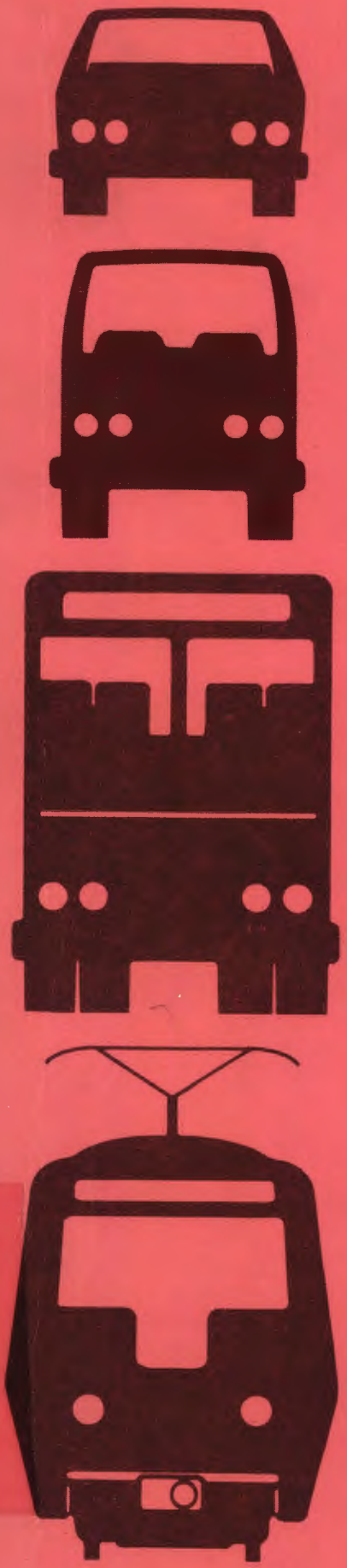
UMTA-DC-06-0492-85-1
UMTRIS 8402



Urban Transportation Abstracts

Winter 1984/1985
Volume 3 Number 2

Transportation Research Board
Urban Mass Transportation Research Information Service
2101 Constitution Avenue
Washington, D.C. 20418

Information Services
Technical Assistance Program
Urban Mass Transportation Administration
U.S. Department of Transportation
Washington, D.C. 20590

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The National Academy of Sciences was established in 1863 by Act of Congress as a private, nonprofit, self-governing membership corporation for the furtherance of science and technology, required to advise the federal government upon request within its fields of competence. Under its corporate charter, the Academy established the National Research Council in 1916, the National Academy of Engineering in 1964, and the Institute of Medicine in 1970.

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
UMTA-DC-06-0492-85-1		

4. Title and Subtitle	5. Report Date
Urban Transportation Abstracts Winter 1984/1985 Volume 3, Number 2	January 1985
	6. Performing Organization Code
7. Author(s)	8. Performing Organization Report No. UMTRIS 8402
9. Performing Organization Name and Address Urban Mass Transportation Research Information Service Transportation Research Board 2101 Constitution Avenue, N.W. Washington, D.C. 20418	10. Work Unit No. (TRAIS)
	11. Contract or Grant No. DTUM60-81-C-72063
12. Sponsoring Agency Name and Address Information Services Technical Assistance Program Urban Mass Transportation Administration Washington, D.C. 20590	13. Type of Report and Period Covered Bibliography: April 1984-October 1984
	14. Sponsoring Agency Code URT-7

15. Supplementary Notes

16. Abstract

This publication contains 989 abstracts of journal articles, research reports, and other information sources. It also summarizes 267 ongoing research activities. The material, selected from current literature and other contemporary sources, covers a broad spectrum of transit information, ranging from technology to operations, management, economics, and government involvement. Literature sources are worldwide. The material is arranged according to the UMTRIS classification scheme in two separate sections—one for abstracts and the other for ongoing project summaries. This publication should be retained since subsequent issues will not be cumulative and will contain only new material.

17. Key Words	18. Distribution Statement
Bus, Carpool, Commuter Service, Light Rail Transit, Paratransit, Public Transit, Rapid Transit, Taxicab, Urban Mass Transportation, Vanpool	Publications Office Transportation Research Board 2101 Constitution Avenue, N.W. Washington, D.C. 20418

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
NA	NA	279	$20.00

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ISSN 0734-0648 **LC 83-640066**

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CONTENTS

FOREWORD

This volume, which contains 989 abstracts of journal articles, research reports, and other information sources, along with 267 summaries of ongoing research activities, covers material accessioned by the Urban Mass Transportation Research Information Service (UMTRIS) between April 1984 and September 1984.

Urban Transportation Abstracts, published semiannually, contains material added to the UMTRIS magnetic-tape file during a 6-month interval prior to its publication. All issues of ***Abstracts*** should be retained since each contains only newly acquired abstract citations; certain of the ongoing research summaries are republished because they continue to be reported until the research projects they describe have been completed or terminated. Ongoing summaries are published only in the Summer issues; Winter issues contain only abstracts.

UMTRIS was developed within the National Research Council, Transportation Research Board (TRB), under contract to the Urban Mass Transportation Administration (UMTA), U.S. Department of Transportation. The UMTRIS computerized data system incorporates information on planning, designing, maintaining, operating, managing, and financing of all modes of public transit, including bus, trolley bus, light and heavy rail transit, commuter rail, advanced guideway systems, taxi and vanpool services, ferries, and local air services. The information is selected because it is seen as useful to operators, designers, researchers, planners, and government agencies at all levels. Sources are worldwide, although the majority of citations are of U.S. origin.

The concepts used by UMTRIS are similar to those of the other TRB modal operations—Highway Research Information Service, Railroad Research Information Service, Maritime Research Information Service, and Air Transport Research Information Service. Collectively, these operations plus UMTRIS are designated the Transportation Research Information Services (TRIS).

Many of the abstracts in the UMTRIS publications are copyrighted even though the publications themselves are not. The abstracts are reproduced here with the permission of the copyright holder. In the Abstracts, any citation followed by Acknowledgment should be considered as possibly subject to restriction, and anyone wishing to reproduce abstracts from UMTRIS publications should secure permission from copyright holders.

Using Urban Transportation Abstracts

This volume is divided into three major sections.

- Abstracts of documents,
- Summaries of ongoing research,
- Indexes by source, author, and subject.

If you are interested in reviewing reports of completed research and other published documents, turn to the section, Abstracts of Reports and Journal Articles, beginning on page 1. The material in this section is arranged in the UMTRIS categories (i.e., Rail Vehicle Technology, Fares and Pricing, Paratransit, Land Use). The category designation and its identifying number are listed in the Contents and appear at the top of each page of the pertinent section.

If you are interested in ongoing research projects, turn to the section, Summaries of Ongoing Research, beginning on page 173. It is important to remember that often there are no reports available; only when the heading References is followed by one or more citations is there a possibility of getting some published results from an ongoing research activity. The summaries are arranged by UMTRIS category, and the designation and appropriate number appear at the top of each page. An A after the numerical designation serves to identify the ongoing projects.

If you can identify your interest by a very specific subject term (i.e., Trolley Bus, New Austrian Tunneling Method, Automatic Fare Collection, Handicapped Persons), turn to the Retrieval Term Index starting on page 249. Each term in this index is followed by one or more document record numbers, each of which consists of the two-digit category designation and the six-digit TRIS accession number that identifies the individual document record within that category. Any listing in italics indicates that the citation is a research summary and appears in the A section. In either the Abstracts or Summaries section, the citations are arranged in order of ascending accession numbers within any category.

If you are looking for abstracts of articles or reports produced by a specific author or summaries of projects being conducted by a particular investigator, turn to the Author Index, page 238, and look for the individual's surname in the alphabetized listing. Again the document record number is used to find the citation in the Abstracts or Summaries section.

If you are interested in abstracts of articles or reports that appeared in a particular publication or were the work of a specific publisher, or if you are interested in summaries of research projects being conducted or funded by a specific organization, turn to the Source Index, page 225. Again, use the document record number to find the appropriate citation in the Abstracts or Summaries section.

Although the Term Index gives a general idea of the scope of the UMTRIS indexing system, information is available on many other terms that do not appear in this specific edition. A complete subject term listing is available.

UMTRIS File Searches

The UMTRIS file is maintained on magnetic tape and is available for literature searches of information related to specific inquiries. The key to searching is UMTRIS categories, appropriate subject terms, dates, performing agencies, or

other data elements. The search is performed batch mode by computer. Output may include abstracts of articles and reports, descriptions of computer programs, and summaries of ongoing research. The output is computer printed and similar in format to citations that appear in this publication.

The fee schedule for UMTRIS title searches reflects the primary support for the service from UMTA and the non-profit nature of all National Research Council information services. The charge for computer retrieval from the UMTRIS file is $50 per request plus $0.25 per citation after screening by UMTRIS. A written authorization or purchase order is required before the retrieval is made. Contact UMTRIS manager, 2101 Constitution Avenue N.W., Washington, D.C. 20418 (telephone 202-334-3251).

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An availability statement is included with each abstract. Because a large number of documents are available from a few major sources, space and printing costs have been reduced by abbreviating these and not indicating an address in the abstract. The standard abbreviations used by UMTRIS for availability statements are shown below, along with the complete name and address of each organization. In all other cases the organization from which a document may be ordered and its complete address are given in the availability statement. Copies of reports and articles listed in this publication are not available from UMTRIS. When ordering from any source, give full information about the document desired. When ordering from the National Technical Information Service, be sure to give the NTIS accession number as well as title and other information. A loan and photocopy service for many of the articles and papers cited is operated by six transportation libraries as explained on page viii. Documents published outside the United States are usually written in the language of the country of origin as indicated at the end of the abstract. If a translation is desired, consult the National Translations Center listed below, which maintains a registry of translations. If the document has never been translated, contact translation services listed in the yellow pages of the telephone book in metropolitan areas.

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1920 L Street, N.W.
Washington, D.C. 20036
Telephone 202-835-9100

AAR
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Association of American Railroads
Technical Center
3140 South Federal Street
Chicago, Ill. 60616
Telephone 312-939-0770

AIAA
American Institute of Aeronautics and Astronautics
Technical Information Service
1290 Avenue of the Americas
New York, N.Y. 10104
Telephone 212-581-4300

AREA
American Railway Engineering Association
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ASCE
American Society of Civil Engineers
345 East 47th Street
New York, N.Y. 10017
Telephone 212-644-7671

ASME
American Society of Mechanical Engineers
345 East 47th Street
New York, N.Y. 10017
Telephone 212-644-7703

CIGGT
Canadian Institute of Guided Ground Transport
Queen's University
Kingston, Ontario K7L 3N6
Canada
Telephone 613-547-5777

DOTL
U.S. Department of Transportation Library
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Telephone 202-426-2565

ECMT
(All documents available through OECD)
European Conference of Ministers of Transport
2 rue André Pascal
Paris 75775, France
Telephone 524-97-22

ESL
Engineering Societies Library
United Engineering Center
345 East 47th Street
New York, N.Y. 10017
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FRA
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Washington, D.C. 20590
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GPO
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Institute of Electrical and Electronics Engineers
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PPI
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Telephone 914-592-7700

RPI
Railway Progress Institute
700 North Fairfax Street
Alexandria, Va. 22314
Telephone 703-836-2332

RTAC
Roads and Transportation Association of Canada
875 Carling Avenue
Ottawa, Ontario K1S 5A4
Canada
Telephone 613-521-4052

SAE
Society of Automotive Engineers
400 Commonwealth Drive
Warrendale, Pa. 15096
Telephone 412-776-4841

SNAME
Society of Naval Architects and Marine Engineers
One World Trade Center
New York, N.Y. 10048
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Transport and Road Research Laboratory
Crowthorne, Berkshire RG11 6AU
England
Telephone Crowthorne 3131

TSC
Transportation Systems Center
Kendall Square
Cambridge, Mass. 02142
Telephone 617-494-2306

UIC
International Union of Railways, BD
14-16 Rue Jean-Rey
75015 Paris
France
Telephone 273-01-20

UITP
International Union of Public Transport
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Belgium
Telephone 73-33-25

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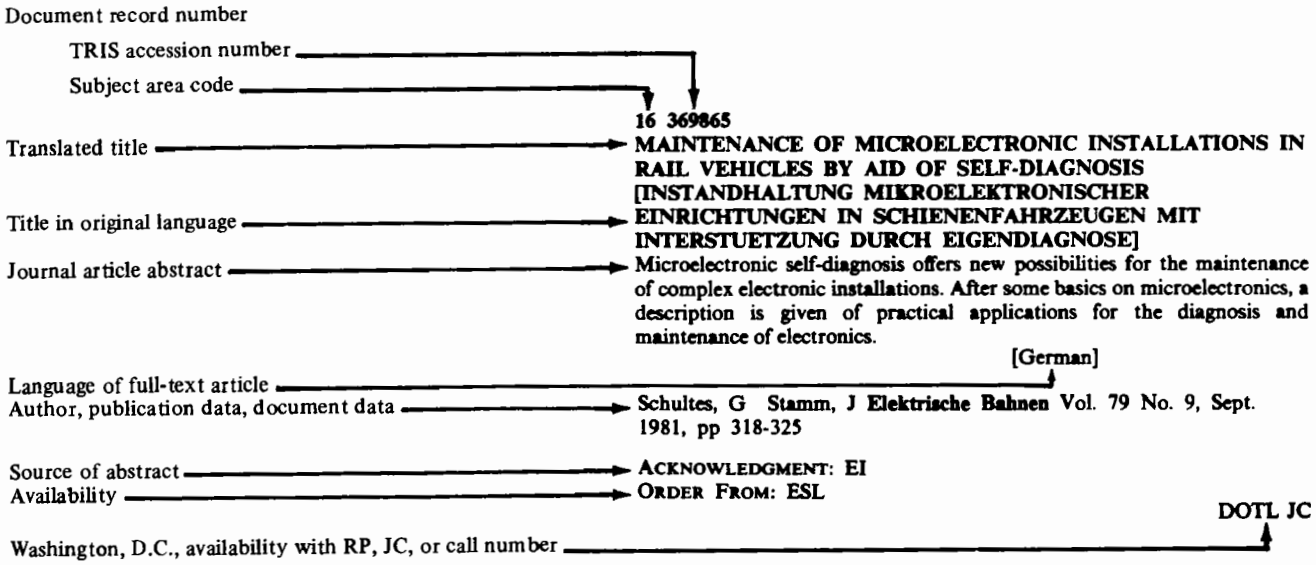
ABBREVIATIONS

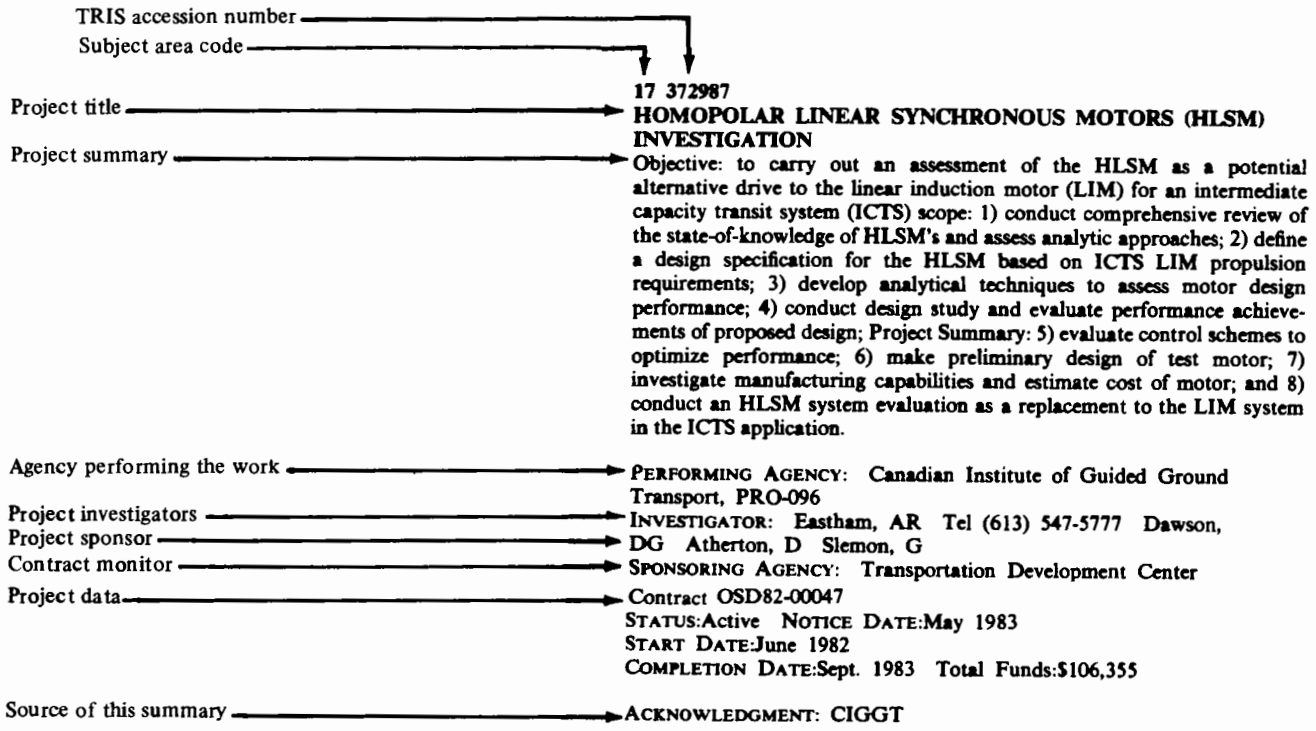
AAR	Association of American Railroads
AIAA	American Institute of Aeronautics and Astronautics
AREA	American Railway Engineering Association
ASCE	American Society of Civil Engineers
CIGGT	Canadian Institute of Guided Ground Transport
CNR	Canadian National Railways
DOT	U.S. Department of Transportation
DOTL	U.S. Department of Transportation Library, Washington, D.C.
ECMT	European Conference of Ministers of Transport
EI	Engineering Index
ESL	Engineering Societies Library
FHWA	Federal Highway Administration,
Fig	Figures
FRA	Federal Railroad Administration
FY	Fiscal Year
GMRL	General Motors Research Laboratories
GPO	U.S. Government Printing Office
HRIS	Highway Research Information Service, Transportation Research Board
HSRI	Highway Safety Research Institute
HUD	U.S. Department of Housing and Urban Development
IEEE	Institute of Electrical and Electronics Engineers
IPC	IPC Transport Press, Ltd.
IRCA	International Railway Congress Association
IRF	International Road Federation
IRRD	International Road Research Documentation
ITS	Institute of Transportation Studies
JC	Journal Collection (DOTL)
L	British Pound Sterling
NAE	National Academy of Engineering
NAS	National Academy of Sciences
NHTSA	National Highway Traffic Safety Administration,
NRC	National Research Council
NTIS	National Technical Information Service
NUTL	Northwestern University Transportation Library
OECD	Organization for Economic Cooperation and Development
OST	Office of the Secretary of Transportation
PB	Prefix identifying an NTIS accession number
Phot	Photographs
Ref	References
Repr PC	Paper copy of original document
RP	Repository (DOTL)
RPI	Railway Progress Institute
Rpt	Report
RTAC	Roads and Transportation Association of Canada
SAE	Society of Automotive Engineers
Shaw	Shaw Publishing Company, Ltd.
SNAME	Society of Naval Architects and Marine Engineers
SRIS	Safety Research Information Service, National Safety Council
Tab	Tables
TRB	Transportation Research Board
TRRL	Transport and Road Research Laboratory
TSC	Transportation Systems Center
UIC	International Union of Railways
UITP	International Union of Public Transport
UMI	University Microfilms International
UMTA	Urban Mass Transportation Administration

Abstract of a non-U.S. journal article



The summaries of ongoing research describe research activities currently in progress or recently completed. Each summary indicates who is performing the project, who is funding it, and how the research goal is to be attained. A summary is not a document surrogate; that is, there may not be a full report published on the project. The summaries are in the format shown below, although each one may not contain all the elements given in this sample. The document record numbers and the order listing are the same for both summaries and abstracts.

Summary of ongoing research



Abstracts of Reports and Journal Articles

11 386270
LISTING OF NEW BUS TECHNOLOGY APPLICATIONS
This report presents the findings of research on bus purchases and demonstrations by transit systems in the U.S. involving innovative vehicles or equipment. Purchases and demonstrations have been catalogued for the last four years. The purchases included in this report show innovative equipment and new manufacturers in the American market. The trend toward mass bus purchases through consortia and a heightened interest in vehicles built by non-traditional manufacturers are shown. The report demonstrates that there is strong interest among transit systems for vehicles that can meet the requirements imposed by local conditions.

Glasser, HS
SG Associates, Incorporated UMTA-MA-06-0126-83-4, DOT-TSC-UMTA-83-29, Dec. 1983, 36p

ORDER FROM: NTIS PB84-149988

11 386278
SHEFFIELD STUDY: COSTS AND MAINTENANCE OF THE SPLIT STEP AND KNEELING MECHANISM
The cost and maintenance were studied of two bus entrance modifications designed to facilitate boarding for the elderly and physically handicapped. One modification was a split front step for double deck buses. The other was to enable single deck buses to kneel. Initial costs were very low compared with the total costs of each vehicle. Various sources of information from four garages were examined for maintenance and repair costs of split step buses. Similar sources were examined at two garages for kneeling buses. Both modifications entailed relatively low costs. A small incidence of damage to split step buses had been reduced by further step well and panel modification. Costs were low enough and benefits significant enouth to warrant wider adoption of the split step modification. Accurate conclusions for the kneeling mechanism were difficult to draw because of its limited use by drivers.

Oxley, PR
Cranfield Institute of Technology, Transport and Road Research Laboratory CRANFIELD-CTS-21, ISBN-0-902-9937-73-1, Apr. 1983, 16p

ORDER FROM: NTIS PB84-145622

11 386287
OPTIMISING THE OPERATIONAL PARAMETERS OF A HYBRID BUS DRIVE IN ORDER TO MINIMIZE FUEL CONSUMPTION
Regenerative braking in vehicles which are operated mainly in transient state offers the basic possibility of reducing the fuel consumption. Vehicles developed for that purpose have not fulfilled these hopes, some of them even show a higher fuel consumption. This study shows that fuel can only be saved if: the efficiency degree of regenerative braking is at its highest, the efficiency degree of energy conversion, and transmission from the fuel tank to the driving axle is improved or at least not worse than that of a conventional driving system—control of energy flows within the system is optimised by means of an adequate operational strategy. Application of these principles in conceiving a hybrid drive system for public transport city buses lead to considerable fuel saving of 22% in test runs. Acceleration, driving comfort, exhaust gas- and noise emission were clearly improved. [German]
Portions are illegible in microfiche products.

Regar, KN
Technical University of Aachen, West Germany NP-4770053, Oct. 1981, 246p

ORDER FROM: NTIS DE84770053

11 386304
UPDATED RELIABILITY EVALUATION OF V730 TRANSMISSION
This report culminates a two-year review of factors concerning the reliability of the Detroit Diesel Allison V730 automatic three-speed transmission for urban transit buses. This report is a continuing examination of the transmission's reliability. Made by the Detroit Diesel Allison Division of General Motors, the V730 is used in almost all urban transit coaches in the United States. This transmission displayed signs of poor reliability soon after its introduction to city transit service in late 1976. Its poor performance was attributable to a number of causes including service and maintenance, as well as design and general quality. This document is a follow-up to the report entitled: Reliability Evaluation of V730 Transmission, October 1982, NTIS number PB 83-167056, A03. The 1982 report covers transmissions manufactured between 1976 and 1981. This present report concentrates on newer transmissions which have been produced since that time and which incorporate a number of design improvements. The data was obtained from eight transit agencies representing the variety of environments across the United States. Methods of data analysis are essentially the same as in the first report, which includes distributions of mileage to first-time failure and mileages attained by unfailed transmissions. Comparisons are made between these newer transmissions and those of the earlier report. Conclusions include reliability improvements.

Seekell, F
Transportation Systems Center, Urban Mass Transportation Administration, (DTS-63) Final Rpt. UMTA-MA-06-0120-83-3, DOT-TSC-UMTA-83-42, Nov. 1983, 23p

ORDER FROM: NTIS PB84-148667

11 386365
DEVELOPMENT OF TRANSIT COACH BONDED BRAKE LINING TEST EQUIPMENT AND TEST PROCEDURES—PROGRESS REPORT
Bonded brake linings have been introduced in limited quantities at several urban and suburban transit properties. The in-service capabilities of current bonding processes and brake materials are undergoing assessment, and field data on the wear and failure of bonded brake linings is being gathered. To support and complement the field data, laboratory testing is required to investigate bonded lining capabilities and failure modes in depth. Such testing will provide a data base for developing analytical techniques for predicting wear and failure of lining bonds. This report documents the development and progress to date of brake test equipment and procedures for heavy-duty transit coach brakes at the Transportation Systems Center. It presents a description of a heavy-duty dynamometer brake test apparatus and specifies proposed test procedures for an evaluation of bonded brake shoe linings. Although many tests were completed, several of the planned dynamometer tests were discontinued as a result of programmatic changes. The overall objectives of this test effort were to: 1) provide a performance evaluation of heavy duty bonded brake linings; 2) establish the parameters which lead to adhesion or delamination of the bonded linings; and 3) develop a bonded lining failure mode analysis that can establish the potential for lining failure under various operating conditions of speed,

load, and temperature. Implicit in the test effort is the development of test procedures and equipment necessary to evaluate the bonded linings.

Simeone, LF
Transportation Systems Center, Urban Mass Transportation Administration, (DTS-44) Final Rpt. UMTA-MA-06-0120-83-5, DOT-TSC-UMTA-83-38, Jan. 1984, 52p, 17 Fig., 5 Tab., 3 App.

ORDER FROM: NTIS PB84-171503

11 386379
REDUCING BRAKE BLOCK WEAR
South Bend Public Transit Co. was averaging as low as 1500 miles per set of brake blocks in 1976. The northern Indiana bus operating agency began a visual inspection every 7 days, restored brake drums only with a light turning, and then ground shoes to fit the drums. Since it then resorted to non-asbestos blocks, its local-service buses promise to average 25,000 miles per set, doubling the performance already achieved. Stopping performance is improved, noise reduced, and any asbestos-related problems avoided. The maintenance superintendent notes that improving brake life is a comprehensive job of proper equipment and procedures, driver training and attitude, and proper scheduling. The entire bus fleet will be fitted with non-absbestos brake blocks.

Metro Vol. 80 No. 2, Mar. 1984, pp 94-96, 4 Phot.

ORDER FROM: Bobit Publishing Company, 2500 Artesia Boulevard, Redondo Beach, California, 90278

11 386985
AT LAST, A TOUGH LITTLE BUS
Orion II, a front-wheel-drive, low-floor bus was designed to offer advantages for wheelchair passengers, low-demand transit routes, and executive charter service. It was developed by Ontario Bus Industries with federal support because of its perceived versatility. Interior space is maximized by front-wheel drive and independently suspended rear wheels. Most structural materials are stainless steel, including the welded integral frame and panels. Power-train module (engine, transmission, front-wheel drive assembly, suspension, steering and cooling system) can be separated from the vehicle in an hour with a spare unit ready to take its place. Some of the problems and advantages of its potential applications are discussed. [French]

Ross, G **TRANSPO 84** Vol. 7/2 1984, pp 24-29, 5 Phot.

ORDER FROM: TRANSPO 84, Editor, Transport Canada, Public Affairs, Ottawa, Ontario K1A 0N5, Canada

11 387573
FROM THE STANDARD TROLLEYBUS TO MODULAR TRACTION EQUIPMENT FOR TROLLEYBUSES WITH CHOPPER CONTROL
Modular drive equipment for trolleybuses can be readily accommodated in the chassis and body of different makes of trolleybus. The paper discusses the typical requirements of modern local transport facilities to be met by the traction system.

Hintze, H (Brown, Boveri & Co, Geneva, Switzerland) **Brown Boveri Review** Vol. 70 No. 12, Dec. 1983, pp 538-545, 5 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

11 387582
REFERENCE MANUAL-ELECTRIC ROAD PUBLIC TRANSPORT VEHICLES 1981
The manual aims to bring together concisely, the past, present and future of electric buses around the world. Information was gathered from published papers and data and on-site investigations, including an extensive visit to North America and Europe. Section 2 presents a history of electric buses 1901-81, and is followed by detailed descriptions of existing and proposed, and some abandoned, electric bus systems, their vehicles and sources of equipment supply, with relevant background comments where possible. A schedule of operating bus fleets, and a list of electric bus manufacturers is given. It is concluded that modern electric bus systems-battery, overhead trolley or hybrid, offer an affordable, adaptable alternative to fixed rail and petroleum-dependent equipment, and the benefits may equally apply in Australia and other southern regions. (TRRL)

Director-General of Transport, South Australia Monograph June 1981, 74p, Figs., Tabs., Phots.

ACKNOWLEDGMENT: TRRL (IRRD 272011), Australian Road Research Board
ORDER FROM: Director-General of Transport, South Australia, Transport Planning Division, GPO Box 1599, Adelaide, South Australia, Australia

11 387592
GUIDING BUSES INTO A NEW ERA
Part of a general improvement to a Birmingham bus route will include a 600 M length of dedicated concrete track along the central reservation of a wide urban dual carriageway. The bus is guided between two parallel kerbs by means of horizontal rollers operating on levers to control the vehicle steering system. Reserved track can be 25 per cent narrower than a conventional highway bus lane giving benefit to users in terms of speed and reliability. The track can be built progressively, as financial and environmental factors permit, at a relatively low cost when compared with that of trams, light rail or trolleybus. A short length of guided busway can speed buses through locally congested areas with the minimum of reserved land usage. Passenger stations have been specially designed with ramps and handrails to give easy access without any steps from the platforms to the bus entrance. Digital displays at the bus stop tell passengers the time when the next bus is due. (TRRL)

Acton, P **Surveyor** Vol. 163 No. 4784, Mar. 1984, pp 10-11, 1 Fig., 2 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 276074)
ORDER FROM: IPC Specialist and Professional Press Limited, Surrey House, 1 Throwley Way, Sutton, Surrey SM1 4QQ, England

11 387665
AC TRANSIT INCREASES BRAKE LIFE BY INSTALLING ELECTRIC RETARDERS ON ITS BUSES
AC Transit of the San Francisco Bay area operates a wide range of express and local bus services over all types of terrain and under a variety of climatic conditions. High costs were incurred becuase of excessive brake wear. Maintenance requirements are being reduced as AC Transit has progressively increased the use of electric retarders on its fleet. Brake lining life has been increased up to six times that achieved with unequipped coaches. The retarder pays for itself in 5 years or 200,000 miles. Reduced braking heat has also increased tire life. Retarders are installed on the drive line at the differential where eddy current energy is dissipated as heat from an air-cooled unit which requires virtually no maintenance.

Bus Ride Vol. 19 No. 3, May 1984, pp 76-77, 2 Phot.

ORDER FROM: Friendship Publications, Incorporated, West 2627 Providence, P.O. Box 1472, Spokane, Washington, 99210

11 387701
HIGHLIGHTS OF THE TRANSIT BUS TECHNOLOGY WORKSHOP APRIL 29-30, 1982
The Transit Bus Technology Workshop, held at the Transportation Systems Center on April 29-30, 1982, provided UMTA with current information on research, development, and technical assistance needed to improve the economy and performance of transit buses. The workshop was sponsored by UMTA's Office of Bus and Paratransit Systems, in cooperation with the American Public Transit Association's Bus Technology Liaison Board. Summaries of the individual speeches made during the general session and of the three working groups are in this document. The Workshop included: Introductory general session on the status of the transit industry and bus technology; three parallel working groups reviewing: (a) critical components of the vehicle; (b) maintenance facilities and rehabilitation and; (c) procurement aspects; and brief summary session for concluding remarks.

Transportation Systems Center, Urban Mass Transportation Administration, American Public Transit Association DOT-TSC-UMTA-82-38, Sept. 1982, 98p

ORDER FROM: TSC

11 387929
THE OTHER RAPID TRANSIT?
The busway is gaining acceptance as a viable transit alternative with 12 such projects in operation, under construction or in the design phase. Starting with the El Monte busway in Las Angeles and the Shirley Highway in northern Virginia a decade ago, the concept has continued to gain adherents. Port Authority of Allegheny County (Pittsburgh) operates the nation's only two exclusive busways; all others share their rights of way with other high-occupancy vehicles. Seattle Metro has won UMTA's highest rating for its $285 million downtown bus subway which will be traversed by trolley buses and possibly dual-modes. The possibility of future conversion to guided buses instead of light rail transit is being investigated by Seattle. Houston Metro has also gotten a high rating for its proposed 42 miles of busways which will be shared with HOVs. Baltimore is also planning a 5.5-mile busway. Aside from routing, modal use and funding-source flexibilities, bus roadways have other advantages. The transit operator does not have track maintenance costs. While the exclusive busway blurs the distinction between bus and rail transit, increased ridership on busways can conceivable make necessary their eventual conversion to the rail mode.

Henke, C **Metro** Vol. 80 No. 4, July 1984, 4p, 2 Phot.

ORDER FROM: Bobit Publishing Company, 2500 Artesia Boulevard, Redondo Beach, California, 90278

11 387935
DIESEL FUEL QUALITY AND EFFECTS OF FUEL ADDITIVES
This synthesis presents information about diesel fuel and fuel additives, with emphasis on their use in transit buses. Rising fuel costs and a gradual decline in diesel fuel quality provide inventives to use fuel more efficiently. Environmental and public relations factors encourage reducing smoke and gaseous exhaust emissions. The use of additives is often proposed as a remedy for fuel-related problems but, because of their cost, additives must be shown to be effective by careful evaluation before and during their use. The study of fuel additives necessarily involves the broader subject of fuel quality and engine performance, which additives are expected to improve. Diesel fuel quality is not a constant, and major causes of changes are identified in the study. Performance in transit buses includes concerns for emissions and efficient combustion. This synthesis describes additives in functional categories and presents a generalized approach to methods for evaluation. Additive evaluation depends on a measurable change in fuel properties, engine performance, or both. Therefore, a background discussion of diesel fuel quality is included. This discussion covers measurement of fuel properties and how those properties relate to performance. Information on fuel quality trends and alternative fuels is also improtant for planning purposes. With this background, the description of fuel additive benefits should be more useful in developing evaluation methods.

Moulton, DS Sefer, NR (Southwest Research Institute) **NCTRP Synthesis of Transit Practice** No. 3, May 1984, 62p, Figs., 15 Tab., 84 Ref., 6 App.

ORDER FROM: TRB Publications Off

11 387972
PHASE 1 METHANOL ENGINE CONVERSION FEASIBILITY STUDY
This report documents the selection of the surface-assisted ignition technique to convert two-stroke Diesel-cycle engines to methanol fuel. This study was the first phase of the Florida Department of Transportation methanol bus engine development project. It determined both the feasibility and technical approach for converting Diesel-cycle engines to methanol fuel. State-of-the-art conversion options, associated fuel formulations, and anticipated performance were identified. Economic considerations and technical limitations were examined. The surface-assisted conversion was determined to be feasible and was recommended for hardware development in Phase 2. It this five-phase program is successful, it will determine technical design specifications, component conversion kit requirements, detailed fleet conversion plans for subsequent use by transit bus operations and state/local authorities to convert diesel bus fleets to methanol fuel.

Booz-Allen and Hamilton, Incorporated, Florida Department of Transportation, Urban Mass Transportation Administration Mar. 1983, v.p., Figs., Tabs.

ORDER FROM: Florida Department of Transportation, Haydon Burns building, 605 Suwance Street, Tallahassee, Florida, 32301

11 387977
NOISE CONTROL OF THE CONTEMPORARY TRANSIT MOTORBUS
A broad range of topics relating to the noise control of ordinary transit motorbuses is presented. The work is an outgrowth of Portland's Transit Mall engineering. Topics include noise ratings of various makes and models, source analysis and treatment, testing techniques, performance benchmarks, environmental noise prediction, busyard sound barrier, and noise control strategies.

Kaye, MC
Tri-County Metropolitan Transp District, Oregon, Urban Mass Transportation Administration, (DTS-63) Final Rpt. UMTA-OR-06-0005-83-1, May 1984, 132p, 50 Fig., 37 Tab., 5 Ref., 3 App.
Contract UMTA-OR-06-0005
ORDER FROM: UMTA

11 387979
TRANSIT BUS FUEL ECONOMY AND PERFORMANCE SIMULATION
This report presents the results of bus simulation studies to determine the effects of various design and operating parameters on bus fuel economy and performance. The bus components are first described in terms of how they are modeled. Then a variation of each component is performed and the resulting fuel economy and performance are presented as sensitivities and tradeoffs. The comparison of test track relative fuel consumption to simulated relative fuel consumption was accomplished with six of the nine simulations agreeing within the plus and equal 1% band of the test results as specified in the SAE Type II J1321 test procedure.

Zub, R
Transportation Systems Center, Urban Mass Transportation Administration, (DTS-63) Final Rpt. UMTA-MA-06-0120-84-2, DOT-TSC-UMTA-84-19, No Date, 116p, 28 Fig., 23 Tab., 6 Ref.
Contract DTUM60-81-C-71103
ORDER FROM: UMTA

11 389315
TRANSPORT FOR THE DISABLED
This, the second part of a survey into the problems of disabled people in using public transport, examines equipment currently available for adapting public service vehicles. Examples are given of a three-step lift which can be converted from a three-step pedestrian entrance into a loading platform for wheelchairs in a time of 15 seconds. An alternative method of accommodating lifting facilities in the normal entrance is by the use of an electrically operated chain-driven lift where a fold-down platform takes either a seated passenger or a wheelchair and subsequently retracts to leave the normal entrance clear for pedestrians. Methods of securing wheelchairs on coaches are discussed and the needs of toilet compartments are examined. Coach and ambulance features are often combined by body manufacturers with experience in each. Notes are given on some of the recently-built or converted vehicles by the major manufacturers in the field. The author mentions those of the larger transport operatives who have specialised in conversions and gives details of other specialists including a consultant.

Coaching Journal and Bus Review Vol. 52 No. 6, Apr. 1984, pp 41-44, 4 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 276755)
ORDER FROM: Travel and Transport Limited, 122 Newgate Street, London EC1A 7AD, England

11 389340
TEST AND EVALUATION REPORT FOR THE USPS COMUTA VAN
A Comuta Van produced by Commuter Vehicles, Inc., for the United States Postal Service was performance-tested by the Tennessee Valley Authority at its Electric Vehicle Test Facility. The Comuta Van was tested for acceleration, top speed, gradability, and driving range under both constant speed and stop/start operation. This report presents test results, data on vehicle operating conditions, descriptions of the vehicle and components, and information on vehicle reliability during the test period.

Driggans, RL Whitehead, GD Buffett, RK
Tennessee Valley Authority TVA/OP/EDT-84/22, Mar. 1984, 89p

ACKNOWLEDGMENT: Energy Research Abstracts
ORDER FROM: NTIS DE84901087

11 389381
SPECIFICATION GUIDE FOR SMALL TRANSIT VEHICLES
This guide seeks to aid the transit operating agency in preparing technical specifications for small vehicles for specific transit operations. Factors to be considered would be vehicle size, how economical it should be to operate, what special equipment is needed, and how much the buyer can afford. Whether it be a standard passenger van, a modified van, a body-on-chassis small bus or a minibus, this guide presents factors to be considered when developing specifications. Three types of service patterns are identified: Demand responsive, fixed-route and special service. Operating factors important in choice are the following: Passenger capacity; weight capapcity; operating environment; vehicle maintenance costs; type of service with consideration for passenger comfort and special equipment needs, fuel type, and budget limitations. Suggestions are given for preparation of specifications in conformance with Federal procurement regulations.

Office of the Secretary of Transportation, Indiana Department of Transportation DOT-I-84-26, Feb. 1984, 56p, 8 Fig., 3 Tab., 2 App.

ORDER FROM: OST

11 389852
LONDON'S BUS OF THE FUTURE?
Visitors to the Royal Society of Arts annual design exhibition this year can see the way some of Britain's brightest young designer students see the next generation of London's double-decker buses. The designer brief required that the new "bus should be suitable for both one-man and two-crew operation, with special attention to quick and efficient fare-collecting systems. It also called for a good ratio between sitting and standing space on the lower deck (by law, buses are not allowed to carry standing passengers upstairs) and for special attention to be given to the needs of elderly, disabled, or heavily laden passengers. It was also suggested that students pay close attention to the driver's compartment, and the needs of vehicle maintenance through easy access to the main mechanical components. And, the judges sought a "friendly" appearance which would not date quickly.

Chartered Mechanical Engineer Vol. 31 No. 7-8, July 1984, pp 40-41

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

11 389855
CONSTRUCTING THE O-BAHN SYSTEM IN AUSTRALIA
The 12-km long O-Bahn system being constructed in Adelaide, South Australia, was chosen among three alternatives with the other two being light rail transit and an exclusive busway. The guideway is constructed of prefabricated concrete elements which are installed on the site. Bus front axles are fitted with follower arms carrying horizontal tires which bear against vertical surfaces of the guideway outer edges. The initial fleet will be 92 vehicles, 51 articulated and 41 standard diesel buses. Vehicles will operate off the guideway at both ends. There are two intermediate stations within the corridor designed to be off-line and into which buses are guided manually. Peak traffic is calculated to be 3800 passengers per hour in each direction with a total of 12 different routes using the corridor guideway.

Niemann, K Sack, H-A (Daimler-Benz AG) **Electric Vehicle Developments** No. 19, 1984, pp 21-23, 3 Fig.

ORDER FROM: Research Applications Limited, City University, Northampton Square, London EC1V 0HB, England

11 389859
BUS AIR CONDITIONING IMPROVEMENTS
Costs and maintenance associated with bus air conditioning continue to pose major problems. Five projects funded by UMTA show that some of the problems may be resolved. Evaporative cooling has been successfully demonstrated in Denver and Tucson where low humidity climate makes such a system practical. A production model of a rotary screw compressor will be tested in Washington, DC, and Philadelphia because it has fewer moving parts, the potential for greater reliability and lower maintenance requirements. Condenser relocation from within the engine housing to the roof is intended to reduce dirt and debris accumulation on heat-transfer surfaces. Another relocation has been to the rear window area, an arrangement tested successfully in Los Angeles and Miami. Atlanta has replaced dual compressors with a single large compressor which has been found to be more reliable; it is recommended that windows and roof hatches which can be opened by opened be installed if a single-compressor system is adopted.

Technical Assistance Briefs Vol. 3 No. 1, 1984, 11p, 5 Fig.

ORDER FROM: UMTA

11 389872
ALLISON HIGH TECH AUTOMATICS FOR THE '80S
Detroit Diesel Allison (DDA) Division of General Motors now offers automatic bus transmissions with new control and braking features for city and intercity service. The precise electronic controls have advantages over conventional hydraulic controls including fuel enconomy improvement, shift point accuracy, and elimination of shift linkages as well as a built-in diagnostic system. The new output retarder is two-staged which can be controlled automatically through the vehicle service brakes in city operation and with separate hand lever on intercity routes. The retarder privides up to 80% of braking effort at high speeds and a continued capability down to very low speeds.

Schroeder, **EJ Bus Ride** Vol. 20 No. 5, Sept. 1984, pp 66-68, 1 Phot.

ORDER FROM: Friendship Publications, Incorporated, West 2627 Providence, P.O. Box 1472, Spokane, Washington, 99210

11 389882
EVAPORATIVE COOLERS FOR TRANSIT BUSES. VOLUME I—DESIGN, DEVELOPMENT, TESTING AND EVALUATION
The Regional Transportation District (RTD) of Denver, Colorado has been investigating and developing the application of evaporative cooling to urban transit coaches since 1979. Denver and most of the semi-arid western U.S. experience an ideal climate to take advantage of this method of cooling. Several types of evaporative coolers including recreational vehicle units and some developed by RTD have been tested by RTD. In 1982, based upon this work, a set of specifications was written to develop a design particularly for use on buses, under an UMTA grant. An evaporative cooling contractor was selected to develop three design concepts as far as the prototype stage. A university research institute was selected to do the testing. Two of the concepts were built as prototypes and installed on two buses. A third concept was built as a bench-scale test unit. The two prototyes were tested in Tucson in October and November of 1982 under three operating conditions: first, with the coach parked and running, second, with the coach operating on typical routes without passengers; and third, in routine revenue service. Test results and analyses are discussed in detail in routine revenue service. Tests results and analyses are discussed in detail in the body of this report along with design concepts and the engineering of the prototypes. The prototype coolers designed and built under this project have been extensively tested, providing a documented demonstration of the capacity and capability to effectively cool a transit coach in typical revenue service. In low humidity climates, this technology affords an opportunity to increase passenger comfort at a cost well below that of conventional mechanical air conditioning as reparted in the life cycle cost analysis included in this report. cost analysis included in this report.
See Volume II, UMTA-CO-06-0012-83-2.

Butz, JR Mattil, JF Marquez, J
Regional Transportation District, Urban Mass Transportation Administration Intrm Rpt. UMTA-CO-06-0012-83-1, June 1983, 302p, Figs., Tabs., 8 App. Contract UMTA-CO-06-0012
ORDER FROM: UMTA

11 389883
EVAPORATIVE COOLERS FOR TRANSIT BUSES. VOLUME II—PREPRODUCTION EVALUATION IN REVENUE SERVICE
In the spring of 1983 RTD contracted for 18 evaporative coolers to be installed on 1981 GMC "New Look" buses. The coolers were built to the RTD detailed design specifications. These units were purchased to evaluate reliability of the design in revenue service prior to equipping the rest of the GM fleet. The evaluation was done on three levels: 1) temperature data was

recorded on two buses continuously, on all routes, in revenue service in Denver during July and August, 2) a detailed passenger survey was conducted by RTD, 3) maintenance, operational and design problems would be observed and solved. This report discusses the results of this evaluation. The use of a heavy duty, high efficiency cooling unit, designed and sized for the demanding service requirements of transit coaches has proven to be a viable alternative to refrigerated air conditioning at approximately half the life cycle cost. Data shows an overall average of 9 deg F temperature drop in the bus from ambient in the Denver area. Cities in the central and western U.S. will now have the option to use this type of system.

See Volume I, UMTA-CO-06-0012-83-1.

Butz, JR Mattil, JF Marquez, J
Regional Transportation District, Urban Mass Transportation Administration Final rpt. UMTA-CO-06-0012-83-2, June 1983, 162p, 4 Fig., 8 Tab., 5 App. Contract UMTA-CO-06-0012
ORDER FROM: UMTA

11 390155
INNOVATION IN TRANSPORT VEHICLES IN AUSTRALIA

Hybrid vehicles represent one method of reducing the heavy demand for oil by Australia's transport fleet by carrying on-board energy storage components. Recent research programmes in the University of Queensland have demonstrated two prototype vehicles. Many concepts from these vehicles could find application on specialised duty cycles particularly in city stop-start environments. One vehicle, a large 1680 kg passenger sedan carries a low speed flywheel as well as lead-acid batteries and aims to increase the internal combustion engine efficiency over city-suburban driving cycles. The other, a 1600 kg delivery van carries only lead-acid batteries in conjunction with either a petrol or diesel engine and relies on substitution of coal derived energy in the form of electricity, for oil. The development programme has initially highlighted the possibility of saving up to 35 per cent of the fuel used by city public transport buses by the addition of components including a high power-density regenerative system to partially capture the kinetic energy normally lost during braking. (Author/TRRL)

The Engineering Conference 1984: Brisbane, 2-6 April 1984, Conference Papers, National Conference Publication.

Gilmore, DB (Queensland University, Australia)
Institution of Engineers, Australia Conf Paper Engng Conf 84/1, 1984, 258-63, 5 Fig., 15 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 272067)
ORDER FROM: Australian Road Research Board, P.O. Box 156, Bag 4, Nunawading, Victoria 3131, Australia

12 389320
BUS DETECTION [DETEKCIJA AUTOBUSA]
The structure of the bus detection system consisting of a detector's loop, amplifier and comparing unit is described. Details are given of the calculation of the detector's amplifier and comparing unit. The change in detector's loop inductivity is due to the passing of vehicles, the amplifier transforms it into an impulse and the comparing unit identifies the impulse given by a passing bus, transmitting to the signal equipment a request for a phase change when the red light is on. By giving priority to public transport vehicles it is possible to adhere to the timetable and to save fuel. For the covering abstract see IRRD 273856. [Croatian]

Vukelic, Z (Nikola Tesla, Zagreb) **Zbornik III Jugo Savetovanje Tehn Regul Saobracaja** Apr. 1983, pp 319-335, 8 Fig., 5 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 273924)
ORDER FROM: Savez Inzenjera I Tehn saobracaja I Veza Jugo, Drustvo Inzenjera I Technicara Saobracaia I Veza Novi Sad, Novi Sad, Vojvodina, Yugoslavia

12 389321
IMPROVEMENT IN TRAFFIC CONTROL THROUGH THE USE OF STRATEGICALLY PLACED DETECTORS [POBOLJSANJE REGULACIJE PROMETA UPOTREBOM STRATESKIH DETEKTORA]
Strategically placed detectors can be directly connected to the microprocessor master controller. They are installed at strategic points in the area where the coordinated control of traffic signals is provided and they supply data on traffic intensity. The collected data are processed and used for the vehicle actuated primary and secondary time plan selection. For the covering abstract of the conference see IRRD 273856. [Croatian]

Ozimec, Z (Nikola Tesla, Zagreb) **Zbornik III Jugo Savetovanje Tehn Regul Saobracaja** Apr. 1983, pp 337-340, 1 Fig., 1 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 273925)
ORDER FROM: Savez Inzenjera I Tehn Saobracaja I Veza Jugo, Drustvo Inzenjera I Tehnicara Saobracaja I Veza Novi Sad, Novi Sad, Vojvodina, Yugoslavia

12 389325
RADIO SYSTEM FOR CONTROLLING THE REGULARITY OF DEPARTURES FOR PUBLIC TRANSPORT BUSES IN NOVI SAD [RADIO SISTEM U FUNKCIJI KONTROLE REDOVNOSTI I ODRZAVANJA POLAZAKA U JAVNOM GRADSKOM I PRIGRADSKOM SAOBRACAJU U NOVOM SADU]
Radio was introduced in the city transport system in 1965. The system was extended and modernized in 1972. The range of the radio station is about 50 kms and in good weather conditions even greater. The radio system comprises the main radio station, bus mobile radio station, repetitor and walkie-talkie radio station. The main advantages of the radio system are: possibility of rapid intervention in case of bus damage, breakdown, repair and change of buses, intervention in special occasions on the lines according to road conditions etc. In the near future the existing system will be improved and enlarged on all the buses in the city. For the covering abstract of the conference see IRRD 273856. [Serbian]

Desnica, B Djakonov, S (Ro 'novi Sad' Gras) **Zbornik III Jugo Savetovanje Tehn Regul Saobracaja** Apr. 1983, pp 617-624, 1 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 277148)
ORDER FROM: Savez Inzenjera I Tehn Saobracaja I Veza Jugo, Drustvo Inzenjera I Tehnicara Saobracaja I Veza Novi Sad, Novi Sad, Vojvodina, Yugoslavia

12 389875
JAPAN: WHERE COMPUTERS AND TRANSIT WORK TOGETHER
The Tokyo Metropolitan Government Transportation Board (TMGTB) has a comprehensive transit control system composed of a number of a number of subsystems including bus location, operation control and office management. A bus location system, initially introduced on three routes, provides information to waiting passengers and drivers. Many bus stops now have a bus approach indicator, a wayside transceiver, which is fed data from the central control and the approaching vehicle. The same equipment allows 1950 TMGTB buses to automatically log in and out of bus depots, just like employees using time clocks. Some buses now have passenger counters which transmit ridership data to the central computer. The public and private rapid transit operating agencies use computers for centralized traffic control, automatic train operation, diagnostics and centralized substation control.

Tomlinson, D **Mass Transit** Vol. 11 No. 8, Aug. 1984, 3p

ORDER FROM: Mass Transit, 337 National Press Building, Washington, D.C., 20045

13 386225
DMU REPLACEMTNT—CAN BR EVER GET IT RIGHT?
The author relates the sorry tale of BR's quest over the past 10 years for a replacement for the ageing fleet of diesel multiple-units, and describes the present state of this issue.

Ford, R **Modern Railways** Vol. 41 No. 426, Mar. 1984, pp 121-125

ACKNOWLEDGMENT: British Railways
ORDER FROM: Allan (Ian) Limited, Terminal House, Shepperton TW17 8AS, Middlesex, England

13 386240
ANALYTICAL EXAMINATION ON MODELS OF RAILWAY ELECTRIFICATION AT 3 KV DC WITH FEEDER AT-3,-6 &-12 KV DC
The ever increasing demand for high transport capacity in the railway sector, understood both as and increase in speed and as traffic density, brings about the need for a study of the problem of the potentiation and amplification of the existing structures. In the case of lines electrified at 3 KV dc, the increase of the potentiality of the system composed of catenary, track and substations, apart from the increase in the number of the lastnamed, mainly consists in the oversizing of the overhead conductors, in the parallel connection at half-distance (only for double track lines) and in the stabilization of the substation voltage amplitude. Outside these possibilities, alternative solutions, based on non-conventional systems, are to be taken into consideration. This memorandum, taking up proposals previously made in other publications, carries out an analytical study on the possibilities of an alternative potentiation system of the lines by means of the application of "transformers into direct current" (DC/TR) installed along the line and fed by means of a feeder at-3,-6,-12 kV dc. [Italian]

Careglio, G **Ingegneria Ferroviaria** Vol. 38 No. 10, Oct. 1983, pp 664-672

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

13 386252
ELECTRONIC EQUIPMENT ON RAIL VEHICLES
Power and control electronics are installed on rail vehicles to replace electromechanical components that are subject to wear and tear and to improve the operational features by achieving complex functions by means of electronic devices. Brief mention is made of recent developments in the fields of installation and cooling, GTO thyristors, microcomputer controls and the use of optical-fibre cables for data transmission, especially for multiple-unit control of locomotives and motor coaches. [German]

Dreimann, K **Glasers Annalen ZEV** Vol. 108 No. 1, Jan. 1984, pp 21-26

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

13 386254
PASSENGER COMFORT: A METHODICAL APPROACH
The authors, from the Transport Research Institute, underline the importance of the comfort factor in the field of transport. They consider the various constituent elements of comfort relevant to rail transport: physical factors, social and environmental factors associated with passengers and the temporal aspects of comfort. The methods for assessing vehicle comfort include different parameters which can be obtained in either analytical or a general manner. In section 3, they provide a contribution to the formulation of an overall comfort model and provide a calculation algorithm. [French]

Favre, B Flores, J-L **French Railway Review** Vol. 1 No. 6, Dec. 1983, pp 515-522

ACKNOWLEDGMENT: British Railways
ORDER FROM: North Oxford Academic Publishing Limited, 242 Banbury Road, Oxford OX2 7DR, England

13 386255
PASSENGER COMFORT—THE ROLE OF ACTIVE SUSPENSIONS
The paper examines the existing and proposed methods of assessing passenger comfort and makes proposals as to acceptable levels of vibrations for railway vehicles. The limitations of passive suspensions are outlined and the advantages of active suspensions in improving passenger comfort cost-effectively are described. Finally some results of active suspension development are presented.

Pollard, MG Simons, NJA **Institution of Mechanical Engineers, Proc Part A** Vol. 198 No. 35, 1984, pp 1-15

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

13 386256
TECHNOLOGY UPDATE: FACT AND FICTION
In this article the relevance of aerodynamic drag to modern trains is discussed. How it is measured; how efficient aerodynamically modern trains are; and how efficiency could be improved. It will be seen that there are some major differences between the aerodynamic characteristics of road vehicles and trains. The measurement of drag coefficient for trains is considerably more difficult than for road vehicles.

Baker, CJ **Modern Railways** Vol. 41 No. 425, Feb. 1984, pp 86-88

ACKNOWLEDGMENT: British Railways
ORDER FROM: Allan (Ian) Limited, Terminal House, Shepperton TW17 8AS, Middlesex, England

13 386257
REFLECTIONS ON THE FUTURE OF ELECTRIC TRACTION
A brief survey of the options available for electric traction, with descriptions of controlled rectifier/d.c. motor; controlled rectifier/inverter/asynchronous motors and controlled rectifier/inverter/synchronous motors. The synchronous motor is seen as the preferred present solution but future improvements in power semiconductors will allow the asynchronous motor to be an alternative. The ability of three phase motors to undertake a wide variety of duties is an important advantage and a more flexible approach to the operation of freight trains is forseen. Mechanical aspects are mentioned such as bogie design (monomotor and body motor/cardan) and motor surface speed. [French]

Caire, A **Chemins de Fer** No. 363, 1983, pp 252-260

ACKNOWLEDGMENT: British Railways
ORDER FROM: Assoc Francaise des Amis des Chemins de Fer, Gare de l'Est, Paris, France

13 386258
MEASUREMENT OF CONTACT PRESSURE BETWEEN PANTOGRAPH AND CATENARY
After a brief survey of the problems associated with current collection at high speeds and the conventional experimental methods used to study this phenomenon, the article describes a new method of measuring the contact force between the pantograph and the overhead line. The principle adopted consists of inserting dynamometers between the contact bars and the collector head in such a way that the aerodynamic behaviour of the pantograph remains unchanged. In addition, the equipment records the vertical acceleration of the head and the lateral position of the contact wire on the contact bars. Measurement noise is considerably reduced by the use of a digital telemetry system which also ensures electrical isolation between the overhead system and the laboratory. Tests carried out on a class 22200 Bo-Bo locomotive fitted with an AM 18 U pantograph are described and assessed. Other experiments have since confirmed the high reliability of this new measurement system. [French]

Delfosse, P Sauvestre, B **French Railway Review** Vol. 1 No. 6, Dec. 1983, pp 497-506

ACKNOWLEDGMENT: British Railways
ORDER FROM: North Oxford Academic Publishing Limited, 242 Banbury Road, Oxford OX2 7DR, England

13 386259
COMPUTER EVALUATION OF CONTROLLED PANTOGRAPHS FOR CURRENT COLLECTION FROM SIMPLE CATENARY OVERHEAD EQUIPMENT AT HIGH SPEED
A digital computer simulation technique is used to study the effects of changing pantograph characteristics upon the quality of current collection from simple catenary overhead equipment at high speed. In particular, the likely benefits to be derived by the use of controlled pantographs are

assessed. Pantograph performance is judged on the basis of contact force variation displacement responsed of pantograph and contact wire. These studies have shown that the dynamic displacements of the combined system are determined primarily by the overhead line parameters rather than by the pantograph. At higher speeds droppers in the vicinity of the pantograph slacken and this is seen to influence significantly the contact force profile. On a "constant height" overhead line, the proposed "frame compensated" and "panhead inertia compensated" pantographs do not show any marked improvement in the quality of current collection.

Vinayagalingam, T **ASME Journal of Dynamic Systems, Meas and Control** Vol. 105 No. 4, Dec. 1983, pp 287-294

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

13 386268
SIMPLIFIED THEORY FOR NON-HERTZIAN CONTACT
In the paper a simplified theory is proposed both for contact formation and for frictional rolling, in which the contact area is not known in advance, and, indeed, may be non-Hertzian. The program first determines the contact area on the basis of the given total normal force, and then applies the FASTSIM algorithm in the contact area on the basis of the given creepages and the spin, to find the total tangential force.

Kalker, JJ
Delft University of Technology, Netherlands 83-22, 1983, 14p

ORDER FROM: NTIS PB84-147214

13 386269
SURFACE IRREGULARITIES AND VARIABLE MECHANICAL PROPERTIES AS A CAUSE OF RAIL CORRUGATIONS
In the present paper a theory of corrugations is given on the basis of the following axioms: the rail is regarded as a beam on a damped Winkler foundation, and the wheel as a large mass; the elastic displacements of the wheel and the rail are vertical only; the wear is taken proportional to the frictional dissipation; the profile of the surface and the other mechanical properties are linearized. Two mechanisms of corrugation formation and development are found, one of which is based on the spring effect of the Hertzian contact between wheel and rail, and the other on the spring effect of the rail in its bedding.

Kalker, JJ
Delft University of Technology, Netherlands 83-21, 1983, 40p

ORDER FROM: NTIS PB84-147222

13 386271
RAIL VEHICLE PERFORMANCE MONITOR FOR ACCELERATION, VELOCITY AND DISTANCE [CONTROLEUR D'ACCELERATION, DE VITESSE ET DE DISTANCE DES VEHICULES SUR RAILS]
A measuring technique for velocity, acceleration and distance of rail vehicles is discussed. Velocity and distance are derived directly from an optical digitally encoded sensor. A low noise differentiation method allows very small accelerations of rail vehicles to be obtained from the velocity signal. Description and design details are given of the major circuit functions. (Author) [French]

Zwarts, CMG
National Research Council of Canada DME-MI-840, NRC-22447, June 1983, 28p

ORDER FROM: NTIS AD-A137227/5

13 386273
TECHNICAL AND ECONOMIC ANALYSIS OF A RAPID TRANSIT BATTERY STORAGE SUBSTATION PROJECT. FINAL REPORT
This final report evaluates the technical and economic viability of deploying battery storage in New York City subway traction substations. Rapid transit systems, which experience daily peak periods of travel, accommodate the demands by operating numerous multi-car trains at closely spaced intervals. This activity results in two daily peaks in the demand for electric power that the transit system imposes upon the supplying electric utility. Reductions in the magnitude of this peak electric power required from the supplying utility can be accomplished by the storage of electric energy and the transit system side of the electric utility/transit interface. To be viable economically, the dollar worth of the demand reduction must be sufficiently large to offset the battery storage system initial capital outlay and recurring operating and maintenance costs. The method used to evaluate the merit of deploying battery storage in the transit system was to establish a dollar value for the reduced demand, postulate a life-cycle cost of this system from the savings on the basis of a net present value. This technique was implemented and the results evaluated for different amounts of battery deployment. Battery storage was found to be both technically feasible and economically attractive. It was concluded that the results of the study warranted construction of the pilot plant described in detail in the report.

Robinson, F Prouty, TP Squires, RB
AiResearch Manufacturing Company, Gibbs and Hill, Incorporated, Department of Energy NYSERDA-83-7, Apr. 1983, 204p

ORDER FROM: NTIS DE84004833

13 386314
OPTIMIZATION OF THE DESIGN OF ELECTRIC TRACTION MOTORS FOR RAILROAD AND OTHER APPLICATIONS
This report summarizes the results of an effort aimed at the optimization of the design of electric traction motors for railroad and other applications. Earlier extensive studies of electric motors for ground transportation were conducted at the Polytechnic over several years. These led to the development of a direct approach to the design. The direct approach is implemented here giving full consideration to the interfaces both with the electrical system, i.e. the power conditioner, and the mechanical system, i.e. the coupling and the gear.

Levi, E
Polytechnic Institute of New York DOT-RSPA-DMA-50-84/8, Aug. 1983, 103p

ORDER FROM: NTIS PB84-159250

13 386315
NEW CONCEPT FOR PROTECTING LINES AGAINST FAULTS IN DC TRANCTION NETWORKS
The problem of dc traction network protection is considered. The protective devices have the task of distinguishing between currents caused by the traction equipment and those due to faults, by performing an analysis. The author describes the special characteristics which have to be taken into account when developing new electronic devices and when deciding on a range of units which must meet the requirements of all networks. The elements to be considered in this analysis affect, on the one hand, the nature of the network-which depends on whether main-line railways, minor lines, urban tram or trolleybus routes, or rapid transit and underground railways are concerned-and, on the other, the operating conditions and features of the rolling stock.

Fernandez, J-A **Brown Boveri Review** Vol. 70 No. 9-10, Sept. 1983, pp 372-378, 4 Ref.

ACKNOWLEDGMENT: EI
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13 386319
TECHNOLOGY '84
The paper is an annual review of significant trends in electrotechnology. Among them are personal computers, software, microprocessors, communications, solid state, instrumentation, industrial electronics, power and energy, consumer electronics, rail transportations, aerospace and military, medical electronics, and education.

Christiansen, D (Spectrum) **IEEE Spectrum** Vol. 21 No. 1, Jan. 1984, pp 34-98

ACKNOWLEDGMENT: EI
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13 386332
RING MODEL OF RAILROAD WHEEL VIBRATIONS
A model is presented for predicting the vibration characteristics of railroad wheels. Earlier workers showed that the ring theory gave a good explanation of the ratio of resonant frequencies in the railroad wheel, assuming flexural modes are excited in the rim. In the present work, the

wheel is modeled by taking the flange, the rim, and the plate as a series of elastically connected rings. The differential equations governing the normal mode flexural vibrations are developed for such a system. The free vibration of the system with displacement out of the plane of the wheel was studied. Modifications were made to include wear on the flange and tread. Hoop stress in the rim was also modeled. The results agree well with those from other theoretical models and also with experimental values.

Haran, S (Houston University); Finch, RD **Acoustical Society of America, Journal of** Vol. 74 No. 5, Nov. 1983, 8p, 17 Ref.

ACKNOWLEDGMENT: EI
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13 386337
PHYSIOLOGICAL DATA, TECHNICAL POSSIBILITES AND REQUIREMENTS IN RESPECT OF COMFORTABLE AIR CONDITIONING IN RAILWAY VEHICLE COMPARTMENTS [PHYSIOLOGISCHE ANFORDERUNGEN, TECHNISCHE MOEGLICHKEITEN UND VORAUSSETZUNGEN FUER BEHAGLICHES RAUMKLIMA IN DEN FAHRGASTRAEUMEN VON SCHIENENFAHRZEUGEN]
The ambient atmosphere of a coach is affected by a number of factors. Also, reaction to air-conditioning varies from one person to another. Air-conditioning can therefore only be designed to satisfy the majority of passengers. One of the basic requirements is that there should be a satisfactory fresh air flow. Air-conditioning equipment has been developed taking into account the different factors, and with the aim of providing maximum comfort. [German]

Knau, U **Die Bundesbahn** Vol. 59 No. 11, Nov. 1983, pp 745-752, 6 Phot., 10 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Hestra-Verlag, Holzhofallee 33, Postfach 4244, 6100 Darmstadt 1, West Germany

13 386342
TECHNOLOGY UPDATE: BRAKES
A short review of braking principles is followed by notes on materials and methods, including disc, hydrokinetic and regenerative braking.

Modern Railways Vol. 40 No. 423, Dec. 1983, pp 625-626, 4 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Allan (Ian) Limited, Terminal House, Shepperton TW17 8AS, Middlesex, England

13 386344
SELECTION CRITERION FOR VEHICLE MATERIALS: AN ECONOMETRIC MODEL [UN CRITERIO PARA LA ELECCION DEL MATERIAL DE UN VEHICULO: MODELO ECONOMETRICO]
The difficulty in defining objective criteria when selecting a given product in relation to the service it is expected to render, has resulted in the development of different mathematical models, as a means of finding the optimum solution. For transport, this selection has always been complex, not only for the choice of vehicles best tailored to the particular service characteristics, but even for the transport system to operate the service. This article focuses on the construction of mathematical models adapted to the transport structure and lays the bases for future developments in this sphere. [Spanish]

Ferre, C **AIT-Revista** No. 54, Oct. 1983, pp 36-49, 3 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Asociacion de Investigacion del Transporte, Alberto Alcocer 38, Madrid, Spain

13 386346
LOW ADHESION BETWEEN WHEEL AND RAIL CAUSED BY FALLEN LEAVES AND ITS REMEDY
Recently it was reported that railcars frequently slipped on the rail over a steep upgrade section of a certain line in autumn. In order to clarify the cause of wheel slip due to low adhesion between wheel and rail and to remedy it, JNR has carried out: (1) measurement of the friction coefficients on the railtop by using a portable rail tribometer, (2) collection of the oily deposits on the railtop, (3) various meteorological observations, (4) field test of ceramic materials used to increase the adhesion coefficient between wheel and rail, and (5) various laboratory tests.

Ohno, K Tsuchiya, J Ogawa, Y Shinkawa, M **Railway Technical Research Inst, Quarterly Reports** Vol. 24 No. 3, Sept. 1983, pp 135-136, 1 Tab., 4 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: ESL

13 386375
RAIL TRANSPORTATION
This summary of 1983 developments includes descriptions of two transit operations that will employ linear induction motors, the 21.4 km transit line in Vancouver, B.C., and the short magnetic-levitation system that connects the Birmingham, England, railway station with the airport terminal. Other highlights were the experience being gained in Europe and Japan with thyristor-controlled propulsion systems employing induction motors; UMTA sponsorship of the development of AC propulsion systems for transit cars; microprocessor-based systems for traction and braking systems for use by Bay Area Rapid Transit and Washington Metro; conversion by New Jersey DOT of former Erie-Lackawanna commuter electrification from 3 kV DC to 25 kV, 60-hertz AC; and utilization of phase control with forced-commutated thyristors for increasing power factor on new series of heavy-duty electric locomotives.

Kaplan, G **IEEE Spectrum** Vol. 21 No. 1, Jan. 1984, pp 82-85

ORDER FROM: ESL

13 386380
ASYNCHRONOUS TRACTION MOTORS WILL MEET THE SYNCHRONOUS CHALLENGE
More and more three-phase traction motors are appearing, with benefits that are evident. Less obvious is the balance of advantage between synchronous and asynchronous motors, and the various types of power converter needed to drive them. The ability to dispense altogether with brushes will probably be the decisive factor enabling the squirrel-cage induction motor to fight off the synchronous challenge represented by the French BB10004 prototype.

Powers, WF (Institute of Electrical & Electronics Engrs, Inc) **Railway Gazette International** Vol. 140 No. 3, Mar. 1984, pp 179-183, 2 Fig., 4 Phot., 7 Ref.

ORDER FROM: ESL

13 386381
KEIHAN CONVERTS FROM 600 V TO 1.5 KV IN ONE NIGHT
In less than 6 h, power supplies to the 64 route-km Keihan commuter line into Osaka were changed by altering transformer and rectifier connections at the substations. At the same time, most of the fleet of 553 EMU cars was converted to 1.5 kV dc, although some new Series 6000 cars built for the higher voltage were introduced.

Miyashita, M (Keihan Electric Railway) **Railway Gazette International** Vol. 140 No. 3, Mar. 1984, pp 189-191, 2 Fig., 1 Tab., 4 Phot.

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13 386395
GENEVA TESTS PROTOTYPE LOW FLOOR TRAM
Service testing of a chopper-controlled tram with a floor level only 480 mm above the rail head is under way in Geneva. Constructed as the prototype for a future build of 45 articulated cars, the tram has a central mini-bogie developed by Ateliers de Constructions Mecaniques de Vevey.

Railway Gazette International Vol. 140 No 5, May 1984, p 359, 2 Phot.

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13 386399
PROCEEDINGS INTERNATIONAL CONFERENCE ON WHEEL/RAIL LOAD AND DISPLACEMENT MEASUREMENT TECHNIQUES JANUARY 19-20, 1981
Measurement of wheel/rail characteristics generates information for improvement of design tools such as model validation, establishment of load spectra and vehicle/track system interaction. Existing and new designs are assessed from evaluation of vehicle/track degradation and performance measure associated with dynamic behavior, fuel economy and safety parameters. Diagnosis and verification of hypotheses dealing with carbody hunting, rock and roll, wheel climb, wear and rail strength have been instrumental in introduction of new types of trucks such as the radial and self-steering designs. Advancement in the field of wheel/rail load and displacement measurement have been achieved by organizations all over the world. This conference provided a look at international developments in the current state-of-the-art. From papers presented, it is evident that instrumented wheelsets for load measurement have reached an advanced stage of sophistication. Accuracy and frequency response of commonly used sets are adequate for most dynamic studies and for assessment and diagnosis of existing or new equipment. Because an instrumented wheelset is generally delicate and complicated with its sophisticated electronics and associated data recording systems, future developments should emphasize simplification and reduced costs. Wayside load measurement has seen the TSC/Battelle lateral circuit and the ORE vertical circuit receive wide acceptance. Direct comparison of on-board and wayside measured loads has provided added confidence in both methods. Rail motion can be monitored at wayside, but there has been little development of measurement of wheel motion relative to rail. It is expected that there will be rapid advancements in measurement of wheel/rail interaction. This conference should hasten such development.

Tong, P Greif, R
Transportation Systems Center, Transport Canada, Federal Railroad Administration, Urban Mass Transportation Administration DOT-TSC-UMTA-82-3, Sept. 1981, v.p., Figs., Tabs.

ORDER FROM: TSC

13 386921
FRANCE GOES SYNCHRONOUS
French National Railways (SNCF) are taking the synchronous motor traction route into the 21st century and are currently negotiating with manufacturers for the first series of 44 of the new generation of 5400 kw locomotives. Two dual-current prototypes should be ready for testing at the beginning of 1985 and series production should be under way the following year. Mechanically, the new units will be reinforced compared with present models because of the higher power output. The shape will also be different with greater emphasis placed on aerodynamic design.

International Railway Journal Vol. 24 No. 2, Feb. 1984, 25p, 1 Fig., 1 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Simmons-Boardman Publishing Corporation, P.O. Box 8, Falmouth, Cornwall, England

13 386922
DB ADOPTS THREE-PHASE TRACTION FOR FUTURE NEEDS
German Federal Railway (DB) operates freight and passenger services on electrified lines with a fleet of 2700 electric locomotives of seven distinct types covering four and six-axle units. The advantages in operating, logistics, maintenance and staff training of having one universal locomotive to perform the tasks of seven specialised units are substantial. DB now has such a locomotive, the three-phase drive BR 120.

International Railway Journal Vol. 24 No. 2, Feb. 1984, pp 18-21, 1 Fig., 1 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Simmons-Boardman Publishing Corporation, P.O. Box 8, Falmouth, Cornwall, England

13 386924
COMPETITION BETWEEN STEEL AND ALUMINUM IN THE CONSTRUCTION OF RAILWAY PASSENGER STOCK [KONKURENCIJA IZMEDU CELIKA I ALUMINIJUMA U IZGRADNJI ZELEZNICKIH PUTNICKIH VOZILA]
From an analysis of framework weight, mechanical strength and costs, the author establishes a comparison between the use of stainless steel and aluminium, and considers present trends for passenger stock. [Yugoslavian]

Bouley, J **Zeleznice** Vol. 40 No. 1, 1984, pp 3-10, 4 Tab., 7 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Zeleznice, Belgrade, Yugoslavia

13 386925
EXPERIENCE AND TRENDS IN PAINTING RAILWAY VEHICLES [ERFAHRUNGEN UND TENDENZEN BEIM ANSTRICH VON SCHIENENFAHRZEUGEN]
Painting railway vehicles without undue perfectionism, but using paints which are long-lasting and easy to use, can help considerably to reduce vehicle maintenance costs. Anti-corrosion protection must be properly applied when the vehicles are built. If a vehicle has to be put into a major workshop when its anti-corrosion protection has deteriorated, the corroded parts must first be removed, by dismantling the vehicle and then carefully cleaned. Such work usually costs more, and takes longer, than repainting. Appropriate up-front spending often helps to avoid much higher repair costs. [German]

Lilljeqvist, H **Verkehrstechnik der Schweiz** No. 18, 1983, pp 24-26, 2 Fig., 2 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Verkehrstechnik der Schweiz, Zurich, Switzerland

13 386932
ANTI-RUST TREATMENT AND PAINTING OF COACHES [KORROSIONSSCHUTZ UND FARBGEBUNG AN REISEZUGWAGEN]
Optimum anti-rust treatment for passenger stock is designed to prolong the service life and reduce maintenance requirements, but it involves considerable constraints in respect of design, technology and manufacturing. After the surfaces have been prepared, a suitably thick coat of strong double anti-rust paint must be aplied to all parts including corners and parts which are often difficult to reach. This does away with the need to withdraw coaches from service prematurely for repairs and the extra costs incurred for such operations. The author comments on the technical processes used in anti-rust treatment and painting. [German]

Hegenbarth, I **Schienenfahrzeuge** Vol. 27 No. 6, Nov. 1983, pp 305-308

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Transpress VEB Verlag fuer Verkehrswesen, Franzoesische Strasse 13/14, Postfach 1235, 108 Berlin, East Germany

13 386942
THEORETICAL RESEARCH IN THE FIELD OF ASSYMMETRICALLY SUPPORTED CONCRETE SLEEPERS [THEORETISCHE FORSCHUNG IM BEREICH DER ASYMMETRISCH UNTERSTUETZTEN BETONBALKENSCHWELLEN]
The author describes a method based on the application of an algorithm and a suitable computer program, for making mathematical analyses of variable stiffness railway sleepers resting on a flexible ballast bed, the bearing properties of which are subject to variation. Previous methods, which held sleeper support to be symmetrical, were found to be out of keeping with real conditions of track behaviour encountered during operating. [German]

Mazur, S **Archiv fuer Eisenbahntechnik** No. 38, Dec. 1983, pp 57-61, 2 Tab., 7 Phot., 4 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Hestra-Verlag, Holzhofallee 33, Postfach 4244, 6100 Darmstadt 1, West Germany

13 386966
RECOURSE TO ADVANCED TECHNOLOGY IN THE DESIGN OF ROLLING STOCK: SOPHISTICATION OR ROBUSTNESS?
The incorporation of technical developments in the design of railway rolling stock-both tractive and hauled-raises important questions which have to be answered by many railway managers and decisionmakers. Would the advanced technology make the rolling stock more complicated and work against the objectives of reducing operating costs, especially maintenance and energy costs? Would it be appropriate for developing countries? Are there not contradictions between what is known by some as "sophistication" and the desire to provide a "robust" vehicle? The article states that it is a false problem, that the meaning of both terms is misunderstood, and this is probably because of the result of various experiences in the past. The employment of advanced technology is not incompatible with strength and reliabilty, to the contrary in fact, but provided it is used with full knowledge of circumstances. The authors consider in turn the objectives that must be complied with, the conditions for employing technical developments, the main channels of progress and innovation and, finally, the results observed on SNCF rolling stock, results which moreover are not specific to the SNCF but apply generally irrespective of the railway that operates the vehicles. [French]

Tessier, M Coget, G **Revue Generale des Chemins de Fer** Vol. 103 Mar. 1984, pp 113-122

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

13 386968
ON THE ACOUSTIC/DYNAMIC CHARACTERISTICS OF THE RESILIENT WHEEL (PART 2: A THEORETICAL ANALYSIS ON THE RADIAL DYNAMIC CHARACTERISTICS)
To suppress the wheel/rail roar noise effectively by use of a resilient wheel, the detailed dynamic characteristics of the wheel must be clarified. The resilient wheel is regarded as a ring with T-section supported discretely on a rigid circular cylinder, a method of analysis on its radial dynamic characteristics is proposed and the accuracy of analysis is improved by consideration of shearing deformation and rotatory inertia.

Arai, H (Japanese National Railways) **JSME Bulletin** Vol. 26 No. 222, Dec. 1983, p 2208, 8 Ref.

ACKNOWLEDGMENT: EI
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13 386969
ON THE ACOUSTIC/DYNAMIC CHARACTERISTICS OF THE RESILIENT WHEEL (PART 1: COMPARISON WITH OTHER ANTI-NOISE WHEELS IN THE RUNNING TEST)
Anti-noise wheels were tested in three steps measuring noise and vibration on the vehicle and ground at the SHINKANSEN test track. The results show that the effectiveness of the resilient wheel in noise reduction was a little over 2 db.

Arai, H (Japanese National Railways) **JSME Bulletin** Vol. 26 No. 222, Dec. 1983, p 2200, 5 Ref.

ACKNOWLEDGMENT: EI
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13 386970
COUPLED LATERAL VIBRATIONS BETWEEN RAIL AND RAILWAY VEHICLE'S WHEELS. PART 1, EQUATIONS OF MOTION OF RAIL AND ITS CHARACTERISTICS
The equations of motion of the coupled lateral bending and twisting of an infinitely long rail are derived for the case of the points of contact between rail and wheels moving at constant speed.

Sueoka, A (Kyushu University, Japan); Ayabe, T Tamura, H **JSME Bulletin** Vol. 26 No. 222, Dec. 1983, p 2193, 12 Ref.

ACKNOWLEDGMENT: EI
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13 386971
INVESTIGATION OF THE DYNAMIC RESPONSE OF TWO INDUCTION MOTORS IN A LOCOMOTIVE TRUCK FED BY A COMMON INVERTER
For ac railway drives it is desirable to feed the parallel connected induction motors from a common inverter. However, the parallel operation depends on several influences, e.g. , the type of inverter, the mechanical transmission system and the characteristic of the wheel-rail contact. In order to understand the behavior a simulation model of the system including both the electrical and mechanical components of a truck was developed. The basic ideas of the model are reported. Simulation results are discussed for two induction motors fed from a current-source inverter. In particular, the dynamic response of the system to variations of the adhesion contact are elaborated.

Skudelny, H-C Weinhardt, M **IEEE Transactions on Industry Applications** Vol. IA-2 No. 1, Jan. 1984, pp 173-179, 7 Ref.

ACKNOWLEDGMENT: EI
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13 386975
CORROSION OF RAIL STEELS EXPOSED TO MARINE ATMOSPHERES
To evaluate the influence of corrosive environments on the life of rail, exposure tests lasting four years on low alloy rail steels have been carried out in submarine tunnels and on a beach tower platform 50 m high. A relationship was obtained between corrosion loss and exposure time, which was then used to estimate the relative corrosion resistance of these steels. From these results and analysis of corrosion products, it was concluded that a few percent addition of alloying elements such as chromium and copper would be effective in preventing corrosion in atmospheric marine environments, but in direct wet conditions a higher percentage will be necessary.

Matsuyama, S Tsuyuki, S Tsumenaga, T Ishii, Y **Railway Technical Research Inst, Quarterly Reports** Vol. 24 No. 3, Sept. 1983, pp 115-120

ACKNOWLEDGMENT: EI
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13 386976
STATISTICAL PROPERTIES AND EVALUATION OF VARIOUS FACTORS FOR FATIGUE-STRENGTH OF CAR-AXLE MATERIAL
This paper describes the experimental results on the statistical properties of fatigue life depending on various factors, i.e. mechanical properties, chemical components, size effect, service period, etc. From these results, the evaluation of fatigue life damage of car-axles under service conditions is discussed.

Tanaka, S Hastuno, K Yaguchi, S Yoshimura, T **Railway Technical Research Inst, Quarterly Reports** Vol. 24 No. 3, Sept. 1983, pp 111-114, 2 Ref.

ACKNOWLEDGMENT: EI
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13 386978
ELECTRIC OPERATION OF THE SWISS RAILROADS IN 1982 [DER ELEKTRISCHE BETRIEB DER SCHWEIZER BAHNEN IM JAHRE 1982]
Apart from the network of the Swiss Federal Railways (SBB), numerous railroad lines exist in Switzerland that are operated by private companies. The article gives a report on various new tractive units, which have been set into operation in 1982. It shows that apart from new vehicles with power electronics also tractive units with classic traction equipment are ordered in order to utilize the advantages of unified series. Data of installations of railroad power supply are included. [German]

Weiss, T (Generaldirektion der Schweizerischen Bundesbahnen) **Elektrische Bahnen** Vol. 81 No. 10, Oct. 1983, pp 319-322

ACKNOWLEDGMENT: EI
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13 386979
THYRISTOR CHOPPER FOR THE UNDERGROUND RAILROAD OF STOCKHOLM, SWEDEN [THYRISTOR-GLEICHSTROMSTELLER FUER DIE STOCKHOLMER U-BAHN]
Since 1973 the underground railroad of Stockholm has operated electric multiple units (emu) with chopper control. These have proven well in many years of operating service. The value of possible energy recuperation by regenerative braking has been higher than expected despite the small number of thyristor controlled emu's on this line. Within a modernization program older trains are converted from resistance control to chopper control. [German]

Tornerud, G (Allmanna Svenska Elektriska Aktiebolaget) **Elektrische Bahnen** Vol. 81 No. 9, Sept. 1983, 4p, 2 Ref.

ACKNOWLEDGMENT: EI
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13 386980
URBAN RAPID TRANSIT SYSTEM RHEIN (RHINE)-RUHR, WEST GERMANY. INSTALLATION OF ELECTRIC EQUIPMENT FOR PUTTING INTO OPERATION THE LINE SEGMENT BOCHUM MAIN STATION-DORTMUND MAIN STATION [S-BAHN RHEIN-RUHR. BAUMASSNAHMEN AN ELEKTROTECHNISCHEN ANLAGEN ZUR INBETRIEBNAHME DES STRECKENABSCHNITTS BOCHUM HBF -DORTMUND HBF]
In September 1983 the S-Bahn traffic has been inaugurated on the line s 1 with a length of 22 km between Bochum main station and Dortmund main station. Due to reconstructions extensive work at the electric installations had to be carried through. A description is given of the electric installations like switching stations, substations, overhead contact system and points heating. The 50-Hz-installations comprise the power supply including emergency power plants and lighting. Further work will follow due to the extension of the lines s 2 and s 4 untile autumn 1987. [German]

Sieverling, H (Bundesbahndirektion, Belenchtungstechnik) **Elektrische Bahnen** Vol. 81 No. 9, Sept. 1983, 4p, 5 Ref.

ACKNOWLEDGMENT: EI
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13 386981
NEW RAILROAD CURRENT SUPPLY INSTALLATIONS AT THE S-BAHN HAMBURG, WEST GERMANY. BEGINNING OF OPERATION OF THE URBAN RAPID TRANSIT SYSTEM FROM HAMBURG MAIN TERMINAL TO HARBURG [NEUE BAHNSTROMVERSORGUNGSANLAGEN BEI DER GLEICHSTROM-S-BAHN HAMBURG. INBETRIEBNAHME DER S-BAHN-STRECKE HAMBURG HBF-HARBURG]
Due to the dc electrification of the line Hamburg-Harburg/Neugraben the dc S-Bahn-network of Hamburg extends by 25%. Five rectifier substations have been installed for the railroad current supply. To meet this demand, the existing railroad owned 25-kv three-phase-current cable network has been extended. An additional feeding point with 31.5 Mva from the public supply network feeds the 25-kv-cable network. The construction of the conductor rail has been improved and simplified. The remote control installations have been extended and new techniques are being utilized. [German]

Gladigau, R (Bundesbahndirektion) **Elektrische Bahnen** Vol. 81 No. 9, Sept. 1983, pp 276-283, 5 Ref.

ACKNOWLEDGMENT: EI
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13 386982
PROJECT STUDY FOR A STANDARD GAGE RAILROAD LOCOMOTIVE WITH LOAD INDEPENDENT DC CURRENT INTERMEDIATE CIRCUIT, PART 2 [PROJEKTSTUDIE FUER EINE VOLLBAHNLOKOMOTIVE MIT STROMGEFUEHRTEM DREHSTROM-ANTRIEESSYSTEM]
This is part two of a paper which was published in the magazine v 81 n 7, July 1983 p 239-245. This part considers the reactor, the main transformer, traction control, arrangement of equipment in the machinery room as well as auziliary equipment. [German]

See also Part I TRIS 382261, UMTRIS Bulletin 8401.

Boehm, H (AEG-Telefunken); Dreimann, K Zoellner, F **Elektrische Bahnen** Vol. 81 No. 8, Aug. 1983

ACKNOWLEDGMENT: EI
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13 386983
INSTALLATIONS ENGINEERING FOR THE RAILROAD POWER SUPPLY OF AC RAILROADS [ANLAGEN-ENGINEERING IN DER BAHNSTROMVERSORGUNG VON WECHSELSTROMBAHNEN]
The installations engineering for installations of the railroad power supply of ac railroads is generally a process of division of work between railroad administration, consulting companies and industry. It depends occasionally on the present know-how of the railroad administration, where all three kinds of enterprises have a share and which kind of cooperation is chosen. The variants of division of work act according to the know-how and the planning capacity of the railroad administration. Two examples demonstrate the promotion of newly developed technical products and the development by proven cooperation between railroads and industry. [German]

Schambach, HG (AEG-Telefunken) **Elektrische Bahnen** Vol. 81 No. 8, Aug. 1983, pp 263-271, 6 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

13 386984
ELECTRIFICATION OF THE DSB MAIN LINES
Part of the preparations for electrifying the main lines of the Danish State Railways (DSB) is based upon a series of development contracts. The contracts covering most of the catenary system have been given to Danish companies and contractors in order to achieve a modern electrification system at a lower price than can be expected with a turn-key solution, and at the same time the highest possible percentage of Danish labor and deliveries.

Rendbaek, O (Danish State Railways); Lindholst, P **Elektrische Bahnen** Vol. 81 No. 8, Aug. 1983, pp 255-262, 2 Ref.

ACKNOWLEDGMENT: EI
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13 387568
3D VISION-GUIDED ROBOTIC WELDING SYSTEM AIDS RAILROAD REPAIR SHOP
Taking advantage of computer-controlled robotics, the shop did away with part and fixturing problems by using sensors and software, and installing a welding robot with two television camera eyes. This system finds the part for the robot to weld wherever the fixture delivers it, regardless of its manufacturing tolerances.

Lacoe, D (Automatrix Incorporated); Seibert, L **Welding Journal** Vol. 63 No. 3, Mar. 1984, pp 53-56

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

13 387569
SPRAGUE ON AN ELECTRICAL REVOLUTION IN URBAN TRANSPORTATION
In this classic paper presented by Frank J. Sprague before the American Institute of Electrical Engineers (AIEE) in June 1888, and reprinted from AIEE Transactions, vol 5, the Sprague traction system employing dc motors is presented. The economic, sanitary, and safety features of the systems are stressed. The system is suggested for the transportation needs of New York City. The comparative economy and the relative advantages of existing use of horses and the proposed methods of electric traction are compared. Three plans are discussed: the storage battery, the conduit and the single electric wire system with underneath contact on the car. The distribution parallel circuit system is also considered.

Brittain, JE (Georgia Institute of Technology) **Institute of Electrical and Electronics Engrs Proc** Vol. 72 No. 2, Feb. 1984, pp 174-195

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

13 387572
TRANSISTORIZED POWER SUPPLY UNITS FOR RAILWAY COACHES
On modern passenger trains the equipment provided for the passengers' comfort-heating, ventilation, air-conditioning, lighting-and the power supply required by them are continually increasing in extent. The author explains how well-tried units can be utilized more efficiently and employed more liberally when improved power transistors are inserted.

Tapavica, K **Brown Boveri Review** Vol. 70 No. 12, Dec. 1983, pp 546-554, 4 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

13 387574
ARTICULATED TRAMS "2000 SERIES" WITH THREE-PHASE DRIVE OF THE ZURICH MUNICIPAL TRANSPORT AUTHORITY
Advances in the development of semiconductors have made it possible to build compact converters for supplying power to cage induction machines. BBC chose the converter with a direct current link (current-source converter) for traction vehicles with a high braking effort and combined regenerative/rheostatic-brake. To demonstrate this drive concept, an articulated tram of series "Tram 2000" of the Zurich Municipal Transport Authority was fitted with three-phase traction motors and a current-source converter. The authors explain the main points of its development and take a close look at the advantages of the drive.

Schaer, R Schmid, A Seger, T **Brown Boveri Review** Vol. 70 No. 12, Dec. 1983, pp 531-537, 6 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

13 387668
STABILITY AND CURVING PERFORMANCE OF CONVENTIONAL AND ADVANCED RAIL TRANSIT VEHICLES
Analytical studies are presented which compare the curving performance and speed capability of conventional rail transit trucks with self steering (cross-braced) and forced steering (linkages between carbody and wheel-sets) radial trucks. Truck curving performance is measured in terms of the work performed by the wheel/rail friction forces in the contact zone during curve negotiation. The contact work is used as an indication of wheel and rail wear rates as well as the additional power required to negotiate curves. Truck speed capability is expressed in terms of the maximum operating speed before lateral instability or hunting occurs. The studies are based upon a generalized computational model which is capable of representing conventional and innovative trucks that are currently being considered for implementation. the stability analysis utilizes a linear model while the curving analysis includes the essential nonlinearities associated with wheel/rail profile geometry, wheel/rail friction force saturation and suspension stiffnesses. In addition, the curving analysis includes an accurate description of two-point wheel/rail contact which can occur with common wheel profiles during flanging. Results of the study indicate that for curves greater than 5 deg, forced steering trucks can offer substantial performance improvements in comparison to well designed conventional trucks in terms of work performed during curve negotiation. Also comparison of a new AAR 1/20 wheel profile with a modified Heumann (single point contact) profile indicates that the latter profile can offer substantial performance improvements in terms of reduced work during curve negotiation.

Wormley, DN Hedrick, JK
Massachusetts Institute of Technology, Urban Mass Transportation Administration, (DTS-76) Final Rpt. UMTAMA-06-0025-83-10, DOT-TSC-UMTA-83-31, Jan. 1984, 348p, Figs., Tabs., 37 Ref., 10 App. Contract DTRS 57-80C-00152
ORDER FROM: NTIS PB84-181098

13 387669
VEHICLE/TRUCK INTERACTION ASSESSMENT TECHNIQUES VOLUME I, PART I
This report describes Vehicle/Track Interaction Assessment Techniques (IAT) which are developed to provide standardized procedures and tools in order to: Investigate the dynamic performance of railroad vehicles, and systematically identify and cure dynamic track interaction problems associated with a vehicle. The IAT addresses ten performance issues: hunting, twist and roll, pitch and bounce, yaw and sway, steady-state curving, spiral negotiation, dynamic curving, steady buff and draft, longitudinal train action, and longitudinal impact. The report discusses the test and data analysis procedures required for each performance issue in terms of the control variables from track inputs tht are required to create the test environment, the response variables to be measured, the extent of data analysis required, the data handling requirements, the performance indices to be used in interpreting the test results, and the potential test sites. This report is in two parts. Part I is contained in Volume I and covers the overall process of determining vehicle performance issues. Part II, comprised of Volumes II and III, discusses the detailed procedures to be used in the Vehicle/Track Interaction Assessment Techniques.
Supporting contractors: Arthur D. Little Inc. (ADL), Battelle Columbus Laboratories (BCL), ENSCO Inc., Kaman Sciences Corp. (KSC), Systems Control Technology (SCT), The Analytic Sciences Corp. (TASC).

Ehrenbeck, R Polcari, S
Transportation Systems Center, Federal Railroad Administration, (DTS-73) Final Rpt. DOT-FRA-ORD-84/01.1, DOT-TSC-FRA-84-1.1, Mar. 1984, 116p

ORDER FROM: FRA

13 387670
VEHICLE/TRACK INTERACTION ASSESSMENT TECHNIQUES VOLUME II, PART II
This report describes Vehicle/Track Interaction Assessment Techniques (IAT) which are developed to provide standardized procedures and tools in order to: Investigate the dynamic performance of railroad vehicles, and systematically identify and cure dynamic track interaction problems associated with a vehicle. The IAT addresses ten performance issues: hunting, twist and roll, pitch and bounce, yaw and sway, steady-state curving, spiral negotiation, dynamic curving, steady buff and draft, longitudinal train action, and longitudinal impact. The report discusses the test and data analysis procedures required for each performance issue in terms of the control variables from track inputs that are required to create the test environment, the response variable to be measured, the extent of data analysis required, the data handling requirements, the performance indices to be used in interpreting the test results, and the potential test sits. This report is in two parts. Part I is contained in Volume I and covers the overall process of determining vehicle performance issues. Part II, comprised of Volumes II and III, discusses the detailed procedures to be used in the Vehicle/Track Interaction Assessment Techniques.
Supporting contractors: Arthur D. Little Inc. (ADL), Battelle Columbus Laboratories (BCL), ENSCO Inc., Kaman Sciences Corp. (KSC), Systems Control Technology (SCT), The Analytic Sciences Corp. (TASC).

Ehrenbeck, R Polcari, S
Transportation Systems Center, Federal Railroad Administration, (DTS-73) Final Rpt. DOT-FRA-ORD-84/01.2, DOT-TSC-FRA-84-1.2, Mar. 1984, 510p

ORDER FROM: FRA

13 387671
VEHICLE/TRACK INTERACTION ASSESSMENT TECHNIQUES VOLUME III, PART II
This report describes Vehicle/Track Interaction Assessment Techniques (IAT) which are developed to provide standardized procedures and tools in order to: Investigate the dynamic performance of railroad vehicles, and systematically identify and cure dynamic track interaction problems associated with a vehicle. The IAT addresses ten performance issues: hunting, twist and roll, pitch and bounce, yaw and sway, steady-state curving, spiral negotiation, dynamic curving, steady buff and draft, longitudinal train action, and longitudinal impact. The report discusses the test and data analysis procedures required for each performance issue in terms of the control variables from track inputs that are required to create the test environment, the response variables to be measured, the extent of data analysis required, the data handling requirements, the performance indices to be used in interpreting the test results, and the potential test sites. This report is in two parts. Part I is contained in Volume I and covers the overall process of determining vehicle performance issues. Part II,

comprised of Volumes II and III, discusses the detailed procedures to be used in the Vehicle/Track Interaction Assessment Techniques.

Supporting contractors: Arthur D. Little Inc. (ADL), Battelle Columbus Laboratories (BCL), ENSCO Inc., Kaman Sciences Corp. (KSC), Systems Control Technology (SCT), The Analytic Sciences Corp. (TASC).

Ehrenbeck, R Polcari, S
Transportation Systems Center, Federal Railroad Administration, (DTS-73) Final Rpt. DOT-FRA-ORD-84/01.3, DOT-TSC-FRA-84-1.3, Mar. 1984, 528p

ORDER FROM: FRA

13 387672
ALGORITHMS AND PARAMETRIC STUDIES FOR ASSESSING EFFECTS OF TWO-POINT CONTACT

This report describes analyses conducted to assess the effects of two-point wheel rail contact on a single wheel on the prediction of wheel-rail forces, and for including these effects in a computer program for predicting curving behavior of rail vehicles. This condition exists for conventional wheel profiles when the wheel is in flange contact with one point of contact being on the tread and the second on the flange. The condition also exists and is particularly significant when conventional wheels come into flange contact or a restraining rail is used to prevent flange contact. The analytical approaches in current use are reviewed and the predictions of computer programs using these approaches are compared to data obtained in recent tests conducted on track of the Washington Metropolitan Area Transit Authority in Washington, D.C. The analyses are incorporated into computational algorithms and a computer program for predicting wheel rail forces in curve negotiation. The program is applied to development of curving force predictions for a typical transit car operating over track with and without restraining rail. This work has indicated that significant reductions in wheel-rail wear and train resistance in curves would probably be available from wheel profiles which give only a single point of contact with the rail.

Elkins, JA
Analytic Sciences Corporation, Urban Mass Transportation Administration, (TSC/DTS-76) Final Rpt. UMTAMA-06-0025-83-11, DOT-TSC-UMTA-83-7, Feb. 1984, 27p, Figs., Tabs., 20 Ref., 1 App. Contract DTRS-57-80-C-00062
ORDER FROM: NTIS PB84-182799

13 387707
COST SAVINGS POTENTIAL FROM IMPROVEMENT IN RAILCAR RELIABILITY AND MAINTAINABILITY

Potential benefits from proposed improvement in transit equipment performance must be quantifiable so that transit managers and other decision-makers can justify expenditures incurred on such improvement programs. This report presents a mathematical tool that will permit the estimation of cost savings potential from improvements in railcar reliability and maintainability. Rail transit improvements are expressed in terms of two major performance indicators—Mean Time Between Failures and Mean Time To Restore a Car to Service Condition. The tool is designed to estimate potential benefits (in dollars) achievable through improvements. It does not address the costs incurred or the actual mechanism for realizing these improvements. Various models for estimating operating, maintenance, and fleet cost savings have been developed. These are then calibrated using data from the Washington Metropolitan Area Transit Authority. Also presented are example application of the models in either areas including cost savings from subsystem improvements and life cycle cost comparisons for making decisions to rebuild or buy new cars. While the models have been developed on the basis of performance related to unscheduled maintenance, they can be extended to include scheduled maintenance. It is cautioned that the results from the calibrated models should not be extrapolated to other transit authorities without a close examination for conformity. Althouth the models have been developed for rail transit, they can be adapted for use in the bus industry, for automated small vehicle systems, or for other types of transit systems.

Task 6.

Muotoh, DU Elms, CP
Lea (ND) and Associates, Incorporated Tech Rpt. UMTA-IT-06-0273-84-1, Apr. 1984, 74p, 12 Fig., 10 Tab., 3 App. Contract D TUM60-82-C71122
ORDER FROM: UMTA

13 387850
DIRECT DIGITAL CONTROL FOR AC ELECTRIC LOCOMOTIVES

Hitachi has been developing a motor voltage regulator (MVR) having such new functions as self-check, failure memory, and monitoring by adopting direct digital control (DDC) using microprocessors in order to make electric locomotives more reliable, maintainable, and controllable. Improvements of control characteristics are reported in a bench test of a prototype MVR with DDC for ac electric locomotives (continuous rated output: 3000 kw).

Kimura, A Konno, N **Hitachi Review** Vol. 33 No. 1, Feb. 1984, pp 7-10, 5 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

13 387852
INTRODUCTION OF NEWEST HITACHI CHOPPERS

Sixteen years ago the first prototype railway car equipped with a Hitachi high power chopper for railway use was introduced in the 1.5 kv dc system of the Teito Rapid Transit Authority in Tokyo (TRTA). The basic concept was established at that time and has since been improved with new components and techniques, namely a high voltage, high current reverse conducting thyristor, a gate turn-off (GTO) thyristor, a Freon evaporation cooling system, compound or separate field traction motor control, and various sophisticated control techniques. As a result, the range of application has expanded. Two featured systems, a GTO thyristor chopper-controlled shunt motor drive and a 3 kv high power chopper for electric cars, are introduced in this paper.

Yamada, Y Yasunami, M **Hitachi Review** Vol. 33 No. 1, Feb. 1984, pp 11-16, 5 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

13 387853
LIGHTWEIGHT STAINLESS STEEL COMMUTER TRAIN CARBODIES

Lightweight stainless steel commuter train carbodies, which are currently being developed by Hitachi, are designed to reduce car weight to nearly that of aluminum alloy cars in order to save energy and to simplify maintenance by using stainless steel for all structural parts. These lightweight stainless steel carbodies have been developed for use on 20 m electric commuter train cars. The weight of the trailer carbody structures, not including the attached equipment, has been reduced to 4.5 tons. To achieve such lightweight carbody structures, the Hitachi Interactive Design System for Structure Analysis and Strength Evaluation (HIDESS) was used to determine the optimum design base, and high tensile-strength stainless steel, new structural joints, and a long flat-sheet beading technique were incorporated in fabrication.

Hamatake, K Kasai, Y Kawai, S **Hitachi Review** Vol. 33 No. 1, Feb. 1984, pp 17-20, 1 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

13 387878
WEAR OF RAILWAY WHEELS FROM THE POINT OF VIEW OF MATERIALS USED [VERSCHLEISS AN EISENBAHNRAEDERN AUS WERKSTOFFTECHNISCHER SICHT]

Wear due to the material usually affects the flange and running surface equally, since both areas are subject to friction which causes the onset of wear. The article examines the effect of the structure and composition of the alloy on resistance values. Running characteristics of the axle on the track also affect wheel wear. Micro-alloyed steels are therefore used more and more for solid wheels in international traffic. [German]

Mombrei, W Ottlinger, P **Schienenfahrzeuge** Vol. 28 No. 1, Jan. 1984, pp 38-41, 3 Phot., 9 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD

ORDER FROM: Transpress VEB Verlag fuer Verkehrswesen, Franzoesische Strasse 13/14, Postfach 1235, 108 Berlin, East Germany

13 387882
THE EMERGING CONCRETE TIE TRACK
Concrete ties are now in over 400 railroad and rail transit saystems all over the world. And in just 20 years, over 11 million of the prestressed units have been installed in rail lines in the U.S., Canada, and Mexico.

Progressive Railroading Vol. 27 No. 1, Jan. 1984, pp 49-54, 8 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Murphy-Richter Publishing Company, 20 North Wacker Drive, Chicago, Illinois, 60606

13 387884
RESEARCH INTO LINE-LAYOUT OPTIMIZATION FROM THE POINT OF VIEW OF TURNING DYNAMICS [UNTERSUCHUNGEN ZUR OPTIMIERUNG DER STRASSENFUEHRUNG IN FAHRDYNAMISCHER HINSICHT]
Suburban railway line layouts are subject to a large number of constraints. Curve radii often have to be small and curves and counter curves follow in quick succession. Vehicle dynamics are not taken into account for they are only calculated statically. The simulation model given here can be used to calculate the dynamic movement triggered by the track layout and to reduce it by improving the latter. Reduction in vehicule dynamics also help to prevent deterioration of the track bed and improve riding comfort. [German]

Kruse, B Reichart, A Luedke, N
Technical University of Berlin, West Germany DB: Dok 6040, 1983, 52p, 4 Tab., 23 Phot., 8 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: ESL

13 387886
ORE. QUESTION B 108—TESTS TO DETERMINE THE INTERACTION BETWEEN THE POWER SUPPLY EQUIPMENT OF DIESEL LOCOMOTIVES AND COACHES WITH AIR-CONDITIONING EQUIPMENT
Equipment supplying the energy on diesel traction vehicles for passenger coaches makes additional demands on the energy supply systems of passenger coaches compared with electrical traction vehicles for reasons of physical, technical and economic nature. Conditions were established to which the equipment for coaches and diesel traction vehicles in service with a.c. voltage must conform, so that they do not adversely affect each other and in order to guarantee reliable service under all types of operating conditions.

International Union of Railways ORE B108/RP 9, Apr. 1983, 30p, 1 Tab., 22 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: UIC

13 387887
HOLLOW RETRACTED BUILT-UP AXLE FOR RAILWAY VEHICLES [KLEBGESCHRUMPFTER HOHLWELLENRADSATZ FUER EISENBAHNFAHRZEUGE]
The main features of this new type of axle are the hollow forged shaft and the innovatory shrunk-on fitting system for the assembly. This new technique makes use of a good adhesion force; radial pressure between the assembly surfaces is low, one advantage of which is that a light hollow axle can be used. [German]

Cortesi, A Weber, KH **SLM Technische Mitteilungen** Dec. 1983, pp 26-32, 10 Fig., 2 Tab., 10 Phot., 2 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: SLM Technische Mitteilungen, Winterthur, Switzerland

13 387889
AERODYNAMIC FEATURES AND DESIGN OF ITALIAN ELECTRIC RAILCARS AND MULTIPLE-UNIT VEHICLES [AERODINAMICITA E COMPATIBILITA DELLE AUTO ED ELETTROMOTRICI ITALIANE]
No Abstract. [Italian]

Koenig, GK **Ingegneria Ferroviaria** No. 11, Nov. 1983, pp 745-766, 55 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: ESL

13 387893
AUTOMATIC CLOSING AND BLOCKING OF COACH DOORS [AUTOMATISCHE TUERSCHLIESS-UND TUERBLOCKIEREINRICHTUNGEN FUER REISEZUGWAGEN]
Railways handling international traffic equip their coaches more and more with automatic door closing and blocking devices in accordance with UIC leaflet 560, with a view to rationalising train departure operations in stations and increasing passenger safety. [German]

Berger, H Musiol, E **Eisenbahn-Praxis** Vol. 27 No. 6, Dec. 1983, pp 255-256, 3 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Transpress VEB Verlag fuer Verkehrswesen, Franzoesische Strasse 13/14, Postfach 1235, 108 Berlin, East Germany

13 387894
RELATIONSHIP BETWEEN THE NOISE LEVEL OF RAILWAY VEHICLES AND ROUGH SURFACES OF RAILS AND WHEELS [ZUSAMMENHAENGE ZWISCHEN DEN GERAEUSCHPEGELN VON SCHIENENBAHNEN UND OBERFLAECHENRAUHIGKEITEN VON RAD UND SCHIENE]
On the basis of measurements taken, the article shows that the running noise of railway vehicles at low speed is mainly caused by rough surfaces at the wheel/rail interface. The quality of rail running surfaces in not related to the assembly method or to cleanliness. [German]

Gross, K
Studiengesellschaft f Unterirdische Verkehrsanlage No. 15, 1981, 144p, 4 Tab., 55 Phot., 31 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Studiengesellschaft f Unterirdische Verkehrsanlage, Cologne, West Germany

13 387897
THE DYNAMIC RESPONSE OF RAILWAY TRACK WITH FLEXIBLE SLEEPERS TO HIGH FREQUENCY VERTICAL EXCITATION
A model of railway track is presented which allows examination of the behaviour of the track support. Large sleeper strains are associated with poorly damped sleeper resonances.

Grassie, SL Cox, SJ **Institution of Mechanical Engineers, Proc Part D** Vol. 198 No. 7, 1984, pp 117-124

ACKNOWLEDGMENT: British Railways
ORDER FROM: Mechanical Engineering Publications Limited, Box 24, Northgate Avenue, Bury St. Edmunds, Suffolk 1P32 6PW, England

13 387898
A NEW THEORY OF RAIL-WHEEL INTERACTION
Nature has clearly distinguished the complex rail-wheel interaction zone by endowing it with very high frequency vibrations of such order that the magnitude is 100 to 1,000 times more than those obtained in other linked masses like ballast or vehicle suspension. This is taken advantage of in formulating a simple hypothesis from fundamental principle of physics and vibrating masses, to estimate dynamic wheel load variations at the wheel rail interacting zone and is validated by comparing with actual field data available involving diverse vehicles starting from 4-wheel and 8-wheel freight stock to diesel and electric locomotives on different track structures. The theory takes into account rail and sleeper masses, their connectivity, the dimension of contact area, the rail top radius and wheel radius and the

wheel load along with speed but overlooks vehicle suspension characteristics as well as ballast and formation characteristics. Using the theory the coefficient of dynamic component and high accelerations in rail in case of TGV train of SNCF at 300 km/h are predicted and shown to agree fairly well with values obtained in the field. The transient but heavy peak loads recorded by JNR for their 951 type train at 210 km/h as also their reduction is also their reduction is also explained. A parametric study is done using the theory to show that lightly loaded coaching stock may become critical at speeds in excess of 110km/h on tracks not provided with elastic fastenings.

Rajaram, B **Rail International** Vol. 15 No. 4, Apr. 1984, pp 7-14

ACKNOWLEDGMENT: International Union of Railways, BD
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13 387901
INVESTIGATIONS INTO THE UTILIZATION OF THE WHEEL/RAIL ADHESION OF ELECTRICAL LOCOMOTIVES
Since the adhesion coefficients are of basic importance in the design of railway traction stock, it is intended to bring up to date for bogie locomotives the Curtius & Kniffler characteristic of 1943. The objectives of the basic investigation are: An exact as possible description of the adhesion utilization of the Class 120 three-phase locomotive and comparable vehicles on the basis of experimental studies (experimental wheelsets, statistical procedures); and comparison of the characteristics so found by relating these to the individual design features and checking for possible consequences. [German]

Zoeller, H **Eisenbahntechnische Rundschau** Vol. 33 No. 4, Apr. 1984, 6p

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Hestra-Verlag, Holzhofallee 33, Postfach 4244, 6100 Darmstadt 1, West Germany

13 387902
FURTHER REDUCTIONS IN COST OF OVERHEAD LINE EQUIPMENT ON BRITISH RAILWAYS
The search for improved performance, greater economies and reduction in maintenance costs of overhead line equipment is a continuous process. An account is given in this paper of a further number of developments unertaken by British Railways that demonstrate the progress being made in achieving these objectives. The integration of various computerised systems into a fully integrated system covering all aspects of electrification activities has only just began but progress to date has been most rewarding. The use of new technology and materials has given the opportunity to improve designs and systems of inspection of the completed overhead catenary system. Finally advanced technology has been applied to maintenance equipment thus improving performance of staff during normal and emergency maintenance periods.

Jones, CR **Rail International** Vol. 15 No. 4, Apr. 1984, pp 20-26

ACKNOWLEDGMENT: National Highway Traffic Safety Administration
ORDER FROM: ESL

13 387916
PASSENGER TRAIN EQUIPMENT REVIEW REPORT. VOLUME 1. ADVANCED PROPULSION SYSTEMS AND PROPULSION SYSTEM REQUIREMENTS
Early in 1977, the Federal Railroad Administration, Office of Research and Development, initiated the improved Passenger Equipment Evaluation Program (IPEEP), which was designed as a detailed systematic review of advanced passenger trains and equipment throughout the world that could possibly be used in the United States. During the course of this program, the members of the IPEEP Train System Review Team prepared 24 technical papers, in addition to the basic set of IPEEP reposts covering baseline data and individual train reviews and a separate report on train performance methodology. This volume contains one paper giving a review of advanced passenger train propulsion systems and one paper identifying the requirements for passenger train propulsion systems.
See also Volume 2, PB84-178383 and Volume 4, PB84-161686.

Unified Industries, Incorporated FRA-ORD-81/45.1, May 1981, 210p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS PB84-178375

13 387917
PASSENGER TRAIN EQUIPMENT REVIEW REPORT. VOLUME 2. PROPULSION SYSTEM COMPONENTS AND FUTURE TRAIN ENERGY CONSUMPTION
Early in 1977, the Federal Railroad Administration, Office of Research and Development, initiated the improved Passenger Equipment Evaluation Program (IPEEP), which was designed as a detailed systematic review of advanced passenger trains and equipment throughout the world that could possibly be used in the United States. During the course of this program, the members of the IPEEP Train System Review Team prepared 24 technical papers, in addition to the basic set of IPEEP reports covering baseline data and individual train reviews and a separate report on train performance methodology. This volume of six papers covers traction motor drives, modern slip detection and control systems for electric locomotives and multiple-unit cars, onboard high-voltage switch-gear for electric locomotives and multiple-unit cars, high-voltage protection and switching control for Northeast Corridor vehicle, pantographs, and the energy consumption of future passenger trains.
See also Volume 1, PB84-178375 and Volume 3, PB84-178391.

Unified Industries, Incorporated FRA-ORD-81/45.2, May 1981, 304p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS PB84-178383

13 387918
PASSENGER TRAIN EQUIPMENT REVIEW REPORT. VOLUME 3. SUSPENSION AND GUIDANCE SYSTEMS
Early in 1977, the Federal Railroad Administration, Office of Research and Development, initiated the Improved Passenger Equipment Evaluation Program (IPEEP), which was designed as a detailed systematic review of advanced passenger trains and equipment throughout the world that could possibly be used in the United States. During the course of this program, the members of the IPEEP Train System Review Team prepared 24 technical papers, in addition to the basic set of IPEEP reports covering baseline data and individual train reviews and a separate report on train performance methodology. This volume of eight papers covers passenger vehicle axle loads, criteria for high-speed curving of passenger vehicles, radial steering systems for high-speed passenger trains, comparison of conventional and radial trucks, wheel profiles for high speed passenger trains, sensitivity of wheel sixe to induction and synchronous traction motor drives, influence of unsprung mass on rail vehicle/track performance, and use of instrumented wheelsets to measure wheel/rail forces.
See also Volume 2, PB84-178383 and Volume 4, PB84-161686.

Unified Industries, Incorporated, Battelle Columbus Laboratories, Carnegie-Mellon University, Marchetti (JW), Incorporated FRA-ORD-81/45.3, May 1981, 236p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS PB84-178391

13 387919
PASSENGER TRAIN EQUIPMENT REVIEW REPORT. VOLUME 5. BANKING SYSTEMS AND TRAIN ARTICULATION
Early in 1977, the Federal Railroad Administration, Office of Research and Development, initiated the Improved Passenger Equipment Evaluation Program (IPEEP), which was designed as a detailed systematic review of advanced passenger trains and equipment throughout the world that could possibly be used in the United States. During the course of this program, the members of the IPEEP Train System Review Team prepared 24 technical papers, in addition to the basic set of IPEEP reports covering baseline data and individual train reviews and a separate report on train performance methodology. This volume of three papers covers clearances for tiltbody passenger vehicles in the Northeast Corridor, tilt systems of modern passenger vehicles, and British and French passenger vehicle articulation systems.
See also Volume 4, PB84-161686.

Unified Industries, Incorporated FRA-ORD-81/45.5, May 1981, 133p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS PB84-174226

13 387925
THE 1983 JUBILEE LINE STOCK
London Transport's 1983 rapid transit cars are the final units of a series which began 45 years ago featuring steel underframes, conventional traction controls and all-rubber suspensions. The new cars have provision for automatic train operation and regenerative braking, and feature aluminum bodies, improved ventilation, welded truck frames, and automatic fault-finding systems. As the 6-car trains began to enter service, LT announced an order for its prototype "1990" trains which will have welded aluminum bodies, air suspensions, chopper controls, steerable trucks, improved ventilation and multiplexing of electrical circuits.

Modern Railways Vol. 41 No. 430, July 1984, pp 370-375, 4 Tab., 7 Phot.

ORDER FROM: Allan (Ian) Limited, Terminal House, Shepperton TW17 8AS, Middlesex, England

13 387978
TASK FORCE REPORT ON THE M-2 AXLE/BEARING FAILURE INVESTIGATION
This investigation of the tubular-axle/roller-bearing failures experienced with M-2 multiple-unit cars of New York's Metropolitan Transportation Authority was aimed at establishing failure mechanisms, assessing the effectiveness of interim and long-term countermeasures, and determining if the risk of such failures exists on other fleets of similar design. Two major causes identified were improper axle/bearing/wheel assembly and design problems with the inboard bearing and tubular axle configuration. Short term recommendations included more frequent inspections, retrofitting with solid axles, and strict observance of rebuilding intervals for bearings. For the long term it was urged that there be more uniform bearing assembly, maintenance and inspection procedures, achieved through auspices of AAR and APTA. There should be an industry attempt to develop automated wayside or onboard hot box detectors for inboard bearings. The procedures used by other commuter railroad operators and by rapid transit agencies for inboard-bearing cars were studied. it was observed that none of the other properties have experienced journal wear or bearing failures at rates comparable to the M-2, in part due to lower vehicle weights and conservatism in axle/bearing design.

Booz-Allen and Hamilton, Incorporated, Federal Railroad Administration Jan. 1983, 63p, Figs., Tabs., 2 App.

ORDER FROM: FRA

13 389341
APPLICATION OF A THREE-PHASE AC DRIVE SYSTEM TO ROLLING STOCK
The use of three-phase AC drive technology in railcars fed by inverters constitutes a system that successfully exploits the special characteristics of this method of control, and is being widely adopted for rolling stock throughout the world. The article introduces the special considerations affecting its application to railcar propulsion and the control system used. It goes on to introduce the simulation techniques used for design support and the performance-testing facilities. The article also covers the history of the development of Mitsubishi Electric's three-phase AC drive system and describes newly developed inverter equipment for 750 and 1,500VDC. [Japanese]
Included in Mitsubishi Denki Giho, V57 N7 pp1-5, 1983 Issue. Order as PB84-195981.

Igura, K Kaga, A Ono, Y Obi, H Nakamoto, N Mitsubishi Electric Corporation July 1983, 5p

ORDER FROM: NTIS PB84-195999

13 389346
PASSENGER TRAIN EQUIPMENT REVIEW REPORT. VOLUME 6. CAR BODY CONSTRUCTION AND CRASHWORTHINESS
Early in 1977, the Federal Railroad Administration, Office of Research and Development, initiated the Improved Passenger Equipment Evaluation Program (IPEEP), which was designed as a detailed systematic review of advanced passenger trains and equipment throughout the world that could possibly be used in the United States. During the course of this program, the members of the IPEEP Train System Review Team prepared 24 technical papers. This volume contains one paper on intercity passenger car body structural technology and one paper on the influence of construction materials on the crashworthiness of passenger car bodies.
See also Volume 4, PB84-161686.

Unified Industries, Incorporated, Battelle Columbus Laboratories, Carnegie-Mellon University, Federal Railroad Administration Final Rpt. FRA-ORD-81/45.6, May 1981, 69p Contract DTFR53-81-P-00189
ORDER FROM: NTIS PB84-180884

13 389354
PASSENGER TRAIN EQUIPMENT REVIEW REPORT. VOLUME 4. BRAKING SYSTEMS
Early in 1977, the Federal Railroad Administration, Office of Research and Development, initiated the Improved Passenger Equipment Evaluation Program (IPEEP), which was designed as a detailed systematic review of advanced passenger trains and equipment throughout the world that could possibly be used in the United States. During the course of this program, the members of the IPEEP Train System Review Team prepared 24 technical papers, in addition to the basic set of IPEEP reports covering baseline data and individual train reviews and a separate report on train performance methodology. This volume of three papers covers minimum braking rate and worst-case braking distance characteristics for advanced U.S. high-speed passenger trains; braking systems for advanced high-speed passenger trains in France, Britain, Canada, and the United States; and the effect of articulation on passenger train braking systems.

Unified Industries, Incorporated, Federal Railroad Administration Final Rpt. FRA-ORD-81/45.4, May 1981, 164p Contract DTFR53-81-P-00189
ORDER FROM: NTIS PB84-161686

13 389399
STARS—IMPROVED AIR CONFORT SYSTEM PHASE I FINAL REPORT, VOLUME I
As part of UMTA's Subsystems Technology Application to Rail Systems (STARS) Probram, a comprehensive study of the problems of rail transit car air conditioning was undertaken. Air conditioning units in the transit environment have high failure rates, and are costly to maintain. Five transit authorities participated in the study: Bay Area Raid Transit District (BART), Port Authority Transit Corporation (PATCO), Chicago Transit Authority (CTA), Port Authority Trans-Hudson Corporation (PATH), and Washington Metropolitan Area Transit Authority (WMATA). A separate study of the New York City Transit Authority (NYCTA) was undertaken by the consultant, and the findings included as part of this report. The 6 authorities studied use air comfort systems made by 4 different manufacturers on 20 types of railcar. These air comfort system and railcar types are of different ages, and have been maintained with varying degrees of thoroughness. This diversity of factors precludes overall correlation of system failure problems among the participating authorities. The problems we identified during on-site visits are therfore discussed for each authority with comparisons drawn between authorities as applicable. The study determined that there are major factors contibuting to air conditioning problems: (1) hardware design, (2) deficiencies in maintenance information systems, (3) preventive maintenance, (4) employee training, (5) technical documentation, and (6) parts procurement, storage. As part of the analysis, a cost-benefit ratio was developed for improvements made in each problem area. A conceptual design for a new concept modular air conditioning system is also included in the report.

Porthouse, HW Allen, DC Elms, CP Diewald, WJ Dewey, SH Data Communication, Incorporated, Urban Mass Transportation Administration Final Rpt. UMTA-IT-06-0250-83-1, ASA 84-1, Nov. 1983, 147p, 4 Fig., 7 Tab. Contract DTUM60-82-C-71146
ORDER FROM: UMTA

13 389400
STARS—IMPROVED AIR COMFORT SYSTEM PHASE I FINAL REPORT, VOLUME II
As part of UMTA's Subsystems Technology Application to Rail Systems (STARS) Program, a comprehensive study of the problems of rail transit car air conditioning was undertaken. Air conditioning units in the transit environment hve high failure rates, and are costly to maintain. Five transit authorities participated in the study: Bay Area Rapid Transit District (BART), Port Authority Transit Corporation (PATCO), Chicago Transit Authority (CTA), Port Authority Trans-Hudson Corporation (PATH),

and Washington Metropolitan Area Transit Authority (WMATA). A separate study of the New York City Transit Authority (NYCTA) was undertaken by the consultant, and the findings included as part of this report. The 6 authorities studied use air comfort systems made by 4 different manufacturers on 20 types of railcar. These air comfort system and railcar types are of different ages, and hve been maintained with varying degrees of thoroughness. This diversity of factors precludes overall correlation of system failure problems among the participating authorities. The problems we identified during on-site visits are therfore discussed for each authority with comparisons drawn between authorities as applicable. The study determined that there are major factors contributint to air conditioning problems: (1) hardware design, (2) deficiencies in maintenance information systems. (3) preventive maintenance, (4) employee training, (5) technical documentation, and (6) parts procurement, storage. As part of the analysis, a cost-benefit ratio was developed for improvements made in each problem area. A conceptual design for a new concept modular air conditioning system is also included in the report.

Porthouse, HW Allen, DC Elms, CP Diewald, WJ Dewey, SH
Data Communication, Incorporated, Urban Mass Transportation Administration Final Rpt. UMTA-IT-06-0250-83-2, ASA 84-1, Nov. 1983, 246p, Figs., Tabs.

ORDER FROM: UMTA

13 389763
USER-ORIENTED AND COMPUTERIZED MODEL FOR ESTIMATING VEHICLE RIDE QUALITY
A simplified empirical model and computer program for estimating passenger ride comfort within air and surface transportation systems are described. The model is based on subjective ratings from more than 3000 persons who were exposed to controlled combinations of noise and vibration in the passenger ride quality apparatus. This model has the capability of transforming individual elements of a vehicle's noise and vibration environment into subjective discomfort units and then combining the subjective units to produce a single discomfort index typifying passenger acceptance of the environment. The computational procedures required to obtain discomfort estimates are discussed, and a user oriented ride comfort computer program is described. Examples illustrating application of the simplified model to helicopter and automobile ride environments are presented.

Leatherwood, JD Barker, LM
Langley Research Center NAS 1.60:2299, L-15745, Apr. 1984, 45p

ORDER FROM: NTIS N84-22162/1

13 389764
U. S. PASSENGER RAIL TECHNOLOGIES
Since the 1960's, the US has been interested in high-speed rail and advanced ground transport technologies, including magnetic levitation. A failing rail infrastructure and institutional reform have taken precedence, thus, expertise in high-speed rail now rests abroad. When US transportation systems evolved to include increased use of air and automobile technologies for intercity travel, passenger rail service experienced significant ridership declines, resulting in institutional changes from private to public sector operation. Now, nine corridors are being actively explored by State, and local governments, regional agencies, and US and foreign technology developers and suppliers for possible application of high-speed ground transport systems. This OTA assessment seeks to lay out in general form what is known about these high-speed technologies and the foreign experience with them, and to identify the areas of uncertainty relative to their application in the United States. The study is intended to identify policy questions and issues pertinent to debate on the subject.

Urban Mass Transportation Administration OTA-STI-222, Dec. 1983, 112p

ORDER FROM: NTIS PB84-182609

13 389799
ZURICH S-BAHN CARS DEVELOP THE DOUBLE-DECK CONCEPT
Swiss Federal Railways (CFF) are on the point of ordering prototype trainsets for the 365 km Zurich S-Bahn. Detailed design of the cars is being finalised, but CFF still has to make the choice between aluminium and steel for the 27.5 m double-deck boides.

Christeller, RH **Railway Gazette International** Vol. 140 No. 3, Mar. 1984, pp 191-192, 2 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: ESL

13 389804
A MODULAR MICROCOMPUTER SYSTEM FOR USE WITH RAILWAY VEHICLES [MODULARES MIKRORECHNER-SYSTEM ZUM EINSATZ AUF BAHNFAHRZEUGEN]
In order for micro-electronics to be developed for specific railway vehicle applications the techniques concerned must have reached a stage where they are able to meet the rigorous requirements of railway operation. Application of the hybrid technique, with its control and regulation circuits, increases the importance of having standard interfaces. The hardware components for traction motors can be divided into 3 functional groups: signal input, connection, signal output. The authors describe the range of possible microtechnology applications for control and regulation equipment and also refer to the software crisis. [German]

Blum, D Gast, J-P **Verkehr und Technik** Vol. 37 No. 2, Feb. 1984, pp 61-68, 11 Phot., 5 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Schmidt (Erich) Verlag, Herforder Strasse 10, 4800 Bielefeld, West Germany

13 389812
EXAMINATION ON RESULTS OF TRACK PERFORMANCE TESTS ON COMPREHENSIVE TEST LINE OF SHINKANSEN
Stresses and displacements were measured on 27 types of test track (25 types of track with test elements and 2 types of standard track) on the Comprehensive Test Line of Tohoku Shinkansen 42.8 km long before operation. In this report these tracks are classified into the following 4 groups: (1) Directly-supported track group consisting of 7 types; (2) ballasted track group consisting of 7 types; (3) Switches of 2 types; and (4) rail joints of 1 type. The results of examination on maximum values of data at each measured point track spring constants of each test track are reported.

Sato, Y Nakamura, S Ando, K Umeda, S **Railway Technical Research Inst, Quarterly Reports** Vol. 24 No. 4, Dec. 1983, pp 161-162, 1 Tab., 1 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: ESL

13 389824
THE DEVELOPMENT OF THE ROLLING RUBBER BUSH PRIMARY SUSPENSION
British Rail's recently introduced Class 58 diesel freight locomotive and the BP20 motor bogie used on the latest designs of electric multiple units (Class 317 and Class 455) both use a new type of primary suspension. This suspension incorporates a rolling rubber bush and has been developed by BR in association with Silentbloc Ltd, a rubber engineering company.

Walker, CG **Railway Engineer** No. 2, 1984, pp 32-34

ACKNOWLEDGMENT: British Railways
ORDER FROM: Institution of Mechanical Engineers, Railway Division, 1 Birdcage Walk, London SW1H 9JJ, England

13 389830
GTO THYRISTOR DEVICE DESIGN
The increasing use of the gate-turn-off (GTO) thyristor, combining the voltage-handling capabilities of the thyristor, combining the voltage-handling capabilities of the thyristor with the controllability of a transistor, has produced demands for devices of ever higher voltage and current ratings.

Taylor, PD **Electronics and Power** Vol. 30 No. 6, June 1984, pp 463-466

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

13 389837
MODERN SWITCH AND CROSSING DESIGN
Starting from the objectives which a switch and crossing layout is required to achieve this paper attempts to show that recent advances in the knowledge of the force systems at work in wheel-rail interaction can enable the technical soundness of available design to be judged and point the way for designs of the future.
Centenary Journal.

Cope, GH Dawkins, AW **Permanent Way Institution Journal** Vol. 102 Part 1, 1984, pp 136-152

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

13 389838
ANALYSIS OF RAIL—SLEEPER ELASTIC FASTENING THROUGH THE VALVES OF ITS BASIC FUNCTION PARAMETERS
The wide use of continuous welded rail has made elastic rail to sleeper fastenings indispensable. In modern tracks, adaptations between continuous welded rails, concrete sleepers and elastic fastenings are necessary. Results of research and recommendations are shown as well as the methodology that enables readers to carry out their own studies and tests. [Spanish]

Megia Puente, MJ **AIT-Revista** No. 58, Jan. 1984, pp 24-38

ACKNOWLEDGMENT: British Railways
ORDER FROM: Asociacion de Investigacion del Transporte, Alberto Alcocer 38, Madrid, Spain

13 389840
NON-CONVENTIONAL TRACK SUPPORT
The track support system proposed by B.R. later designated P.A.C.T., supported the rail on a continuous resilient pad and used Pandrol clips in specially designed shoulders to provide a reduced toe-load. There followed a highly curved track with a large cant-deficiency and this P.A.C.T. slab had a deep trough along the 4-foot space to exaggerate the effect of lateral forces on the fastenings. Then a slab with a more conventional profile was built to carry high-speed locomotive hauled passenger trains and heavy freight.
Centenary Journal.

Whitbread, JE **Permanent Way Institution Journal** Vol. 102 Part 1, 1984, pp 111-135

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

13 389841
DEVELOPMENTS IN THE CONSTRUCTION OF CONVENTIONAL TRACK
Research in recent years has shown that ballasted track can offer a very high quality track, needing only a small amount of maintenance if it is made correctly and with good quality materials. The cost of such a track need not be much greater than one which is made in a more careless fashion. If, however, the construction is not correct then it is very difficult to rectify the situation by subsequent maintenance.
Centenary Journal.

Frederick, CO **Permanent Way Institution Journal** Vol. 102 Part 1, 1984, pp 96-109

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

13 389842
SIMULATION OF RUNNING BEHAVIOUR OF AN INDEPENDENT-WHEEL RAILWAY VEHICLE. CHECK WITH EXPERIMENTAL RESULTS
This article describes a simulation model, which adopts the step-by-step integration method of Runge and Kutta, in order to foresee the running on straight sections and on curves of a bogie with independent wheels. The results of the simulation were checked by an on-line experimental campaign which confirmed the potentiality of the simulation model for the foreseeing of both quasi-static and dynamic phenomena. The model permitted a thorough analysis of osciallation movements occuring on curves where track irregularities exist. [Italian]

Frullini, R **Ingegneria Ferroviaria** Vol. 39 No. 1-2, Jan. 1984, 29p

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

13 389843
WHEEL TREAD PROFILE AS A RAIL VEHICLE DESIGN PARAMETER
Rail vehicle running gear must satisfy conflicting requirements for good response and stability on tangent (straight) track and good guidance in curves. A frequently overlooked characteristic, the wheel tread profile, can be designed in conjunction with the vehicle suspension to meet those objectives. The dynamic performance of vehicles with low, moderate and high conicity wheel profiles is reported. Design charts for stability and curving are utilized to finind optimum primary suspension values to accompany each wheel profile. The results demonstrate that high conicity wheel profiles offer significant overall performance advantages over low conicity wheel profiles. However, the truck primary suspension must be designed to match the wheel profile in order to realize the potential improvement.

Cooperrider, NE Wirth, JL
American Society of Mechanical Engineers ASME 82-WA/DSC-3, 1982, 8p

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

13 389844
THE EFFECT OF TWO POINT CONTACT ON THE CURVING BEHAVIOUR OF RAILROAD VEHICLES
This paper describes recent improvements in the prediction of wheel/rail forces. These improvements are associated with the analytic modelling of thee two point contact conditions that exist with the standard wheel and rail profiles in common use in the USA. Experimental results from tests on a rapid transit system highlighted the errors that existed in the previous single point contact analysis and provided a validation of the two predictions. the two point contact model predicts significantly larger wheel rail forces, higher wheel/rail wear and larger train resistance than would be estimated from a single contact point model.

Elkins, JA Weinstock, R
American Society of Mechanical Engineers ASME 82-WA/DSC-13, 1982, 9p

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

13 389847
GUARDIANS OF THE GAUGE: TIES AND FASTENINGS
Timber ties fastened to the rail by cut-spike "system" continue to do a job that satisfies most US railroads, but concrete and steel ties and direct-fixation fasteners are emerging as challengers. Experiences of various railways and on the FAST track are reported.

Armstrong, J **Railway Age** Vol. 185 No. 6, June 1984, 7p

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

13 389850
FRENCH METRO SYSTEMS FOR EXPORT: TECHNICAL DEVELOPMENT OF ROLLING STOCK
Those responsible for the Paris metro, on which very extensive modernisation and development schemes have been carried out, are often requested, through the intermediary of SOFRETU, the RATP (Paris Transport Authority) engineering consultancy subsidiary, to advise and provide assistance to large towns which plan to build a metro railway system. It was in this way that the metro system with trains running on rubber tires, which had been researched and developed by the RATP, has also been built abroad in Montreal, Mexico City and Santiago. Likewise the rolling stock operated on the RATP Regional Express Railway (RER) served as the basis for the design of the rolling stock adopted for the metro in Cairo. More recently modern techniques for electric traction chopper equipment, the construction of aluminium coachwork and automatice driving systems,

developed on the most recent Paris metro rolling stock, have been chosen for Caracas metro. The experience gained by the RATP thus backs up SOFRETU's engineering consultancy activities. [French]

Freixe, G **Revue Generale des Chemins de Fer** Vol. 103 June 1984, pp 281-288

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

13 389868
SLIP-STICK VIBRATIONS MAY HOLD THE KEY TO CORRUGATION PUZZLE
The rail corrugation problem is getting worse; grinding or planing merely alleviates the symptoms. Long wave corrugations in sharp curves used by EMUs probably result from wear caused by lateral vibration of the outer rail as wheelsets suffer periodic sideways slip. It appears likely that a similar but more complex slip-stick phenomenon exciting lateral vibration of the rails may lie at the root of short-wave corrugations, even on straight track. But there is still some way to go before solutions can be identified.

Clark, RA (British Rail) **Railway Gazette International** Vol. 140 No. 7, July 1984, pp 531-533, 5 Fig.

ORDER FROM: ESL

13 389869
TRACK SUPPORT MUST BE RIGHT IF CONCRETE SLEEPERS ARE TO SURVIVE
Wheel flats are the most important source of dynamic forces affecting North American track, and concrete sleepers are more vulnerable to consequential damage than wood. Recently a much deeper understanding of the interaction between track forces and the behaviour of the track support has been achieved. It is now possible to specify ballast and subgrade conditions that will allow heavy haul trains with 30 tonne axles to operate economically over concrete-sleepered track, but provision of wheel-flat detectors may still be desirable.

Raymond, GP (Queen's University, Canada) **Railway Gazette International** Vol. 140 No. 7, July 1984, pp 528-530, 4 Fig., 9 Ref.

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13 389870
TREAT THEM RIGHT AND CONCRETE SLEEPERS WILL LAST HALF-A-CENTURY
Hopes of a 40 to 50 year life were dashed when early batches of concrete sleepers began to fail after little more than a decade, but designs introduced since the late-1960s look set for a much longer life. It is not just a matter of producing robust sleepers with well anchored fastenings, however. It is also necessary to handle concrete sleepers gently, to preserve a good depth of clean ballast, and to eliminate defects in the rail running surface.

Riessberger, K (Technical University of Graz, Austria) **Railway Gazette International** Vol. 140 No. 7, July 1984, pp 525-527, 1 fig., 4 Phot., 8 Ref.

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13 390095
REGENERATIVE BRAKE SYSTEM OF AC ELECTRIC CARS
Series 713 ac electric cars with a regenerative brake system have started to be used in 1984 for conventional narrow gage lines and JNR is studying use of regenerative brakes for the Shinkansen Electric Multiple-Unit (EMU) cars. This paper describes the technique of ac regenerative brakes developed by JNR for the ac electric car.

Aburaya, K Toshima, M **Railway Technical Research Inst, Quarterly Reports** Vol. 25 No. 1, 1984, pp 7-12

ACKNOWLEDGMENT: EI
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13 390131
LIGHT RAIL TRANSIT DEVELOPMENT IN THE UNITED STATES
Light rail transit can be an alternative to rapid transit, railroad commuter service or busways under certain conditions. Over two dozen U.S. cities are either building or expanding light rail systems, or seriously considering new systems. In many cases the systems are not networks but only a single line or multiple lines in selected corridors that require medium-capacity transit facilities. In these situations LRT can be a practical option, significantly less expensive than conventional rapid transit yet offering an attractive level of service. These cities have demonstrated that light rail transit is an important element in the family of urban transportation modes, which can be cost-effectively constructed and operated.

Bottoms, G Graeub, WC **TRNews** No. 113, July 1984, pp 17-22, Phots.

ORDER FROM: TRB Publications Off

13 390133
LOW COST CATENARY DESIGN-ANALYSIS. FINAL REPORT, TASK 1 AND 2
A new system of railroad electrification has been studied that requires only a single contact conductor as opposed to the conventional catenary system. Preliminary designs for the various components have been developed and are described. These include the traveller (that rides on the contact conductor), the traveller arm and the supports for the contact conductor. Various dynamic analysis models were developed including a six-degree of freedom model and finite-element model to study the dynamic performance of the total system. Results of the interaction of the components are presented for various contact conductor diameters and tensions, for different span lengths between supports and for various vehicle (traveller) speeds. These results indicate the concept is feasible and the design is viable. Futher, the report recommends that the full-scale field test (tasks 3 to 7 inclusive of the contract) be funded to complete the dynamic analysis and to provide a working mechanical model.
Portions are illegible in microfiche products.

Retallack, RL Doyle, GR, Jr Schneider, LA Sheadel, JM
American Electric Power Service Corporation FRA/ORD-81/73, Oct. 1981, 116p

ORDER FROM: NTIS DE84011134

13 390146
SEATING FOR TRANSPORTATION
We have seen the fundamental philosophies for human transportation change dramatically during the last decade. From the days when efficient transportation of the public was measured in terms of the number of people moved from a to b in the shortest time through the age of affluence when the decor and comfort of the passenger assumed considerable importance to today's concentration on energy and hence economic efficiency. This paper deals with passenger seating comfort aspects of urban rail passenger transportation and also extends to embrace the operator control position of the bus driver in the metropolitan transport system. The bus driver's seat must cater for the anthropometric and morphic range of the drivers and also all aspects of the working environment to which the driver is exposed. A feature of this working environment is the potential for vibrational stress resulting from the road and vehicle characteristics. This can be a significant factor in operator efficiency and operator selection, since individual sensitivity to vibration can vary considerably. The transmission of vibration is largely dependent on the match between the human's physical system and the bus's mechanical system, this match being established at the man machine interface, namely the bus driver's seat. Hence seat design in this situation is of paramount importance. If the seat design is poor, the consequent driver fatigue could result in a poorer performance with the danger of an increased incidence of accidents. The human welfare and economics of this situation are a primary concern of the State Transport Authority of South Australia who initiated this research. (Author/TRRL)
Ergonomics in the Community: Proceedings of the 20th Annual Conference of the Ergonomics Society of Australia.

Hall, EC (Post and Telecommunications Corporation); Shinnick, T Hill, G
Ergonomics Society of Australia and New Zealand, (0726-7029) 1983, pp 191-211, 11 Fig., 1 Tab., 26 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 272065), Australian Road Research Board
ORDER FROM: Australian Road Research Board, P.O. Box 156, Bag 4, Nunawading, Victoria 3131, Australia

14 386245
KOREA: LINES 3 & 4 PUT SEOUL IN THE FOREFRONT OF METRO TECHNOLOGY
Cab signalling and speed supervision will ensure safety on the third major phase of the Seoul Subway, consisting of two north-south lines totalling 57 km. Chopper-controlled trains are being built by Daewoo under sub-contract to GEC of Britain, and GEC also has overall responsibility for ensuring technical compatibility with electric power and S & T equipment supplied by Welco and Wabco from the USA. Mean summer temperatures reach 32 deg C, so trains and underground stations must be air-conditioned.

Railway Gazette International Vol. 140 No. 2, Feb. 1984, pp 109-111

ACKNOWLEDGMENT: British Railways
ORDER FROM: IPC Transport Press

14 386339
A NEW GENERATION OF SIGNAL-BOXES BASED ON FAIL-SAFE MICRO-COMPUTERS [NEUE STELLWERKSGENERATION AUF DER BASIS SICHERER MIKROCOMPUTER]
Siemens have developed a new generation of signal-boxes based on modular systems using up-to-date micro-computer equipment. Several prototypes have been installed in the Federal Republic of Germany and elsewhere, with a very high efficiency and reliability rating. The article describes the MES 80 and SIMIS micro-computer systems as well as the input and monitoring equipment, interpretation and announcing equipment and the interface. [German]

Hartkopf, H-O Zillmer, A **Internationales Verkehrswesen** Vol. 35 No. 5, 1983, pp 366-371, 5 Phot., 4 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Tetzlaff-Verlag GmbH, Havelstrasse 9, Postfach 4006, 6100 Darmstadt 1, West Germany

14 386389
LITERATURE SURVEY OF THE APPLICATIONS OF MICROELECTRONICS AND COMMUNICATIONS TECHNOLOGIES TO THE TRANSPORTATION SECTOR
This report and literature review, covering the 1980-1983 period, deals with applications of microelectronics and communication technologies to the aviation, automobile, truck, train, urban mass transit and marine sectors. Management information systems, maintenance and repair equipment, and pipeline monitoring and control were not covered. Microelectronics applications are well underway around the world; within 5 years all new vehicles manufactured will contain at least one microprocessor. Applications can be classified as vehicle traffic signaling and control; communication or data links between traffic control centers and a mobile transceiver or signaling device; communications or data links between control centers; vehicle control of on-board systems and vehicle monitoring; vehicle information input/output systems; vehicle navigation and guidance; and external vehicle monitoring. Six fundamental technologies underlying microelectronics applications in transportation are embedded processors and software; digital data communications; digital signal processing; fiber optic cable data bases; flat panel interactive displays; and voice recognition and messaging coupled with limited artificial intelligence. Although Canada has firms capable of providing systems and subsystems, these organizations will have to overcome substantial barriers to survive and grow. In the R&D area, Canadian government should direct funds to the microelectronics transportation sector. The study is a preliminary market survey, designed to advise manufacturers of microelectronics of market opportunities in transportation and transportation equipment manufacturers, carriers and governments of opportunities to improve productivity and safety by using microelectronics.

Clarke, TE
Stargate Consultants Limited TP 4448, Apr. 1983, 214p, 2 App.

ORDER FROM: Transport Canada Research and Development Centre, 1000 Sherbrooke Street, West, P.O. Box 549, Montreal, Quebec H3A 2R3, Canada

14 386930
TE-13 ELECTRONIC TELETRANSMITTER [TELETRANSMISOR ELECTRONICO TE-13]
The purpose of this article is to describe a model TE-13 high-fidelity monitoring and control system for metropolitan railways. The system will soon become operational on the Fepasa suburban railway, and there are also plans to install it on the mountain section of the Uberaba-Santos line of Fepasa. [Portuguese]

Giavina, MA Furlan, CE **Revista Ferroviaria** No. 8-12, 1983, pp 38-46, 9 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Empresa Jornalistica dos Transportes, Rua Mexico 41-S-904, Rio de Janeiro ZC-00, Brazil

14 386931
THE MINIMUM FEEDBACK INFORMATION REQUIRED ON ELECTRONIC EQUIPMENT. THE RELIABILITY OF AUTOMATIC DRIVING ON THE PARIS METRO [L'INFORMATION MINIMALE A RECUEILLIR EN SUIVI DE MATERIEL ELECTRONIQUE. LA FIABILITE DU PILOTAGE AUTOMATIQUE DU METRO DE PARIS]
As part of the work of the Committee for electronic components which aims to define an overall policy in this area for the RATP, consideration was given to the problems of monitoring these components. These two articles present the conclusions reached, with examples: MF 77 metro rolling stock; reliability studies on trainborne electronic equipment for automatic metro drive. [French]
Also covered in No. 10, pp 41-49 RATP-Etudes. Projets 1983 issue.

Cailiez, P Richard, JP **RATP-Etudes. Projets** No. 4, 1983, pp 24-31, Tabs., Phots., Refs.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Regie Autonome des Transports Parisiens, 53 Ter. Quai des Grands Augustins, Paris, France

14 386936
PROGRESS ACHIEVED IN INFORMATION TECHNOLOGY AS A RESULT OF THE INTRODUCTION OF MICRO-ELECTRONICS [FORTSCHRITT MIT DER MIKROELEKTRONIK IN DER NACHRICHTENTECHNIK]
After sketching the historical background the author describes the present situation and future prospects for signalling and telecommunications as a result of the introduction of micro-electronics. He concentrates on electronic control centre functions and the use of a modern data transmission network on the DB. [German]

Wehner, L **Eisenbahningenieur** Vol. 35 No. 1, Jan. 1984, pp 10-22, 9 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Tetzlaff-Verlag GmbH, Havelstrasse 9, Postfach 4006, 6100 Darmstadt 1, West Germany

14 386938
THE SIEMENS-TYPE ELECTRONIC SIGNAL BOX [DAS ELEKTRONISCHE STELLWERK DER BAUFORM SIEMENS]
Siemens AG has installed the first electronic signal boxes in Duisburg and Berlin while another is under construction in Hilversum (Netherlands), all based on the SIMIS modular micro-computer system. The DB is also planning to test one of the first of this new generation of signal boxes. The author describes the structure and method of operation of the new box. [German]

Suwe, K-H **Signal und Draht** Vol. 75 No. 11, Nov. 1983, pp 210-215, 8 Phot., 4 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Tetzlaff-Verlag GmbH, Havelstrasse 9, Postfach 4006, 6100 Darmstadt 1, West Germany

14 386956
AUTOMATION IN RAIL-BASED URBAN TRANSIT SYSTEMS
The last few years have seen a resurgence of interest in the mass-transit concept, leading to the creation of new systems and the extension of existing ones. Advances in technology have made automation a desirable

or, in some case, an indepensable option. After discussing the objectives of automation, the authors describe various fields of application, with examples drawn from the Paris Metro and the RER system. The technical aspects are then examined, with particular reference to recent trends in equipment practice whereby the fail-safe principle is being suspended by a probabilistic approach. Lastly, the authors discuss the various human and ergonomic problems posed by automation. [French]

Perrin, J-P Beauchard **French Railway Review** Vol. 2 No. 2, Apr. 1984, pp 101-111

ACKNOWLEDGMENT: British Railways
ORDER FROM: North Oxford Academic Publishing Limited, 242 Banbury Road, Oxford OX2 7DR, England

14 386957
SHORT-CIRCUIT DETECTION ON RATP LINES
After referring to the operation of the traction current supply and distribution equipment, the authors explain the methods adopted by the RATP to limit the consequences of a short-circuit on the traction newtwork. In particular, because of increasing traffic and the higher performance of trains, the technical department has designed a specially adapted electronic relay short-circuit detector which has been patented and is now installed on the different lines of the railway system (Metro and RER) as well as on certain foreign networks. [French]

Buhour, Y Venard, C **Revue Generale des Chemins de Fer** Vol. 103 Mar. 1984, pp 133-140

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

14 386977
DEVELOPMENT OF CONTROL SYSTEM FOR ELECTRIC RAILWAY POWER NETWORK
In order to resolve anticipated problems arising fom expansion of the Shinkansen system throughout Japan and the automation of electric power dispatching, a new decentralized hierarchical control system (DECS) has been developed and adopted in Tohoku and Joetsu Shinkansen. The system introduces a newly developed "Neighboring interlocking" system which ensures high reliability and realizes automatic control of the electric power network on the level of field substations, and a "Waggon type" remote control system which can provide two district control center devices in one group system.

Itoh, K **Railway Technical Research Inst, Quarterly Reports** Vol. 24 No. 3, Sept. 1983, pp 103-110, 3 Ref.

ACKNOWLEDGMENT: EI
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14 387567
RADIO COMMUNICATION SYSTEM FOR THE RHAETIAN RAILWAY
BBC have developed a new type of line communication system for the Rhaetian Railway featuring simultaneous radio transmission, and therefore high frequency economy. By integrating the system in the autonomous railway telephone network, it has been possible to dispense with a costly dispatching center. The base stations also act as repeaters between the mobile stations, making the radio network ideal for a wide range of applications.

Niederer, K **Brown Boveri Review** Vol. 70 No. 12, Dec. 1983, pp 555-559, 3 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

14 387571
INTERFACING AN ELECTRO-MECHANICAL TRAIN SPEED RECORDING DEVICE TO A COMPUTER-SUPPORTED SAFETY SYSTEM
The Finnish State Railways intend to introduce, on certain sections of their railway network, an automatic train safety and monitoring system. At the same time, however, they wish to continue using the well proven Hasler locomotive tachograph of the electromechanical type which is currently installed in their locomotives. This article describes the changes which were necessary to allow the Hasler system to meet the new requirements.

Flueck, B Saxer, A **Hasler Mitteilungen/Hasler Review** Winter 198 Vol. 16 No. 4, pp 87-89

ACKNOWLEDGMENT: EI
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14 387858
RECENT COMPUTER APPLICATION SYSTEMS FOR RAILWAYS
In this article, recent trends in computer application system technology for railways, such as train traffic control, electric power supply control, and passenger information services, are described. As typical applications, four systems are also presented.

Hattori, A Matsumaru, H Miyamoto, S **Hitachi Review** Vol. 33 No. 1, Feb. 1984, pp 1-6, 4 Ref.

ACKNOWLEDGMENT: EI
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14 387864
INDUCTIVE DETECTOR FOR THE DETECTION OF TRAMWAYS [INDUKTIVNI DETEKTOR ZA DETEKCIJU PRISUTNOSTI I SMJERA VOZNJE TRAMVAJA]
When it is not requested, the actuating of green signals in a particular traffic lane for vehicles or pedestrians often results in the forming of unnecessary queues on other approach roads to a crossing. Unnecessary queues can be avoided by incorporating a detector which will detect vehicles or pedestrians and enable green signals to be actuated for only justified reasons. There are various types of detector in the world today: contact, pneumatic, inductive, radar, ultrasonic, etc. This paper describes how to use inductive detectors for tram detection. For the covering abstract see IRRD 273912. [Croatian]

Vukelic, Z (Nikola Tesla, Zagreb) **Zbornik V Jugo Simpozij o Elektronikiv Prometu** Oct. 1983, P C/19-1/5, 4 Fig., 3 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 273903)
ORDER FROM: Elektrotehniska Zveza Slovenije, Titova 50, Ljubljana, Slovenia, Yugoslavia

14 387865
IMPLEMENTING NEW TRAM PRIORITY REGULATIONS IN MELBOURNE
New traffic regulations have been introduced in Victoria enabling trams in Melbourne to be given greater spatial priority over other road traffic. The regulations permit, in addition to competitive (ie, no priority) use of the tram track lane, two levels of priority: (a) exclusive use of the track area by trams (and buses, if desired) on a part-time or full-time basis; and (b) shared use of the track area with the onus on motor traffic not to delay trams. The method of designating spatial priority and its ramifications in relation to the scheme's flexibility in handling variations and trends in road usage in an environment of conflicting institutional pressures (such as the desire to preserve kerbside parking) is discussed. The authors' understanding of the strategy for configuring spatial priority is outlined. It embodies several important principles related to comprehension, compliance, enforcement, safety, flexibility and the performance of trams and other traffic; these principles are discussed (A).

Fraser, MJ . McGinley, FJ Roe, J (Metropolitan Transit Authority, Victoria) **Australian Road Research** Vol. 14 No. 1, Mar. 1984, pp 26-31, 5 Fig.

ACKNOWLEDGMENT: TRRL (IRRD 272104), Australian Road Research Board
ORDER FROM: Australian Road Research Board, P.O. Box 156, Bag 4, Nunawading, Victoria 3131, Australia

14 387888
A NEW TRACK RELEASE SYSTEM [EIN NEUES GLEISFREI-MELDESYSTEM]
The former track release system working on 50 Hz track circuits in Berlin's Transport system (Berliner Verkehrsbetriebe—BVB) has frequent failures, in spite of upgrading, in particular when 3 phase tractive units are used. However, remote-controlled audio-frequency track circuits operate without disturbance. Insulating points and electronic elements near the track are no longer necessary. It is possible to develop this into a system for linear

control of train running without the track cables that were needed until now. The new technique proved satisfactory to the BVB and will progressively replace the 50 Hz track circuits. [German]

Dewald, H Wuttke, G **Nahverkehr** Vol. 1 No. 6, 1983, pp 68-73, 7 Phot., 5 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Nahverkehr, Dusseldorf, West Germany

14 387899
BREAKTHROUGH IN VEHICLE IDENTIFICATION
Non-optical automatic vehicle identification systems may undo the damage done to the ACI image by often-unreliable optical systems. Five are currently in the picture.

Armstrong, J **Railway Age** Vol. 184 No. 4, Apr. 1984, 5p

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

14 387903
DEVELOPMENTS AND FUTURE OF SYSTEM CONTROL ON THE RAILWAYS
By way of summarized and systemized consideration it can clearly be deduced from the historical development of system control on the railways that the future of such control for all modes of transport will be automation. This future is nearest in the case of the railway owing to the fact of its being based on the principle of track guidance. The first moves toward putting these possibilities into effect are at present to be seen only in connection with local transport services. [German]

Pierick, K **Eisenbahntechnische Rundschau** Vol. 33 No. 4, Apr. 1984, 7p

ACKNOWLEDGMENT: British Railways
ORDER FROM: Hestra-Verlag, Holzhofallee 33, Postfach 4244, 6100 Darmstadt 1, West Germany

14 387923
NJ TRANSIT TURNS TO VIDEO CABLE
As New Jersey DOT converted the former Erie-Lackawanna suburban lines to high-voltage ac and undertook ac electrification of the North Jersey Coast route, it found that the new high-performance, chopper-equipped electric multiple unit cars rendered existing communication and signal lines unusable as the result of electromagnetic interference. While heavily-shielded cables could reduce the interference, it proved more economical to use a frequency-division multiplex single-sideband carrier system with shielded coaxial video cable. The entire electrified right-of-way now has this video cable installation capable of transmitting up to 60 4Hz over a basedband carrier well above the traction frequency and harmonic noise spectrum. Carrier terminals were distributed at 26 points in substation buildings and signal bungalows. Conventional video pair cable between transmission points and limited use of heavily shielded telephone distribution cables dramatically reduced communication system cost. The system is designed to have circuit integrity under failure conditions.

Progressive Railroading Vol. 27 No. 8, Aug. 1984, pp 36-37, 4 Phot.

ORDER FROM: Murphy-Richter Publishing Company, 20 North Wacker Drive, Chicago, Illinois, 60606

14 389795
SIGNAL PROCESSOR FOR A NONCONTACT SPEED MEASUREMENT SYSTEM
The concept and performance of a new digital signal processor for noncontact, high precision speed and distance measurement of rail-guided vehicles are presented. The measurement procedure is based on the estimation of the time-delay between two signals generated by two optimal sensors located a distance L apart. Due to surface irregularities these signals are random, but nearly identical except for a time delay corresponding to the velocity of the vehicle. The high precision and good dynamical properties of the measuring device are achieved by applying a combination of open-and closed-loop correlation techniques and sophisticated digital signal postprocessing algorithms.

Bohmann, J (RWTH Aachen, Aachen, West Ger); Meyr, H Peters, R Spies, G **IEEE Transactions on Vehicular Technology** Vol. VT-3 No. 1, Feb. 1984, pp 14-22, 12 Ref.

ACKNOWLEDGMENT: EI
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14 389796
FAIL-SAFE RAPID-TRANSIT ENGINEERING ENSURES RELIABILITY, PASSENGER SAFETY
A new fail-safe computer system-the Fail-Safe 86-will soon be installed in 45 stations of the Bay Area Rapid Transit (BART) District, in the San Francisco Bay area. The new system architecture-which uses standard, proven industrial components combined with a versatile real-time operating system-is fault-tolerant and combines modularity with reliability. The new Fail Safe 86 microcomputer software architecture and the Integrated Control System (ICS) are described.

Kravetz, GA (Fail-Safe Technology Corporation) **Electronics** Vol. 57 No. 10, May 1984, pp 152-154

ACKNOWLEDGMENT: EI
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14 389808
FAILURES OF CONSTRUCTION ELEMENTS AND THE SAFETY OF ELECTRONIC CIRCUITS IN RAILWAY SIGNALLING TECHNOLOGY
The requirements of the DB with regard to the safety, of electronics and microelectronics from the signalling technology aspects, are explained. Central in this are the failure characteristics of semi-conductors and integrated circuits and the measures for rendering harmless individual defects, for independence, for the revealing of failures and for dealing with multiple failures. Redundant codings protect against risks through defects in the hardware only, when the requirements of signalling technology safety are fulfilled.

Schwier, W **Rail International** Vol. 15 No. 5, May 1984, pp 17-25, 5 Phot., 8 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
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14 389816
MICRO-COMPUTER FAILURE AND FAILURE DETECTION IN MICRO-COMPUTERS USED IN RAILWAY SIGNALLING SYSTEMS [AUSFALLVERHALTEN VON MIKRORECHNERN UND AUSFALLERKENNUNG BEIM EINSATZ IN DER EISENBAHNSICHERUNGSTECHNIK]
The use of microelectronics/microcomputers in railway signalling requires a completely new attitude towards implementation and monitoring of safety equipment, because of the special behaviour of integrated circuits in case of breakdown; specific features of computer operation; and new possibilities of error detection and correction offered by microcomputers. Findings of reasearch into these problems and solutions proposed are quoted. The authors make special reference to error detection procedures. [German]

Fenner, W Kuehn, H **Signal und Schiene** Vol. 28 No. 2, Mar. 1984, pp 64-66, 3 Phot., 2 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Transpress VEB Verlag fuer Verkehrswesen, Franzoesische Strasse 13/14, Postfach 1235, 108 Berlin, East Germany

14 389828
TELEVISION EQUIPMENT ON BOARD PARIS SOUTH-EAST SUBURBAN TRAINSETS
On suburban lines over which trains are operated with just a driver on board, it is essential for him to have a view of the whole train on the platform side from his driving seat. Since 21 November, 1983, visual display units have been fitted in the cabs of Z2N motor trainsets providing the passenger service between Paris and Melun. For a train about 300m long, six cameras are required along the platform. A video processing system enables the number of carrier frequencies transmitted by a cable laid along the track to be reduced by three. By means of receiver aerials fixed

beneath the power car, the pictures are received in the driving cab on three monitors which are under the control of the driver. All precautions have been taken to ensure that the chances of a complete breakdown are reduced to a minimum and to enable the driver to rectify quickly a partial breakdown [French]

Boulanger, J **Revue Generale des Chemins de Fer** Vol. 103 June 1984, pp 297-302

ACKNOWLEDGMENT. British Railways
ORDER FROM: ESL

14 390173
CONTROL IN TRANSPORTATION SYSTEMS. PROCEEDINGS OF THE 4TH IFAC/IFIP/IFORS INTERNATIONAL CONFERENCE, BADEN-BADEN, FEDERAL REPUBLIC OF GERMANY, APRIL 20-22 1983

Some of the papers presented at the conference are as follows: Operations of ground transportation systems-traffic control of subways (Lassalle, J-M); Availability and safety (Gelbstein, EE); The impact of modelling on the operation of transportation systems (Scheizer, G); The Lille underground-first application of the Val system (Ferbeck, D and Plagnol, M); Demand bus system for Tsukuba Science City and its simulation study (Tsugawas, S); Determination of optimal path and allocation of demand buses using fuzzy heuristic approach (Nadkatsuyama, M, Nishizuka, D and Nagahashi, H); Optimal dispatching control of bus lines (Adamski, A); Digital state control and observation of maglev vehicle motions (Schnieder, E and Kraft, KH); Requirements of operations control for maglev transit systems (Kraft, KH and Schnieder, E); Automatic routing and scheduling of a fleet of vehicles providing door-to-door service for handicapped people (Lahaut, M); The conception and development of an operational control system for flexible modes of operation (Bredendiek, R and Kratschmer, W); Allocation algorithm for mixed operation modes (Kratschmer, W, Frank, RJ, Denninger, R and Bredendiek, R); Energy regeneration in transportation systems. Methodologies for power-networks simulation (Capasso, A, Lamedica, R and Penna, C); Distributed Microcomputer-based control of multiple signalized traffic intersections (Greenberg, P, Trabelsi, A and Tabak, D); Determining the time-dependent trip distribution in a complex intersection for traffic responsive control (Cremer, M). (continued

Klamt, D Louber, R Lassale, J-M Gelbstein, EE Schweizer, G Ferbeck, D Plagnol, M Tsugawa, S Nakatsuyama, M Nishizuka, N Nagahashi, H Adamski, A Schnieder, E Kraft, KH Lahaut, M Bredendiek, R Kratschmer, W Frank, RJ Denninger, R Capasso, A Lamedica, R Penna, C Greenberg, P Trabelsi, A Tabak, D Cremer, M
Pergamon Press Limited Monograph No Date, 374p, Figs., Tabs., Phots., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 278189)
ORDER FROM: Pergamon Press Limited, Headington Hill Hall, Oxford OX3 0BW, England

14 390174
CONTROL IN TRANSPORTATION SYSTEMS. PROCEEDINGS OF THE FOURTH IFAC/IFIP/IFORS CONFERENCE, BADEN-BADEN, FEDERAL REPUBLIC OF GERMANY, 20-22 APRIL 1983 (CONTD)

(continued from IRRD 278189). Maximization of traffic flow through intersection by branch-and-bound method (Gubernic, S, Reljic, S and Senborn, G); Feasibility of a distributed computer traffic control system (Lum, M, Kinney, LL and Kumar, KSP); An optimization technique of big container transport in road network (Janacek, J); Optimization of the data base logical structure (Aven, OI and Alexeychuk, AE); A comprehensive control concept for merging of automated vehicles under a broad class of traffic conditions (Posch, B and Schmidt, G); Freeway traffic modelling and control (Papageorgiou, M and Schmidt, G); A martingale approach to estimation and control of traffic flow on motorways (Van Maarseveen, MFAM); The metro line simulator of RATP (Barrier, P); A method of distinguishing safe from less safe driving (Janitzki, AS); Improving the user guidance of ticket slot machines (Reinig, H-J and Geiser, G); Floating traffic control for public transportation system (Sasama, H and Ohkawa, Y); A new approach for .real-time control of urban traffic networks (Drouin, M, Abou-Kandil, H, Dib, G and Bertrand, P); Operations planning and control in urban public transportation as an integrated control loop (Schulze, W). (continued on IRRD 278191).

Klamt, D Lauber, R Gubernic, S Reljic, S Senborn, G Lum, M Kinney, LL Kumar, KSP Janacek, J Aven, OI Alexeychuk, AE Posch, B Schmidt, G Papageorgiou, M Maarseveen, MF van Barrier, P Janitzki, AS Reinig, H-J Geiser, G Sasama, H Ohkawa, Y Drouin, M Abou-kandil, H Dib, G Bertrand, P Schulze, W
Pergamon Press Limited Monograph 1984, 374p, Figs., Tabs., Phots., Refs.

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14 390175
CONTROL IN TRANSPORTATION SYSTEMS. PROCEEDINGS OF THE FOURTH IFAC/IFIP/IFORS CONFERENCE, BADEN-BADEN, FEDERAL REPUBLIC OF GERMANY, 20-22 APRIL 1983 (CONTD)

(continued from IRRD 178190). On the use of a computer-aided specification tool to support the development and licensing of safety-related systems (Baur, P); Safety, availability and cost questions about diversity (Ehrenberger, WD); Control task assignment and systems availability. Reliability analysis of spatially distributed microcomputer control systems (Grober, A and Strobel, H); Area measurement of traffic using photoelectric elements (Coyama, N and Shigets, K); Optimal fixed-time vehicular control for multi-junction nodes using mathematical programming (Camus, R, D'Amore, A and Ukovich, W); A Method for analysing traffic streams in an urban network (Lesort, JB and Sellam, S); The Prodyn real time traffic algorithm (Henry, JJ, Farges, JL and Tuffal, J); Simulation of passenger flows on the metro lines (Artynov, AP and Embulajev, VN); Safety studies for the "Metro de Caracas" (Ligeron, JC and Delage, A); Licensing of safety-related equipment of track-bound transportation systems (Gayen, JT and Haferstroh, U); Moving-monitoring system applied mark tracing (Kono, H). (continued on IRRD 278192).

Klamt, D Lauber, R Baur, P Ehrenberger, WD Groeber, A Strobel, H Ooyama, N Shigeta, K Camus, R D'Amore, A Ukovich, W Lesort, JB Sellam, S Henry, JJ Fargues, JL Tuffal, J Artynov, AP Embulajev, VN Ligeron, JC Delage, A Gayen, JT Haferstroh, U Kono, H Tsuji, H Kawashima, H
Pergamon Press Limited 1984, 374p, Figs., Tabs., Phots., Refs.

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14 390176
CONTROL IN TRANSPORTATION SYSTEMS. PROCEEDINGS OF THE FOURTH IFAC/IFIP/IFORS CONFERENCE, BADEN-BADEN, FEDERAL REPUBLIC OF GERMANY, 20-22 APRIL 1983 (CONTD)

(continued from IRRD 278191). On safe longitudinal control of ground transportation vehicles (Glimm, J); A velocity-adaptive, microprocessor-based, vehicle lateral controller (Murthy, SS and Fenton, RE). (TRRL)

Klamt, D (Iabg, Federal Republic of Germany); Lauber, R (Stuttgart University, West Germany); Glimm, J (Physikalisch-Technische Bundesanstalt); Murthy, SS Fenton, RE (Ohio State University)
Pergamon Press Limited Monograph 1984, 374p, Figs., Tabs., Phots., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 278192)
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15 379637
SLURRY WALLS FOR UNDERGROUND TRANSPORTATION FACILITIES
This volume contains the papers of the 20 speakers who addressed the topic of Slurry Walls at the Symposium sponsored by the Federal Highway Administration. The symposium was held at the Hyatt Regency Hotel in Cambridge, Massachusetts on August 30 & 31, 1979 The papers provide a thorough coverage of the design, construction, economics, geotechnical, instrumentation, economic, and legal aspects of the technique as well as pertinent examples of its application at sites around the world. (FHWA)

Dennis, B
Chi Associates, Incorporated, Federal Highway Administration FHWA-TS-80-221, Mar. 1980, 414p
SPONSORING AGENCY: Contract DOT-FH-11-9505
ORDER FROM: NTIS PB84-114677

15 386173
FUNDAMENTALS OF ROCK JOINT DEFORMATION
This paper describes laboratory investigations of the deformation characteristics of rock joints under normal and shear loading. Normal deformability was studied by conducting loading/unloading and repeated load cycling tests on a wide variety of fresh and weathered joints in five different rock types. The data invariably showed non-linear behaviour, irrespective of the rock and joint type. A hyperbolic function is suggested to describe the stress-closure/opening curves of joints. Quantitative relations between normal deformability and relevant joint parameters (aperture, wall strength and roughness) are developed. Tentative conclusions on the changes in normal stiffness during shearing are also presented. The behaviour of dislocated (mismatching) joints is studied qualitatively and analytically. Shear deformability was studied by performing direct shear tests under normal stresses in the range of engineering interest. It is shown that behaviour in the pre-peak range is invariably non-linear depending on the joint type, and can be adequately described by easily measured parameters and hyperbolic functions. (Author/TRRL)

Bandis, SC Lumsden, AC Barton, NR **Intl J of Rock Mech & Mining Sci & Geomechanic Abs** Vol. 20 No. 6, Dec. 1983, pp 249-268, 19 Fig., 5 Tab., 23 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 274972)
ORDER FROM: ESL

15 386180
PLANNING OF SITE INVESTIGATION FOR THE EXCAVATION OF TUNNELS IN ROCK [PLANIFICACION DE RECONOCIMIENTO PARA EXCAVACION DE TUNELES EN ROCA]
Site investigation for the construction of tunnels has to be made in three phases: (1) preliminary investigation; this consists of the search for the most convenient alignment. It is based primarily on the application of geologic techniques and to a lesser degree hydrogeologic and geotechnical techniques. A stratigraphic column, a geologic plan of the tunnel alignment, a structural scheme with faults, and isopiestic lines and hydrogeological plans are presented. (2) preliminary planning: to define the feasibility of the project and to permit its approximate evaluation. A site investigation is done by mechanical bore holes, geophysics, excavation pits or wells, and investigation headings. In this phase, geological and hydrogeological methods are completed and a geotechnical analysis is developed; to define in a qualitative and quantitative way the area of the tunnel excavation. Drilling difficulty level and drilling problems analysis, estimation of floods and/or regular filtrations and support and environmental aspects are presented as a final result. (3) design; a complete definition of the work in relation to all the elements integrating the work process will be given. Site investigation of special areas, and a geotechnical analysis for the lining design have to be made. (TRRL) [Spanish]

Romana, M **Revista de Obras Publicas** No. 3211, Feb. 1983, pp 73-87, Figs.

ACKNOWLEDGMENT: TRRL (IRRD 274984)
ORDER FROM: Escuela de Ingenieros de Caminos,Canales y Puertos, Ciudad Universitaria, Madrid 3, Spain

15 386189
DISC FORCE MEASUREMENTS ON A FULL-FACE TUNNELLING MACHINE
This paper reports the results of full-face tunnel borer instrumentation during tunnelling in basalt near Melbourne. It is found that the cutter forces are highly dynamic in nature but fundamental force frequencies lie in the 0-2 hz range. The instantaneous forces are compared to global machine performance data and fair agreement is found. The results are compared to other field data and again fair agreement with existing trends is found. It is concluded that the Melbourne study field results provide a basis for examining theoretical results of force prediction free of scaling effects. Finally, it is recommended that more field results should be collected to obtain a better understanding of rock fragmentation with full-face, disc-cutter, tunnelling machines (Author/TRRL)

Samuel, AE (Melbourne University, Australia), Seow, LP (Provisional Mrt Authority, Singapore) **Intl J of Rock Mech & Mining Sci & Geomechanic Abs** Vol. 21 No. 2, Apr. 1984, pp 83-96, 21 Fig., 6 Tab., 16 Ref.

ACKNOWLEDGMENT TRRL (IRRD 275748)
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15 386224
A NEW APPROACH TO PROJECT FORECASTING
Forecasting presents the project manager with a dilemma: Simple methods are usually not very accurate, while more accurate methods are usually abstract and complex The approach presented here offers an effective compromise. It uses actual conditions at various points throughout the project's life as a basis for predicting when the project will be completed and how much of the budget will be consumed.

O'Brien, GT **Machine Design** Vol. 56 No. 2, Jan. 1984, pp 49-53

ACKNOWLEDGMENT: British Railways
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15 386228
INTERACTIONS BETWEEN TRACK STRUCTURES AND CONTINUOUS WELDED RAIL
One of the major technical developments in railway technology since the war has been increasingly widespread adoption of continuous welded rail. However, one obstacle still stands in the way of producing "ideal" jointless track, namely the existence of railway bridges. Temperature variations at the mobile ends of bridges create additional stresses in the rails which can affect track stability or cause rails to fracture. Various railway networks have already carried out research and drawn up regulations on the subject, but it was felt necessary to go into the subject in still greater depth so that principles and guidelines, if not regulations, could be formulated. ORE Committee D 101 is responsible for this research, and as part of the ORE programme, the R.A.T.P. has carried out two series of measurements described by the author, who also gives details of the results obtained and draws a number of conclusions applicable to heavy concrete structures, including the high degree of thermal inertia of this type of structure and the contribution of the ballast to thermal insulation, the resulting lower maximum stresses in the rails and the fact that, in the medium or long term, the "mean" temperature of the structure can be defined and changes in length can be calculated using the laws of physics. The ORE is continuing its research on different types of bridge and is attempting to draw up a mathematical formula based on the results obtained from the various measuring programmes. [French]

Colnat, J **French Railway Review** Vol. 2 No. 1, Feb. 1984, pp 1-14

ACKNOWLEDGMENT: British Railways
ORDER FROM: North Oxford Academic Publishing Limited, 242 Banbury Road, Oxford OX2 7DR, England

15 386229
THE ROCKY ROAD TO GOOD TRACK
Slab-track experiments notwithstanding, ballast is here to stay. Ensuring that it stays clean and does its duty is a continuing challenge to civil and mechanical engineers.

Armstrong, J **Railway Age** Vol. 185 No. 2, Feb. 1984, 4p

ACKNOWLEDGMENT: British Railways

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15 386230
MEASURES AGAINST LATERAL VIBRATIONS OF SLAB TRACK (EXCERPT A LECTURE)
JNR track maintenance section is located about the center of the Seto Inland Sea area and is engaged in the maintenance of the track extending about 57.5 km. The track structure comprises slab track 41 km long, and ballasted track 16.5 km, the former accounting for 71%. The slab track of this section has improved in condition every year since March 1975 when the track was opened for service, and entered a stable period several years ago. On the other side of the coin, lateral vibrations become conspicuous recently for the reasons partly still unknown. The author mentions some of the measures taken by the maintenance section.

Kami, T **Permanent Way** Vol. 25 No. 4, Dec. 1983, pp 5-15

ACKNOWLEDGMENT: British Railways
ORDER FROM: Japan Railway Civil Engineering Association, 1-18-7 Higashiueno, Taito-ku, Tokyo 110, Japan

15 386231
PRACTICAL APPLICATION OR RESIN-FILLED TURN-OUT SLAB TRACK
One of the greatest problems to be solved in practical application of slab trck is how to cope with the horizontal load. The conventional idea is to form a recess in the lower surface of a turn-out slab and fill it to utilize the strong shearing resistance of the filler. Such a filler, synthetic resin high in shearing strength as compared with mortar and also high in bonding strength, was selected for use with the turn-out slab track of Shinkansen. It was decided to study general uses of the synthetic resin making up the new filler, establish the required physical properties by studying the specifications and by physical tests. The workability was also studied on the one hand and a horizontal resistance test of a life-size turn-out slab was conducted to define the basic conditions for practical application of the turn-out slab track on the other.

Abe, N **Permanent Way** Vol. 25 No. 4, Dec. 1983, pp 16-24

ACKNOWLEDGMENT: British Railways
ORDER FROM: Japan Railway Civil Engineering Association, 1-18-7 Higashiueno, Taito-ku, Tokyo 110, Japan

15 386232
STATE OF THE ART OF PIPE JACKING METHOD AND ITS FUTURE
The pipe jacking method was initiated in the USA in 1896 and, nowadays, it is much popularized as a method of tunnel construction in the cities of all over the world. The characteristics of this method are that it does not interrupt the traffic on the ground surface and it does not cause the public nuisance due to the noise. Meanwhile, this method has two important problems, that is to say, an estimation of the thrust and the controlling line of pipes. The author discusses these problems and explains their countermeasures in this report.

Takehita, S **Railway Technical Research Inst, Quarterly Reports** Vol. 24 No. 4, Dec. 1983, pp 137-142

ACKNOWLEDGMENT: British Railways
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15 386248
DESIGN OF UNDER-TRACK CONSTRUCTION IN SEISMIC AREAS: INSTRUCTIONS AND COMMENT
In connection with recent seismic events the FS has found it necessary to adapt the design of railway bridges to the findings of the studies, which are becoming increasingly perfected, on the schematization of earthquakes and on the relative effects on the structures. In this connection, Law No. 64 concerning the "provisions for constructions with particular regulations for seismic areas", provided the general critera for the design, execution and testing of structures in seismic areas. The Permanent Way Department has issued appropriate "Technical Instructions" after prior approval of the 1st Section of the Higher Council of Public Works. These instructions are quoted in full and commented point by point, amplifying and giving examples of the content, at the same time clarifying the philosophy lying behind each individual instructions in such a way as to provide the designers and the users with the fullest possible elements in his field. [Italian]

Puorger, AC Traini, G **Ingegneria Ferroviaria** Vol. 38 No. 10, Oct. 1983, pp 653-663

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

15 386260
REPORT FOR 1981 AND 1982 U.S. NATIONAL COMMITTEE FOR ROCK MECHANICS. SUMMARY REPORT
The U.S. National Committee for Rock Mechanics (USNC/RM), a part of the Commission on Physical Sciences, Mathematics, and Resources (CPSMR) was formed within the National Research Council in 1967 to represent U.S. interests in the science and engineering of rock mechanics. The purposes of the USNC/RM are: 1) to serve the national interests of the U.S. by recommending actions for advancing the science and engineering of rock mechanics to government, industry, and the universities; and 2) to effect appropriate participation in all activities of the International Society for Rock Mechanics (ISRM) through the National Academy of Sciences—National Academy of Engineering—National Research Council, which adheres to the ISRM on behalf of U.S. scientists, engineers, and technologists interested in rock mechanics. This annual report describes the work of the committee and its panels. Both domestic and international activities are presented in this report.

National Research Council UMTA-DC-06-0286-83-1, 1983, 136p

ORDER FROM: NTIS PB84-119247

15 386274
METHOD FOR RAPIDLY DETECTING SUBTERRANEAN TUNNELS BY DETECTING A NON-NULL VALUE OF A RESULTANT HORIZONTAL MAGNETIC FIELD COMPONENT
This invention provides for the detection and location of subterranean tunnels, voids and other anomalies. Two magnetic fields are established by passing current in two parallel wires laid out horizontally on the earth's surface in the general area in which an anomaly is known or suspected to be. Magnetic field null measurements are made along a center line between the parallel wires. The presence of a tunnel warps or distorts the magnetic fields and causes the signal level to increase when the measurement is made over the tunnel or void beneath.
Filed 18 May 1981. Supersedes PAT-APPL-6-264 754.

Hansen, PM Hoffman, JG Seeley, EW Andrew, WA
Department of the Navy Patent PAT-APPL-6-264 754, PATENT-4 393 350, July 1983, 6p

ORDER FROM: Commissioner of Patents, Washington, D.C., 20231

15 386297
DEVELOPMENT OF AN EXTRUDED TUNNEL LINING SYSTEM
The objective of this report was to design, develop, fabricate, test and demonstrate a system for placing a continuously extruded tunnel liner. The Extruded Tunnel Lining System (ETLS) is a process for continuous slipforming of a concrete tunnel lining directly behind a tunnel boring machine. The program was carried out in three phases. This present report describes the results of the work conducted during Phases II and III (July 1979-June 1983). It includes the design, fabrication and evaluation of a full-scale, 10-foot diameter in an above ground tunnel test facility. The facility consists of: a 10-foot diameter, 22 foot long steel "tunnel"; an ETLS; a "TBM" reaction structure; and concrete mixing and pumping equipment. The ETLS consists of: a 9 foot diameter, 10 foot long, 1 in. thick steel cylindrical slipform; a 9.5 foot diameter, 8 in. wide by 6 in. thick independent annular bulkhead; hydraulic actuators controlling slipform and bulkhead motions; and an electro-hydraulic system for controlling the hydraulic actuators. The rapid set/rapid strength gain concrete mix design has been finalized to achieve 1-1/2 hr strength of 1000 psi while maintaining workability for 30 minutes. Tests of the ETLS have been carried out at advance rates of 4, 6, and 7 feet per hour. In all cases, a competent, self-supporting liner has been produced. Data acquired during these tests have provided a better understanding of the first underground system. Data acquired during these tests have provided a better understanding of the first underground system. Data have included mechanical loading on ETLS components due to form drag, buoyancy, and deviation

from alignment; concrete pressures and concrete strength/time properties; and behavior of the ETLS control system. These have been incorporated into a conceptual design based on the information generated during this test program.

Phase I of this report is entitled: Extruded Tunnel Lining System, Phase I—Conceptual Design and Feasibility Testing, September 1979, NTIS No. PB 80-118011.

Boyce, JS Maser, KR Ounanian, DW
Foster-Miller Associates, Incorporated, Urban Mass Transportation Administration, (TSC/DTS-75) Final Rpt. UMTA-MA-06-0100-83-6, DOT-TSC-UMTA-83-50, Dec. 1983, 220p Contract DOT-TSC-1516
ORDER FROM: NTIS PB84-158823

15 386317
SHIELD IN DRIVE TO RENOVATE 180 YEAR OLD CANAL TUNNEL
Tunneling along a tunnel is the method being used to rehabilitate the center of one of Britain's oldest tunnels. Deteriorating brick linings are being replaced with specially designed concrete segments. The method involves erecting a shield in a hand enlarged chamber 7. 6 m diameter X 8 m long, one third of the way into the tunnel, and driving along the profile removing the brick lining with an excavator mounted in the shield, erecting the new concrete segmental lining behind. To ensure safety and to secure the existing tunnel in front of the shield, a steel skid-mounted A-frame is pushed along and used to erect and remove a series of seven steel colliery-type arches supported on hydraulic props.

Martin, D (Tunnels and Tunnelling, London) **Tunnels and Tunnelling** Vol. 15 No. 11, Nov. 1983, pp 35-38

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

15 386318
SELF PROPELLED SHUTTLE CAR TAKES THE BURDEN OUT OF MUCKING
Self propelled shuttle cars have been used by UK contractor John Mowlem behind tunneling shields for removing spoil for at least the past 20 years, especially where high production rates and long hauls were required. These shuttle cars have been progressively developed during this period and have now become a sophisticated and reliable means of transporting muck out from the face and moving materials (and men) into the face. Designed on the principle of a mobile bunker conveyor, the shuttle car incorporates a comparatively shallow scraper chain which nevertheless can move a considerable depth of spoil along the high sided vehicle without drawing through the underside of the heap. The cars can operate successfully on 1:30 grades and can be further elevated to load one another. This article describes the shuttle car, its method of operation, and its recent application on a sewer tunnel project.

Tunnels and Tunnelling Vol. 15 No. 11, Nov. 1983, pp 47-48

ACKNOWLEDGMENT: EI
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15 386320
OPTIMAL SIMPLE SPAN LENGTHS FOR FLEXIBLE GUIDEWAYS
The two most important dynamic phenomena which require accommodation in the design of vehicle/guideway systems are vehicle suspension resonance and guideway beam resonance. For a given system configuration there exists an optimal span length which will yield the best dynamic performance. Furthermore, there exist critical ranges of span lengths, shorter than the optimum span, which will cause resonant guideway and vehicle vertical oscillations unless much stiffer guideway sections are used. A detailed dynamic assessment of the optimum simply supported guideway span length is presented. The effects of all parameters to the system performance are examined and critical parametric combinations are identified for a practical design example of vehicle/guideway system.

Minnetyan, L (Clarkson College of Technology) **Journal of Structural Engineering** Vol. 110 No. 1, Jan. 1984, pp 138-153, 7 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

15 386329
MAGNEL DIAGRAMS FOR PRESTRESSED CONCRETE BEAMS
G. Magnel's graphical method for the analysis of a prestressed concrete beam and for the determination of safe prestressing force and eccentricity is described. The paper presents the characteristics of the original Magnel diagram, reviews the writers' modifications to and extensions of the method, discusses relevant work by others, and offers a further simplification for the plotting of the safe zone, illustrated by a worked example.

Krishnamurthy, N (National University of Singapore) **Journal of Structural Engineering** Vol. 109 No. 12, Dec. 1983, 9p, 7 Ref.

ACKNOWLEDGMENT: EI
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15 386330
BENEFITS AND COSTS OF EEO RULES IN CONSTRUCTION
The findings of a study designed to investigate the benefits and costs of Equal Employment Opportunity (EEO) regulations in the construction industry are presented. The data indicate that large contractors have less difficulty than smaller organizations in meeting EEO requirements. In addition, it is shown that the regulations both benefit and increase the number of minority construction workers.

Koehn, E (Purdue University); Jones, MW **Journal of Construction Engineering and Management** Vol. 109 No. 4, Dec. 1983, pp 435-446, 24 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

15 386331
AUTHORITY STRUCTURES FOR CONSTRUCTION PROJECT MANAGEMENT
This paper provides a primer on authority structures. The basic corporate organizational forms are described and construction examples are given. The basic authority structures for project management are also described. These forms are the functional, pure project, and matrix. For each form, the advantages and disadvantages as they relate to the project manager's ability to support the project are cited. Nine factors that influence the choice of authority structure are discussed. The role of the project manager is described.

Thomas, R Keating, JM Bluedorn, AC **Journal of Construction Engineering and Management** Vol. 109 No. 4, Dec. 1983, pp 406-422, 13 Ref.

ACKNOWLEDGMENT: EI
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15 386333
JAPAN: EAST-WEST TIES GAIN MOMENTUM
Much has already been said about the phenomenal rate of development of new soft ground tunneling techniques in Japan. Feelings amongst tunnellers in the more traditional tunneling nations of Europe and North America have in the past run high, with the new technology from Japan often being seen as a threat rather than a benefit in their sphere of the industry. Attitudes, however, appear to be changing and the evidence of the last two or three years points to a future of cooperation and mutual gain. The article discusses Japanese tunneling machine and shield manufacturers and applications, contacts with European manufacturers, exports of tunneling machinery and technology.

Tunnels and Tunnelling Vol. 15 No. 10, Oct. 1983, pp 32-33

ACKNOWLEDGMENT: EI
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15 386334
JAPANESE BREAK-THROUGH IN SAN FRANCISCO
Japanese expertise was enlisted to excavate a sewer tunnel in San Francisco. An earth pressure balanced machine was used for the soft ground portion and a roadheader in a shield for the rock and mixed ground section. However, a return to more traditional methods proved necessary in the more difficult conditions. This article discusses the route geology, ground supports, earth pressure balanced machine specifications, and excavation problems.

Clough, R (Clough (Russell G) Company) **Tunnels and Tunnelling** Vol. 15 No 10, Oct. 1983, pp 15-17

ACKNOWLEDGMENT: EI
ORDER FROM. ESL

15 386336
STUTTGART REGIONAL EXPRESS NETWORK—EXPERIENCE GAINED IN THE BUILDING OF THE HASENBERG TUNNEL [S-BAHN STUTTGART—ERFAHRUNGEN BEIM BAU DES HASENBERGTUNNELS]
The 5.5-km Hasenberg tunnel is at present under construction as part of the Stuttgart S-Bahn redevelopment project. Most of the work, which began five years ago, should be completed by the middle of 1984. The author discusses the methods used, with examples, and the problems involved in building tunnels today. [German]

Grueter, R Scholz, O **Die Bundesbahn** Vol. 59 No. 11, Nov. 1983, pp 757-762, 12 Phot , 4 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Hestra-Verlag, Holzhofallee 33, Postfach 4244, 6100 Darmstadt 1, West Germany

15 386345
URBAN TUNNELS. DIFFICULTIES ENCOUNTERED IN THEIR DESIGN AND CONSTRUCTION; IMPACT ON THEIR OPERATION [OUVRAGES SOUTERRAINS URBAINS. DIFFICULTES DANS LEUR CONCEPTION ET LEUR REALISATION, INCIDENCES SUR LA GESTION DU SOUS-SOL]
This number contains long summaries of lectures delivered during the seminar held in Paris on this topic June 9 and 10, 1983, under the auspices of the CEIFICI (Center for the training of engineers). Of particular interest are the lectures on SEMALY approach to archaeological constraints in the construction of the Lyon underground; optimum use of underground space: constraints of the Civil Code and the Mining Code; underground town-building; construction of metro stations in Antwerp using forced tubes and the Cairo underground. [French]

Tunnels et Ouvrages Souterrains No. 60, Dec. 1983, pp 261-318, 10 Phot., 10 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: ESL

15 386382
FIT AND FORGET TRACK STRUCTURE CUSHIONS MBTA TRACK
Floating-slab track, used by Washington Metro and Toronto Transit, is now being installed by Massachusetts Bay Transportation Authority. About 4 miles of new lines at below-grade sites will use this track structure to reduce ground-borne noise and vibration and eliminate maintenance problems associated with conventional track. Slab track and direct rail fixation eliminate problems of track settling and shifting encountered with conventional ties and ballast. Rail fastener shoulders are set into "second pour" pads placed on top of the precast concrete blocks 5 ft long and 10 ft wide. Each block is carried on four natural rubber shock absorbers supplemented by horizontal dampers of the same material. The continuously supported rail sits on stiff elastomeric strips, secured against embedded shoulders with insulated spring clips. MBTA goal is a long-life, trouble-free track structure.

Railway Track and Structures Vol. 80 No. 4, Apr. 1984, 3p, 1 Fig., 4 Phot.

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15 386383
BALLASTLESS TRACK: A RAPID TRANSIT WAVE OF THE FUTURE?
Successful application of ballastless track carried directly on concrete substructures is relatively new but gaining in popularity because it will retain its geometry longer than ballasted track. In tunnels it will also minimize bore size and on bridges will reduce dead weight. Three general types of ballastless track are used; Group I, the block system, in which rail is supported on prefabricated blocks set in a trackbed of longitudinal troughs; Group II, direct fixation on supporting structure, where the rail is mounted on bearing plates and elastomeric pads set directly on the bridge deck or tunnel invert; Group III, paved or slab track, where the supporting slab is poured in one pass to final alignment. All three designs have advantages but Group I appears to be the most versatile and easiest to construct. For bridges, rail expansion joints have traditionally been placed at each pier, and span lengths limited. For Miami Metro, it was decided to utilize long aerial structures of increased span length, then utilize rail fasteners where creep resistance could be limited. This would control effects of differential expansion of structure and rail. Although ballastless track is widely accepted for rapid transit, much development remains. Design criteria are still empirical; noise and vibration damping require development; and turnouts and at-grade construction need to be researched.

Jackson, B (Dade County Transportation Administration) **Railway Track and Structures** Vol. 80 No. 4, Apr. 1984, pp 37-39, 3 Phot.

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15 386926
GEOLOGICAL CAUSES OF LANDSLIDES DURING TUNNEL CONSTRUCTION [GEOLOGISCHE URSACHEN VON VERBRUECHEN IM TUNNELBAU]
All landslides threaten the lives of people working in tunnels. It is moreover costly in both time and money to clear them away. Wide-section tunnels make landslides even more dangerous, especially during construction. The article describes the different types of landslide (surface subsidence and caving in), their relation to construction methods and the geological causes (exceeding of the rock's load capacity faults in the rock, land movements, inadequate tunnel lining, building materials with poor cohesive qualities, sliding land masses) and preventive measures. [German]

Spaun, G **Tiefbau-BG** Vol. 95 No. 11, 1983, pp 768-775, 11 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
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15 386939
RESEARCH ON THE EFFECTS OF BRAKING AND ACCELERATION OF RAILWAY TRAINS ON BRIDGES [RECHERCHES SUR L'INFLUENCE DU FREINAGE ET DU DEMARRAGE DES CONVOIS FERROVIAIRES SUR LES PONTS]
This article sums up a research project carried out by the UIC Office for Research and Experiments (ORE) on the effects of braking and acceleration of railway trains on bridges. The aim of this study was to assess the forces caused by braking and acceleration on bridges, and how these are spread over the rails, the structure, its supports and the terrain. After a standard method of measurement and data analysis had been established and specific units of measurement agreed, open line tests were carried out. The author goes on to describe the tests carried out on different types of bridge, draws conclusions from the most significant findings of this research, and summarises the studies carried out. He then describes a method of calculation obtained as a result of this research, and finishes with some additional thoughts. [French]

Winand, A **Revue T Tijdschrift** No. 2-3, 1983, pp 21-34, 9 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
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15 386940
THE "BRIDGES" RESEARCH PROJECT AS PART OF THE WHEEL/RAIL PROGRAMME OF THE FEDERAL MINISTRY FOR RESEARCH AND TECHNOLOGY [DAS FORSCHUNGSVORHABEN "BRUECKEN" IM RAD/SCHIENE-PROGRAMM DES BUNDESMINISTERS FUER FORSCHUNG UND TECHNOLOGIE]
The investigation looked at requirements to be met by new railway bridges designed for speeds of 160 to 350 km/h. Apart from dynamic vehicle/bridge stresses, researchers concentrated on transmission of longitudinal forces included by changes in temperature and braking, and on structures with special reference to high viaducts. They also looked at sideways slip of high single-span support piers under total load including wind loading. [German]

Sonntag, PE **Eisenbahntechnische Rundschau** Vol. 32 No 12, Dec. 1983, pp 819-825, 9 Phot., 16 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Hestra-Verlag, Holzhofallee 33, Postfach 4244, 6100 Darmstadt 1, West Germany

15 386941
CHARACTERISTICS OF CWR MANUFACTURE USING A MOBILE FLASH-BUTT WELDING MACHINE [TECHNOLOGISCHE BESONDERHEITEN BEI DER HERSTELLUNG LUECKENLOSER GLEISE MIT DER FAHRBAREN ABBRENNSTUMPFSCHWEISSMASCHINE]
Improvement of track welding quality by manufacturing LWRs within the laying temperature range with the PRSM-3; a mobile flash-butt welding machine. Explanations of the technologies used. [German]

Kunhart, F Gentes, H-J **Signal und Schiene** Vol. 28 No. 1, Jan. 1984, pp 4-5, 2 Phot., 4 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Transpress VEB Verlag fuer Verkehrswesen, Franzoesische Strasse 13/14, Postfach 1235, 108 Berlin, East Germany

15 386943
WATERPROOFING OF CIVIL ENGINEERING STRUCTURES [ABDICHTUNG VON INGENIEURBAUWERKEN]
The new regulation on waterproofing of civil engineering structures, in force since 1 January 1982 (DS 835), provides a vast up-to-date fund of technical reference, on current problems in waterproofing of structures. The writer quotes several practical examples from the S-Bahn. [German]

Behrendt, A **Eisenbahningenieur** Vol. 35 No. 2, Feb. 1984, pp 55-59, 6 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Tetzlaff-Verlag GmbH, Havelstrasse 9, Postfach 4006, 6100 Darmstadt 1, West Germany

15 386945
QUESTION—ORE D 101—MEASUREMENT OF THERMAL EFFECTS ON TRACK AND STRUCTURE IN THE CASE OF A DB STEEL BOX-GIRDER BRIDGE WITH CONTINUOUS BALLAST BED (ADDITIONS AND CONCLUSIONS)
This report contains the additional results to RP 18 and concerns measurements taken continuously over a whole year on a 139 m long continuous box-section steel bridge. The track consists of S 54 rails on timber sleepers, laid on continuous ballast bed 34 cm deep (under the sleeper soffit). There are no expansion joints in the track. In the measuring zone the rails were cut about 100 m on either side of the bridge at low temperatures and disconnected from the sleepers. This report describes the time-dependent temperature fluctuations of the rails and of the deck and their effect on the relative displacements of the deck and of the track and also the longitudinal forces in the rails.

International Union of Railways ORE D 101/RP 21, Apr. 1983, 17p, 8 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: UIC

15 386961
S.N.C.F. TUNNEL MAINTENANCE: REPOINTING, GROUTING, DRAINAGE
The first section of the article deals with the techniques, materials and equipment used for preparatory cleaning, raking out and repointing of joints in brickwork or rubble masonry. The author then describes the grouting techniques used for strengthening the tunnel lining and for ground improvement, giving details of the grout compositions employed and the results obtained in various S.N.C.F. tunnels. The final section examines certain aspects of tunnel drainage.

Eraud, J **French Railway Review** Vol. 2 No. 2, Apr. 1984, pp 131-142

ACKNOWLEDGMENT: British Railways
ORDER FROM: North Oxford Academic Publishing Limited, 242 Banbury Road, Oxford OX2 7DR, England

15 386962
TUNNELLING THE GAP IN THE OSLO METRO SYSTEM
Extensive pre-grouting, shotcreting and rockbolting, both to stabilise the weak soft ground and to control ground water ingress, highlight the difficulties encountered during construction of Oslo's new Sentrum station.

Wallis, S Martin, D **Tunnels and Tunnelling** Vol. 16 No 3, Mar. 1984, pp 33-36

ACKNOWLEDGMENT. British Railways
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15 386972
CONCRETE IN THE RAILROAD ROADBED
A traditional track structure supports rails on wood crossties partially embedded in a ballast of crushed stone or other aggregate, resting on a subgrade of varying load capacity. At the same time that supplies of hardwood for ties have been depleted in some parts of the world, prestressed concrete technology has advanced and railroads have moved toward increased use of prestressed concrete ties. Concrete ties may be one-piece prestressed concrete, or they may be made of two concrete end blocks connected by a steel cross-piece.

Concrete Construction Vol. 29 No. 3, Mar. 1984, pp 309-311, 2 Ref.

ACKNOWLEDGMENT: EI
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15 386974
DYNAMIC RESPONSE OF STEEL AND COMPOSITE GIRDERS UNDER HIGH SPEED TRAIN
On a test track of the Tohoku Shinkansen system in Japan, the behavior of three types of railway bridges-through truss girder, composite girder, and preflexed composite girder-were measured under running trains with high speed. This paper presents measured impact factors in relation to stress and deflection, and they are compared with calculated results.

Asakawa, K Kawakami, H Yoshioka, T Matsumoto, N Hidaka, I **Railway Technical Research Inst, Quarterly Reports** Vol. 24 No. 3, Sept. 1983, pp 121-122

ACKNOWLEDGMENT: EI
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15 387570
SELECTING USED TUNNEL BORING MACHINES: THE PROS AND CONS
The cost of tunnel excavation can be minimized and bidding for such work may be much more competitive with the utilization of used tunnel boring machines. An increasing number of tunnels have been excavated with used machines, although occasionally with disastrous results. Based on past experience, methods will be suggested to evaluate the condition and suitability of used machines on a given project.

Tarkoy, PJ **Tunnels and Tunnelling** Vol. 15 No. 12, Dec. 1983, 5p, 4 Ref.

ACKNOWLEDGMENT: EI
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15 387580
A GUIDE TO THE USE OF ROCK REINFORCEMENT IN UNDERGROUND EXCAVATIONS
After describing the mechanics of failure of underground excavations, the report outlines the concepts of rock reinforcement. Design considerations are discussed in detail. The three most common types of reinforcement (dowels, bolts and anchors) are each fully described, with the basic factors to be considered for corrosion protection. Selected case studies appear in an appendix. The report covers most aspects including site investigation, design, selection, installation and monitoring of rock reinforcement, but it excludes contractual matters, planning and costs. (TRRL)

Douglas, TH Arthur, LJ
Construction Industry Research & Information Assoc, (0305-408X)
CIRIA Report 101, 1983, 74p, 36 Fig., 16 Tab., 115 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276132)
ORDER FROM: Construction Industry Research & Information Assoc, 6 Storey's Gate, London SW1P 3AU, England

15 387849
PRECAST CONCRETE IN THE TRANSIT INDUSTRY
The paper discusses some of the reasons for the relatively limited use of precast and prestressed concrete in mass transit systems and suggests ways in which the full potential of the material can be attained. Concrete's dynamic and noise abatement characteristics and its architectural adaptability make it an ideal material for guideways. The success of precast concrete's performance, economy, and appearance has been proven on modern transit systems.

Dolan, CW (ABAM Engineers Incorporated) **Prestressed Concrete Institute, Journal of** Vol. 29 No. 2, Mar. 1984, pp 20-27, 1 Ref.

ACKNOWLEDGMENT: EI
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15 387855
MECHANISED RIGS TAKE THE MUSCLE AND MESS OUT OF ROCKBOLTING
Both resin grouted rock bolts and bulk cement grouted rock bolts can now be inserted using the same rockbolting rig. A combination bolting head which allows the operator to decide on the spot which type of bolt to insert has made this possible. All that is needed is a supply of resin cartridges, bags of ordinary Portland cement, the necessary bolts and to follow the correct procedure for inserting each. Drilling the hole, inserting the resin or cement and fitting the bolt or rebar can be achieved using a fully integrated mechanized rockbolting rig operated by one man from under the safety of the previously secured roof section.

Wallis, S **Tunnels and Tunnelling** Vol. 16 No. 4, Apr. 1984, pp 55-58

ACKNOWLEDGMENT: EI
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15 387856
FORMING MACHINES PRECAST MILES OF GUIDEWAY GIRDERS
Rapid, economical production of more than a thousand prestressed and post-tensioned box girders is crucial to the building of a new public transportation system in Vancouver. Since much of the system is elevated and in urban areas, precasting was chosen as a way to speed erection, lessen congestion on the job, cut costs and control quality. Tight tolerances were established, and success of the precasting operation depends in large measure on the specialized forming system described in this article. Eight of the first 13 miles of the system will ride on elevated box girders over lines having frequent twists and curves. This phase requires 594 curved and banked beams, 394 straight (tangent) units and 48 turnout units for track crossover, all to be supplied within a 22-month period.

Concrete Construction Vol. 29 No. 4, Apr. 1984, pp 405-410

ACKNOWLEDGMENT: EI
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15 387857
EISENHOWER STATION FEATURES DISTINCTIVE DESIGN
First-of-a-kind design gives a distinctive appearance to the Eisenhower Avenue Station on Washington, DC's new Metropolitan Area Rapid Transit System. The stations's most unique features are its thin, cylindrical, shell-shaped canopies, which partially cover the platform, exterior stairways and escalators. An innovative, three-dimensional space-frame structural system was used to support the track bed, platforms and canopies.

Sharko, W (Howard Needles Tammen & Bergendoff) **Concrete Construction** Vol. 29 No. 2, Feb. 1984, 3p

ACKNOWLEDGMENT: EI
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15 387883
REPLACEMENT OF THREE ROAD BRIDGES IN DUSSELDORF [ERSATZ VON DREI STRASSENBRUECKEN IN DUESSELDORF OHNE VERKEHRSEINSCHRAENKUNG]
Description of how three bridges over a busy railway line were replaced without road or rail traffic restrictions. Description of methods used (lengthwise and lateral displacement, construction) and special applications such as the installation of three partial bridges with rigid supports, displaced lengthwise in succession by means of a cable-suspended bearing structure. [German]

Bayer, E Gottstein, F von **Bauingenieur** Vol. 59 No. 1, 1984, pp 27-37, 11 Phot., 2 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
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15 387892
DOCUMENTATION ON TUNNEL DIGGING WORK ON THE DB'S HANNOVER-WUERZBURG NEW LINE [DOKUMENTATION DER VORTRIEBSARBEITEN AUF DER NEUBAUSTRECKE HANNOVER-WUERZBURG DER DEUTSCHEN BUNDESBAHN]
Analysis of roof tunnelling, the distribution of advance heading lengths, composition of advance heading durations, digging speed, the staff on site, explosives consumption, the cost of digging lengths and safety volumes, in order to obtain coefficients applicable to tunnel digging. For different tunnel projects, distinction is made between geological data, tunneling cross-section, digging method and use of equipment. [German]

Eber, A Thurner, G **Felsbau** Vol. 1 No. 3-4, 1983, pp 125-131, 1 Tab., 13 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Felsbau, Essen, West Germany

15 387906
MANAGING CAPITAL PROJECTS
The growing cost and complexity of capital investment projects, when improperly managed, can jeopardize their success. Time and cost overruns on major public construction projects are the results of decisions made during planning and design, coupled with untimely management response to problems arising during construction. Better management control of project planning, scheduling and organization are essential. Examples are given of new transit projects and of other municipal and state projects. The dealing with potential problem areas, critical in managing a successful project, is sometimes called risk management. Risk programs should be implemented during the design review process. Another technique is value engineering, a function-oriented process that focuses on the function of the product, its methods and process, in order to produce the same item at lower cost. Good project and construction management includes (1) setting of goals and objectives; (2) clarifying delegated decision-making; (3) instituting effective internal communication; (4) adopting realistic policies and procedures; (5) timely securing of funding; (6) instituting management information systems; (7) carrying out risk management; (8) developing cost estimating and scheduling systems; (9) ensuring effective designs; (10) anticipating land and right-of-way needs for early acquisition; (11) designing and implementing "wrap up" insurance; (12) instituting value engineering and risk mitigation.

Hirten, JE (Pacific Kellogg Corporation) **Traffic Engineering and Control** Vol. 38 No. 3, July 1984, pp 403-418, 1 Fig., 2 Tab.

ORDER FROM: Eno Foundation for Transportation, Incorporated, P.O. Box 55, Saugatuck Station, Westport, Connecticut, 06880

15 389310
ROCKDISC-A MICROCOMPUTER-BASED CORE LOGGING SYSTEM
Large amounts of sample data are obtained from diamond drilling of in situ rock formations. Logged observations are normally recorded on pre-printed-forms for later analysis. Manual systems are being replaced by computer techniques for more comprehensive collection, storage and processing of data. The system described is built around a computer terminal with a cp/m operative system, and an optical encoder. A keyboard is used to communicate with the computer and a printer is connected for listing recorded information. The rockdisc code is written in OBASIC and

stored on floppy-disc. Data can be converted for further processing on a minicomputer, the program plot-rockdisc is written in pascal and can be used to obtain a graphical presentation of borehole data. The graphical presentation obtained from the plot-rockdisc routine gives a top co-ordinate axis divided into 2 and 10 metre intervals. Geomechanical parameters in the first two rows are plotted in groups of three. Results of chemical analysis, texture and structure codes, rock types, core losses and crushed zones are also displayed.

Nordqvist, A (Swedish Mining Res Foundation Kiruna, Sweden) **Intl J of Rock Mech & Mining Sci & Geomechanic Abs** Vol. 21 No. 2, 1984, pp 109-112, 3 Fig., 2 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276693)
ORDER FROM: Pergamon Press Limited, Headington Hill Hall, Oxford OX3 0BW, England

15 389311
THE KIELDER EXPERIMENTAL TUNNEL: FINAL RESULTS
The entrance to the Kielder experimental tunnel was sealed late in 1979 about the same time as the driving of the 32 km long 3.3 M dia tunnel for the Kielder water scheme was completed. The experimental tunnel was the scene of quite detailed studies of the performance of a variety of support systems in the four fathom mudstone over a period of five years. The important lessons learned from these long-term experiments are reviewed. In particular the most recent experiment where the same support, consisting of an annulus of sprayed concrete, was placed at different times after excavation (equivalent to different amounts of rock yielding) is reported. This has enabled characteristic lines, or ground-reaction curves, to be established in the field. The strains and deformations in the cast in situ concrete lining, in a part of the Kielder main tunnel where it passes through the same mudstone, are also presented. These demonstrate that it is lightly loaded-a result to be expected from the experimental tunnel studies.(a)

Ward, WH Tedd, P Berry, NSM **Geotechnique** Vol. 33 No. 3, Sept. 1983, pp 275-291, 12 Fig., 2 Phot., 20 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276708)
ORDER FROM: Archiv fuer Eisenbahntechnik, 15 Hestra[Verlag, Holzhofallee 33, Pos, tfach 4244

15 389312
LOADS ON LEAKING AND WATERTIGHT TUNNEL LININGS, SEWERS AND BURIED PIPES DUE TO GROUNDWATER
In this note the authors demonstrate that simple application of the principles of effective stress and seepage laws leads to the perhaps surprising result that the long-term loads acting on linings below the water table are unaffected by whether the lining is watertight or not. This is only valid for cases where the original groundwater level is only little affected by the lining acting as a drain, and where the flownet is approximately radial, and is therefore of most relevance to relatively deep tunnels. The practical significance of this result is that it is erroneous to suppose that the total load on a watertight deep tunnel (or sewer lining or buried pipe) in soil would be reduced by allowing the lining to be permeable. By relieving the water pressure in the soil immediately outside the lining. a steady-state seepage would develop and the seepage stresses imposed on the soil grains (and therefore on the lining) would balance the relief of the water pressure.

Atkinson, JH (City University, London); Mair, RJ (Geotechnical Consulting Group, London) **Geotechnique** Vol. 33 No. 3, Sept. 1983, pp 341-344, 4 Fig., 5 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276711)
ORDER FROM: Archiv fuer Eisenbahntechnik, 15 Hestra[Verlag, Holzhofallee 33, Pos, tfach 4244

15 389344
APPLICATIONS OF CENTRIFUGE MODELLING TO THE DESIGN OF TUNNELS AND EXCAVATIONS IN SOFT CLAY
The geotechnical centrifuge provides the opportunity for constructing small-scale model tunnels and excavations and observing their deformation and collapse in safety. Over the past decade there has been a major research program at Cambridge into the behavior of tunnels, shafts and trench excavations in soft clay, and centrifugal modelling has played a key role in the research work. This paper briefly describes the test series undertaken and summarizes those results of direct relevance to design. Full details may be found elsewhere, principally in the various M. Phil or PhD theses associated with the research work (Mair, 1979; Kusakabe, 1982; Phillips, 1982, 1984; Tayloer 1979, 1984). Details of the Cambridge Geotechnical Centrifuge facility are fully described by Schofield (1980).

Mair, RJ Phillips, R Schofield, AN Taylor, RN
Cambridge University, England CUED/D-SOILS/TR-146, 1984, 28p

ORDER FROM: NTIS PB84-169945

15 389345
FEASIBILITY STUDY OF A NOVEL ROCK TUNNELING AND EXCAVATION METHOD, PHASE 1
Results are presented of the study, test, and evaluation of a novel rock fracturing technique. A waterjet drill breaker rapidly drills a small diameter hole into a rock mass and then drills slots into the sides of the hole. Two basic geometries are most useful for rock fragmentation purposes: (1) paired lateral slots cut into opposite sides of the hole, and (2) disk-shaped slots cut at the bottom of the hole. A load applied to either of these slot geometries will cause a fracture to propagate in the same plane due to high stress intensities at their tips. The fracture mechanics analysis of the two loading approaches and various slot geometries is provided, and information is given on fracture initiation, arrest, and the geometry of the resulting fracture surface. It is concluded that this fracturing method can achieve competitive tunneling advance rates while reducing bottomline excavation costs by up to 48 percent.

Flow Industries, Incorporated, National Science Foundation Final Rpt. Res & Tech-232, NSF/CEE-82137, May 1982, 75p Contract NSF-CEE81-14486
ORDER FROM: NTIS PB84-180074

15 389572
ANALYSIS OF A SPILING REINFORCEMENT SYSTEM IN SOFT-GROUND TUNNELING
An investigation of a spiling reinforcement system used for stabilizing tunnels is presented. The system is composed of a series of radially installed reinforcing spiles placed around the perimeter of the tunnel heading before excavation. This system provides immediate stabilization of an opening as well as permanent stabilization. It has been successfully used for tunneling in weak rock formations and, to a lesser extent, in soft grounds. To date, no rational design methodology has been formulated because no reasonable analytic method of analysis has been suggested. A generalized plane strain composite finite-element analysis, which uses the proper simulation of the excavation and reinforcement to calculate three-dimensional stresses and displacements while the finite-element grid remains in two dimensions, is presented. The effects of the reinforcement, the inclination, and the spacing of the spiles on the performance of the system have been analyzed with the proposed method. The ground surface movements are used to calculate the vertical and horizontal distortions that are directly related to damage to buildings located above the tunnel.

This paper was published in Transportation Research Record No. 946, Interaction of Vehicles and Pavements.

Bang, S (Notre Dame University) **Transportation Research Record** No. 946, 1983, pp 45-51, 11 Fig., 3 Tab., 12 Ref.

ORDER FROM: TRB Publications Off

15 389758
COMPUTER DESIGN AND ANALYSIS OF STEEL BOX GIRDER BRIDGES FOR TRANSIT STRUCTURES
The purpose of this study is to develop design criteria and a computer program which can be used to design/analyze straight or curved single or multi composite box girder bridges for transit structures. The resulting computer program will perform an analysis or design of a single prismatic or nonprismatic straight or curved box girder when subjected to a specified train loading. The train loading may be any series of coupled units. The box section is a single unit of the bridge or a member of a multiple box system. The box man be non-composite or composite construction. The section can have internal transverse diaphragms spaced along the box and top lateral bracing. Output contains influence line ordinates, stresses on top and bottom at locations along the span due to: 1) dead load; and 2) superimposed dead load and live load. Force envelopes including moment, shears, torsion and bimoment are given for load combinations. Influences due to bending, torsion, warping and distortion are included. Stress

envelope is given for use in fatigue design. Applicable specifications are utilized to establish allowable stresses, web and flange stiffening requirements and shear stud spacing. Resulting girder deflections and rotations, due to sequential concrete placements, can also be determined for specified length of pours. Composite/non-composite action may be assumed after the concrete hardens. The full woking specifications, utilized in this computer program, is given in the companion report "Specifications Manual for Steel Box Girder Transit Structures", UMTA-MD-06-0076-82-1.

Heins, CP Shyu, JY
Maryland University, College Park Final Rpt. UMTA-MD-06-0076-82-2, June 1982, 115p Contract AW08-218-046
ORDER FROM: NTIS PB84-184944

15 389797
QUICK TAKE-OFF SECURES SMOOTH PASSAGE FOR HEATHROW TUBE
The article discusses the 3 one-half mile long Terminal 4 tube extension through London clay, which is characterized by speedy mobilization, good equipment and an ingenious continuous mucking system. The contractor went for "fast tunneling" using three mechanized working faces. The method chosen was to use boom-type road-headers working in hydraulically jacked shields. The main problem from the contractor's point of view was how to muck out quickly enough to keep up with the rapid rate of tunneling expected. The rather novel solution adopted was to use as large mucking cars as could be gotten onto the 600mm gage Jubilee track. The mucking system also included a surge area and a conveyor. These and other aspects of the job are discussed.

Martin, D **Tunnels and Tunnelling** Vol. 16 No. 5, May 1984, pp 26-30

ACKNOWLEDGMENT: EI
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15 389798
BUFFALO STAMPEDES TO MEET NATM CHALLENGE
The shotcreting element in the New Austrian Tunneling Method (NATM) is often the bottleneck in the cycle. The increasing use of the NATM as a rapid excavation technique has highlighted the need for specifically designed higher capacity shotcreting equipment. One company dedicated to the research and development of such equipment is Putzmeister of West Germany. The latest addition to its range of shotcreting equipment is the Spritzbuffel or Spray Buffalo, which is designed specifically for use on the construction of large cross section tunnels. The unit only handles wet concrete. The consortium Hochtief/Universale Bau is currently operating three of these machines on separate tunnel contracts on the new Hannover to Wuerzburg high speed railway.

Wallis, S **Tunnels and Tunnelling** Vol. 16 No. 5, May 1984, pp 49-50

ACKNOWLEDGMENT: EI
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15 389800
BUILDING OF CUT AND COVER RAILWAY TUNNELS [UNTER VERKEHR ERSTELLTE EISENBAHNTUNNEL IN OFFENER BAUWEISE]
Referring to two examples taken from the new Mannheim-Stuttgart line, the author describes difficulties that can arise with cut and cover tunnel building at interconnection points with other communications infrastructures. In the first example the new line goes through a tunnel to cross the A6 Federal motorway. Because of the heavy-load traffic 2 lanes had to be permanently available in both directions. In the second case the new line crosses the existing Mannheim-Karlsruhe line and forms a junction with it. Here again, traffic must not be disrupted. [German]

Bienstock, R **Tunnel** No. 1, 1984, pp 3-9, 8 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Tunnel, Guetersloh, West Germany

15 389817
WORLD PREMIERE IN JUMET. THE JUMET EXPERIMENTAL TUNNEL. AUTOMATED URBAN TRANSPORT [PREMIERE MONDIALE A JUMET. TUNNEL EXPERIMENTAL DE JUMET. T.A.U. TRANSPORT AUTOMATISE URBAIN]
Automated Urban Transport is a light unmanned metro project for medium-size town requirements. Promotors of the new system are emphasising the low infrastructure building costs. An experimental site has been opened in Jumet and a new tunnel building method (R.D.W.) is being exhibited for the first time. The author describes the different stages of tunnel drilling work (dry and bentonite methods) with photogrpahs and diagrams and outlines the thinking behind the method. [French]

Excavator No. 4, 1984, pp 20-30, 10 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Association Graphique et Artistique, 225 Avenue Moliere, 1060 Brussels, Belgium

15 389836
RESEARCH INTO TRAIN WIND GENERATED IN SUBWAY LINE NO. 12 WITH SMALL CROSS-SECTION
Subway Line No. 12 is one of the 13 proposed lines of the urban rapid transit network in Tokyo and consists of circular and radial sections totalling around 38.9km. In tunnel design, the smallest cross-section is to be adopted so as to attain the greatest savings in construction and operation costs. The wind generated by trains in these small tunnels could be stronger than normal and so measures must be taken to predict the wind speed and its effect.

Fukui, S **Japanese Railway Engineering** Vol. 23 No. 3, 1983, pp 21-24

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

15 389839
EXTENSION OF METRO LINE 5 TO BOBIGNY: TECHNICAL FEATURES OF CIVIL ENGINEERING WORK
After a general description of the project, the authors describe the particularly difficult problems associated with constructing the tunnel under the Ourcq canal: the structure was installed in two half-sections so that navigation could continue along one side of the canal while the work proceeded. Details are then given of the Bobigny-Prefecture station complex: as it is situated in an already redeveloped, built-up area, the Berlin method was used for its construction and the work was completed relatively quickly, within 21 months.

Dumain, JP **French Railway Review** Vol. 2 No. 3, June 1984, pp 179-188

ACKNOWLEDGMENT: British Railways
ORDER FROM: North Oxford Academic Publishing Limited, 242 Banbury Road, Oxford OX2 7DR, England

15 389863
A NEW GENERATION OF ESCALATORS FOR THE BRUSSELS METRO
The new escalators put into service in the stations of Brussels public transport network incorporate the following innovations: Microprocessor control (used for control and diagnosis); soft start device (comfort of the user); side lighting (security); and a person detection system (security)

Woitchik, M **UITP Revue** Vol. 33 No. 2, 1984, pp 135-136

ORDER FROM: International Union of Public Transport, Avenue de l'Uruguay 19, B-1050 Brussels, Belgium

15 390101
DYNAMICS OF NEAR-OPTIMAL SPANS WITH MOVING LOADS
This study focuses on continuous, uniform, beam-type spans designed for balanced static stresses and for minimal vibration amplitudes imparted to the transit vehicles. It predicts optimal pier spacing ratios for span geometries ranging from two to nine interior supports. Using Bernoulli-Euler theory, it calculates nondimensional dynamic responses for these nonperiodic spans, subject to single and tandem vehicle loading, and

validates these results with extensive laboratory-scale experiments. The findings are that the choice of optimal, continuous span configurations, instead of a series of simple spans of the same total length and stiffness, leads to two important results: a possible 20 to 30 percent reduction in peak dynamic span moment, and a possible 30 to 100 percent reduction in the vertical rms span deflection imparted to the transit vehicle. Results are applicable to the design of dynamically efficient spans which afford high degrees of passenger ride comfort.

Wilson, JF (Duke University); Barbas, ST **Journal of Advanced Transportation** Vol. 16 No. 3, 1982, pp 253-283, 9 Ref.

ACKNOWLEDGMENT: EI
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15 390102
ELASTIC CONSOLIDATION AROUND A LINED CIRCULAR TUNNEL
The analysis of the interaction between a thin, circular, elastic tunnel lining and the surrounding saturated, elastic soil has been presented. The loading on the lining is due to the removal of material from within the tunnel and the response of the lining is dependent on time because of consolidation within the surrounding elastic soil. A parametric study has been carried out to investigate the effects of the elastic properties of both the lining and the soil, the thickness of the lining, and the magnitude of the initial stress state in the soil upon the behavior of the lining. It has been found that typically the maximum hoop thrust in the lining is increased only by about 10% due to consolidation, but the maximum bending moment can be increased by as much as 100%.

Carter, JP (Sydney University, Australia); Booker, JR **International Journal of Solids and Structures** Vol. 20 No. 6, 1984, pp 589-608, 4 Ref.

ACKNOWLEDGMENT: EI
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15 390103
WEATHERING STEEL BRIDGES EVALUATED
Although study evaluating the performance of weathering steel on 49 highway bridges in seven states has been conducted by a task group of state and federal highway officials and steel company corrosion/metallurgical specialists. The study was initiated after a statewide moratorium on the use of unpainted weathering steel was established by the Michigan Department of Transportation in March, 1980. The data collected on the effects of long-term exposure of weathering steel found that, of all the bridges inspected, 30% showed good performance in all areas, 58% showed good performance with moderate corrosion in some areas and 12% showed good overall performance with heavy corrosion in some areas. The study found deicing salts to be the major contributor to excessive corrosion of most bridge materials.

Better Roads Vol. 54 No. 5, May 1984, pp 18-19

ACKNOWLEDGMENT: EI
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15 390104
HYDROGEOLOGICAL STUDY OF WATER INFLOW AND ASSOCIATED CHANGES OF WATER BALANCE CAUSED BY TUNNEL EXCAVATION
Water inflow into a tunnel has been considered simply as one of the technical problems in excavation, but it should be dealt with from the environmental viewpoint of water use because of the highly cultivated area concerned. The present paper intends to show how to investigate and forecast the phenomena of the inflow and the decreasing and recessing of land-surface water and groundwater based on actual examples.

Ohshima, H **Railway Technical Research Inst, Quarterly Reports** Vol. 25 No. 1, 1984, pp 25-32

ACKNOWLEDGMENT: EI
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15 390105
DELAYED FRACTURE OF HIGH STRENGTH BOLTS USED IN RAILWAY BRIDGES
It has been about 20 years since high-strength bolts came to be used for the railway bridge. During this period a delayed fracture has occurred in some bolts with the tensile strength more than 1.1 GPa In this review, case studies of delayed fracture and environmental, mechanical and metallurgical factors governing delayed fracture are presented with some comments on the prevention of bolt failures.

Matsuyama, S **Railway Technical Research Inst, Quarterly Reports** Vol. 25 No. 1, 1984, pp 19-24, 9 Ref.

ACKNOWLEDGMENT: EI
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15 390106
ESTIMATION OF DETERIORATION CHARACTERISTICS OF SOFT ROCKS AND ITS APPLICATION
Simple and convenient tests to clarify the deterioration characteristics of soft rocks were practiced. After discussing the correlations of testing results, 6 items are selected to evaluate the swelling potential. They are clay and silt-clay contents in the mechanical analysis of soil, the plasticity index, the amount of absorbed water in simple absorbing tests, the degree in simple collapse tests in water, and the montmorillonite content by means of the X-ray reflection method. It is found that the composite estimation of the swelling potential and the mechanical property of sampled rocks show good correspondence with the tendency of the actual earth pressure behaviors in tunneling sites.

Yoshikawa, K Sakurai, T Tatematsu, H **Railway Technical Research Inst, Quarterly Reports** Vol. 25 No. 1, 1984, pp 3-6, 3 Ref.

ACKNOWLEDGMENT: EI
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15 390180
RESEARCH ON SAVINGS IN UNDERGROUND WORKS. INTERNATIONAL STUDY DAYS 10-14 MAY 1981, NICE. [LA RECHERCHE D'ECONOMIES DANS LES TRAVAUX SOUTERRAINS. JOURNEES D'ETUDES INTERNATIONALES 10-14 MAI 1981, NICE.]
This publication contains the opening addresses and individual papers presented on the following themes: Legislation and regulations governing contracts in underground operations; Launching and follow-up study of an undergroung project; Standards and special technical specifications for underground work; Technical aspects of construction and investigation in to low-cost construction methods. The reports of the AITES-AFTES plenary meeting on the possibilities offered by the subsoil: cost-benefit analyses, together with the round table on the use of the subsoil in developing countries are published in the special number of the AITES review: "advance in tunnelling technology and subsurface use", Vol 2, No. 2, 1982. (see IRRD 265203, 265091 and 265090. See also IRRD 114938 to 114942). (TRRL) [French]

Association Francaise des Travaux en Souterrains Monograph 1981, 328p, Figs., Tabs., Phots., Refs.

ACKNOWLEDGMENT: Central Laboratory of Bridges & Highways, France (IRRD 114937), TRRL
ORDER FROM: Association Francaise des Travaux en Souterrains, Rue de Messine 3, Paris, France

15 390181
THEME 4-PART 2-TECHNICAL ASPECTS OF CONSTRUCTION AND STUDY OF ECONOMICAL CONSTRUCTION METHODS [THEME 4-2EME PARTIE-REALISATION TECHNIQUE ET RECHERCHE DE PROCEDES D'EXECUTION ECONOMIQUES]
Part 2 of Theme 4 contains the following papers: Use of a boring machine to excavate long sloping shafts (Marin, G); Urban tunnels and savings resulting from mechanization (Bougard, JF); Savings in the construction of large diameter shafts (Schatzmann, A); Economic aspects of the new tunnel boring method using mechanical presplitting (Longelin, R); Reduction in risk during the construction of the Frejus tunnel thanks to rock mechanics measurements (Levy, M); New developments in railway tunnel repair

methods (Picquand, JL and Destaing, E). For the covering abstract see IRRD 114937. (TRRL) [French]
Journees d'Etudes Internationales 10-14 May 1981, Nice.

Marin, C (Edf, France); Bougard, JF (Sofretu-France); Schatzmann, A (Electrowatt-Suisse); Longelin, R (Soc Perforex, France); Levy, M (Setec Trav Publics, France); Piquand, JL Destaing, E (Societe Nationale des Chemins de Fer Francais)
Association Francaise des Travaux en Souterrains 1981, pp 268-310, Figs., Tabs., Phots., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 114942), Central Laboratory of Bridges & Highways, France
ORDER FROM: Association Francaise des Travaux en Souterrains, Rue de Messine 3, Paris, France

15 390183
THEME 3-STANDARDS AND TECHNICAL SPECIFICATIONS SPECIFIC TO UNDERGROUND OPERATIONS [THEME 3-NORMES ET SPECIFICATIONS TECHNIQUES PARTICULIERES AUX TRAVAUX SOUTERRAINS]

Theme 3 comprises the following papers: Optimising tunnel design and construction (Grodecki, W, Sleminski-Lewandowska, A and Stamatello, H); Selection of timbering and dry method of excavation using cost tables based on geometric, geotechnical and hydrological parameters (Boller, A); Three-dimensional calculation of a large cavity with a view to determining the final timbering (Bouvard, A and Boudon, J); Economic importance of the optimum selection of timbering and lining (Gesta, P); Standardization in underground construction (Mahieu, L); Savings through the standardization of tunnel profiles (Plichon, JN); savings through recent improvements in immersed tunnels and comparison of the different methods of building under-river tunnels (Oud, HJC); Tunnel construction in terrain subject to caving and water-bearing terrain using the hydraulic tunnel drilling machine of the Wayss and Freytag system (Anheuser, L); Tunnels in unstable soil: state of the art of methods of consolidation by injection and freezing (Haffen, M). For the covering abstract see IRRD 114937. (TRRL) [French]
Journees d'Etudes Internationales 10-14 May 1981, Nice.

Grodecki, W Sleminska-lewandowska, A Stamatello, H (Ecole Polytechnique Varsovie); Boller, A (Semaly-France); Bouvard, A Boudon, J (Coyne ft Bellier-France); Gesta, P (Soc Gen Entrep, France); Mahieu, L Plichon, JN Oud, HJC Anheuser, L Haffen, M
Association Francaise des Travaux en Souterrains 1981, pp 152-202, Figs., Tabs., Phots., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 114940), Central Laboratory of Bridges & Highways, France
ORDER FROM: Association Francaise des Travaux en Souterrains, Rue de Messine 3, Paris, France

15 390185
THEME 1-LAUNCHING AND FOLLOW-UP STUDY OF AN UNDERGROUND OPERATION [THEME 1-LANCEMENT ET SUIVI D'UNE OPERATION EN SOUTERRAIN]

Theme 1 contains the following papers: Optimisation of the galleries of the Marseille-Est branch of the Provence canal as regards geological aspects (Barbier, JL); Attempts to save during the design and construction of underground structures by the Nice local authorities (Liautaud, A); Underground railway in the town of Lyons, Line B. Comparison between several construction methods (Talichet, G); Financial comparison between various types of gallery constructed by Brussels Highways Authorities (de Lathauwer, W); Cost-construction method interrelation as regards tunnels results of studies conducted by the STUVA (Haack, A); Provisional forecasts at different study levels (Constantin, B); Economic aspects of the design and construction methods of the Brussels underground railway (Dochy, A); Public transport on exclusive right of way in urban and suburban areas-comparative studies of infrastructures built in the open (Godard, JP); Management of underground construction projects in urban area (de Truchis, G); Methodology for the study of geological stresses in drainage networks (Barussaud, S, Cailleuz, JL, Maire, JL, Poupelloz, B and Toulemont, M); Construction of low-cost highway tunnels in Norway (Groenhaug, A). For the covering abstract see IRRD 114937. (TRRL) [French]
Journees d'Etudes Internationales 10-14 May 1981, Nice.

Barbier, JL Liautaud, A Talichet, G (Semaly-France); Lathauwer, W de (Brussels, City of, Belgium); Haack, A (Stuva-Deutschland Br); Constantin, B (Cetu-France); Dochy, A Godard, JP Truchis, G de (Regie Autonome des Transports Parisiens); Barussaud, S Cailleux, JL Maire, JL Poupelloz, B Toulemont, M (Lr Est Parisien-Bourget); Groenhaug, A
Association Francaise des Travaux en Souterrains 1981, pp 74-151, Figs., Tabs., 9 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 114939), Central Laboratory of Bridges & Highways, France
ORDER FROM: Association Francaise des Travaux en Souterrains, Rue de Messine 3, Pris, France

16 386233
SNCF POLICY IN THE FIELD OF INSPECTION, MAINTENANCE AND RENEWAL OF TUNNELS
The author covers general behaviour of tunnels with time; inspection and evaluation; strengthening studies; geometrical studies; route maintenance; available repair methods; and conclusions. [French]

Eraud, J **Travaux** No. 585, Feb. 1984, pp 28-38

ACKNOWLEDGMENT: British Railways
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16 386250
MODELLING ROLLING CONTACT FATIGUE IN RAILS
A description is given of the fractographic features of subsurface fatigue in rails. This background knowledge is employed to develop a fracture mechanics model of the fatigue process and it is shown that crack propagation in shear is a dominant mechanism. With some simplifying assumptions, particularly with regard to the effectiveness of combined modes II and III in determining fatigue response, it is shown that the influence of material variations and railroad operational conditions on service fatigue performance can be evaluated. In particular, the effects of inclusion size and wheel load on rail performance are considered and predictions made as to the influence of axle load on the rate of appearance of significant defects in track.

Chipperfield, CG Blicbau, AS **Rail International** Vol. 15 No. 1, Jan. 1984, pp 25-31

ACKNOWLEDGMENT: British Railways
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16 386251
ROLLING-SLIDING WEAR DAMAGE IN RAIL AND TYRE STEELS
The wear behaviour of several rail steels in rolling-sliding contact with a tyre steel is investigated in the laboratory using an Amsler wear testing machine. Three wear regimes are identified, and a metallurgical examination to determine the characteristic wear modes within these regimes is described. Relations between the wear rates and test contact parameters are presented for two of these regimes. A comparison of laboratory test wear modes with those found to occur in side-worn rails shows sufficient correlation for the laboratory test to be used to offer a prediction of the relative wear behaviour of pearlitic rail steels in curved track.

Bolton, PJ Clayton, P **Wear** Vol. 93 No. 2, 1984, pp 145-165

ACKNOWLEDGMENT: British Railways
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16 386253
AUTOMATIC CONDENSATION DETECTION
During cold weather the insulation resistance of certain electrical components in stationary rolling stock may be temporarily reduced due to the combined effect of surface pollution and local weather conditions. An atmospheric condensation detection system which gives prior warning to the staff concerned has been developed at the Vitry Testing Centre. This equipment also provides useful data for taking precautionary measures to deal with the problem. [French]

Saglier, R **French Railway Review** Vol. 1 No. 6, Dec. 1983, pp 523-526

ACKNOWLEDGMENT: British Railways
ORDER FROM: North Oxford Academic Publishing Limited, 242 Banbury Road, Oxford OX2 7DR, England

16 386261
TRANSPORTATION ENERGY MANAGEMENT. TRANSIT OPERATOR FACILITIES. VOLUME 1. OFFICE GUIDE
While the bulk of energy expenditures cover vehicle operations, utility costs for fixed facilities have also increased. This report, in two volumes, is intended to assist transit operators assess means of saving money through reducing fixed facility energy usage. Many measures are at no or low cost, whereas others requiring larger investments may be eligible for capital assistance from UMTA. This handbook presents practical, step-by-step instructions for developing and implementing a six-part conservation program. These steps include organizing a conservation team, creating an energy profile, a walk-through survey, implementation procedures, evaluation of measures, and the permanent program. This volume is an office reference guide with instructions for collecting and analyzing the data. Reference material and a case study are included as appendices.
See also PB84-151182.

Municipality of Metropolitan Seattle-METRO DOT-I-83-10, Sept. 1982, 44p

ORDER FROM: NTIS PB84-151174

16 386262
TRANSPORTATION ENERGY MANAGEMENT. TRANSIT OPERATOR FACILITIES. VOLUME 2. FIELD GUIDE
While the bulk of energy expenditures cover vehicle operations, utility costs for fixed facilities have also increased. This report, in two volumes, is intended to assist transit operators assess means of saving money through reducing fixed facility energy usage. Many measures are at no or low cost, whereas others requiring larger investments may be eligible for capital assistance from UMTA. This handbook presents practical, step-by-step instructions for developing and implementing a six-part conservation program. These steps include organizing a conservation team, creating an energy profile, a walk-through survey, implementation procedures, evaluation of measures, and the permanent program. This volume includes forms and instructions for collecting and analyzing the data.
See also PB84-151174.

Municipality of Metropolitan Seattle-METRO DOT-I-83-11, Sept. 1982, 111p

ORDER FROM: NTIS PB84-151182

16 386294
COLD WEATHER TRANSIT TECHNOLOGY PROGRAM. VOLUME 11—PREDICTION OF ICE FORMATION
This report is one of a series of reports associated with the Cold Weather Transit Technology (CWTT) program of the Urban Mass Transportation Administration. The CWTT program is a project to improve transit operations in severe ice, snow, and cold environments. The program was initially directed to solutions for automated guideway transit system cold weather problems in support of the downtown people mover program (DPM). However, curtailment of the DPM program in November 1980, caused UMTA to redirect the focus of the program to obtain solutions for cold weather problems of existing transit systems. Therefore, the objective of the CWTT program is to develop new and more effective solutions for cold weather problems experienced by urban mass transportation systems. This volume presents results of research on the prediction of ice/frost formation on a local scale through the measurement of site specific metrological parameters. The objective of this study is to make in-situ measurements of environmental conditions under which ice or frost has formed on an exposed surface such as a rail or electrical bus. Computerized monitoring systems that are already available will then have access to information that will increase their ability to judge or forecast warnings of probable frost formation and how soon it will occur. The ice formation studies include the design parameters for a local weather station which monitors ambient conditions and predicts the projected onset of ice accumulation through humidity condensation, freezing precipitation, or freezing surface water. This data would be transmitted to transit systems and vehicle operators as an aid in planning specific countermeasures.

McComas, ST Uhran, JJ Flentz, JL Ham, AE
Notre Dame University, Urban Mass Transportation Administration Final Rpt. UMTAIN-06-0009-83-11, Nov. 1983, 92p

ORDER FROM: NTIS PB84-159995

16 386295
COLD WEATHER TRANSIT TECHNOLOGY PROGRAM. VOLUME 5—THIRD RAIL DEICING SYSTEM RESEARCH
This report is one of a series of reports associated with the Cold Weather Transit Technology (CWTT) program of the Urban Mass Transportation Administration. The CWTT program is a project to improve transit operations in severe ice, snow, and cold environments. The program was initially directed to solutions for automated guideway transit system cold weather problems in support of the downtown people mover program (DPM). However, curtailment of the DPM program in November 1980, caused UMTA to redirect the focus of the program to obtain solutions for

cold weather problems of existing transit systems. Therefore, the objective of the CWTT program is to develop new and more effective solutions for cold weather problems experienced by urban mass transportation systems. This report addresses the third rail deicing research, and investigated the use of new or high technology concepts for removing or preventing ice on existing transit system third rails. The work started with a survey of rail transit systems to establish the nature and extent of the problem and to examine solutions currently employed. Potential solutions were then developed in concept and were evaluated technically. From these, three concepts were selected for element testing. These included radio frequency induction heating, high pressure water jet, and improved electrical resistance heating deicer systems. Based on the results of the element tests, the high pressure water vehicle mounted and the improved resistance heating wayside concepts were selected for operational tests. Prototype systems were developed and tested during the winter of 1982-1983 on the Orange Line System of the Massachusetts Bay Transportation Authority. Following completion of these tests, a cost/benefit analysis was conducted.

Larson, AR, Jr
Vought Corporation, Urban Mass Transportation Administration Final Rpt. UMTA-IN-06-0009-83-5, Nov. 1983, 137p Contract IN-06-0009
ORDER FROM: NTIS PB84-159987

16 386348
AUTOMATIC MONITORING DEVICE FOR OVERHEAD CONTACT SYSTEM
There are ten electric equipment inspection cars for both conventional lines and Shinkansen of JNR. The data measured by them is useful for the maintenance of electric equipment. Automation and reduction of labor are required increasingly to ensure rational management and to raise the reliability of electric equipment. But, there are two important problems. They are establishment of the diagnosing technique for abnormalities and troubles with trolley-wire-supported equipment at high running speeds, and development of diagnosing devices without any measuring pantograph. So the diagnostics of overhead contact systems by an automatic monitoring device (ITC with shutter) have been researched. This paper describes the research.

Ichikawa, M Nakama, F Kusuyama, H **Railway Technical Research Inst, Quarterly Reports** Vol. 24 No. 3, Sept. 1983, pp 129-130, 3 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: ESL

16 386385
A TROUBLESHOOTER'S GUIDE TO FAULTS IN BUS POWER STEERING SYSTEMS
Expert troubleshooting is critical in assuring that bus steering problems are overcome. Preparation and care in troubleshooting of power steering can produce major benefits in terms of economics and safety. Many steering difficulties may originate outside the steering gear. Axle alignment and other mechanical components may need to be checked. With regard to the actual power steering, a series of pointers are given on hydraulics, air entrapment, leakage, valve preloading, pump output and other factors. Manuals and special tools are available.

Bus Ride Vol. 20 No. 2, Apr. 1984, pp 56-58, 2 Fig.

ORDER FROM: Friendship Publications, Incorporated, West 2627 Providence, P.O. Box 1472, Spokane, Washington, 99210

16 386954
COLD WEATHER TRANSIT TECHNOLOGY PROGRAM. VOLUME 4. INVESTIGATION OF RAIL HEATER RELIABILITY
This report documents the results of the investigation into the reliability of present railroad switch and third rail heaters used in deicing and show removal applications. Phase 4, this report, was directed to operational testing of new heaters to replicate typical failures for examination and analysis to determine the cause and establish correlation with the failed heater failure analysis.
See also PB84-155407 and PB84-155399.

Payne, JN
Notre Dame University UMTA-IN-06-0009-83-4, Nov. 1983, 74p
ORDER FROM: NTIS PB84-155381

16 386960
NON-DESTRUCTIVE TESTING OF SNCF ROLLING STOCK COMPONENTS
The importance of checking the condition of railway rolling stock on acceptance as well as while in service no longer needs to be demonstrated. In this article are explained the non-destructive test methods employed for this purpose: visual examination, heat tests, magnetoscopy, eddycurrent testing, ultrasonic testing, X-ray photography. For each method, details are given of the principles on which it is based, the sphere of application, the limitations as well as the anticipated improvements. Each method is illustrated by a few typical examples. The automation of equipment and computer processing, which is now being extended, make the intepretation of results all the easier. [French]

Montandon, J Mager, G **Revue Generale des Chemins de Fer** Vol. 103 No. 2, Feb. 1984, pp 69-76

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

16 387576
GARAGE LOCATION FOR AN URBAN MASS TRANSIT SYSTEM
This paper discusses a model for the problem of locating garages in an urban mass transit system and the associated assignment of vehicles to garages for background and peak services of transit lines. The objective of this model is to minimize the sum of fixed site-related costs, variable vehicle costs, and crew relief costs. The model is solved by an iterative procedure involving a location interchange heuristic and a network flow-based algorithm. The implementation of the model is discussed through its various stages, from data preparation to the final policy recommendations.

Ball, M (Maryland University, College Park); Assad, A Bodin, L Golden, B Spielberg, F **Transportation Science** Vol. 18 No. 1, Feb. 1984, pp 56-75, 11 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

16 387854
CONVERSATIONAL VOICE INPUT/OUTPUT SYSTEM APPLIED TO THE TRANSPORTATION FIELD
Voice recognition systems have recently been put to practical use in many fields as a result of rapid progress in microelectronics. This paper describes a conversational voice input/output (I/O) system which uses a voice recognizer as one of its main components and is applied to the railway field. It is necessary that conversational voice I/O systems for industrial use can be used in conditions with high noise levels. Techniques for utilizing voice recognizers in such conditions are explained. As examples of applications, a diesel electric locomotive testing system, an electric coach inspection system, and a portable I/O system are discussed.

Higuchi, T Kyuma, Y Inabatani, T **Hitachi Review** Vol. 33 No. 1, Feb. 1984, pp 21-24

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

16 387881
DRAINAGE OF A RAILWAY LINE ON LIGHT SOIL [SANIERUNG EINES BAHNGLEISES AUF WEICHEM UNTERGRUND]
Presentation of drainage elements: length profile, rails, sleepers, ballast bed, infrastructure, drainage. A presentation of the bases for calcutation follows: the ballast-coefficient method, finite-element method. Also given is a comparison of values calculated and measured before and after drainage (subsidence, soil compression on subsoil, shear stresses on subsoil). [German]

Yang, F-L Schmutz, G **Schweizer Ingenieur und Architekt** Vol. 102 No. 7, Feb. 1984, pp 101-105, 11 Fig.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Verlag der Akademischen Technischen Vereine, Staffelstrasse 12, Postfach, CH-8021 Zurich, Switzerland

16 387900
A FRENCH PERSPECTIVE ON THE COST EFFECTIVE MAINTENANCE OF PASSENGER COACHING STOCK
In October 1981 the author travelled to France where, as a guest of SNCF, he visited various French railway headquarters departments, Hellemmes Main Workshops and Massena Depot both to probe the philosophy behind passenger coaching stock maintenance on that side of the Channel and observe its current, practical application. This paper briefly outlines the organization and methods which are being employed by SNCF to improve the cost effectiveness of their approach to this common concern, and seeks to highlight areas where fresh insights may be introduced to benefit the maintenance of coaching stock on Britain's railway system.

Ravehall, EN **Institution of Mechanical Engineers, Proc Part D** Vol. 198 No. 7, 1984, pp 107-116

ACKNOWLEDGMENT: British Railways
ORDER FROM: Mechanical Engineering Publications Limited, Box 24, Northgate Avenue, Bury St. Edmunds, Suffolk 1P32 6PW, England

16 387930
THE NUTS AND BOLTS OF OLYMPIC OPERATION
Maintenance operations for Southern California Rapid Transit District during the 1984 Olympic Games were the subject of much planning. SCRTD acquired 550 new buses, retained older units due for retirement, and leased others from nearby transit agencies. The maintenance force has been expanded substantially since 1979, funding has been increased, new facilities built and maintenance management upgraded with the result that bus reliability is now about 5 times higher than 5 years earlier. For the Olympics, it proved difficult to determine in advance just where the heaviest passenger movements would be and where vehicles should be assigned. Mechanics and tow trucks were to be stationed at each event site for immediate action in case of bus failures. Becuase part-time drivers would be employed for the expanded Olympic service, it was anticipated that many vehicle problems might not be detected in time to prevent complete breakdowns. With the tight SCRTD budget, size of its service area, increase in ridership literally overnight, the number of temporary vehicles to be operated and many additional factors that affected operation, transit for the Olympics was seen as a unique challenge.

Metro Vol. 80 No. 4, July 1984, 5p

ORDER FROM: Bobit Publishing Company, 2500 Artesia Boulevard, Redondo Beach, California, 90278

16 387933
HOW NEW TECHNOLOGY RESCUED THE CABLE CARS
Restoration of the San Francisco Municipal Railway cable-car system, completed in June 1984 follwoing a 2-year shutdown for reconstruction, was a joint public/private effort at historic preservation. Almost $10 million was raised by private sources to assist the City in making the first complete overhaul in a century. The archaic technology was faithfully restored, bolstered by current materials and designs wherever possible without affecting the appearance or operation of the venerable hill-climbing public transit system. Design changes and new lubricants are expected to increase the 100-day life of the 11 miles of cable which propel the 44 classic cable cars at a constant 9.5 mph. The new drive system, installed in the historic Car Barn, presented complications but the exterior of the building was unchanged. While machinery in the Car Barn and beneath the streets, along with the track structure in the streets, is completely new, the old cars were completely restored using traditional materials and techniques.

Casey, S **Historic Preservation** Vol. 36 No. 3, June 1984, pp 54-57, 5 Phot.

ORDER FROM: University Microfilms International, 300 North Zeeb Road, Ann Arbor, Michigan, 48106

16 387934
GUIDELINES FOR EVALUATION AND REPAIR OF DAMAGED STEEL BRIDGE MEMBERS
Steel bridge members often are subjected to damage due to accidental impact, mishandling, or fire. Methods used for repair of such members include heat straightening and welding or bolting splices, replacement components, or reinforcement. At present, the decision to repair a damaged member, and the techniques used, are determined on the basis of the inspector's or engineer's evaluation of the situation, with little sound engineering information available for guidance. To place this decision-making process on a more rational basis, it is necessary to assemble information concerning the effect of these repair techniques on the service life, safety, performance, and maintenance of the structure. Decisions on method of repair must also consider the costs, user inconvenience, and esthetics of the repair technique. The objectives of this study were to provide guidance for the assessment of accidental damage to steel bridge members and to identify, develop, and evaluate the effectiveness of repair techniques. The main portion consists of a manual of recommended practice containing detailed procedures for evaluation of damage as well as information on repair techniques and the effects of those repairs. Information presented will be useful immediately in solving practical problems in bridge repair. Guidelines are presented for the following methods of repair: flame straightening, hot mechanical straightening, cold mechanical straightening, welding, bolting, partial replacement, and complete replacement.

Shanafelt, GO Horn, WB **NCHRP Report** No. 271, June 1984, 64p, 64 Fig., 5 Tab., 31 Ref., 2 App.

ORDER FROM: TRB Publications Off

16 387968
AN EVALUATION OF THE WEAR AND MAINTENANCE BEHAVIOR OF TURNOUTS AND FROGS/GUARD RAILS DURING THE FIRST FAST EXPERIMENT
This report describes the service evaluation of frogs, switches and guard rails on the Facility for Accelerated Service Testing track near Pueblo, Colorado. The selected components were measured and insptected at scheduled intervals determined by service loading. Wear and maintenance data per MGT are given for each metallurgy and location, and the conditions influencing performance are here thoroughly discussed. The authors note that engineering personnel from participating (donor) railroads and suppliers were frequently on hand to observe the frog and turnout performance tests and that changes in design and maintenance practices have resulted.

Moyar, GJ Cruse, WJ
Association of American Railroads, Federal Railroad Administration Final Rpt. AAR T-013 FAST, Jan. 1984, 117p, 54 Fig., 12 Tab., 3 App. Contract DTFR-53-82-C-00282
ORDER FROM: FRA

16 389342
LICHFIELD EXPERIMENT: PROGRESS REPORT AND USER'S MANUAL FOR EXPERIMENTAL EQUIPMENT
An experiment is in progress at Lichfield in South Staffordshire on the West Coast Main Line (WCML) of British Rail (BR) as part of a collaborative investigation between BR and Cambridge University Engineering Department (CUED) into the mechanism of rail wear and corrugation formation. The particular effects which are being investigated are the rail composition and the initial rail-head profile. This report describes the experimental procedure which has been adopted on site, and the purpose and use of the computer programs which have been developed to acquire profile data, to process and plot this data, and to process wear data. The wear and profile records which have been obtained to date are briefly discussed.

Grassie, SL
Cambridge University, England CUED/C-MECH/TR-36, 1984, 61p

ORDER FROM: NTIS PB84-203702

16 389352
ROLE OF REHABILITATION IN TRANSIT FLEET REPLACEMENT. FINAL REPORT
This report describes the concept of transit vehicle rehabilitation and its role in fleet replacement programs. It summarizes experience with rehabilitation of diesel buses, trolleys, and vans. The report shows how life cycle costing techniques can be used to compare the costs of rehabilitating older vehicles with that of purchasing new ones, and to help decide between these two alternatives. Based on their analysis, a set of general guidelines on where rehabilitation is a productive option to consider is presented. The methodology is illustrated by applying it to a number of case studies in the

Seattle area. The report should be especially useful to staffs involved in procurement decisions for transit properties, or capital purchase planners.

Secrist, D Smith, M
Puget Sound Council of Governments, Department of Transportation DOT/I-83-33, Mar. 1983, 102p

ORDER FROM: NTIS

16 389383
TRANSPORTATION ENERGY MANAGEMENT: ENERGY EFFICIENCY IN TRANSIT BUILDINGS
This report is written for planners and facility managers who want to minimize transit building utility costs. A number of measures are suggested by which there can be improvements in the way energy is used in a building. A number of measures can reduce a transit agency's energy consumption 10% at little or no cost and by an additional 20% by installing equipment with a payback period of less than 5 years. Eight chapters discuss specific areas: Energy management tools; heating, ventilating and air conditioning; the building envelope; lighting; hot water; innovative energy projects; solar energy; and new buildings. The final chapters describe the organization for saving energy, and give conclusions about three levels of energy conservation. Inappropriate projects are identified as presently involving solar heating and insulation retrofits.

Municipality of Metropolitan Seattle-METRO, Urban Mass Transportation Administration DOT-I-84-29, Jan. 1984, 66p, 5 Fig., 14 Tab., 17 Ref., 5 App.

ORDER FROM: OST

16 389756
COLD WEATHER TRANSIT TECHNOLOGY PROGRAM. VOLUME 12—STUDY OF LASER DEICING
This report is one of a series of reports associated with the Cold Weather Transit Technology (CWTT) program of the Urban Mass Transportation Administration. The CWTT program is a project to improve transit operations in severe ice, snow, and cold environments. The program was initially directed to solutions for automated guideway transit system cold weather problems in support of the downtown people mover program (DPM). However, curtailment of the DPM program in November 1980, caused UMTA to redirect the focus of the program to obtain solutions for cold weather problems of existing transit systems. Therefore, the objective of the CWTT program is to develop new and more effective solutions for cold weather problems experienced by urban mass transportation systems. This report presents theoretical and experimental results regarding the laser melting of ice from transit rails. The objective of this study is to present estimates of the energy requirements to either melt ice from transit rails or establish a thin melt zone at the ice-transit rail interface. The process radiates electromagnetic energy at laser wavelengths to and through an ice layer on a metal substrate and which is absorbed by both the ice and substrate. The results are used to estimate the equipment requirements necessary for implementation of laser deicing techniques.

Gaida, WJ
Notre Dame University, Urban Mass Transportation Administration Final Rpt. UMTAIN-06-0009-83-12, Jan. 1984, 52p Contract IN-06-0009
ORDER FROM: NTIS PB84-192400

16 389805
THE PROFITABILITY OF RAIL GRINDING AS AN INTEGRAL PART OF TRACK MAINTENANCE [WIRTSCHAFTLICHES SCHIENENSCHLEIFEN ALS BESTANDTEIL DER GLEISERHALTUNG]
This article deals with analysis of a whole range of data on rail grinding on the DB and deduction of the main parameters affecting profitability of this type of maintenance work. It has been found that maintenance costs can be reduced by adopting low threshold levels and that optimum schedules can be organised for use of grinding trains. [German]

Fendrich, L Junkermann, N **Eisenbahntechnische Rundschau** Vol. 33 No. 3, Mar. 1984, pp 185-191, 5 Tab., 5 Phot., 1 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Hestra-Verlag, Holzhofallee 33, Postfach 4244, 6100 Darmstadt 1, West Germany

16 389810
THE PRAGUE METRO OVER TEN YEARS [DESET LET PRAZSKEHO METRO]
A series of 9 articles on the Prague metro since it began operating ten years ago: Technology and principles of operational management; the rolling stock fleet and maintenance department; the energy supply installations; monitoring of the track structure; rail welding; and problems of escalator maintenance. [Czech]

Dykast, J **Zeleznicni Technika** Vol. 14 No. 2, Apr. 1984, pp 51-74, 3 Fig., 4 Tab., 18 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Nakladatelstvi Dopravy a Spoju, Hybernska 5, 115 78 Prague 1, Czechoslovakia

16 389811
BETTER SELECTION OF TRACK BALLAST
At one time it was common practice to rely solely on materials that could be procured on-line for railroad ballast. However, rapid deterioration of some materials compared with others has led to the development of new test procedures for determining ballast quality and performance before use.

Progressive Railroading Vol. 27 No. 4, Apr. 1984, pp 60-62, 1 Fig., 4 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
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16 389825
THE POSSIBLE APPLICATION OF TEMPORARY COMPOSITE STRUCTURES WITHIN THE B.R. NETWORK
Continuous filament glass fibres held in a resinous matrix-in this case polyester-can be arranged to form lattice structures. Structures formed in this manner can provide distinct technical and commercial advantages when compared with structural steel fabrications. Significant advantages have been demonstrated by using such structures on temporary overhead electrification supports and the indications are that more permanent applications are feasible offering very worthwhile savings in first cost, maintenance and erection.

Batchelor, J Kelly, JF **Composite Structures** Vol. 2 1984, pp 245-259

ACKNOWLEDGMENT: British Railways
ORDER FROM: Elsevier Applied Science Publishers Limited, 22 Rippleside Commercial Estate, Ripple Road, Barking, Essex 1G11 0SA, England

16 389827
FLASHOVER PHENOMENA OF POLLUTED INSULATORS
Over the years, several mathematical models have been proposed for predicting the critical withstand voltage of polluted insulators, mainly based on the static are voltage-gradient. The paper proposes a new mathematical model which is based on a dynamic arc voltage-gradient equation. Comparison of computed results with the results obtained from other mathematical models, as well as experiments, indicates a good agreement in respect of individual suspension/disc insulators. However, some disparity is observed in respect of long-rod insulators.

Copal, S Rao, YN **Institution of Electrical Engineers, Proc Part C** Vol. 131 No: 4, July 1984, pp 140-143

ACKNOWLEDGMENT: British Railways
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16 389846
VEHICLES FOR OVERHEAD CONTACT LINE MAINTENANCE
Rheiner Maschinenfabrik Windhoff AG has developed a number of vehicles for the maintenance of overhead contact lines. The vehicles enable both reliable and economical execution of maintenance jobs. Depending on the requirements, scissor type platforms, telescopic slewable platforms or lifting climbers are used. Numerous varients are possible for the car bodies, running gear and drive systems. The vehicles have become noted for the variety of possible applications and their high availability. [German]

Wessels, C **Glasers Annalen ZEV** Vol. 108 No. 6, June 1984, pp 177-188

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

16 389858
AUTOMATIC BUS DIAGNOSTIC SYSTEM
The Automated Bus Diagnostic System (ABDS) was tested in a prototype form by New York City Transit Authority which indicated that the system has promise as an effective diagnostic tool. While systems now under development apply only to the engine and transmission, ABDS will ultimately check systems throughout the bus including air conditioning, brakes and tire pressure. Plans are underway for transit agencies to test ABDS equipment and grants have been made by UMTA for installations in Flint, MI; Syracuse, NY; and Nashville, TN. The new computerized ABDS has been designed to: (1) reduce unplanned maintenance by detecting minor mechanical problems so they can be corrected before they can produce major service disruptions and higher rapair costs; (2) allow quick daily testing of major bus subsystems while the vehicle is being refueled; (3) provide comprehensive diagnostic testing during routine maintenance; (4) verify that, once performed, the repairs have actually corrected a malfunction.

Technical Assistance Briefs Vol. 3 No. 2, 1984, 13p, 6 Fig.

ORDER FROM: UMTA

16 389862
THE ADAPTATION OF ON-TRACK MAINTENANCE MACHINES TO THE CONDITIONS PREVAILING ON LOCAL PUBLIC TRANSPORT SYSTEMS
Ballasted track used by streetcars, light rail vehicles and rapid transit trains has belatedly come to be maintained by mechanized track equipment. Complications prevent the use of many standard railroad machines. Some transit systems are narrow gauge and others have restricted clearances, third rails and high-level platforms. Sharp curvature and in-street trackage can require special maintenance equipment. Because many urban rail systems are short, justification of track machinery may require it be used by more than one system with consequent transfer problems Environmental effects—noise and fumes from engines—can also present problems. Urban railways need to cooperate in adapting track machinery specifications to their special conditions. Collaboration with builders will make possible a broadening of the market and can produce machines that will give high-quality track and productivity to urban railways.

Schieb, A (RWTH Aachen) **UITP Revue** Vol. 33 No. 2, 1984, pp 125-127

ORDER FROM: International Union of Public Transport, Avenue de l'Uruguay 19, B-1050 Brussels, Belgium

16 389871
UPDATING TRANSIT MAINTENANCE FACILITIES: SPOKANE MEETS THE CHALLENGE
Spokane Transit Authority (STA) contracted for development of concepts for a new maintenance facility. This article describes factors and considerations leading to the concept adopted for the final design. City ownership began in 1971 and STA became an independent unit of local area governments in 1981 with funding from a sales tax increase. UMTA funding for the shop required an initial study to define a workable concept. After examining alternative sites, it was decided to reuse STA's existing maintenance base and storage facility with same expansion and considerations for zoning, parking, on-site circulation and other factors. Indoor heated storage was recommended for buses and ultimately it was found most effective to replace completely the 80-year-old maintenance building originally built for streetcars. An alternatives analysis was performed covering possible maintenance of all city, county and STA vehicles in the same facility or in the same area with centralization of certain facilities. Ultimately it was decided to retain individual facilities with certain specialized operations to be performed only by a single designated agency.

Shrope, SJ (Bovay Engineers, Incorporated) **Bus Ride** Vol. 20 No. 5, Sept. 1984, pp 56-58

ORDER FROM: Friendship Publications, Incorporated, West 2627 Providence, P.O. Box 1472, Spokane, Washington, 99210

16 389880
EVALUATION REPORT: TRACK CONDITIONS, TRAINING, AND INSPECTION PROCEDURES FOR THE NEW YORK CITY RAPID TRANSIT SYSTEM APRIL 9-20, 1984
During April 1984, Federal investigators undertook an evaluation of several aspects of the track maintenance program of the New York City Transit Authority (NYCTA). Three important elements of the track program were examined: training, inspection, and track conditions. A sound track maintenance program must be founded on a cadre of people who know how to maintain track and who understand the importance of their role in achieving a successful track maintenance program. The portion of this report dealing with training evaluates, on the basis of limited exposure, how well NYCTA is fulfilling its training obligations. The second area involved NYCTA inspection procedures. An effective inspection program carried out by adequately trained inspectors will generate the necessary information to permit immediate action by maintenance crews to avoid traffic interruptions and give adequate warning of major track work requirements so that program work can be scheduled. The existing inspection system used by the NYCTA falls short of these basic objectives and recommendations are presented. The final area of involvement was an evaluation of actual track conditions, the major effort of Federal inspectors. Approximately 15 percent of the system's main track mileage was selected for detailed inspection. It covered each of the six operating subdivisions on all three divisions. In all, 100.21 miles of track were examined.

Urban Mass Transportation Administration May 1984, 103p, 1 App.

ORDER FROM: UMTA

16 389887
BUS MAINTENANCE EQUIPMENT STUDY
Public transit agencies have begun to examine their maintenance operations with an eye toward increased productivity. Supplementing their bus maintenance staff with newer and more efficient equipment is one way to contain future cost growth. But which equipment and how much will it save? The Urban Mass Transportation Administration (MTA) structured this bus maintenance equipment project to answer these questions, assisting transit agencies in their productivity assessments. This final report draws together essential ingredients from the public and private transportation sectors and constructs cost-benefit analyses of selected bus maintenance items. The result is a glimpse of the overall bus maintenance picture, a list of specific maintenance equipment improvements applicable to most transit agencies, and a detailed examination of the costs and benefits associated with a selected number of high priority maintenance items.

Weiss, JF Travis, CT Ligon, CM
AMAF Industries, Incorporated, Urban Mass Transportation Administration Final Rpt. UMTA-MD-06-0101-84-1, 8408-T2300-201, Aug. 1984, 66p, 1 Fig., 11 Tab., 6 App. Contract DTUM60-83-C-71218
ORDER FROM: UMTA

16 390094
SPECTRUM ANALYSIS OF SURFACE WAVES IN ACOUSTIC SIGNATURE INSPECTION OF RAILROAD WHEELS
Surface waves are produced by hammer impact on the rim of a railroad wheel. They travel around the wheel tread making one complete traverse of the circumference every millisecond. If a receiver is located close to the impact point the signal shows a series of arrivals at millisecond intervals. If a crack is present in the surface, there will be an extra impulse received in the first millisecond interval. Both contacting accelerometers and noncontacting microphones can be used to detect the signals. If the signals are digitized and processed in time, frequency, and frequency domains, the presence of the crack can be seen most clearly by filtering the spectrum to remove all but the initial reflection from the crack.

Fahmy, MN (Houston University); Finch, RD **Acoustical Society of America, Journal of** Vol. 75 No. 4, Apr. 1984, pp 1283-90, 14 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

17 386242
EVALUATION OF POSITION-FINDING SYSTEM FOR MAGLEV TRANSPORT LAYOUTS
The aims of an operating control system for high-speed guided transport networks with contact-free traction are safety, punctuality and economy. To this end one needs not only data transmission between the vehicles and the operating control centres, but also a system of position-finding. This should give information on location, speed of travel and identity of all vehicles in a certain area, and to do this with a certain minimum degree of accuracy and frequency and communicate the data to the operating control system at a suitable interface. Theoretical studies on the position-finding of maglev vehicles have been carried out at the Institute for Transport, Railways and Traffic Safety at Brunswick Technical University for and with the assistance of the Federal Ministry of Research and Technology (TV 7455a). Thereafter a provisional choice of system was made for a first application so as to create a basis for further development work. [German]

Klimmek, D **Eisenbahntechnische Rundschau** Vol. 32 No. 12, Dec. 1983, pp 827-830

ACKNOWLEDGMENT: British Railways
ORDER FROM: Hestra-Verlag, Holzhofallee 33, Postfach 4244, 6100 Darmstadt 1, West Germany

17 386243
MEETING THE MAGLEV SYSTEMS' SAFETY REQUIREMENTS
The author shows how the safety requirements of the maglev track system derive from the general legal conditions for the safety of tracked transport. It is described how their compliance beyond the so called "development-accompanying" and "acceptance-preparatory" safety work can be assured for the Transrapid test layout (TVE) now building in Emsland and also for later application as public transport system in Germany within the meaning of the General Railway Act. [German]

Pierick, K **Eisenbahntechnische Rundschau** Vol. 32 No. 12, Dec. 1983, pp 801-805

ACKNOWLEDGMENT: British Railways
ORDER FROM: Hestra-Verlag, Holzhofallee 33, Postfach 4244, 6100 Darmstadt 1, West Germany

17 386244
START OF OPERATION OF THE TRANSRAPID TEST LAYOUT IN EMSLAND—AIMS & TASKS
The MVP (Versuchs-und Planungsgesellschaft fuer Magnetbahnsysteme) has been founded to operate the Transrapid maglev test layout in Emsland. MVP is responsible not only for the operation, testing, development and management of the facility, but also will carry out operation analyses and economic investigations with the system. Partners in the MVP are the DB, Lufthansa German Airlines and IABG (Industrieanlagen-Betriebsgesellschaft). The MVP's small staff means that its work is mainly in co-ordinating and evaluating. Work intensive tasks are to be subcontracted, the main subcontractors being the partners themselves. This ensures that the MVP benefits from the expertise of the three partners in a way which would be possible only to a limited extent by the seconding of experts. The MVP's aims and tasks in respect of operation, testing and evaluation are directed at obtaining pointers to the usefulness of the maglev system for high-speed passenger transport and evolving recommendations for further procedure. [German]

Heinrich, K Polifka, F **Eisenbahntechnische Rundschau** Vol. 32 No. 12, Dec. 1983, 5p

ACKNOWLEDGMENT: British Railways
ORDER FROM: Hestra-Verlag, Holzhofallee 33, Postfach 4244, 6100 Darmstadt 1, West Germany

17 386301
MORGANTOWN PEOPLE MOVER PHASE II IMPACT ASSESSMENT
This report describes an assessment of the Morgantown People Mover (MPM) system, which is an automated guideway transit system extending over 5,300 meters (3.3 miles) of double lane guideway, connecting West Virginia University's downtown campus with three complexes on its new Evansdale Campus and with the Morgantown central business district. It provides demand responsive, non-stop service between any two of the five stations in small, 21-passenger automated vehicles. The objectives of the Phase II Impact Assessment is to measure and assess: 1) the contributions that the Phase II MPM has made to travel and mobility in the Morgantown ares; 2) the impact that the Phase II MPM has had on business and life in the community; and 3) the impact of the MPM construction activities on business and life in the community. The vehicles of the MPM are managed by a central computer system that maintains a vehicle inventory at each station and releases vehicles for use on demand. The study finds that the MPM technology is a technical success. The vehicles perform as designed with a high degree of reliability. They satisfy service demands with few delays. Most technical problems that do occur are handled promptly and with only minor delays to passengers. The MPM carried almost three million passengers during the first full year of operation, attracting nearly fifty percent of those travelers who could conveniently use the service. The report points out that the MPM is more reliable than the bus system it replaced, but on the other hand, waiting times for buses were shorter and the wait more comfortable, and the bus operating costs were only one-third of the MPM operating costs. Students are by far the heaviest users of the system. Both users and non-users have a high opinion of the system. Users, however, uniformly object to the waiting times, which are perceived to be unacceptably long. Because of the inefficiency of dispatching vehicles to meet each individual trip request, a vehicle is delayed in filling a demand for five minutes or until fifteen passengers have requested service between the same origin and destination stations. Although esteemed by all resident groups in Morgantown, the MPM's commercial success must be judged marginal. Its service is slightly better than the buses that it replaced and its impacts on the local economy have been marginal. The authors point out that the marginal benefits fall for short of justifying the MPM's high capital and operating costs.

Jones, PS Shaw, JG
SYSTAN, Incorporated, Urban Mass Transportation Administration, (TSC/DTS-64) Final Rpt. UMTA-MA-06-0126-84-1, DOT-TSC-UMTA-83-57, Feb. 1984, 190p Contract DOT-UT-90019
ORDER FROM: NTIS PB84-169366

17 386305
AGT EXPERIENCE, STATUS AND PROSPECTS: LOCAL PLANNING AND THE SUPPLIER INDUSTRY
This report is one of a series prepared in the Automated Transportation Appraisal Project to evaluate the impacts of the implementation of automated guideway transportation (AGT) systems on their local areas and on the industry which supplies them. The two foci of this report are:—the lessons which can be learned from the local experiences in carrying out AGT planning activities as part of the Downtown People Mover (DPM) Demonstration Program from 1975 to 1981. —the changing status of the firms supplying AGT systems in the United States—the AGT industry—and the future prospects of this industry. These foci form the subject matter of the two major sections of this report. The first section presents general conclusions based on extensive interviews held with participants and observers of the planning process in Cleveland, Houston, Los Angeles, and St. Paul. City-specific reports on the planning contexts, histories, and evaluations appear in Appendices A through D. The second major section represents an assessment of the AGT industry at the present time in the light of interviews held with representatives of nine potential, past, and/or present firms participating in this industry; as well as on information available from corporate annual reports and from the business and financial press. Reports on the specific firms interviewed and their involvement in AGT and related industries are included as Appendices E through K.

Neumann, L Ruiter, E
Cambridge Systematics, Incorporated, Urban Mass Transportation Administration, (79034.01) Intrm Rpt. UMTA-IT-06-0177-83-1, Dec. 1983, n.p. Contract DOT-UT-90074
ORDER FROM: NTIS PB84-187640

17 386313
SIMULATION AND CONTROL ELEMENT DESIGN FOR A COUPLED AERODYNAMIC/MAGNETIC SYSTEM
Aerodynamic effects are among the many problems raised by the Maglev technique and its industrial application, but until recently they were only regarded as disturbances. Theoretical studies as well as model experiments in wind and water tunnels were only interested in optimizing the shape of the vehicle cell. The most important goals of development were low sensitivity to side-wind and a neutral aerodynamic design of the vehicle

nose. The present paper investigates the aerodynamic effects by means of extended models. Aerodynamic effects on the elevation control system are considered by a suitable control element structure. [German]
Portions are illegible in microfiche products.

Schneider, E
Hochschule der Bundeswehr NP-3770174, Nov. 1982, 153p

ORDER FROM: NTIS DE83770174

17 386394
LILLE'S UNMANNED METRO CELEBRATES FIRST BIRTHDAY
After one year of successful operation of the first part of Lille's automated metro, the final section of Line 1 serving the Regional Hospital Centre opens on May 2. Line 1 needs only 170 staff who account for just 38 per cent of operating costs. Engineering design of a second route is virtually complete, and tenders for civil engineering work and a second batch of rubber-tyred cars are about to be called.

Railway Gazette International Vol. 140 No. 5, May 1984, pp 356-358, 2 Fig., 1 Tab., 6 Phot.

ORDER FROM: ESL

17 386958
MAGLEV—A BRITISH FIRST AT BIRMINGHAM
In April the world's first magnetically levitated commercial transport system will state public service at Birmingham Airport. The developments that led up to this new type of transport are outlined and the system is described.

Pollard, MG **Physics in Technology** Vol. 15 1984, 7p

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

17 387851
TRAFFIC ANALYSIS OF PRT GRADECROSSED INTERSECTION
A gradecrossed intersection of the personal rapid transit system (PRT), which is one of the automated guideway transit systems, is modeled. Its control algorithm which assigns moving cells to avoid vehicle collision at intersection part or the merging part is presented. The model is formulated as a finite Markov chain (one-dimensional) random walk). As a result, the relation between vehicle traffic density and (1) delay distribution and expected delay time due to intersection passing, (2) abort rate, and (3) throughput, is obtained explicitly.

Kurihara, M (Hokkaido University, Japan); Kaji, I Nakada, K Hamamatsu, Y **Electronics and Communications in Japan** Vol. 66 No. 9, Sept. 1983, pp 36-45, 6 Ref.

ACKNOWLEDGMENT: EI
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17 387891
AN AUTOMATIC URBAN PUBLIC TRANSPORT SYSTEM FOR MEDIUM SIZE TOWNS. A METRO WITH A HUMAN FACE [LE TRANSPORT COLLECTIF AUTOMATISE URBAIN POUR VILLES MOYENNES. UN METRO A LA MESURE DE L'HOMME]
The idea of TAV (Automated Urban Transport) arose in connection with a project to implement a new type of urban transport system for medium-size towns. It was to be light and cheap to run. The author describes the three important phases to the TAV project, underling the new techniques introduced (e.g. fully automated drive and operation). He then assesses the ecomomic social and commercial impact and emphasises the fact that there is still plenty of room left for use of human skills. [French]

Excavator No. 2, 1984, pp 2-14, 10 Fig., 10 Tab., 10 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Association Graphique et Artistique, 225 Avenue Moliere, 1060 Brussels, Belgium

17 387920
IMPROVEMENTS IN RAIL VEHICLE DYNAMIC PERFORMANCE THROUGH CONTROL OF LINEAR MOTOR LATERAL AND NORMAL FORCES
The objective of this research is to examine the use of linear motors for improving the lateral dynamic performance of railroad vehicles. The potential for improved vehicle stability, ride quality, traction capability, curving performance, track loading, and derailment safety results from the use of controllable lateral and normal magnetic forces present in the motor in addition to those used for propulsion. In this study recent advances in technology originally for high-speed levitated vehicles are applied to conventional railroad vehicles resulting in a system which has a higher potential for near-term implementation. The approach used combines theoretical models for the performance of rail vehicles and linear motors with model validation and concept demonstration using experimental scale models of LIMs and microprocessor control of analog simulations.

Caudill, RJ Sweet, LM Garrard, WL Heck, BS Garrison, P
Princeton University DOTRSPA/DMA-50/84/15, Oct. 1983, 224p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS PB84-182351

17 387927
HOVERING SHUTTLES ELEVATE OTIS INTO PEOPLEMOVER MARKET
The Otis peoplemover will be used for new installations at Tampa, Fl, and Serfaus, an Austrian ski center. The Florida peoplemover will extend 762 m from a car park and hotel complex to a new development at Harbor Island. While the prototype Otis system at Duke University in North Carolina has cars powered by linear induction motors, the two new systems will be cable-powered, a low-capacity option based on regular elevator technology. Guideway and vehicles are standardized for both the cable-operated shuttle and the linear-network versions. Vertical suspension in either case is by air-cushion units and horizontal guidance by rubber-tired wheels running on steel rails in the guideway walls. The shuttle system is powered by gearless drive electric motors beneath the guideway at one of its terminals.

Railway Gazette International Vol. 140 No. 8, Aug. 1984, p 619, 4 Phot.

ORDER FROM: ESL

17 387967
DOWNTOWN PEOPLE MOVER DETROIT, MICHIGAN. FINAL ENVIRONMENTAL IMPACT STATEMENT
This Final Environmental Impact Statement (EIS) documents the environmental impacts of alternative distribution/circulation systems in the Detroit Central Business District (CBD) and responds to substantive comments received on the Draft EIS. Two alternatives to improve downtown circulation were examined in detail. The first is an automated transit system that would operate in an elevated, tracked guideway and would be controlled from a central operations facility. This Downtown People Mover system would be a 2.96-mile, single-lane, elevated loop around the CBD and would serve thirteen stations. The second is a circulator bus system, which could range from continuation of the two-route circulator now operating downtown to an extensive new system serving the same thirteen stops as the Downtown People Mover.

Urban Mass Transportation Administration, Southeastern Michigan Transportation Authority Dec. 1980, v.p., Figs., Tabs., 3 App.

ORDER FROM: UMTA

17 387970
SUPPLEMENT V: COST EXPERIENCE OF AUTOMATED GUIDEWAY TRANSIT SYSTEMS—COSTS AND TRENDS FOR THE PERIOD 1976-1982
This report summarizes the cost experiences and trends of sixteen domestic AGT systems. Capital costs, operation and maintenance costs, system characteristics, operational statistics, and unit cost measures are presented to provide useful information to those contemplating the installation of AGT systems. To provide insight into important cost variations in this data, analyses of basic cost measures, evaluation of trends, and comparison with other transportation modes are also included. Sixth in a series, this report follows an initial report and four supplements. The supplemental reports have been published annually with updated information since 1979.

Supplement V has been expanded to include more narrative and illustrations, and a new section which shows AGT system costs over time, thus giving a historical perspective in one volume. The sixteen AGT systems examined in this report all utilize bottom-supported vehicles and operate in the following locations: Busch Gardens, Williamburg; Dallas-Fort Worth Airport ("Airtrans"); Duke University Medical Center; Fairlane Shopping Center; Hartsfield Atlanta International Airport; Houston Intercontinental Airport; King's Dominion Amusement Park; Miami International Airport; Miami Metro Zoo; Minnesota Zoological Garden; Orlando International Airport; Pearlridge Center; Seattle-Tacoma International Airport; Tampa International Airport Walt Disney World; and West Virginia University ("Morgantown").

Dynatrend, Incorporated, Urban Mass Transportation Administration, (DTS-66) Final Rpt. UMTA-MA-06-0126-84-5, DOT-TSC-UMTA-84-8, Apr. 1984, 138p, 17 Fig., 18 Tab., 4 App. Contract DTRS-57-80-C-00081
ORDER FROM: UMTA

17 389748
ESSENTIAL TECHNIQUES ON MAGLEV (MAGNETIC LEVITATED TRANSPORTATION)
This article reports on the progress of the study group on Magnetic Levitated Transportation systems with special emphasis on the essential technics to achieve breakthrough in this field, an analysis of system components, running energy, and transportation demands and the technical view of this system.

Included in Quarterly Reports of the Railway Technical Research Institute, V25 N1, pp 13-18, 1984. Order as PB84-199165.

Railway Technical Research Inst, Quarterly Reports Mar. 1984, 7p

ORDER FROM: NTIS PB84-199173

17 389749
DISCRETE EVENT SIMULATION MODEL (DESM) AND THE ASSOCIATED CONTROL AND EXAMPLE INPUT FILES
The discrete Event Simulation Model (DESM) provides the capability to model the operation of a mass transit system operating over a network composed of guideway links and stations within a given time domain. A wide range of transit classes can be modelled using the DESM. User controls and options are available within the simulator to allow modeling the effects of various operating strategies and service policy options on overall system performance in terms of providing transportation service on an individual patron basis. The model is described in detail in two documents, the Discrete Event Simulation Model User's Manual (UMTA-MA-06-0048-82-2) contains the Modelling features, requirements and procedures necessary for execution of the model, the Discrete Event Simulation Model Programer's Manual (UMTA-MA-06-0048-82-1) contains information for Model Maintenance and Modifications, as required... Saftware Description: The program is written in the FORTRAN programming language for implementation on a IBM 370-3031 computer using the MVS/TSO operating system. 3,500K bytes of core storage are required to operate the model.

Yuan, LS Watson, LE
Transportation Systems Center DOT/DF-84/001, Feb. 1983, n.p.

ORDER FROM: NTIS PB84-188622

17 389750
REACTIVE POWER COMPENSATED CYCLOCONVERTER
The cycloconverter is one of the most popular drivers of Linear Synchronous Motor (LSM) for the magnetic levitated transportation system. The conventional cycloconverter has two drawbacks, which are the extremely poor input power factor and the waveform distortion of input current. Reactive power compensated cycloconverter (RPCC) has been developed to solve these problems. This paper discusses the principle, configuration and characteristics of RPCC and describes the experimental results of the test track.

Included in Quarterly Reports of the Railway Technical research Institute, V25 N1, pp 33-38, 1984. Order as PB84-199165.

Shimada, K Ikeda, H Saijo, T
Railway Technical Research Inst, Quarterly Reports Mar. 1984, 7p

ORDER FROM: NTIS PB84-199181

17 389751
ACCELERATING WALKWAY SYSTEM: HOBOKEN RAIL TERMINAL DEMONSTRATION. SITE ENGINEERING REPORT
The Accelerating Walkway System (AWS) demonstration program was designed to test the feasibility of operating such a system in an urban setting. Based on an initial feasibility study, the New Jersey Transit commuter railroad station at Hoboken was selected as the demonstration site, located specifically at the connection between the New Jersey Transit commuter rail station and the east end of the mezzanine level of the Port Authority Trans-Hudson station. The demonstration was designed to provide information about the mechanical performance of the system under actual operating conditions, monitor passenger usage, and evaluate public acceptance of the system. Completed phases of the program include feasibility studies; AWS design and development, including preliminary site investigation and site engineering studies; and the award of a contract for the manufacture of the system. A series of equipment and user tests initiated in March 1983 is also nearing completion. This report describes the program of site engineering work that was planned by the Port Authority's Engineering Department in preparation for the installation and operation of the TRAX walkway system, including the excavation, equipment, fundation design, installation, and site restoration plans, as well as related cost, scheduling, and specifications data. During the preparation of this report, the proposed Hoboken demonstration was cancelled. However, the authors point out that this report is written assuming that the demonstration site was still being planned. Even though testing at Hoboken is no longer being planned, the detailed information contained in this report should be useful to operators that may be considering application of AWS technology.

Morrison, A Hobbins, G Paratore, J
Port Authority of New York and New Jersey, Urban Mass Transportation Administration UMTA-IT-06-0126-83-2, Dec. 1983, 109p Contract IT-06-0126
ORDER FROM: NTIS PB84-198415

17 389757
INVESTIGATION OF STRUCTURAL DESIGN CRITERIA FOR AUTOMATED TRANSIT AERIAL GUIDEWAYS
Recent experiences at existing Automated Guideway Transit (AGT) installations show that the guideway structure is the single most expensive component of an AGT system. The deployment of AGT technology in urban locations may also exacerbate the cost contribution of the guideway structure. Despite this high cost of guideways, very little research has been directed towards the design and construction of high-efficiency guideway structures. Designers have relied mostly on existing structural design codes; the most frequently used being the American Association of State Highway and Transportation Officials (AASHTO) Standard Specifications for Highway Bridges. Sometimes AASHTO codes have been revised to reflect any special load characteristics of the particular AGT vehicle. In general, the degree of modification varies from one system to the other. Hence, there is presently no widely accepted set of criteria for the desing of AGT guideway structures. The problem is that because of the higher predictability of AGT loads, an unreasonable application of existing codes may lead to overly conservative guideway structures and consequently increased system cost. This report reviews existing design criteria, assesses their appropriateness for AGT aerial guideway design, and explores the feasibility of an industry-wide set of design criteria that will reduce the cost of AGT aerial guideway structures.

Muotoh, DU
Lea (ND) and Associates, Incorporated, Urban Mass Transportation Administration Tech Rpt. UMTA-IT-06-0311-84-1, Apr. 1984, 55p Contract DTUM 60-83-P-30376
ORDER FROM: NTIS PB84-196419

17 389770
PLANNING FOR DOWNTOWN CIRCULATION SYSTEMS. VOLUME 1. PLANNING CONCEPTS
This document brings together the state-of-the-art in planning concepts, methods and data for use by those cities proposing or considering comprehensive or innovative downtown circulation systems, particularly Downtown People Mover systems. DPM systems are a subset of Automated Guideway Transit (AGT) systems, a class of transportation systems that includes unmanned vehicles operating on fixed exclusive guideways. Although primary attention in the report is given to DPM systems, it

should be emphasized that these are but one example of a downtown circulator system. The advantage of using such a complicated circulator system example as a DPM is that the resulting report covers a broad range of planning issues, only a subset of which would be of concern in planning a simpler or conventional circulation system. The report thus tends to be a quite useful reference document for planning any type of downtown circulation system. This volumes comprises the concept stage of the downtown circulator planning process. Included are sections on the development of goals and objectives, generation of alternative conceptual designs, familiarization with important planning issues, and crude feasibility studies of alternative systems.

See also Volume 2, PB84-209246. Also available in set of 3 reports PC E99, PB84-209220.

Transportation Systems Center DOT-TSC-UMTA-83-47-1, UMTA-MA-06-0039-83-2, Oct. 1983, 294p

ORDER FROM: NTIS PB84-209238

17 389771
PLANNING FOR DOWNTOWN CIRCULATION SYSTEMS. VOLUME 2. ANALYSIS TECHNIQUES

This volume contains the analysis and refinement stages of downtown circulator planning. Included are sections on methods for estimating patronage, costs, revenues, and impacts, and a section on methods for performing micro-level analyses.

See also Volume 1, PB84-209238, and Volume 3, PB84-209253. Also available in set of reports PC E99, PB84-209220.

Transportation Systems Center DOT-TSC-UMTA-83-47-2, UMTA-MA-06-0039-83-3, Oct. 1983, 228p

ORDER FROM: NTIS PB84-209246

17 389772
PLANNING FOR DOWNTOWN CIRCULATION SYSTEMS. VOLUME 3. APPENDICES

This volume contains worksheets for estimating circulator patronage, costs, revenues and travel impacts, detailed discussions of estimation and application procedures for the demand models developed, and a case study of the models' application using a Los Angeles downtown people mover example.

See also Volume 2, PB84-209246. Also available in set of 3 reports PC E99, PB84-209220.

Transportation Systems Center DOT-TSC-UMTA-83-47-3, UMTA-MA-06-0039-83-4, Oct. 1983, 226p

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17 389790
GROUND TRANSPORTATION

A review is given on some of the most significant areas of current ground transportation research and key issues bearing on the deployment question: fast transit by magnetic levitation; linear electric motors assisting braking; the redesign of rail tracks; the high-speed ground transportation program of the U. S. government; cooler adiabatic diesel engines; new automotive transmissions; re-using heat from regenerative braking; room for revolution in auto assembly; causes of slow progress; and world markets.

Loomis, JP Hoess, JA **Research and Development** Vol. 26 No. 6, June 1984, pp 74-81

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

17 389809
THE FIRST STEPS OF THE LILLE METRO

Since 16 May, 1983, the Lille Metro has been operating commercially. It is a beginning full of promise since, during the first two months, more than two million passengers used the VAL system. On the one hand, the placing in service of this new completely automatic mode of transport took place successfully and, on the other hand, the reactions of the public are extremely positive. The completely automatic working makes it possible to improve considerably the quality and safety of the service offered. In addition, it gives rise to a new operating organisation allowing for enhanced human relationship between the operating staff and the public. Apart from the technical and financial advantages offered by the automatic working, its impact at human level is undeniable, although still is known little about it.

Plagnol, M **Rail International** Vol. 15 No. 5, May 1984, pp 29-32, 3 Tab., 3 phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: ESL

17 389820
THE M-BAHN: A MAGNETIC-LEVITATION LOCAL TRANSPORT SYSTEM

The concept of the M-Bahn with permanent magnetic levitation, mechanical air-gap control, side guiding and long-stator linear motor represents an economical solution to local transport problems. Such a system has been under test since 1976 at a facility in Brunswick where more than 325,000 km have been run. Using further-developed components, a 1.6-km-long line is being built in a central location in West Berlin and is scheduled to commence a public transport service in 1986. The authors describe the design principal, the practical running aspects and the advantages compared with conventional systems. [German]

Eisenbahntechnische Rundschau Vol. 33 No. 6, June 1984, pp 515-518

ACKNOWLEDGMENT: British Railways
ORDER FROM: Hestra-Verlag, Holzhofallee 33, Postfach 4244, 6100 Darmstadt 1, West Germany

17 389821
THE TRANSRAPID 06 TEST VEHICLE AND ITS DRIVE SYSTEM

To prove the practicability of a high-speed maglev transport system, a large-scale test facility is now under construction in Emsland with the backing of the Federal Ministry of Research and Technology. The TRANSRAPID 06 test vehicle is designed to carry 192 seated passengers at a maximum speed of 400 km/h. With running tests now in progress, the project has entered a decisive phase. The article describes the objectives, concept and design of the TR 06 vehicle and its drive system. Upon conclusion of the main operational preparations by the construction consortium, the facility will be taken over by the MVP, a joint subsidiary of the DB, Lufthansa German Airlines and the IABG. Following a successful changeover, the aim will be to ensure feedback of operating experience to the industry. [German]

Eitlhuber, E **Eisenbahntechnische Rundschau** Vol. 33 No. 6, June 1984, 5p

ACKNOWLEDGMENT: British Railways
ORDER FROM: Hestra-Verlag, Holzhofallee 33, Postfach 4244, 6100 Darmstadt 1, West Germany

17 389822
OPERATING CONTROL TECHNIQUES FOR MAGLEV TRANSPORT SYSTEMS

The technical and operational possibilities of magnetic levitation transport systems can only be fully exploited by introducing "intelligent" control systems which ensure automatic and trouble-free train running. The solution of exacting requirements in the fields of traction, of dynamics, security and control as well as information gathering transmission and processing is an important prior condition in that respect. The authors report here on the present state of research and development in operating control techniques applicable to maglev transport systems. [German]

Kraft, KH Schnieder, E **Eisenbahntechnische Rundschau** Vol. 33 No. 6, June 1984, 5p

ACKNOWLEDGMENT: British Railways
ORDER FROM: Hestra-Verlag, Holzhofallee 33, Postfach 4244, 6100 Darmstadt 1, West Germany

17 389823
THE STEEL GUIDEWAY OF THE TRANSRAPID TEST FACILITY IN EMSLAND

The Transrapid test facility in Emsland, which has been built with the support of the Federal Ministry of Research and Technology in Bonn, is now being put into operation. The 5-km-long steel guideway of the northern turning loop has received official approval and is now available for

running tests with the Transrapid 06 vehicle. The author describes general aspects of the system, the interaction between vehicle and guideway, the concept and design of the latter, the construction, the guideway furnishings and functional components, the electromagnetic supporting, guiding and traction techniques, the manufacturing methods for the longitudinal stator components and also the manufacturing and fitting-out techniques used for the steel guideway. [German]

Raschbichler, H-G **Eisenbahntechnische Rundschau** Vol. 33 No. 6, June 1984, pp 487-492

ACKNOWLEDGMENT: British Railways
ORDER FROM: Hestra-Verlag, Holzhofallee 33, Postfach 4244, 6100 Darmstadt 1, West Germany

17 389826
PREPARING A FEASIBILITY STUDY FOR A MAGLEV TRANSPORT SYSTEM
The Transrapid test facility in Emsland is almost completed, and the phase of putting into operation with the TR 06 maglev vehicle has commended. This will be followed by a general test phase to check the practicability of the maglev system. It is now time to clarify, by means of a feasibility study, what steps are necessary for the introduction of the maglev system in West Germany. Taking two existing railway lines as example, namely Hamburg-Hanover and Dusseldorf Airport-Cologne/Bonn Airport, the effect will be examined of the public-law licensing procedure, participation of the general public in planning procedures, and the information of the media. Also, the technical framework data will be revised on the basis of the experience gained in building the Transrapid facility and the technical improvements made subsequently. Proposed track routing plans are to take particular account of environmental protection considerations, while cost accounting models will be developed which allow fast and reliable forecasts to be made for future projects in respect of investment and operating costs, and optimal operating procedures will be determined by means of simulation. [German]

Kessel, H **Eisenbahntechnische Rundschau** Vol. 33 No. 6, June 1984, pp 495-498

ACKNOWLEDGMENT: British Railways
ORDER FROM: Hestra-Verlag, Holzhofallee 33, Postfach 4244, 6100 Darmstadt 1, West Germany

17 389829
DORTMUND UNIVERSITY'S SUSPENSION RAILWAY LAYOUT
A demonstrated layout for an automated suspension railway, or H-Bahn, has been constructed on the grounds of the Dortmund University. This will be the first tracked transport system to operate with neither crew in the vehicles nor supervisory personnel at the stations. Starting with the summer term two passenger vehicles with space for forty passengers as well as a special vehicle for maintenance work and the towing-away of broken-down cars have been in operation. The track, which has an elevation of 5 to 16 metres and a length of just over 1 km, connects two separate parts of the University. The terminal stations at each end of the line have a centre platform with tracks on each side. Sliding doors on the cars protect passengers against accidents and inclement weather. The stations are supervised from the operating control centre by way of monitor cameras. Following critical assessment by various experts and proof of reliability in a two-week "ghost-running" period, operation with passengers was commenced on April 2, 1984. [German]

Giesen, U **Eisenbahntechnische Rundschau** Vol. 33 No. 6, June 1984, pp 519-524

ACKNOWLEDGMENT: British Railways
ORDER FROM: Hestra-Verlag, Holzhofallee 33, Postfach 4244, 6100 Darmstadt 1, West Germany

17 389867
TRANSRAPID HALFWAY TO TARGET SPEED
Transrapid 06, the West German experimental magnetic-levitation system, has reached speeds of 205 kph on test. When completed, the Emsland guideway will permit the vehicles to reach up to 400 kph. The 06 vehicle is composed of a pair of 27-m units, one presently fitted with accommodations for 96 passengers and the other with test equipment. Details are given of the train and of the 31.3-km guideway which is scheduled for completion in 1985.

Railway Gazette International Vol. 140 No. 7, July 1984, pp 538-539, 1 Fig., 5 Phot.

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17 389874
THE HANEDA MONORAIL. RAIL LINKS TO AIRPORTS
The Haneda monorail opened in 1964 to connect downtown Tokyo with the inner city airport which serves primarily domestic flights. This 8-mile line, a modified version of the German Alweg straddle-type system, has rubber-tired trains of up to nine cars running atop the concrete beam. As air traffic has increased, the Haneda line ridership has also gone up and new higher capacity cars are now in service. Plans are being made for an immediate extension to an additional airport terminal and for longer-term means to increase capacity as traffic continues to grow. Some of the advantages and disadvantages of the Alweg system and its present Japanese configuration are described.

Garbutt, PE **Modern Railways** Vol. 41 No. 431, Aug. 1984, pp 406-408, 2 Phot.

ORDER FROM: Allan (Ian) Limited, Terminal House, Shepperton TW17 8AS, Middlesex, England

17 390096
ESSENTIAL TECHNICS IN MAGLEV TRANSPORTATION
In 1981, RTRI organized a short-term study group named "Maglev SE" for surveying the current status of Maglev system development and for searching for the future direction in development. The group studied the status with special concern on the breakthroughs of the essential technics. In this paper are shown the analyses of system components, running energy, essential technics, transportation demands, and a technical view of the system.

Sato, Y Hasegawa, Y Ishizuka, H **Railway Technical Research Inst, Quarterly Reports** Vol. 25 No. 1, 1984, pp 13-18

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

17 390097
VEHICLE OF THE EMSLAND TRANSRAPID TEST FACILITY (TVE)
This report describes the concept and the purpose of the Emsland TRANSRAPID Test Facility. In addition, it includes the design and performance of the vehicle TRANSRAPID 06. The underlying principle of this development is to accelerate and decelerate the train electrically by means of an iron-cored long-stator synchronous motor, whereby no friction between the track and train occurs.

Borchert, J (Krauss Maffei AG, West Germany); Parnitzke, RA **Journal of Advanced Transportation** Vol. 17 No. 1, 1983, pp 57-71

ACKNOWLEDGMENT: EI
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17 390098
PROJECT DESIGN OF A MAGLEV SYSTEM WITH SHORTSTATOR LINEAR MOTOR PROPULSION
This paper presents a shortstator MAGLEV configuration for high speed application (400 km/h) based on an improved suspension technique. The system applies one set of electromagnets for levitation and also for guidance, utilizing the self-centering effect of laterally displaced magnets, and thus providing for strictly passive vehicle guidance. This use of a combined system helps to minimize vehicle weight and thus to reduce cost-effective track loading. Propulsion consists of liquid-cooled double-sided linear induction motors, which are supplied by static inverters with a boiling cooling technique, in order to achieve low volume for vehicle installations. The simple and passive track equipment can reduce capital investment significantly. Cooling the static inverter with a heat exchange medium which boils provides higher heat transfer rates per unit area and limits temperature rise more effectively than the more commonly used liquid coolants.

Gaede, P-J (Krauss Maffei AG, West Germany) **Journal of Advanced Transportation** Vol. 17 No. 1, 1983, pp 49-56

ACKNOWLEDGMENT: EI

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17 390099
OPTIMIZATION OF TRANSIT-SYSTEM CHARACTERISTICS
The paper examines the equation for total cost of a transit system per passenger-mile to determine how to configure a new system to minimize this quantity. Term-by-term analysis leads to derivation of a consistent set of optimum characteristics. Guideway costs are minimized by distributing the load in very small capsules. The fleet cost is minimized by increasing the average speed without increasing the cruising speed by use of off-line stations, which in turn minimize energy use by permitting nonstop trips. Maintenance costs are minimized by designing a very light-weight, automated vehicle with very few moving parts. The general system configuration can be derived by minimization of system costs, and that cost minimization is obtained simultaneously with service maximization.

Anderson, JE (Automated Transportation Systems Incorporated)
Journal of Advanced Transportation Vol. 18 No. 1, 1984, pp 77-111, Refs.

ACKNOWLEDGMENT: EI
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17 390100
PERFORMANCE DEPENDABILITY AND WAITING TIMES OF A PERSONAL RAPID TRANSIT SYSTEM
A joint project by the West Virginia University and the Urban Mass Transportation Administration during the early 1970's led to the construction of an innovative transportation system. Personal Rapid Transit (PRT), or Downtown People Mover. PRT connects the three campuses of the university with an automated, electrically-powered system composed of about 100 rubber-tired vehicles operating on an exclusive guideway. Some operations are computer-controlled. An attempt is made to evaluate the dependability and passenger waiting times of the system.

Polus, A (Technion-Israel Institute of Technology); Eck, RW
Journal of Advanced Transportation Vol. 16 No. 3, 1982, pp 285-301, 11 Ref.

ACKNOWLEDGMENT: EI
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17 390140
VAL VIVE LA DIFFERENCE!
In its first year the VAL system in Lille, France, attracted 13 million riders to its initial 8.4-mile segment opened in May 1983. This was almost 3 times the projected ridership. VAL technology, which includes rubber tire vehicles and complete automation, was chosen because it offered several cost-saving features. Along with crewless operation, the small lightweight vehicles make possible smaller tunnels and low-cost elevated guideways. The Lille system has a very extensive surveillance and communications system to assure passengers on the unmanned trains. Platform screens are used at stations to insure safety of passengers who must wait until platform and train doors are aligned and then opened. Architecture received great emphasis in the design of stations.

Kraus, D **Mass Transit** Vol. 11 No. 9, Sept. 1984, 4p, 3 Phot.

ORDER FROM: Mass Transit, 337 National Press Building, Washington, D.C., 20045

21 386311
METHODS FOR MAINTAINING TRANSIT SERVICE REGULARITY
This report describes the development of methods for transit planning departments and street supervisors to employ for maintaining service regularity (reliability) through improved scheduling and real-time control. An interest in developing methods which are representative, easy to use and cost-effective were important factors governing the research design. The research findings include both individual and collective issues which impact service reliability. The resulting information is integrated into a decision methodology which can be used to improve service reliability through the implementation of real-time holding strategies. A mechanism is also provided by which the transit manager can directly utilize the methodology to address current reliability problems. Tests conducted using the methodology indicate that it has considerable potential in improving bus route operations and passenger level of service. This is seen as being particularly important in these times of reduced subsidies for transit operations.

Abkowitz, M Engelstein, I
Rensselaer Polytechnic Institute, Urban Mass Transportation Administration Final Rpt. NY-06-0097, Mar. 1984, 162p Contract NY-06-0097
ORDER FROM: Rensselaer Polytechnic Institute, Department of Civil Engineering, Troy, New York, 12181

21 386324
BRANCHED TRANSIT SERVICES: AN ANALYSIS
A method for optimizing the route structure and schedule for zonal transit services has been extended from one-dimensional linear cases to two-dimensional branched networks. The values of zone lengths. subroute lengths, and headways which minimize the sum of operator and user costs are determined by calculus in simple cases and a quasi-Newton computer algorithm in more complex cases. Algebraic relations are derived which provide useful guidelines for optimal system design and greatly simplify sensitivity analysis. It is shown that user wait costs, user access costs, and vehicle operating costs should be equalized to minimize total costs. A case study is used to demonstrate the applicability of the method.

Tsao, S (National Taiwan University, Taipei); Schonfeld, P **Journal of Urban Planning and Development** Vol. 110 No. 1, Jan. 1984, pp 112-128, 20 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

21 386328
IMPROVED LOWER BOUND TO THE MINIMUM FLEET SIZE PROBLEM
The authors give a formal proof that a procedure to find a starting fleet size is a lower bound on the minimum fleet size problem when deadheading trips are allowed. It is shown that this bound is stronger than the "simultaneous operation" bound used previously by the authors in the URDHC program. The URDHC program is an interactive bus scheduling program which inserts deadheading trips into a timetable in an effort to reduce the required fleet size. The "simultaneous operation" lower bound is equal to the maximum number of trips in a given timetable that are in simultaneous operation over the schedule horizon. The improved lower bound is based on the construction of a temporary timetable in which trips are extended to include potential linkages reflected by deadheading time considerations.

Stern, HI (Ben Gurion University of the Negev); Ceder, A **Transportation Science** Vol. 17 No. 4, Nov. 1983, pp 471-477, 7 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

21 386343
JUDGING JOURNEY TIME MEASUREMENTS [BEOORDELING VAN RITTIJDMETINGEN]
It is often impossible to give a clear interpretation of the notion of bottlenecks in public transport. A method for judging journey times has been developed. There are now objective standards for judging real journey times and the regularity of public transport mixed with other traffic. The standard for the judgment of journey times is based on the so-called sheer journey time, i.e. total time minus waiting times. Added to this are extras for traffic and transport factors which may affect the journey time. The regularity standard is determined by the scatter of the journey times. [Dutch]

Verdiesen, RC Vroome, HE de Zeevenhoven, EC **Verkeerskunde** Vol. 34 No. 9, 1983, pp 428-432

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Royal Dutch Touring Club ANWB, Wassenaarseweg 220, P.O. Box 93200, The Hague, Netherlands

21 386684
MICROCOMPUTER APPLICATIONS IN TRANSIT AGENCIES
To say that microcomputers have and will continue to affect the way that transit systems are operated and managed is to state the obvious. Within the last few years microcomputers have been used by transit systems to perform a variety of tasks, ranging from common business applications such as payroll and parts inventory to more sophisticated algorithmic applications particular to transit management, such as run-cutting and scheduling and transit service performance monitoring. A discussion of what has been learned from the experience of several transit agencies with microcomputers is presented in this paper and some direction for future microcomputer activities in transit agencies is proposed. Topics addressed in this paper are (a) how microcomputers are being used in transit operations, (b) problems and possible solutions in their deployment, and (c) some ideas on how to help ensure that microcomputers are used appropriately within transit agencies in the future.
This paper was published in Transportation Research Record N932, Microcomputers in Transportation.

Reilly, J (Capital Dist Trans Authority, Albany, New York); D'Ignazio, J (Greater Roanoke Transit Company, Virginia) **Transportation Research Record** No. 932, 1983, pp 9-12, 3 Ref.

ORDER FROM: TRB Publications Off

21 386934
DELAY MODEL FOR MODERN EXPRESS TRAINS [VERSPAETUNGSMODELLE FUER DEN MODERNEN SCHNELLBAHNBETRIEB]
The author, after presenting a set of mathematical models for calculating and forecasting delay times, deduces on the basis of probability methods, a set of practical formulae which give a more or less accurate description of the behaviour of systems when operating incidents occur. This theoretical approach is intended to serve as an aid in assessing the quality of guided transport system operation. [German]

Kraft, KH **Archiv fuer Eisenbahntechnik** No. 38, Dec. 1983, pp 5-9, 6 Phot., 6 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Hestra-Verlag, Holzhofallee 33, Postfach 4244, 6100 Darmstadt 1, West Germany

21 386947
FLINT MASS TRANSPORTATION AUTHORITY ROUTE CONFIGURATION STUDY
The Flint Mass Transportation Authority (MTA), a public transportation system incorporated by the Flint City Council (Michigan) in 1971, provides regularly scheduled, fixed-route fixed-schedule bus service, a special elderly and handicapped service, charter service, and limited demand responsive service in the Flint metropolitan area. The subject of this report is regularly scheduled weekday fixed-route fixed-schedule bus service. The purpose of the study is to evaluate the many changes made since 1971 and relate them to the entire system vis-a-vis current land use, employment patterns, and shopping areas. The study discusses existing conditions in the Flint area; provides a detailed system performance evaluation; identifies potential problem areas on a route specific basis; discusses four possible alternatives to alleviate problems identified; and evaluates three spearate headway options. Included in this report is a year-by-year implementation plan for the selected routing alternatives and recommendations on actions to be taken first as well as the year changes are to be implemented. The appendices contain route profiles and headways for each routing alternative.

JHK and Associates, Urban Mass Transportation Administration Final Rpt. UMTA-MI-09-0069, Apr. 1984, 95p Grant MI-09-0069

ORDER FROM: UMTA

21 386959
TIMETABLE PLANNING
The author describes the various stages of timetable compilation, in the course of which train paths are worked out on the basis of locomotive type and train load, with particular reference to the leeway allowed in terms of recovery margins, etc. Various problems are examined, and the use of computers for optimizing train running in order to achieve energy savings in discussed. Prospects for further computerization are assessed. [French]

Quinchon, C **French Railway Review** Vol. 2 No. 2, Apr. 1984, pp 113-122

ACKNOWLEDGMENT: British Railways
ORDER FROM: North Oxford Academic Publishing Limited, 242 Banbury Road, Oxford OX2 7DR, England

21 387590
BETWEEN TRAM AND METRO [TUSSEN TRAM EN METRO]
A fast tram between the south of Amstelveen and the centre of Amsterdam could reduce travel time to less than 45 minutes. A metro/fast tram via the Bijlmermeer line would only serve the eastern part of the inner city. Working on an ABAB stop system may cause problems as far as clearness and reliability are concerned. Combination of fast and slow services seems to offer good possibilities. (Author/TRRL) [Dutch]

Schaafsma, AAM **Verkeerskunde** Vol. 35 No. 2, Feb. 1984, pp 87-90, 6 Fig., 1 Tab., 2 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275803), Institute for Road Safety Research SWOV
ORDER FROM: Royal Dutch Touring Club ANWB, Wassenaarseweg 220, P.O. Box 93200, The Hague, Netherlands

21 387600
OPERATIONAL PLANNING OF PUBLIC TRANSPORT WITH THE AID OF COMPUTERS [FORDONSPLANERING MED HJAELP AV DATOR I DEN DAGLIGA PLANERINGEN]
This report relates to a joint project by the Public Transport Commission, Oerebro Traffic Company, and Volvo Transportsystem ab. A computer aided vehicle planning system was tested under realistic conditions in daily traffic planning in the winter of 1982/83. The savings made are arounds 120000 kroner per year, and are due to saving of 1 bus and driver, and saved idling time. Savings would probably have been greater if extra traffic by county buses had been integrated in the scheme. County buses were however unable to participate owing to lack of time by their planners. The direct costs for testing and evaluation of the vehicle planning system for 1 year are about 60000K and comprise terminal, printer and modem costs, telephone and computer charges, leasing of software. The planners were generally in favour of the system which worked well during the test period. The experience of Oerebro indicates that this planning method may be of interest to many traffic companies. Its utility is likely to increase with increasing company size. It may be best in the first place to rent equipment, computer time and programs. (TRRL) [Swedish]

Kollektivtrafikberedningen KTB Rapport 1983:15, 1983, 47p, 4 Fig., 13 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 275703), National Swedish Road & Traffic Research Institute
ORDER FROM: Kollektivtrafikberedningen, P.O. Box 1339, Solna, Sweden

21 387615
THE ROTTERDAM-EXPERIMENT. RESULTS OF THE FIRST PHASE OF THE TRICOPT-RET 5 STUDY [HET ROTTERDAM-EXPERIMENT. RESULTATEN EERSTE FASE VAN HET TRICOPT-RET 5 ONDERZOEK]
The first results of research into ways by which the regular performance by public transport can be improved are described. This resulted in an experiment with the "passing disc"; it appeared that the proportional irregularity could be reduced by more than 50%. The survey which was carried out in close co-operation with the local public transport company was based on an extensive analysis of existing performances. The source of interference turned out to be those public transport vehicles running fast rather than the ones which had been delayed by any circumstances. This led to the basic concept of improving the regular performance by "taming" the faster vehicles to help the slower ones. To accomplish this it is necessary to develop individual time-tables for every run on every section. These are computed in such a way as to prevent vehicles arriving at their final destination behind schedule as a result of any corrections on the way while improving regularity. This requires a precise insight into the profile of the performance, which necessitates extensive data collection and processing. By using the tricopt data collector these data can be collected very quickly. A striking result of the experiment appeared to be the warm cooperation of the drivers who by using the passing disc can contribute personally to a more regular performance. (TRRL) [Dutch]

Hakkesteegt, P Muller, TH Zeevenhoven, EC (Ret, Rotterdam) Delft University of Technology, Netherlands Mar. 1981, 42p, Figs., Tabs.

ACKNOWLEDGMENT: TRRL (IRRD 275816), Institute for Road Safety Research SWOV
ORDER FROM: Delft University of Technology, Netherlands, Laboratorium voor Verkeerskunde, Stevinweg 1, 2208 Delft, Netherlands

21 387633
REVIEW OF ROUTE-LEVEL RIDERSHIP PREDICTION TECHNIQUES (ABRIDGMENT)
An important trend in the local transit planning field is away from large-scale, capital intensive planning toward low-cost operational planning. Because most major transit and highway facilities are in place, greater consideration is being given to making minor changes to improve the efficiency and increase the capacity of existing transit services. Transit managers need to predict the effect of proposed service changes on ridership for a variety of reasons: (a) to allocate vehicle and manpower resources, (b) to prepare budget requests for proposed service plans, and (c) as inputs into the detailed route planning and scheduling that must accompany new service plans. To perform these tasks adequately, route-level patronage models must be sensitive to service characteristics as well as to the more traditional socioeconomic characteristics of the area the route passes through. The service quality measures most often affected by the route-level service modifications made by most transit properties are headway adjustment, route extension and contraction, limited and express service, shortlining, branching, through routing, creating transfer opportunities, fare adjustments, and new hours of service. A review of techniques that are currently used in the industry for predicting route-level ridership is presented. This review is based on discussions with the planning staffs of 40 transit agencies. Seven criteria were selected for evaluating the various techniques: accuracy, sensitivity, range of application, analyst dependence, cost of application, technical sophistication, and transferability.

This paper appeared in Transportation Research Record No. 936, Public Transportation and Transit Operations Planning.

Menhard, HR Ruprecht, GF (Multisystems, Incorporated) **Transportation Research Record** No. 936, 1983, pp 22-24, 1 Fig., 1 Ref.

ORDER FROM: TRB Publications Off

21 387693
DULUTH VARIABLE WORK HOURS/TRANSIT FARE PREPAYMENT DEMONSTRATION
This report describes the evaluation results of the Duluth Variable Work Hours/Transit Fare Prepayment Demonstration. The demonstration project was intended to reduce severe peaks in demand on the bus routes of the Duluth Transit Authority (DTA). It was anticipated that these reductions in peaking would result in either in either reduced operating costs for the DTA or an improved level of service for DTA passengers. The project combined two major elements—a Variable work hours program, intended to increase work schedule flexibility, and a differential peak-offpeak pricing component to encourage temporal shifts in transit demand. The pricing component was implemented through regular and discounted peak-restricted monthly passes. The program was unsuccessful in achieving its goals for serveral reasons. Variable work hours programs were universally rejected by employers, first because they did not perceive a peak congestion problem in Duluth, and second because they were concerned that union labor might demand continuation of variable work hours even if a trial program had unacceptable impacts on their business. Pass sales were relatively small, and the time restrictions and peak-offpeak pass price

differentials were not effective in inducing shifts in travel behavior even among the small group of pass buyers. Only very small impacts could be attributed to the demonstration, while the revenue sacrificed to pass buyers was significant.

Charles River Associates, Incorporated, Urban Mass Transportation Administration, (DTS-64) Final Rpt. UMTA-MN-06-0013-84-1, DOT-TSC-UMTA-84-7, Apr. 1984, 140p, 21 Fig., 23 Tab., 5 App. Contract DOT-TSC-1757
ORDER FROM: UMTA

21 387695
MINNEAPOLIS-ST. PAUL TRANSIT SERVICE RELIABILITY DEMONSTRATION
This report summarizes the results of UMTA's first transit service reliability demonstration. The demonstration was implemented by the Metropolitan Transit Commission on a high-frequency branched bus route—Route 5 in Minneapolis. the aim of the demonstration was to test the hypothesis that a combination of rescheduling and dynamic strategies could improve reliability without significant increases in cost or other negative effects on operation. The project involved application of a holding point strategy, preceded by schedule changes needed to fine-tune the route. The holding policy was based on improving schedule adherence, although it also incorporated efforts to moderate large headway gaps. The results of the project indicate that reliability was improved by on-street supervision at a control point combined with application of specific holding policies. Furthermore, indications are that supervision alone was more important than the holding policy in improving reliability and that the benefits were sustained beyond the period of application. This implies that drivers have greater ability to control unreliability than they typically acknowledge, and that further study of driver behavior would be worthwhile. The reuslting improvements in reliability should allow operators to reduce fleet size by more than enough to justify the costs of the supervisor. The cost-effectiveness could be even greater if several routes can be monitored at a single control point or strategies can be applied on an occasional basis.

Englisher, LS
Multiplications, Incorporated, (DTS-64) Final Rpt. UMTA-MA-06-0049-83-8, Apr. 1984, 44p, 2 Fig., 2 Tab. Contract DOT-TSC-1756
ORDER FROM: UMTA

21 387863
TOWARDS BETTER UTILISATION OF CONVENTIONAL RAILWAYS: A MICROPROCESSOR-BASED TRAFFIC REGULATION PROJECT
The increase in running speed of a fraction of trains operating on a network increases the difficulties of integrating these with flows of lower speed traffic. The paper examines the problems of modelling conventional railway traffic with a view to optimal regulation, and suggests an approach which is considered sufficiently rudimentary to allow real-time computer control. Preliminary results obtained from a small laboratory implementation are presented.(a)

Renfrew, AC (Manchester University, Institute of Science & Tech); Khan, MEH (Gulf Polytechnic, Bahrain) **Transportation Research. Part A: General** Vol. 18A No. 1, Jan. 1984, pp 37-42, 5 Fig., 2 Tab., 8 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276159)
ORDER FROM: ESL

21 387870
TRICOPT. THE EFFECT OF REGULAR PERFORMANCE ON THE NUMBER OF PASSENGERS IN COLLECTIVE PUBLIC TRANSPORT [TRICOPT. HET EFFEKT VAN REGELMAATSBEVORDERING OP DE VOERTUIGBEZETTING IN HET KOLLEKTIEF OPENBAAR VERVOER]
The level of service to the public and efficient management in urban collective public transport is adversely influenced by an irregular distribution of the number of passengers in the vehicles. This Tricopt study determines the way in which fluctuations in the passenger supply and irregularity in the timetable affects this problem. Irregularity has a large effect on the fluctuations of the number of passengers. A timetable with a percentile irregularity of 50% needs 75% more vehicles than a regular service to satisfy to the same service norm of 85%. [Dutch]

Hakkesteegt, P Muller, THJ
Delft University of Technology, Netherlands Monograph Dec. 1982, 13p, 7 Fig.

ACKNOWLEDGMENT: TRRL (IRRD 276176), Institute for Road Safety Research SWOV
ORDER FROM: Delft University of Technology, Netherlands, Laboratorium voor Verkeerskunde, Stevinweg 1, 2208 Delft, Netherlands

21 387873
METHODOLOGY FOR MEASURING THE LEVEL OF QUALITY OF PUBLIC BUS TRANSPORT [METHODIEK TER BEPALING VAN HET KWALITEITSNIVEAU VAN HET OPENBAAR BUSVERKEER]
Seven levels of quality are defined, three of them related to separated bus roads and four on situations where buses have to mingle with other traffic (cf the HCM levels of service). A measuring method is developed to determine the influence of design factors like radii, distances between stops etc on the level of quality. It now becomes easy to examine how service speeds are affected if design criteria are not met. The methodology is illustrated with examples from practice.(a) [Dutch]

Kwakernaak, M (Dhv Raadgevend Ingenieursbureau Bv) **Verkeerskunde** Vol. 35 No. 3, Mar. 1984, pp 131-135, 8 Fig., 3 Tab., 1 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 276190), Institute for Road Safety Research SWOV
ORDER FROM: Royal Dutch Touring Club ANWB, Wassenaarseweg 220, P.O. Box 93200, The Hague, Netherlands

21 387885
ENERGY BALANCE IN RELATION TO DRIVING TECHNIQUE IN RAILWAY TRACTION [ENERGETISCHE ERMITTLUNGEN ZUR FAHRTECHNIK BEI DER ZUGFOERDERUNG]
Fuel consumption when starting, accelerating, with set regulating steps, coasting, gradual braking (engine ratings). Example: passenger train with diesel traction-calculation program to optimize the driving mode for short distances with stops (no set regulating steps due to optimum use of coasting). This should be taken into account when the timetable is prepared. [German]

Jentsch, E **Hochschule f Verkehrs F List Wissenschaft Zeitschr** Vol. 30 No. 3, Oct. 1983, pp 625-643, 1 Fig., 4 Tab., 2 Phot., 14 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Hochschule fuer Verkehrswesen Friedrich List, Friedrich List Platz 1, Dresden 801, East Germany

21 387907
THE TIMED-TRANSFER/TRANSIT CENTER CONCEPT AS APPLIED IN TACOMA/PIERCE COUNTY, WASHINGTON
Pierce Transit District (PTD) in Washington State has restructured its bus routes from a downtown-oriented radial system to a multi-focal point system through establishment of six transit centers. PTD succeeded Tacoma Transit in 1980, expanding its service-area population from 200,000 to over 400,000. The radial Tacoma system was not well matched to needs of the areas's potential ridership. Since PTD was established, ridership has increased 20 percent; present operation involves 185 buses on 42 routes and 19 vans for elderly and handicapped. Each new transit center is a major activity site—college campus, shopping center and central business districts. The transit center concept makes possible timed-transfer service with scheduling arranged to bring all connecting routes to centers simultaneously. PTD has thus successfully changed its transit network to better serve the needs of a dispersed population and the activity-center pattern in its service area. The centers attract ridership in conjunction with high activity that contributes to security and have the vital role in timed-transfer scheduling. They also have a role in land-use patterns for their area. Site selection criteria include high visibility, compatibility with adjacent land uses, and operational feasibility. Next stage is to build permanent installations at the center sites.

Schnieder, JB Deffebach, C (Washington University, Seattle); Cushman, K (Pierce Transit) **Transportation Quarterly** Vol. 38 No. 3, July 1984, pp 393-402, 2 Tab.

ORDER FROM: Eno Foundation for Transportation, Incorporated, P.O. Box 55, Saugatuck Station, Westport, Connecticut, 06880

21 387931
PLANNING BALTIMORE'S METRO
The trouble-free startup of operations of Balitmore's Metro rapid transit line in late 1983 was the result of almost 3 years of planning and months of pre-revenue service testing. ATE Management, which had been in charge of Metro's bus operations, had its contract expanded to cover responsibility for the rail services. In autumn 1983 the Metro/transit union labor agreements were altered to cover rail service personnel. This was possible only after prior decisions about the level and quality of service, training, maintenance, supervision and other factors. Late in 1983 the Operations Test Plan was drafted; it was certified for use in May 1983. Integration of Metro bus services and fare system with the new rapid transit line was carefully developed. Car and system performance was carefully adjusted in the test phase; Metro also avoided setting a formal opening date as long as possible. When operations started there was relatively little confusion. The existing 7.5-mile route is currently being extended another 6 miles.

Juram, HC (ATE Management and Service Company, Incorporated) **Metro** Vol. 80 No. 4, July 1984, 4p, 5 Phot.

ORDER FROM: Bobit Publishing Company, 2500 Artesia Boulevard, Redondo Beach, California, 90278

21 389326
PUBLIC TRANSPORT AUTOMATIC CONTROL SYSTEM-SAKS [SISTEM AUTOMATSKE KONTROLE SAOBRACAJA-SAKS U JAVNOM GRADSKOM PREVOZU]
SAKS is a public transport automatic control system. The system solves problems of modern public transport, providing better service to the passengers, better use of the staff, increase in efficiency, decrease in fuel consumption. Following the general description of the system, details are given of the control centre, transport unit equipment, and main system characteristics. The equipment is based on microcomputer technology which offers high system reliability and can meet the requirements of various groups of customers. For the covering abstract of the conference see IRRD 273856. [Serbian]

Pesic, J Acimovic, D Tancev, A (Ei-Ro 'telekomunikacije', Oour Feu 'pionir',zemun) **Zbornik III Jugo Savetovanje Tehn Regul Saobracaja** Apr. 1983, pp 625-636, 4 Fig., 1 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 277149)
ORDER FROM: Savez Inzenjera I Tehn Saobracaja I Veza Jugo, Drustvo Inzenjera I Tehnicara Saobracaja I Veza Novi Sad, Novi Sad, Vojvodina, Yugoslavia

21 389338
A TRANSIT RIDERSHIP-REVENUE MODEL
The paper outlines the theoretical underpinnings of an urban mass transit revenue and ridership model designed to provide medium term forecasts of future trends in situations of data sparsity. The specific example laid out in the paper relates to the greater Vancouver regional district but the framework is of general applicability. Much of the informational input at the initial stage is of a general kind and details of the specific transit system and local area are of the sort which should be readily available to most urban authorities. The model developed is designed for use on a desk-top micro-computer and offers an inter-active method of forecasting. The operator has the facility to both consider fare policy sensitivity and review alternative scenarios about future trends in exogenous factors. A selection of forecasts developed for the gvrd is provided to reveal the main features of the approach.(a)

Navin, FPD (British Columbia University, Canada); Button, KJ (Loughborough University of Technology, England) **Transportation Planning and Technology** Vol. 9 No. 1, 1984, pp 47-60, 5 Fig., 5 Tab., 14 ef.

ACKNOWLEDGMENT: TRRL (IRRD 277306)
ORDER FROM: ESL, ORIG

21 389357
IMPACTS FROM THE REDUCTION OF FEDERAL OPERATING ASSISTANCE FOR TRANSIT USING SECTION 15 DATA
The purpose of this report is to investigate the impacts on transit operations from the reduction or elimination of Federal operating assistance. Fare increases, service reductions, or both are considered and their impacts on fares, ridership and operating costs are predicted through an interative, computer-based methodology. The major findings are that the reduction or elimination of Federal aid will produce more severe impacts, as measured by the percent of lost ridership, on the small systems. In addition, each system should attempt to recover its lost aid through strategies that combine fare increases with service reduction, except for some extreme cases. The numerical results presented should be considered as upper bounds rather than actual impacts, since better marketing, pricing innovations, increased local assistance and other methods of recovering lost Federal aid were not considered.

Bladikas, AK Crowell, WH
Polytechnic Institute of New York, Urban Mass Transportation Administration Final Rpt. UMTA-NY-11-0023-84-1, Feb. 1984, 122p, Figs., Tabs., 2 App. Grant NY-11-0023
ORDER FROM: UMTA

21 389376
SHORT RANGE TRANSIT PLANNING: CURRENT PRACTICE AND A PROPOSED FRAMEWORK
The research described in this report explored the service and operations planning process in the transit industry in a two-phase approach. In the first phase a detailed assessment of current short range transit planning practice was undertaken through a survey of a dozen transit properties and a detailed investigation of two properties. This phase of the research provided a fuller understanding of the existing process, the constraints which any changes in the process should satisfy, and the weaknesses both as recognized by the planners themselves and as identified by disinterested observers. From this base, the second phase suggested a framework for structuring improvements to the planning process to deal with some of the more significant deficiencies.

Wilson, NHM Bauer, A Gonzalez, S Shriver, J
Massachusetts Institute of Technology, Urban Mass Transportation Administration Final Rpt. UMTA-MA-11-0035-84-1, June 1984, 54p, Figs., Tabs., 27 Ref. Contract MA-11-0035
ORDER FROM: UMTA

21 389382
OPERATING STRATEGIES FOR MAJOR RADIAL BUS ROUTES
This report is to assist bus transit service planners and schedulers in designing bus routes and operating strategies in radial travel corridors. It defines alternative operating strategies and stopping policies that can improve transit productivity and demonstrates (through examples) how these strategies can be applied to reduce costs and improve performance. Service strategies discussed are intended for moderate-to-high demand corridors that have a strong directional orientation (toward the central business district or a rapid-transit station. The corridor definition is 8 or more busloads per hour cumulative passenger volume for all routes serving it. The strategies are intended only for use during the periods when corridor demand meets this qualification. This overview report is primarily descriptive and is to be followed by detailed planning manuals. Chapters of this volume discuss the use of express service, how local bus operation can be customized and refined to achieve more efficient operation, and how deadheading and interlining among corridor routes can reduce vehicle requirements.

Multiplications, Incorporated, Urban Mass Transportation Administration, North Carolina Department of Transportation Final Rpt. DOT-I-84-27, May 1984, 38p, Figs., Tabs.

ORDER FROM: Office of the Secretary of Transportation, Technology Sharing Program, 400 7th Street, SW, Washington, D.C., 20590

21 389384
COMBUS: REGIONAL EMPLOYMENT CENTER BUS SERVICE
To avoid building-up a peak-oriented system by taking on additional commuter runs, and because financial constraints prevented the Greater

Bridgeport Transit District (GBTD) from subsidizing new commuter service, GBTD set out in this COMBUS project to explore the potential role of private bus operators in commuter transportation. Basically, the purpose of this study is to examine whether a privately operated commuter bus service could be self-supporting. The objectives of the study were: 1) to examine private operator interest in providing commuter service; 2) to examine the feasibility of a self-supporting commuter service; 3) to develop components of start-up support; and 4) to evaluate effectiveness and efficiency of GBTD brokerage by actually implementing a service. Planning consisted of a survey of local private operators and the selection of an employment center. The project demonstrated that low demand and low revenues were too risky a market for the private sector. COMBUS never became self-supporting during the 3-months of test service. The recovery rate was between 50-60 percent (better than the GBTD regular service of 40 percent). The project also demonstrated the problems associated with private bus operators in commuter service in the Bridgeport area. Overall, the study concluded that self-supporting privately operated commuter service had little potential in the area. The GBTD (320,000 population) is a middle-sized operation with a peak fleet of 50 buses operating on 20 routes. Public transit operations began in 1979 when GBTD took over the service provided by 4 private companies—two of which remain as large schoolbus and charter operators.

Greater Bridgeport Transit District, Urban Mass Transportation Administration Final Rpt. UMTA-CT-09-0026-84, H-651, June 1984, 94p, 1 App.

ORDER FROM: UMTA

21 389386
MSBA ROUTE ANALYSIS STUDY
Since the changeover from private to public ownership and the acquisition of private operators' assets (1970s), Nassau County has witnessed improvements in bus transportation in terms of quantity and quality of service provided to residents. To maintain this momentum and respond to future changes, the Nassau County Planning Department embarked on an examination of bus service provided by the Metropolitan Suburban Bus Authority (MSBA) in order to formulate a 5-year transit development plan. This report represents the culmination of an intensive planning analysis of MSBA in meeting current and future mobility needs of the County residents. Accompanying this plan is a capital improvement program and a financial resources plan necessary to implement service, facility and equipment recommendations. Throughout the study, dialogue was held with MSBA staff and documented in interim reports so as to serve as a discussion guide for the project. The study began with a review of the County in terms of demographic characteristics, employment, activity centers, and land land use. To assess financial performance, each route and service was analyzed separately and is presented in this report. Results provided guidance in developing route proposals to enhance performance. A detailed set of service standards are presented that reflect the perspective of the riders, operators, and community toward public transportation. Actions required to remedy current service deficiencies as well as to exploit opportunities in the future are identified. The 5-year Recommended Service Plan, the Capital Improvement Program, and the Financial Plan represent prior actions to improve and expand bus service in Nassau County.

Abrams-Cherwony and Associates, Nassau County Planning Department, Urban Mass Transportation Administration Final Rpt. UMTA-NY-09-0075, TS E-721, Mar. 1984, 313p, Figs., Tabs., 1 App. Grant UMTA-NY-09-0075
ORDER FROM: UMTA

21 389388
METHOD FOR ESTIMATING THE COSTS OF DRIVERS' WAGES FOR BUS SERVICES
To plan changes in bus transit service it is often necessary to estimate the costs of individual routes. Unfortunately, it is difficult to isolate the cost of one route from the costs of an entire network. A model for estimating only the marginal costs of drivers' wages for individual bus services is presented. The model shows that union work rules and an uneven demand for service influence labor costs, and that the marginal cost of drivers' wages is higher during peak hours than during off-peak hours. The model, developed for the Massachusetts Bay Transportation Authority (MBTA), is used to estimate how much the MBTA would save if any of 12 currently operating routes were dropped. Thie application reveals that the model is simple to use and can be applied by any agency considering increasing or decreasing bus transit service. The results demonstrate that the model is extremely accrate for routes for which the ratio of peak service to base service is similar to the ratio for the entire system. For peak-period-only bus service, or routes offering concentrated service during peak hours, a technique is presenbted for establishing a range in the cost of drivers' wages.

This paper appeared at Transportation Research Record No. 947, Transit Management and Services.

Herzenberg, A (Massachusetts Bay Transportation Authority) **Transportation Research Record** pp 7-14, 4 Fig., 1 Tab., 3 Ref.

ORDER FROM: TRB Publications Off

21 389390
POTENTIAL OF GRAPHICAL INFORMATION SUPPORT FOR TRANSIT DECISION MAKING AND PERFORMANCE EVALUATION
The objective of this paper is to examine the potential of the graphical information system (GIS) to increase transit operator control over performance by improving decision-making effectiveness. The GIS is based on the distinction between data and information; data are collected facts, but information is only that data useful for a particular purpose and perceived as such by the user. The GIS increases both relevant information and its perception. The GIS is effectively used in semistructured decisions where it enhances the ability of the user to apply creativity and judgment in solving novel problems. An example illustrates the potential of the GIS to convey patterns, trends, and relationships, thereby enhancing the ability of the user to filter relevant information from extraneous data. Several graphic profiles of a bus route are contrasted with the corresponding tabular summary. All are derived from the same data, but because of data format they convey significantly different information.

This paper appeared in Transportation Research Record No. 947, Transit Management and Services.

Rinderle, CA Kornhauser, AL (Princeton University) **Transportation Research Record** No. 947, 1983, pp 23-28, 10 Fig., 3 Ref.

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21 389404
MANAGING TRANSIT'S FISCAL CRISIS BY RATIONALIZING SERVICE POLICY: A CASE STUDY OF NEW JERSEY TRANSIT.
The objective of this report is to analyze the potential for improving transit system performance by rationalizing service allocation policy. It is hypothesized that redistribution of service from underutilized or very unprofitable portions of a system to better utilized and less unprofitable portions would significantly raise overall system effectiveness. To test this hypothesis and to measure the extent of improvement that can be expected from service reallocation, New Jersey Transit Corporation was selected as a case study. Two different types of simulation models were developed for the mechanism of reallocation. Five alternative performance criteria and four different elasticity assumptions were used in the study. By incorporating a wide range of choices for these crucial inputs into the model, we were able to analyze the robustness of the results. The route-by-route service reallocation simulated in the model did indeed lead to improvement in overall system performance, although not as dramatic as had been expected. The most favorable combination of elasticity and performance criterion yielded hypothetical ridership increases of 24% for bus and 6% for rail (holding subsidy constant). Values on a range of performance indicators also increased. The degree of service reallocation was significant, with some lines receiving 149% increases in service, while others were cut by two-thirds.

Pucher, J Brail, R
Rutgers University, New Brunswick Final Rpt. UMTA-NJ-06-0007-84-1, June 1984, 110p, 16 Fig., 28 Tab., 22 Ref., 1 App. Contract DOT-UMTA-NJ-06-0017
ORDER FROM: UMTA

21 389753
PLANNING, DESIGNING AND OPERATING MULTI-CENTER TIMED-TRANSFER TRANSIT SYSTEMS: GUIDELINES FROM RECENT EXPERIENCE IN SIX CITIES
The planning, design and operation of a polycentric timed-transfer transit system in two American, two Canadian, one Australian and one Brizilian

city are described and evaluated. The foreign systems have been in operation longer and are more fully developed than the American systems in Portland, Oregon and Tacoma, Washington. The experience gained in each of the six cities is described in terms of the location and sizing of the transit centers, the design of the physical facilities involved, route/schedule considerations and some data on operating experience gained to date. This report should be helpful to those American cities, particularly those located in the West, that wish to undertake the development of a polycentric timed-transfer bus/rail transit system that will fit well the diverse travel pattern generated by the modern polycentric city. The experience gained in each city is described in some detail and guidelines that should be helpful in other cities are highlighted. The purpose of this report is to provide an update and extension of a 1980 report entitled: Planning and Designing a Transit Center Based Transit System: Guidelines and Examples from Case Studies in Twenty-Two Cities, NTIS order number PB81-154569, A07.

Schneider, JB Deffebach, C Latteman, J McCormack, E Wellander, C
Washington University, Seattle, Urban Mass Transportation Administration Final Rpt. UMTA-WA-11-0009-84-1, Res Rpt 83-1, Sept. 1983, 120p Contract WA-11-0009
ORDER FROM: NTIS PB84-211-85

21 389793
SUPPLY FACTORS AND TRANSIT DEMAND IMPACTS
The mix of fare increase and service reduction may not be the best strategy to reduce subsidy levels for transit operations. This paper investigates the effects of fare and service characteristics on transit demand. The travel decision-making process is structured as a choice process, and within this framework the factors likely to affect travel decisions are identified. The strength of the relationship between these factors and transit demand is then quantified. Finally, this information is used to identify three general service design strategies which are likely to be effective in retaining or attracting ridership. These strategies are selective increases in transit fares, the implementation of premium services, and improvements in the quality of transit service.

Koppelman, FS (Northwestern University, Evanston); Rose, G **Journal of Advanced Transportation** Vol. 17 No. 3, 1983, pp 201-217, 38 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

21 389815
CAPACITY OF MODERN RAILWAY LINES [DIE LEISTUNGSFAHIGKEIT MODERNER EISENBAHNSTRECKEN]
A comparison of railway line and motorway performance levels shows that, for equal operational quality and assuming realistic rates of train occupancy at peak hours, modern railway line performance levels are three times as high as those of motorways. Working from the normal daily average, they are much higher than motorway levels both for freight and passenger traffic. However, by batching trains, introducing regular interval services and increasing speeds, the railways can improve their performance still further. [German]

Schwanhaeusser, W **Internationales Verkehrswesen** Vol. 36 No. 1, 1984, pp 32-37, 4 Tab., 3 Phot., 5 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Tetzlaff-Verlag GmbH, Havelstrasse 9, Postfach 4006, 6100 Darmstadt 1, West Germany

21 389832
AN INVESTIGATION OF PASSENGER INTERCHANGE AND TRAIN STANDING TIME AT LRT STATIONS. (1) ALIGHTING, BOARDING AND PLATFORM DISTRIBUTION OF PASSENGERS
The train standing-time at a station is a determinant of the line capacity and the necessary fleet-size. Its determination is usually based on the assumption that boarding and alighting is uniform at all doors of a train. Uniform boarding andd alighting is concerivable if passengers distribute themselves uniformly on station platforms while waiting for trains. The validity of the uniformity assumptions is tested using data from two stations (one CBD, one suburban) of the Calgary, Alberta LRT system. It is shown that passenger distribution on the platform, alighting and boarding is not uniform and is closely related to the location of platform access points. Some strategies that will encourage uniformity are discussed. However, procedures that can estimate the standing time for non-uniform boarding and alighting need to be developed.

Szplett, D Wirasinghe, SC **Journal of Advanced Transportation** Vol. 18 No. 1, 1984, n.p.

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

21 390111
CALCULATION OF PERFORMANCE AND FLEET SIZE IN TRANSIT SYSTEMS
The paper provides a consistent, analytic approach to the calculation, from the demand matrix, of parameters needed to analyze the performance and cost of transit systems. It covers all types of transit systems, including the new automated systems. The basic analysis applies to loop systems, which include those collapsed into line haul systems. It is then extended to all types of network systems in which vehicles may transfer from one line or loop to another. The novel features of the paper lie in 1) the layout of the computation in a straightforward, ordered way; 2) the computation of vehicle dwell times in stations from loading rates; 3) the use of the Poisson distribution to estimate and show how to shorten the passenger wait time in off-line stations; and 4) the simplicity of the means of extending the results to network systems.

Anderson, JE (Minnesota University, Minneapolis) **Journal of Advanced Transportation** Vol. 16 No. 3, 1982, pp 231-252, 6 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

21 390158
SIMPLIFICATIONS FOR SINGLE-ROUTE TRANSIT-RIDERSHIP FORECASTING MODELS
The growth in popularity of microcomputers has reemphasized the need for simplified transit-planning techniques. This paper describes and evaluates a single-route ridership forecasting model which is designed to fit within a modest-sized microcomputer. The model is based upon the traditional four-step urban transportation modeling process, but it is simplified by removing the possibility of multiple transfers and by eliminating the highway network. An analysis of model error shows that these simplifications do not appreciably affect the accuracy of the forecasts. A particular advantage of implementing the model on a microcomputer is the user-friendliness that can be achieved by employing interactive color graphics for data input. (Author/TRRL)

Horowitz, AJ (Wisconsin University, Milwaukee) **Transportation (Netherlands)** Vol. 12 No. 3, Apr. 1984, pp 261-275, 3 Fig., 3 Tab., 9 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 277284)
ORDER FROM: Elsevier Scientific Publishing Company, P.O. Box 211, Journal Division, 1000 AE Amsterdam, Netherlands

21 390169
BUS SERVICE COSTING-AN IMPROVED PLANNING TOOL
This paper describes three contributions to the field of bus costing: (1) an accurate and rapid method of estimating crew shift requirements for any specified service from operating data which are normally readily available. (2) a methodology for analysing the costs of an existing bus system by route and by time period, or for estimating the incremental costs of service changes. (3) a computer package which incorporates both of the above into a simple-to-use costing tool for planning and analysis purposes. The methods use inputs which operators would generally have readily available. They are also relatively easy to apply, particularly if interactive computer programs are used. The methodology and computer package were developed initially for application to the bus and tram services operated by the state transport authority of South Australia. Subsequent application elsewhere has shown that they are transferable to other systems without undue difficulty. Probably the most significant advance over methods previously available is the improved procedures for estimating crew shift requirements for any service, and hence for any service change. The procedures developed and applied with high levels of accuracy in Adelaide have since been further developed and applied with similar accuracy to bus, tram and suburban rail services in other Australian cities. This planning

tool is proving useful in addressing a wide variety of issues where costs of existing services need to be analysed, or incremental costs for service changes to be estimated, for all public transport modes. (TRRL)

Hill, TW Wallis, IP (R Travers Morgan Pty, Australia); Starrs, MM (Department of Transport, South Australia) **Traffic Engineering and Control** Vol. 25 No. 2, Feb. 1984, pp 54-59, 2 Fig., 4 Tab., 4 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 277316)
ORDER FROM: TRRL

22 386226
INSPECTION AND REPAIR FACILITIES FOR MASS TRANSIT RAILWAYS
The author appeals for a larger percentage of funds to be spent on repair facilities if they are to provide a service that ensures high reliability and availability at minimum cost.

Sheldon, JS Vye, RR **Hong Kong Engineer** Vol. 12 No. 1, Jan. 1984, pp 9-16

ACKNOWLEDGMENT: British Railways
ORDER FROM: Asia Trade Journals Limited, 7th Floor, Sincere Insurance Building, 4-6 Hennessy Road, Hong Kong, Hong Kong

22 386249
ON BOARD DATA PROCESSING FOR TRACK RECORDING VEHICLES
The capability of analysing measured track data automatically, using on-board computer processing equipment, can transform a conventional recording vehicle from a role of simply producing records needing visual interpretation, into a system able to function as the prime source of data for programmes used to plan and control the overall track maintenance activity. The cost savings which may be derived from the—now possible—optimisation of the use of maintenance resources, together with operation at increased efficiency can make the installation of this on-board equipment (assuming the availability of off-line equipment with which it can communicate) highly cost effective. British Rail operates two main recording vehicles; the High Speed Track Recording Coach (HSTRC) is used by the Civil Engineering Department as a source of track data for maintenance purposes, and the Track Recording Multiple Unit (TRMU) is used by the Research & Development Division as a source of track data for experimental purposes and as a development vehicle. Both vehicles employ data processing equipment of the type referred to, utilising inter-data Model 70 mini computers. The work described in this paper results from a study carried out to provide alternatives to these computers, since the model 70 is now obsolescent, with the object of using micro-processors, or more precisely micro-computers, of which a wide range of types is now currently available. The system described however is considered to be generally applicable, and capable of installation, on most recording vehicles able to provide the track data in a suitable analogue or digital form.

Lewis, RB Conway, KDW **Rail International** Vol. 15 No. 1, Jan. 1984, pp 33-40

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

22 386293
AN EVALUATION OF THE AUTOMATIC BUS DIAGNOSTIC SYSTEM DEMONSTRATION PROGRAM
Automatic bus diagnostic system (ABDS) is a microprocessor-based test and diagnostic tool that permits rapid sequential inspection and fault isolation of diesel buses. The purpose of the ABDS is to improve both the efficiency of daily bus operations and the 6,000 mile scheduled inspection testing operations, and the effectiveness of bus maintenance for the New York City Transit Authority (NYCTA). The study covered a 10 month period (12 months for installing and calibrating ABDS equipment; and 7 months as the basis for the evaluation). Forty buses were instrumented for ABDS (an Experimental Group) and another forty buses used as a Control Group. Data collected included information on the number and cost of various items: repair events; repair hours; number and cost of road calls; and number and cost of parts used in the maintenance of the buses. This report describes the evaluation of the ABDS performed by the Sperry Corp. at the NYCTA. The report describes and presents the results obtained and the recommendations made. Additional information outlining the background of the study and the nature of the equipment is also supplied as well as references to other studies. Although the report concludes that the ABDS cannot be considered the sole reason for the poorer performance of the Experimental Group, it does recommend that 1) the study be repeated for a full year after reselection of Experimental and Control Groups of buses, and 2) if the test cannot be repeated, then the ABDS in its present configuration is not recommended for installation as an operational system.

Sperry Corporation, Urban Mass Transportation Administration Final Rpt. UMTA-IT-09-0034, Sept. 1983, n.p.

ORDER FROM: NTIS

22 386302
THE AUTOMATED BUS DIAGNOSTIC SYSTEM DEMONSTRATION IN NEW YORK CITY
In response to a growing problem with the quality and efficiency of nationwide bus maintenance practices, an award was granted to the Tri-State Regional Planning Commission for the testing of an automated bus diagnostic system (ABDS). The ABDS was designed to improve the effectiveness of bus maintenance through early detection of bus defects, improved diagnosis and fault isolation, and a reduction in improper repairs. It was anticipated that the efficiency of bus operations would be improved by decreasing the number of in-service breakdowns and reducing the number of spare buses required to maintain scheduled service. The ABDS is a microprocessor-based test and diagnostic tool that permits rapid sequential inspection and fault isolation in buses and their subsystems. The evaluation examined ABDS performance, its operational and economic impacts, and the application of this concept for other transit operations. The primary evaluation approach was to compare operational and economic data for the experimental buses and a control group of buses. The ABDS demonstration proved that diagnostic equipment can be successfully installed and operated at a major transit system maintenance facility. However, reluctance to use the maintenance area unit by some maintenance personnel was a problem throughout the demonstration. In contrast, the fuel island unit seemed to have been readily accepted. The data indicated that the ABDS equipment itself performed very well. During the evaluation period, ABDS repair hours increased for the experimental group as compared to the control group. However, ABDS-type road calls were reduced to a greater degree for the experimental buses. In addition, total out-of-service time for the experimental group was less than the control group during the last two months of the demonstration. Therefore, it appears that the added repairs on the experimental group reduced their road calls and down time. The economic analysis showed that operational cost exceeded quantifiable benefits for the evaluation period. However, there were several maintenance and service benefits which could not be quantified. The report points out that 6 months is too short a period to fully evaluate the economics of this concept and more evaluation of ABDS is needed to determine long-term benefits and cost effectiveness.

Casey, RF
Transportation Systems Center, Urban Mass Transportation Administration, (DTS-64) Final Rpt. UMTA-IT-06-0102-83-1, DOT-TSC-UMTA-83-43, Dec. 1983, 120p Contract IT-06-0102
ORDER FROM: NTIS PB84-160944

22 386372
THE FLEET MAINTENANCE MANAGEMENT CYCLE
Efficient management of a vehicle fleet involves the continuous and successful execution of four functions: Procurement; Inspection and Testing; Preventive and Corrective Maintenance; and Management Information System. For bus and rail-vehicle purchasers, the relative strengths of competitive manufacturers may suggest that life-cycle cost or negotiated procurement may be more economical than a simple low bid. Long-term procurement can enable the buyer to budget purchases and the supplier to count on a base of business well defined in volume. Production inspection and tests assures that manufacturing discrepancies have been corrected and form the basis for the owner's preventive/corrective maintenance program. The ratio of preventive to corrective maintenance depends on vehicle age and the user's ability to tolerate unscheduled breakdowns. Continuous monitoring of fluids consumption is important along with tracking of performance of vital components. Training and supervision are also crucial. The management information system must provide information for supervisors, managers and policy makers so that the utilization of scarce resources will be maximized.

Ward, PE (Charles River Associates, Incorporated) **Transitions** Winter 1984, pp 21-35, 2 Fig.

ORDER FROM: ATE Management and Service Company, Incorporated, Editor, 617 Vine Street, Suite 800, Cincinnati, Ohio, 45202

22 386373
MEANWHILE BACK IN THE SHOP
Worcester Area Transportation Co. has leased an EZFLEET computer system for its bus maintenance operations. The system consists of simple portable data collectors, a software package and an Apple II computer. The hand-held data collectors are used by mechanics to input daily information

on mileage; tire pressure; and fuel, lubricant and coolants added for each bus serviced. This stored information is subsequently dumped into the computer memory each night. The arriving day foreman has a complete status report on the fleet on which to base his work-day planning. Computer techniques were quickly merged into daily operations. Improved inventory control is expected to reduce by one third the value of spare parts. It is expected that the maintenance program will be transferred to a larger computer the Massachusetts system plans to acquire. To date mechanics and supervisors have been comfortable with the phased-in data processing.

Pence, H (Worcester Area Transportation Company, Inc) **Transitions** 1984, pp 37-45

ORDER FROM: ATE Management and Service Company, Incorporated, Editor, 617 Vine Street, Suite 800, Cincinnati, Ohio, 45202

22 386374
MIS—FOR WHOM THE SYSTEM FUNCTIONS
This article describes the evolution of business computer systems, suggesting three categories of data/information users in business organizations and indicating the right and wrong ways to implement a modern mangement information system (MIS). The three user categories are inputters, manipulators and assimilators. The changing roles of these groups are discussed and examples of computer applications for bus maintenance are given. It is concluded that: (1) MIS is no better than the data collected, processed and reported; (2) Methods for collecting data should consider needs of people doing the collecting and prove its relevance to them; (3) Key personnel in source departments should be part of the computer system design team a active participants; (4) The system must improve management and work techniques in the source departments.

Hein, E **Transitions** 1984, pp 47-57

ORDER FROM: ATE Management and Service Company, Incorporated, Editor, 617 Vine Street, Suite 800, Cincinnati, Ohio, 45202

22 386390
ARE YOU ON THE NEW "TOTAL PLANNED MAINTENANCE" BANDWAGON?
Maintenance management for vehicle fleets, large and small, is discussed in terms of the taxi industry. Total Planned Maintenance (TPM) has as its goal the avoidance of breakdowns by use of several daily procedures: (1) Establishing of objectives and rewarding of managers for their maintenance achievements; (2) Microcomputer installations in or near the maintenance shop for fleet manager use; (3) Daily data input; (4) Regular vehicle servicing; (5) Complete preventive maintenance program for vehicles; (6) Daily defects control; (7) Fluids "exceptions" for individual vehicles; (8) Complete records. Summaries with the article indicate the improvements in productivity achievable by various levels of TPM, a cost analysis of TPM benefits, and a TPM benefits review. It is concluded that TPM offers the best prospect for productivity improvements, fuel conservation, reliability and safety. It may be the most significant advancement in maintenance management since preventive maintenance was introduced.

Duckworth, L (ATE Management and Service Company, Incorporated) **Taxicab Management** Vol. 1 No. 1, Apr. 1984, 5p, 2 Fig., 2 Tab.

ORDER FROM: Taxicab Management, International Taxicab Association, 11300 Rockville Pike, Rockville, Maryland, 20852

22 387662
ACQUISITION OF DATA FOR THE MAINTENANCE OF ELECTRONIC EQUIPMENT [DIE ERFASSUNG VON DATEN ZUR WARTUNG ELEKTRONISCHER GERAETE]
The widespread application of electronic controls in the transit industry necessitates creation of coherent policies for their management. It is essential to know how the equipment really functions, requiring that extensive data be collected and be processed by computers. The object of this paper is to guide the designer of an equipment-monitoring system in determining what data is to be acquired. It is based on experience gained by various Paris Metro departments, dealing with the technical aspects of monitoring operational reliability and serviceability without involving the economics. After describing the problems in defining terms, it discusses the minimum data to be collected and lists precautions to be taken when designing the forms for data acquisition. Every such system must be capable of evolution to satisfy possible new requirements. An appendix is a case study the application of the described processes to a specific group of Paris Metro transit cars with extensive use of electronic controls. [German]

Calliez, P (Regie Autonome des Transports Parisiens) **UITP Revue** Vol. 33 No. 1, 1984, pp 17-21

ORDER FROM: International Union of Public Transport, Avenue de l'Uruguay 19, B-1050 Brussels, Belgium

22 389358
VALUE ENGINEERING FOR BUS MAINTENANCE FACILTTIES
Value engineering is a systematic design review and cost control technique that analyzes functions of a system, facility or materials and matches the most cost effective design to the functions with the objective of achieving the required function at the lowest life cycle cost consistent with requirements for performance, reliability, quality, maintainability and safety. The recently initiated Value Engineering program of UMTA is to evaluate the VE technique in the design and construction of bus maintenance facilities. UMTA believes that this program can make substantial reductions in initial and recurring costs associated with the construction, rehabilitation, operation and maintenance of bus facilities. The general discussion of VE is accompanied by an example of a facility workshop where illumination is studied.

Urban Mass Transportation Administration May 1984, 6p, 2 Phot., 6 Ref.

ORDER FROM: UMTA

22 389377
SOUTHERN DIVISION MAINTENANCE FACILITIES MASTER PLAN FOR N.J. TRANSIT BUS OPERATIONS, INC. REVISED EDITION
Deadhead or non-revenue costs, obsolete, deteriorating and inefficient bus maintenance facilities as well as concerns about garage location and size generated this study to develop a master plan to guide the current effort to rehabilitate and replace the 5 bus maintenance/garage facilities of the NJ Transit Bus Operations, Inc. (NJTBus) Southern Division (Atlantic City, Maple Shade, Newton Avenue, Turnersville, and Wildwood). Currently, the NJTBus Southern Division fleet consists of 266 buses (projected growth factor of 15 percent) assigned to 5 maintenance facilities scattered throughout the region. The purpose of this study was to examine the operations of the 5 facilities and the potential for renovation and relocation. The report discusses the factors considered in developing the master plan for the bus maintenance garages, namely: existing garage facilities; deadhead or non-revenue cost analysis computer program; and capital and operating costs. Five alternate scenarios were developed and tested to determine the optimum number and location of garages. Scenarios are described herein. In addition, the report presents an evaluation of each alternate scenario in terms of total costs, including capital and operating costs, and the physical limitations of each site. The recommended bus maintenance garage program presented in this report has a total cost of about $27 million, or, excluding construction cost of 40 spaces for future growth, a cost of about $23 million for the existing fleet (266). This is about $11 million more than the "do nothing" alternative. The report states that the annualized capital costs incurred by implementation of the recommended program are offset by operational savings.

Daniel, Mann, Johnson and Mendenhall, New Jersey Transit, Urban Mass Transportation Administration Final Rpt. UMTA-PA-09-0080-84, Apr. 1984, 84p, 12 Fig., 18 Tab. Contract UMTA-PA-09-0080
ORDER FROM: UMTA

22 389853
AN ONGOING DRIVE TO IMPROVE
Washington Metro, with the 5th largest American bus fleet, has in 11 years since its formation transformed an aging fleet of 1800 buses and a series of obsolete trolley barns where they were maintained into a very modern fleet with many new facilities. WMATA has replaced or remanufactured its original fleet, opened new maintenance centers and taken steps to increase productivity. The article discusses the bus operations division where

emphasis has been on reduced absenteeism, preventive maintenance and quality assurance.

Metro Vol. 80 No. 5, Sept. 1984, 3p, 3 Phot.

ORDER FROM: Bobit Publishing Company, 2500 Artesia Boulevard, Redondo Beach, California, 90278

23 386140
GUIDE FOR THE EVALUATION OF HUMAN EXPOSURE TO WHOLE-BODY VIBRATION. ADDENDUM 2: EVALUATION OF EXPOSURE TO WHOLE-BODY Z-AXIS VERTICAL VIBRATION IN THE FREQUENCY RANGE 0.1 TO 0.63 HZ
This addendum covers vibration transmitted to the body in the frequency range 0.1 to 0.63 hz. This addendum applies especially to discrete frequency and narrow band of vibration and provisionally to random and non-periodic vibrations within the specified frequency range. The boundaries defined in this addendum are intended to minimise the severe discomfort associated with motion sickness and allied symptoms. The "severe discomfort" boundary has some similarity to, but is not an extension of, the "exposure limit" (see ISO 2631) which is intended to protect against pain and permanent injury rather than temporary incapacity. Because of lack of data, it is not possible to recommend an extension of the fatigue-decreased proficiency boundary below 1 hz, but suggestions are made on the unwanted effects on activity due to inertial loading. Lack of data also confines the recommendations specifically to z-axis vibration only, applied to unadapted sitting or standing fit young men. The existence of measured levels exceeding the boundaries contained in this addendum should not be construed as implying that undesirable effects occur or will occur in random vibration environments where experience shows otherwise. (TRRL)

ISO International Standards NISO 2631-1, May 1982, 5p, 1 Fig., 1 Tab., 9 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275031)
ORDER FROM: International Organization for Standardization, P.O. Box 56, CH-1211 Geneva 20, Switzerland

23 386141
GUIDE FOR THE EVALUATION OF HUMAN EXPOSURE TO WHOLE-BODY VIBRATION. 2ND EDITION
This international standard defines and gives numerical values for limits of exposure for vibrations transmitted from solid surfaces to the human body in the frequency range 1 to 80 hz. It may be applied, within the specified frequency range, to periodic vibrations and to random or non-periodic vibrations with a distributed frequency spectrum. Provisionally, it may also be applied to continuous shock-type excitation in so far as the energy in question is contained within the 1 to 80 hz band. These limits are given for use according to the three generally recognizable criteria of preserving comfort, working efficiency, and safety or health. These limits are specified in terms of of vibration frequency, acceleration magnitude, exposure time and the direction of vibration relative to the torso. This direction is defined according to the recognized anatomical axes of the human body. This international standard is applicable only to situations involving people in normal health. Amendment 1 to this international standard was circulated to the member bodies in February 1980. (TRRL)

ISO International Standards NISO 2631-1, 1978, 15p, 5 Fig., 3 Tab., 34 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275030)
ORDER FROM: International Organization for Standardization, P.O. Box 56, CH-1211 Geneva 20, Switzerland

23 386151
THE WORKING ENVIRONMENT OF TAXI DRIVERS [TAXIFOERARES ARBETSMILJOE]
The effects of environmental factors on job satisfaction, comfort and safety, and of driver environment on traffic safety, have been assessed. As regards the climate in taxis, comfort may be considerably reduced on hot summer days due to high radiant temperatures, and in winter due to cold interiors on starting and after longer breaks. No measurements of air pollution inside the car have been made, but it may be assumed that levels inside are largely the same as outside. Rear view through the mirrors is unsatisfactory. Many taxi drivers suffer from back complaints. Seats often have insufficient adjustment; this should be improved. The protective hoods fitted to drivers' seats have been investigated. Despite some drawbacks, they should be retained or replaced by a modified model. The combination of high infrasound level and low noise level which occurs in some cars can have deleterious effects. However, this does not seem to be a problem in taxis. The vdu should have better lighting. Interior lighting should be improved. Many taxi drivers use a seat belt, but a campaign should be started to increase usage, and withdrawal of the dispensation from compulsory wearing of seat belts should be considered. (TRRL) [Swedish]

Transportfackens Yrkes- och Arbetsmiljoenaemnd TYA Rapport 1983:1, 1983, 89p, 15 Fig., 9 Tab., 5 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 275007), National Swedish Road & Traffic Research Institute
ORDER FROM: Transportfackens Yrkes- och Arbetsmiljoenaemnd, Vaestra Vaegen 11A, Solna, Sweden

23 386280
REVIEW OF SOME UNION AGREEMENTS OPERATING WITHIN ENGLAND, SCOTLAND AND WALES
A survey is reported of constraints on bus services and crews, undertaken to determine the effects of different levels of these constraints on costs. Nineteen operators with fleet sizes of at least 150 buses were included in the survey. The factors considered included maximum stretch length, maximum platform time, maximum spreadover, minimum daily payment, latest sign off for each duty, minimum length of meal break, duties with no meal breaks, earliest signing on time, duties paid through, canteen opening times, travelling times between garage and relief points, maximum number of meal breaks in a schedule, maximum number of buses in a duty, duty mix and numerous other unwritten rules. The possible effects of changing the limits of certain of these items on crew schedules are discussed.

Parker, ME Wren, A
Leeds University, England, Science Research Council LU/DCS/R-144, Mar. 1981, 29p

ORDER FROM: NTIS PB84-144195

23 386281
QUALITY CIRCLES IN SERVICE INDUSTRIES: COMPREHENSIVE GUIDELINES FOR INCREASED PRODUCTIVITY AND EFFICIENCY
The authors show how quality circle techniques proven in the manufacturing sector can be used in financial institutions, government agencies, and the computer industry. They provide practical guidelines for writing handbooks for leaders and members and for preparing an effective management presentation.

Ingle, S Ingle, N
Prentice-Hall, Incorporated 1983, 359p

ACKNOWLEDGMENT: Canadian Pacific
ORDER FROM: Prentice-Hall, Incorporated, Route 9W, Englewood Cliffs, New Jersey, 07632

23 386296
OPERATOR ABSENCE IN THE TRANSIT INDUSTRY
Efficiency in the urban public transportation sector has been identified as a major topic of interest and concern by the Urban Mass Transportation Administration. In line with this concern, it has been found that transit management policies need to be evaluated, and if necessary, changed to improve the operations of all types of transit properties. One area of transit management that has been shown to seriously affect efficiency and productivity is management's attempt to deal with the problem of absenteeism. On a nationwide basis, public transportation properties experience tremendous costs associated with excessive levels of bus operator absence. This research examined the problem through an integrated pair of studies. In the first study, the focus was on the organizational level, and 130 bus properties across the country were surveyed in an effort to highlight the organizational characteristics that influence operators' attendance. The second study surveyed over 300 bus operators from ten properties representing a variety of geographic locations and sizes in an attempt to identify individual operators' attitudes and characteristics that correlate with absence. The results suggest that organizational characteristics, such as size of the property, climate, and average age of the operator, together with individual responses, such as job dissatisfaction, job commitment, and various types of stress, contribute to an operator's attendance record. A series of potential programs geared toward reducing operator absence is presented. These programs consist of reducing the perceived size of the organization, more complete recordkeeping of absences, including a feedback component, and workshops for operators to help them cope with job-related stress. These programs were examined from a cost-benefit or utility perspective to determine their

anticipated return on investment. A recommendation for a trial implementation of two of the programs is also made.

Jacobs, RR Shapiro, KL Ray, WJ
Pennsylvania Transportation Institute, Urban Mass Transportation Administration Final Rpt. UMTA-PA-11-0028-83-1, PTI 8320, Oct. 1983, 102p Contract PA-11-0028
ORDER FROM: NTIS PB84-157098

23 386352
SECTION 13(C) LABOR PROTECTIVE AGREEMENTS AND PARATRANSIT: RETHINKING LABOR DEPARTMENT POLICY
This history of application of UMTA Act Section 13(c) labor protective agreements to paratransit service and the legal implications of such steps are discussed. UMTA financial aid has been legislatively conditioned upon certification by the Labor Department that adequate protective arrangements have been made for mass transportation workers in the grantee's area, insuring that they will not lose collective bargaining rights or suffer adverse economic effects. Special problems arise in paratransit. What was originally a worker protective arrangement appears in danger of becoming a union protective device that threatens free development of flexible and responsive local transportation systems. Grant applicants may bargain away the interests of its taxpaying constituents in low-cost public transport services and the rights of any newly hired workers to accept or reject specific union representation. The author advocates that the specifically bargained agreement be dispensed with whenever possible and the Labor Department more readily use its certification authority to counterbalance unfair bargaining advantage to foster development of sound, responsive public transportation systems.

Wickham, DQ (Tennessee University College of Law) **Kansas Law Review** Reprint Vol. 27 No. 1, 1978, pp 63-83

ORDER FROM: Kansas University, School of Law, Room 510, Green Hall, Lawrence, Kansas, 66045

23 386370
TRANSIT LABOR-MANAGEMENT RELATIONS THE VIEW FROM THE ATU
The views of an executive of the Amalgamated Transit Union with respect to labor-management relations in the transit industry are given. These relations ebb and flow at different periods with the present termed, for the unionists' view, a "down time" for labor. The economic downturn, deregulation, a pool of unemployed and rapid technological change have affected attitudes on both sides. ATU's primary responsibility is to improve wages and working conditions, and to achieve a sense of respect and dignity for its members on the job. With all organized labor it seeks through collective bargaining, political action and social involvement to secure a fairer share of the nation's wealth for all citizens. The ATU strives to apply common sense and reasonableness in dealings with transit management, aiming to provide the best possible transit service and the best possible price. Both management and labor must cooperate. ATU requires local unions to offer arbitration as a means of settling disputes. It is concluded that the public will be best served when labor and management communicate and cooperate for the common good.

LaSala, J (Amalgamated Transit Union, AFL-CIO/CLC) **Transitions** 1984, pp 1-8

ORDER FROM: ATE Management and Service Company, Incorporated, Editor, 617 Vine Street, Suite 800, Cincinnati, Ohio, 45202

23 386406
ASSESSMENT OF QUALITY-OF-WORK-LIFE PROGRAMS FOR THE TRANSIT INDUSTRY. RESEARCH REPORT
This report documents a review of quality of work life, programs and concept; an evaluation of the transit environment; and and assessment for potential applications within transit agencies. A companion document (NCTRP Report 6) contains model programs to guide the initiation and maintenance of quality-of-work-life programs for a transit agency. The political and fiscal environment of transit agencies is in a period of significant change. Scarcity of funds will mean an emphasis on productivity and efforts to retain and motivate quality employees. New federal policies stressing local initiative will encourage management to be more sensitive to innovative ideas, and a changing work force will make different demands. Although the transit industry is highly labor-intensive, a great deal of emphasis has been placed in the past on capital development, financial controls, and transportation planning. Potentially, one of the most important areas for improving transit agency effectiveness is the development and management of human resources. Quality-of-work-life programs can provide such an opportunity by stressing the importance of the individual as well as the productive gains to the agency. The results of this study have been published in two reports. This report, the main research document, includes an overview of the summary of findings; a main text that thoroughly documents the study effort and recommendations; and several appendixes that provide a master list of references, a selected annotated bibliography, case studies and summary results of a survey of transit agencies. A single table conveniently documents current activity in various industries.

Clark, SG Warren, KD Greisinger, G (Public Administration Service) **NCTRP Report** No. 5, Dec. 1983, 99p, Figs., Tabs., Refs., 3 App.

ORDER FROM: TRB Publications Off

23 386407
ASSESSMENT OF QUALITY-OF-WORK-LIFE PROGRAMS FOR THE TRANSIT. MODEL PROGRAMS
The model programs documented in this report will guide general mangers, officials of transit unions, and others responsible for human resources development in initiating and maintaining quality-of-work-life programs within transit agencies. Of interest to the same individuals should be a companion document, the final report (NCTRP Report 5), which thoroughly documents the study effort leading to the model programs and provides the information needed for a more complete understanding of quality of work life and its relationship to the transit industry. Although quality-of-work-life programs may focus on particular employees or groups of employees, the initiation and success of a program many times depend on the attitude and environment created by upper management and, if unionized, the interaction between management and the affected unions. Therefore, recommendations on the potential application of quality-of-work-life programs required consideration of both transit agencies as a whole and individual employees. This report on model programs provides specific guidance for initiating and maintaining programs within a transit agency.

Clark, SG Warren, KD Greisinger, G (Public Administration Service) **NCTRP Report** No. 6, Dec. 1983, 37p, 7 Fig., Refs., 1 App.

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23 386409
TRANSPORTATION WORKSHOP FOR MINORITY INSTITUTION FACULTY
A summer workshop to train faculty from minority institutions in various aspects of transportation research was held in the summers of 1980 and 1981. The purpose of the workshop was to generate a greater response from transportation faculty in such institutions to UMTA research programs. Faculty at minority institutions have a number of institutional constraints that hinder full participation in research programs. The workshop was designed to help faculty deal with those constraints and also approach the complexities of grant and contract research. A rigorous selection process culminated in the choice of 15 participants in 1980 and 12 in 1981. The majority of the participants were from historically black colleges. Seven weeks of the workshop were spent in carrying out the various phases of a research project-from a grant application through a final report. One week of the workshop was held in New York City, where the participants had extensive lectures on and tours of New York's complex transit system. The success of the workshop was measured by both postworkshop evaluation and the continuing transportation work of the participants. The workshop was influential in the establishment of a new working network.

This paper appeared in Transportation Research Record No. 929, Education and Training.

Paaswell, RE (State University of New York, Buffalo); Pignataro, LJ (Polytechnic Institute of New York); Jasper, N (Urban Mass Transportation Administration); Falcocchio, J Roess, R (Polytechnic Institute of New York) **Transportation Research Record** No. 929, 1983, pp 1-9, 3 Fig., 2 Tab.

ORDER FROM: TRB Publications Off DOTL JC

23 386410
REENTRY OF WOMEN INTO THE TRANSPORTATION PROFESSION: PROGRAM AND POTENTIAL
A National Science Foundation Women in Science program for the retraining of women seeking to reenter the job market in the transportation profession is described and discussed. The suitability of transportation as a reentry field is argued, and reentry students are shown to be a potentially large market of new students for graduate transportation programs.

This paper appeared in Transportation Research Record No. 929, Education and Training.

Roess, RP Kramer, PE Pignataro, LJ (Polytechnic Institute of New York) **Transportation Research Record** No. 929, 1983, pp 9-13, 1 Fig., 4 Tab.

ORDER FROM: TRB Publications Off DOTL JC

23 386411
DESIGN OF TRAINING PROGRAMS FOR TRANSIT MIDDLE-MANAGERS
A management training program developed by Polytechnic Institute of New York that is based on specific transit system experience is reviewed in this paper. The program will now be given under the sponsorship of UMTA, under funding from Section 10 of the Urban Mass Transportation Act of 1964. The process of training program design based on need analysis and systematic organization diagnosis hs great potential for improving the impact of training on transit system operations. Finally, the concept of teams of university faculty drawn from management, transportation engineering, and industrial engineering disciplines is explored. The maximum potential for helping transit systems to develop state-of-the-art management development and organizational development strategies tailor-made for each transit system is achieved by using this approach.

This paper appeared in Transportation Research Record No. 929, Education and Training.

Schrier, DA Roess, RP Allison, WS (Polytechnic Institute of New York) **Transportation Research Record** No. 929, 1983, pp 13-16, 1 Fig., 2 Tab., 1 Ref.

ORDER FROM: TRB Publications Off DOTL JC

23 386986
THE CHANGING NATURE OF LABOR/MANAGEMENT RELATIONS IN TRANSPORTATION
The nature of labor/management relations and collective bargaining in transportation industries has changed dramatically during the past several years. Unprecedented changes in work rules, compensation patterns, and bargaining format have been prompted by a combination of economic conditions and public policies which have fundamentally altered the structure of the transportation industries. While such changes can be viewed with alarm by the participants, there is the opportunity for improving the efficiency of transportation companies through mutually beneficial cooperation between management and labor. The productivity changes in airlines, trucking, railroads and mass transit are discussed. There has been an erosion of the nationwide bargaining format and changes in federal policies related to labor protection, government funding and public sector strikes. Managers and union leaders are challenged to respond rapidly to the new environment. Improved communications must be established and human resource management must be expanded. Union leaders must improve communications with their members and be able to see management positions. Public opinion concerning transportation labor unions has deteriorated badly in recent years.

Lieb, RC (Northeastern University) **Transportation Journal** Vol. 23 No. 3, 1984, pp 4-14

ORDER FROM: University Microfilms International, 300 North Zeeb Road, Ann Arbor, Michigan, 48106

23 387700
AMALGAMATED TRANSIT UNION, RESEARCH DEPARTMENT BULLETIN, JUNE 1984
Wage settlements negotiated by the Amalgamated Transit Union (ATU) in 1983 contained wage increases, on the average, higher than the National wage averages reported by Statistics Canada and the U.S. Bureau of Labor Statistics. The 121 contracts covering 45,000 ATU members averaged an increase of 4.1 percent in the first contract year and 4 percent annually over the lives of the contracts. Cost of Living Allowance (COLA) increases brought the totals to 4.4 and 4.7 percent, respectively. COLA clauses were incorporated in 28 contracts. When bargining units are divided into size categories, it was found that the larger units did not do as well as the medium and small units in their new contracts. ATU finds that in a year characterized by high national unemployment and concession bargaining, the wage increases negotiated were consistently above national averages and, in most cases, above the national inflation rate. Only 3 contracts showed wage decreases and another 21 had no base wage increase in the first year. Contract details for individual transit operating agencies are given, along with swing-run provisions, guarantee provisions, allowance provisions, and payments for selected special duties and for uniforms.

Amalgamated Transit Union Vol. 11 No. 2, June 1984, 45p

ORDER FROM: Amalgamated Transit Union, 100 Indiana Avenue, NW, Washington, D.C., 20001

23 387706
ASSESSING PERSONNEL MOTIVATION NEEDS IN TRANSIT: THE TWIN CITIES STUDY
In a labor-intensive industry like transit, one means of improving productivity is to motivate personnel. Limited financial resources and the changing age composition of today's work-force are two important factors in such motivation. The Twin Cities Metropolitan Transit Commission (MTC), operator of the transit system in Minneapolis-St. Paul Metropolitan area, had its Human Resources Department develop a Motivational Research Project to better understand the needs of its labor force. This report documents the initial step in the project—an assessment of the employees' feeling and attitudes toward the workplace. A written survey, a number of group discussions and in-depth interviews were conducted. This report includes a description of the project setting and the events that led to its initiation; a discussion of the design of the study; the results of the survey, discussion groups and interviews; and the conclusions. MTC employees were found to have real pride in what they do and the agency for which they work. Their jobs are an important element in their lives and the quality of the workplace is a significant element in job satisfaction. The initial phase has led to a series of follow-on efforts.

Rubin, D
Comsis Corporation, Urban Mass Transportation Administration, Office of the Secretary of Transportation Final Rpt. DOT-I-84-19, Oct. 1983, 135p, 31 Tab., 5 App.

ORDER FROM: OST

23 387936
RESOURCE GUIDE FOR TRANSPORTATION ENGINEERING EDUCATION
This bibliography contains useful and current references for transportation engineering education and practice. Its publication is the result of cooperation between the ASCE Urban Transportation Division Committee on Education and the TRB Committee on Transportation Education and Training. The ASCE committee has focused largely on undergraduate transportation education in civil engineering; the TRB committee has dealt with broader issues primarily useful at the graduate level. Books/and journals deal with the following areas: General; planning; design; traffic; transit; rail; aviation; environmental; accident analysis; economics; motor carriers; marine; safety; policy; materials. Each publication is coded also to indicate whether its primary target is undergraduate, graduate or reference.

Bibliography No. 61, 1984, 57p

ORDER FROM: TRB Publications Off

23 389360
GUIDE TO EMPLOYING HANDICAPPED PERSONS IN THE TRANSIT INDUSTRY
This document has been developed as a management training tool for use by mass transit operators who are concerned with improving their employment practices and policies affecting handicapped persons. The Guide is disseminated as an Interim Report for the Joint Transit Industry Training Project for the employment of the Handicapped. This project is sponsored through UMTA's Transportation Management Program, and developed under the technical supervision of its Human Resources Development and Training staff. During the research phase of this project, interviews were conducted at six major transit systems to determine how

handicapped workers have fared in terms of equal opportunity. The results of that research will be summarized in the project's final report. This document is an attempt to address the practical issues confronted by transit systems in their efforts to hire and place handicapped persons in their work force. It discusses employment policies and practices which may hinder the selection and placement of handicapped persons. It also presents suggestions on effective methods of hiring and reinstating disabled workers in the mass transportation industry.

Donlon, B Saskel, S McGee, M Chasen, D
Russell (Harold) Associates, Incorporated, Urban Mass Transportation Administration Intrm Rpt. UMTA-MA-06-0105-81-1, Dec. 1981, 56p Contract DTUM-60-80-C-72042
ORDER FROM: UMTA

23 389362
OPERATOR AVAILABILITY MANAGEMENT METHODS
Management of operator availability represents a collection of procedures and information used to maintain cost-effective staffing levels. It addresses only the mechanics of matching operator supply with demand, aiming to minimize that component of operating costs. As transit managers seek to increase productivity, the task of achieving a cost effective driver inventory cuts across organizational lines and demands effective planning, coordination and control. This report describes procedures and techniques that promote a greater understanding of the dynamics of operator availability management by describing techniques employed by three U.S. transit systems which have proven effective. Two basic controls are required: Informational—collection and abstraction of data for management purposes, and organizational—coordination of different functions reporting to different managers. Typically six organizational units have some impact on the process: Service planning, scheduling, transportation administration, transportation divisions, transportation instruction and personnel. Case studies show controls developed in Seattle, Minneapolis/St. Paul and Albany, N.Y.

Booz-Allen and Hamilton, Incorporated, MacDorman (LC) and Associates, Urban Mass Transportation Administration Final Rpt. DOT-I-84-23, June 1984, v.p., 1 App.

ORDER FROM: Office of the Secretary of Transportation, Technology Sharing Program, 400 7th Street, SW, Washington, D.C., 20590

23 389374
JOINT TRANSIT INDUSTRY TRAINING PROJECT FOR EMPLOYMENT OF THE HANDICAPPED CASE STUDIES: TRAINER'S GUIDE
The ten case studies in this booklet comprise one portion of a training program designed to assist managers in the public transportation industry in their efforts to hire and accommodate handicapped persons. The case studies are illustrative of the types of problems that confront handicapped persons in securing jobs and the issues faced by personnel decision-makers and supervisors who may be dealing with handicapped employees in greater numbers than ever before. The situations that form the basis of these of these case studies reflect actual policies and practices in effect in the public transit industry today. They are designed to provide managers and supervisors with an increased awareness of the needs and concerns of the handicapped worker and provide a basis for discussion of constructive ways of addressing these concerns within the parameters of sound management practice.

Russell (Harold) Associates, Incorporated, Urban Mass Transportation Administration UMTA-MA-06-0105-81-1, DTUM60-80-C-72042, 44p

ORDER FROM: UMTA

23 389873
OPO ON THE H&C
One-person operation was introduced experimentally on a surface line of London Transport connecting Hammersmith and Whitechapel early in 1984. Without guards, the rapid transit train operators had to open car doors, look back along the train or check rear-view mirrors or television screens a short distance in front of the stoped train to determine when it would be appropriate to close doors, and to monitor the mirror or screen again as the train departed the station. LT's Victoria Line trains have been worked by only one person since they went into service in 1967; this is in conjunction with automatic train operation. OPO has been found to present no technical problems; labor negotiations and government safety requirements remain to be resolved. Appraisal of the conversion from two-person to one-person operation should be cost effective.

Abbott, J **Modern Railways** Vol. 41 No. 431, Aug. 1984, pp 401-403, 7 Phot.

ORDER FROM: Allan (Ian) Limited, Terminal House, Shepperton TW17 8AS, Middlesex, England

23 390152
BUS DRIVER IN THE CITY. AN OCCUPATION WITH HIGH RISK TO HEALTH [STADSBUSCHAUFFEUR, EEN BEROEP MET HOGE RISICO'S VOOR DE GEZONDHEID]
Some epidemiological studies which underline the theory of an extra ageing of bus drivers are discussed. The importance of the major stress factors of this occupation is discussed. A study made by the author is concerned with severe stress effects on drivers who have already undergone the ageing process for some time. Finally some critical notes on the new tariff plan for public transport in the Netherlands are given. (TRRL) [Dutch]

Kompier, M **Nederlands Transport** Vol. 36 No. 2, Jan. 1984, pp 8-14, 1 Fig., 2 Tab., 4 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 276734)
ORDER FROM: TIJL Tijdschriften BV, P.O. Box 9943, Amsterdam, Netherlands

23 390167
THE PUBLIC SERVICE VEHICLE DRIVING TEST
With a few exceptions (community buses or school buses owned by an education authority) a PSV driver licence is needed by anyone who drives a bus or coach carrying passengers for hire or reward. This booklet explains what the public service vehicle driving test involves, and how to prepare for it. It also gives details of the EEC driver training requirements which are involved in the test. (TRRL)

South Eastern Traffic Area Monograph DLP 68, Apr. 1984, 21p

ACKNOWLEDGMENT: TRRL (IRRD 278206)
ORDER FROM: South Eastern Traffic Area, 3 Ivy Terrace, Eastbourne, Sussex, England

24 386195
PUBLIC TRANSPORT "IN THE MARKET"? [OPENBAAR VERVOER IN DE MARKT?]
In an open economy the rising of production costs can be tempered by improving the productivity and/or using the advantages of international trade. In the field of e.g. Public transport, national health, education and public housing it is quite obvious that there is a lack of possibilities. These sectors therefore tend to move from the market sector to the public sector where a national government has to deal with the problem of raising money to finance these sectors. As the need for money tends to rise more strongly than the market sector can bear there is a structural tendency to spend more money than available. That is why the Dutch government had to temporize its policy in the field of collective care. There is a need for better conditions for an integrated traffic and transport policy. Environmental planning and the planning of public transport are subjects which should be dealt with in one planning structure. Systems of criteria for the levels of service could be used as a distribution system for the money available. Tariffs should be used more as an instrument of financing public transport but tariff policy in public transport should be part of a general policy in the field of rising prices of collective goods to reach a new equilibrium. Public transport operators can contribute to control the rising of public transport costs if they could operate as if they were operating a company in the market sector. (TRRL) [Dutch]

Rat, JW **Tijdschrift voor Vervoerswetenschap** Vol. 19 No. 4, 1983, pp 339-348, 2 Fig., 1 Tab., 5 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275503), Institute for Road Safety Research SWOV
ORDER FROM: Netherlands Institute of Transport, Polakweg 13, 2288 GG Rijswijk, Netherlands

24 386197
A TRANSPORT INFORMATION SYSTEM FOR URBAN AND RURAL PUBLIC TRANSPORT OPERATORS [EEN VERVOERSINFORMATIESYSTEEM VOOR STAD EN STREEKVERVOERBEDRIJVEN]
In recent years both within the central government and the public transport operators in the Netherlands an increasing demand for a management information system has developed. The central government needs insights in the overall performance of the public transport system in order to implement and monitor their integrated national transport policy, while public transport operators need more detailed operational information for their short term and longer term planning. The Transport Information System (TIS) should provide the necessary information in a standardised format at different levels of aggregation. The starting point for this system should be a reliable registration system of passengers and trip times. For longer term planning this registration system should be complemented by a forecasting system based on passenger surveys and socio-economic data from other sources. In 1982 the Ministry of Transport, together with organisations of urban and rural public transport operators commissioned a group of consultants to carry out a pilot study in order to develop the first part of TIS. This part of TIS is based on automated registration of numbers of passengers and trip times and includes three components: (1) the development of a data-converter, which is needed to "translate" the information collected by the automatic registration system into a data base which can be used for the information system; (2) the development of the information system itself, which includes data-manipulation and presentation based on; (3) a statistical study, aiming to identify optimal sampling strategies for using the limited number of automated registration systems. It is hoped that by the end of 1983 this first part of TIS will be fully operational at three operators. The development of the second part of TIS has been started very recently, aiming to supplement the data resulting from the first part of TIS with data from small-scale passenger surveys and socio-economic data. The combined information will be used for operational evaluation of public transport lines and networks. (Author/TRRL) [Dutch]

Rens, JHP van Hilferink, PBD Kustermans, PACM (Economisch Bureau Voor Het Weg En Watervervoer) **Tijdschrift voor Vervoerswetenschap** Vol. 19 No. 4, 1983, pp 362-370, 2 Fig.

ACKNOWLEDGMENT: TRRL (IRRD 275505), Institute for Road Safety Research SWOV
ORDER FROM: Netherlands Institute of Transport, Polakweg 13, 2288 GG Rijswijk, Netherlands

24 386308
INDICATORS AND PEER GROUPS FOR TRANSIT PERFORMANCE ANALYSIS
Data from the second year (1979-80) of the Section 15 statistics are used, first to test the validity of a small set of performance indicators for fixed-route bus operations, and secondly, to define relatively homogeneous groups of operators (peer groups) that can be compared. Agencies operating 304 bus systems are included. Rail operations were excluded, as were exclusive, demand-responsive operations. The second year data is both more complete and accurate than that reported for the inaugural year. However, data from the magnetic tape had to be reorganized before it could be used with any of the major statistical software packages. A large set of performance variables are analysed with factor analysis to establish seven dimensions of transit performance. Seven market indicators were chosen rather than the nine proposed in previous research. Cluster analysis is used to create a typology for transit based upon characteristics of operations that are available in the Section 15 statistics. Agency size (measured by total vehicle miles and number of peak vehicles operated), peak to base demand, and average bus speed are used to create 12 peer groups. Results from this research confirm the validity of using a small set of indicators to represent dimensions of transit performance. They will also allow meaningful comparisons between similar systems.
See also Executive Summary, PB84-181494.

Fielding, GJ Brenner, ME Rocha, O de la Babitsky, TT Faust, K
California University, Irvine, Urban Mass Transportation Administration Final Rpt. UMTA-CA-11-0026-84-2, Jan. 1984, 170p Contract CA-11-0026
ORDER FROM: NTIS PB84-181502

24 386358
APC UNIFORM FUNCTIONAL REQUIREMENTS DEFINITION
This final report describes the types of Automatic Passenger Counting (APC) systems available, their current transit applications and suppliers. The report includes an assessment of the perceptions and needs of current and potential users, the costs and benefits of using APC systems, and the market for such systems in Canada. The main focus is development of a set of uniform functional requirements for APC systems in the form of core specifications with optional modules for more sophisticated applications. Outlined are minimum specifications for data acquisition, data recording, data transfer, data processing and minimum operational and maintenance standards. The goal is some standardization in the use, development and manufacture of APC systems. Smaller transit properties should be better able to take advantage of a standardized technology. The report is to be recognized as an industry standard for APC systems.

Transvision Consultants, Group Five Consulting Limited Final Rpt. No Date, 66p

ACKNOWLEDGMENT: Transit Topics
ORDER FROM: Canadian Urban Transit Association, 140 Bay Street, Suite 220, Union Station, Toronto, Ontario M5J 2L5, Canada

24 386371
MICROCOMPUTER BASED MIS IN A VERY SMALL TRANSIT SYSTEM
The Allen county Regional Transit Authority of Lima, OH, has established a management information system (MIS) which deemphasizes production of reports but encourages their use to improve productivity. ACRTA is a small operation with 12 buses and 25 employees. After many proposals it signed a contract with a consultant to develop a turnkey microcomputer-based MIS which involves a 128K microcomputer with two disk drives, display and printer. Packaged software provides general ledger, payroll, accounts payable and inventory functions along with a data base and graphics capabilities. Custom software handles revenue and passenger accounting, miles and hours accounting, consumables monitoring, road call reporting, service productivity, and vehicle history. Transing and support for the MIS system were part of the contract. Management issues which had to be confronted with its introduction included: New job descriptions; acquisition of new skills, particularly in the accounting area; parrallel operation of the old and new systems for an interval; adjustment of certain pay scales; and physical arrangement of office space.

Hunkins, LS **Transitions** 1984, pp 9-19

ORDER FROM: ATE Management and Service Company, Incorporated, Editor, 617 Vine Street, Suite 800, Cincinnati, Ohio, 45202

24 386933
CAPACITY, INVESTMENT AND OPERATING COSTS OF BUS, TRAM, AND URBAN AND SUBURBAN RAILWAY SYSTEMS [LEISTUNGSFAEHIGKEITEN, INVESTITIONS-UND BETRIEBSKOSTEN VON BUS-, STRASSENBAHN-UND STADTBAHNSYSTEMEN]
This comparative study of capacity, investment and operating costs of bus, tram and urban and suburban railway systems uses "operating costs per passenger" as the reference parameter. By reasonable standards it is calculated that 3,000 passengers can be carried per hour at 2 minute intervals by bus, 5,000 passengers per hour at 3 minute intervals by tram and 7,320 passengers per hour at 3 minute intervals by urban and suburban railways (S-Bahn). After accounting for rolling stock and operating costs, the author arrives (for an annual total of 55,000 km) at an annual figure in terms of operating costs per passenger per year of 2,590 DM for buses, 3,800 DM for trams and 5,400 DM urban and suburban railways. [German]

Leuthardt, **H Verkehr und Technik** Vol. 36 No. 12, Dec. 1983, pp 455-460, 3 Tab., 5 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Schmidt (Erich) Verlag, Herforder Strasse 10, 4800 Bielefeld, West Germany

24 386973
PEER REVIEW: A MANAGEMENT TOOL FOR PUBLIC SECTOR PROJECTS
Peer review is a process in which a project is reviewed by experienced specialists in an attempt to improve it. Most reviews last two days, are project oriented, and draw their members from public agencies in the same industry. However, peer reviews can be held on any subject and peer members may be chosen from related disciplines. The Urban Mass Transportation Administration (UMTA) began to use the peer review process in 1979. In UMTA peer reviews, the goal is to draw on the knowledge available in the operating rail transit systems in order to assist new rail projects to produce cost effective rail systems.

Dougherty, WL (Urban Mass Transportation Administration) **Civil Engineering** Vol. 54 No. 2, Feb. 1984, pp 46-49

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

24 387630
INFORMATION-RELATED NEEDS IN THE TRANSIT INDUSTRY (ABRIDGMENT)
An analysis of discussions with representatives of more than 30 transit agencies is presented. This occurs in the context of the goals of the UMTA-sponsored Operations and Planning Support (OPS) Program to develop and promote tools that incorporate computer technologies to address problems faced in the transit industry across the full range of functional areas (finance and administration, maintenance, service provision, and service development). Current and anticipated capabilities in each of the agencies as well as task-based needs for automatic data processing are assessed. The findings take into consideration constraints that exist among transit agencies that are likely to implement the proposed innovative management tools. It has become evident that both the attitude toward computers and the organizational setting are particularly important in determining the success of innovations and the kinds of needs designated as critical. A summary of informational concerns as well as actions to be taken is presented.

This paper appeared in Transportation Research Record No. 936, Public Transportation and Transit Operations Planning.

Damm, D (Transportation Systems Center) **Transportation Research Record** No. 936, 1983, pp 12-15, 1 Ref.

ORDER FROM: TRB Publications Off

24 387676
INDICATORS AND PEER GROUPS FOR TRANSIT PERFORMANCE ANALYSIS, EXECUTIVE SUMMARY
Data from the second year (1979-80) of the Section 15 statistics are used, first to test the validity of a small set of performance indicators for fixed-route bus operations, and secondly, to define relatively homogeneous groups of operators (peer groups) that can be compared. Agencies operating 304 bus systems are included. Rail operations were excluded, as were exclusive, demand-responsive operations. The second year data is both more complete and accurate than that reported for the inaugural year. However, data from the magnetic tape had to be reorganized before it could be used with any of the major statistical software packages. A large set of performance variables are analysed with factor analysis to establish seven dimensions of transit performance. Seven maker indicators were chosen rather than the nine proposed in previous research. Cluster analysis is used to create a typology for transit based upon characteristics of operations that are available in the Section 15 statistics. Agency size (measured by total vehicle miles and number of peak vehicles operated), peak to base demand, and average but speed are used to create 12 peer groups. Results from this research confirm the validity of using a small set of indicators to represent dimensions of transit performance. They will also allow meaningful comparisons between similar systems.

See also TRIS 386308, PB84-181502.

Fielding, GJ Brenner, ME Rocha, O de la Babitsky, TT Faust, K
California University, Irvine, Urban Mass Transportation Administration Final Rpt. UMTA-CA-11-0026-84-1, Jan. 1984, 11p Contract CA-11-0026
ORDER FROM: NTIS PB84-181494

24 387677
PRODUCTIVITY AND EFFICIENCY STUDIES ON BEST AND WORST PERFORMANCES OF URBAN BUS TRANSIT SYSTEMS
The objective of this research project is to investigate the variability within a very limited number of performance measures of urban bus transit systems. The performance measures focus on vehicle productivity, on effectiveness of use, on efficiency of operations, on labor productivity, on operating conditions, and on expense allocations. The variability is explored in terms of potential relationships with system's size, the occurrence of consistent "best" and "worst" performances in the field, and with a number of factors that characterize the operational environment within which the systems perform. The project utilizes Section 15 data from "Year Two" files; with advisory use only of data from "Year One" and "Year Three." The findings of the work carried out as part of this research project focus on the following three conclusions: (a) that with a very small number of performance measures (about one dozen) an analyst can accurately diagnose the level of achievements of an urban mass transit system; (b) that in the field there are indeed "best" and "worst" performances with huge differences between "best" and "worst" performance of the system, but on occasion environmental factors do affect system's performance. Significant improvements in system performance are, therefore, feasible in most systems performing well below the performance levels of the best performance in the field.

Tomazinis, AR
Pennsylvania University, Philadelphia, Urban Mass Transportation Administration Final Rpt. UMTA-PA-11-0029-84-1, Jan. 1984, v.p., Figs., Tabs., Refs. Contract PA-11-0029
ORDER FROM: UMTA

24 387688
TRANSIT POLICY STUDY VOLUME 4. TRANSIT SYSTEM PERFORMANCE IN WISCONSIN'S SMALL CITIES
Public transit, available in 13 of Wisconsin's small urban areas (population of 5,000 to 50,000), is of two basic types, fixed-route bus service and paratransit. All state-subsidized paratransit is shared-ride taxi, except for one small city where small buses operate on a point-deviation schedule. Data in this report are grouped to reflect the three specific types of service. The goal is to broaden knowledge about Wisconsin's small urban systems' efficiency and effectiveness, to facilitate exchange of information among such operations, and to monitor use of public financial assistance to local transit operators. Ridership, revenue and cost characteristics of all the transit systems vary. There is a distinct difference in services operated by

fixed-route, scheduled bus operations as compared with demand-responsive door-to-door service of shared-ride taxi systems. Differences in average costs and ridership indicators reflect this. Taxi systems tend to have much lower operating costs and higher fares than bus systems; bus systems have substantially higher ridership. Experiences in small cities with urban paratransit indicate a variety of patterns. Decisions for all systems will depend on how much and what type of service is desired and at what cost to users, local government and other levels of government.

Duffe, JR
Wisconsin Department of Transportation Oct. 1983, 50p, 10 Tab., 1 App.

ORDER FROM: Wisconsin Department of Transportation, Divisions of Planning & Budget & Transportation Assistance, Madison, Wisconsin, 53702

24 387689
TRANSIT POLICY STUDY VOLUME 5. TRANSIT SYSTEM PERFORMANCE AND STATE TRANSIT POLICY
This report examines issues related to transit system operating characteristics in Wisconsin and to the Wisconsin DOT's role of providing financial, management, and information assistance to these systems. WisDOT's past, present, and potential future uses of transit system performance information are discussed. The ramifications of using system performance as a factor in state transit assistance are also included. This report describes and analyzes the positive and negative attributes of expanding the level of state control over the financing and management of local public transit.

Duffe, JR
Wisconsin Department of Transportation Apr. 1984, 42p

ORDER FROM: Wisconsin Department of Transportation, Divisions of Planning & Budget & Transportation Assistance, Madison, Wisconsin, 53702

24 387896
THE QUALITY OF URBAN TRANSPORT
The author discusses how the quality of service provided by a public transport undertaking should be assessed from three aspects: technical, commercial and in terms of management. He describes the solutions envisaged and their practical application by the RATP (Paris Transport Authority). He explains how the information obtained from this approach has been used by the RATP as a factor in internal negotiations and also as a factor in mobilising forces and remaining competitive. [French]

Essig, P **Revue Generale des Chemins de Fer** Vol. 103 Apr. 1984, pp 173-184

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

24 387969
MICROCOMPUTERS IN TRANSPORTATION SOFTWARE AND SOURCE BOOK, MARCH 1984
The Urban Mass Transportation Administration (UMTA) and the Federal Highway Administration (FHWA) of the U.S. Department of Transportation provide training and technical assistance in the new and rapidly changing area of transportation application of microcomputers. These two agencies maintain up-to-date microcomputer references for transit and paratransit operators, transportation planners, and traffic engineers. This document contains information pertaining to: 1) Microcomputer references and training and; 2) descriptions of software in the areas of transit operations, transportation planning, traffic engineering, and paratransit planning and operations.

For copies of this report send a self-addressed gummed label to Price, Williams and Associates, Incorporated.

Urban Mass Transportation Administration UMTA-URT-41-84-1, Mar. 1984, 165p

ORDER FROM: Price, Williams and Associates, Incorporated, Microcomputer Reports, 962 Wayne Avenue, Suite 500, Silver Spring, Mayrland, 20910

24 387985
SDL: A SOFTWARE DESIGN LANGUAGE. FINAL REPORT
The Office of Methods and Support of the Urban Mass Transportation Administration (UMTA) develops and distributes computer software that aids local agencies in planning their transportation systems. This report describes a computer language designed to accommodate the continuing software development effort, namely, the Software Design Language (SDL). SDL is a block-structured, scoped, go-to-less language with strong type-checking. The blocks can be delimited either by an ALGOL-like BEGIN-END block structure or by a uniform indentation scheme of the subordinate statements in the block. The data types are based upon Pascal's structured data types and upon Simula 67's abstract structured data types. SDL also contains facilities for scientific calculations, logical decisions, database manipulations and report generations. There are FOR, WHILE, and UNTIL control structures, as well as IF-THEN-ELSE and CASE constructs for decision control. Decision table constructs are added to permit a concise, tabular specification of complex conditional logic. The report writer feature permits specification of output reports by means of a two-dimensional layout depicting the actual form of the printed results. In addition, SDL provides its users with: top down structure, I/O features, multi-word names, treatment of shared (common) data, separate compilation, and a run time library.

Dial, RB
Peat, Marwick, Mitchell and Company, Intermetrics, Incorporated, Urban Mass Transportation Administration Final Rpt. UMTA-IT-06-0050-84-1, July 1981, v.p., 7 Fig., 25 Tab., 41 Ref., 8 App.

ORDER FROM: UMTA

24 389303
THE MICROCOMPUTER IN TRANSPORTATION [DE MICROCOMPUTER IN DE VERKEERSKUNDE]
As a general introduction to the Verkeerskunde Congress on the microcomputer in transportation the author gives an extensive overview of the physical appearance of the micro and compares the micro with other computing systems. Several applications are dealt with viz in traffic engineering, transportation planning and public transport. The author concludes with a list of important organisations and literature. (Author/TRRL) [Dutch]

Jansen, GRM (Delft University of Technology, Netherlands)
Verkeerskunde Vol. 35 No. 4, Apr. 1984, pp 198-205, 1 Fig., 1 Rab., 20 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276505), Institute for Road Safety Research SWOV
ORDER FROM: Royal Dutch Touring Club ANWB, Wassenaarseweg 220, P.O. Box 93200, The Hague, Netherlands

24 389367
AC TRANSIT 5 YEAR PLAN FY 85-89
This plan describes the latest operating, capital and financial projections for providing reliable and efficient bus service in San Francisco's East Bay region. Certain local funds available to AC Transit, Bay Area Rapid Transit and San Francisco Muni are discretionary and must be divided in consultation with the Metropolitan Transportation Commission. Assumptions of the Plan include the following for AC Transit: Fleet size will remain unchanged; revenues will increase about 15% with a temporary decrease in ridership; certain new facilities will be completed to increase operating effeciencies and the management information system will be automated. Chapters I-III describe the existing operation; Chapter IV summarizes progress during FY 1983-1984. Chapter V establishes transit district policy. Chapter VI analyzes several major categories: Maintenance, operations, schedules, efficiency, equipment, passenger comfort, marketing, coordination and land-use policy development. Chapter VII gives statistical data on individual routes. Chapter VIII includes plans to meet unmet transit needs, a plan for maintaining current levels of service, and a plan to meet the impact of decreased funding.

AC Transit No Date, v.p., Figs., Tabs., Phots., 4 App.

ORDER FROM: AC Transit, Research and Planning Department, 508 16th Street, Oakland, California, 94612

24 389387
PUBLIC TRANSIT PERFORMANCE EVALUATION: APPLICATION TO SECTION 15 DATA
Performance indicators are quantitative measures that enable managers and policymakers to monitor the current position of an agency and outline strategies to improve performance. Because public services have many different dimensions of performance, a large number of performance indicators are normally used. In this paper a conceptual model is used to help select a few performance indicators that represent all the improtant performance concepts. Data were obtained from a national sample of 311 urban bus transit systems in the first year that data were reported under Section 15 of the Urban Mass Transportation Act of 1965, as amended. The steps in the performance-evaluation procedure involve defining a conceptual model of performance and designing a balanced set of performance indicators that represent all performance concepts. Factor analysis is then used to select the indicators that best represent all dimensions of performance. This small, representative set of performance indicators is used to analyze performance and to establish peer-group rankings.

This paper appeared in Transportation Research Record No. 947, Transit Management and Services.

Fielding, GJ (California University, Irvine); Anderson, SC (California State University, Northridge) **Transportation Research Record** No. 947, 1983, pp 1-7, 1 Fig., 5 Tab., 9 Ref.

ORDER FROM: TRB Publications Off

24 389389
ASSESSMENT OF OPERATIONAL EFFECTIVENESS, ACCURACY, AND COSTS OF AUTOMATIC PASSENGER COUNTERS
The research results of an assessment of the operational effectiveness, accuracy, and costs of various bus transit automatic passenger counter (APC) technologies are presented. The primary objective of automated passenger counters is to efficiently acquire accurate data on passenger activity and transit travel times. These data, which are essential for ongoing planning and scheduling activities, may include boardings, alightings, passenger loads, and vehicle running times. Automated techniques enable the reporting and analysis of these data in varying levels of detail. The current applications of APC technology in 12 North American transit properties are assessed on the basis of four technological factors: accuracy, equipment reliability, data turn-around time, and cost. Finding indicate that APC technology and its creative use may not be the magical solution to the bus transit monitoring dilemma; however, APC technology does offer a reasonable cost-effective option that operators can seriously consider to satisfy their data-collection needs.

This paper appeared in Transportation Research Record No. 947, Transit Management and Services.

Attanucci, J Vozzolo, D (Multisystems, Incorporated) **Transportation Research Record** No. 947, 1983, pp 15-23, 1 Fig., 3 Tab., 18 Ref.

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24 389405
SIMPLIFYING HUMAN SERVICE TRANSPORTATION AND SMALL TRANSIT SYSTEM ACCOUNTING: A SIX STATE PERSPECTIVE
This manual outlines accounting simplification methods for human service and rural transit systems. The organizational structure and methods of coordinating human service transportation differ in each State. Consequently statewide implementation of uniform transit accounting for small transit systems varies. Each State has chosen to pursue uniformity by starting with and modifying the standard chart of accounts for large, urban transit operations. The first section of this manual briefly introduces small transit system accounting problems resulting from the lack of coordination among various funding sources. Each Consortium State is applying a systematic bookkeeping approach, to simplify transportation accounting for small transit systems. The second section of this manual is on bookkeeping, the foundation for actions to simplify transportation accounting. The specific examples lead to a discussion of the state's role in selecting a uniform method of bookkeeping. A decision tree, with the roles a state can select as well as extent of uniform operating and financial reporting desired, is outlined. The third section of this manual focuses on billing. The issues of rate setting, invoicing, and cost allocation are specifically addressed. The cash flow section, describes the Consortium State efforts and methods to facilitate the payment of providers. The fifth section deals with those problems that result from multiple audits. Transportation providers receiving funding from multiple categorical program sources are subject to a like number of audits. The sixth section deals with program service accountability. The seventh section identifies methods for increasing federal funds to public transportation projects.

Department of Transportation, Department of Health and Human Services, Transportation Accounting Consortium Final Rpt. DOT-I-83-25, Nov. 1983, 148p, 4 Fig., 9 Tab., 2 App.

ORDER FROM: OST

24 389406
ACCOUNTING AND REPORTING PROCTIVES FOR TRANSPORTATION: AN ANALYSIS IN SIX STATES. VOLUME 1: FINAL REPORT
The Transportation Accounting Consortium (TAC) represents 6 states—Arkansas, Iowa, Massachusetts, Michigan, North Carolina and South Carolina. TAC has a primary goal of developing simplified accounting, reporting and cost sharing procedures for use in social service/public transportation programs. With 114 Federal programs funding local transportation service and because there is often lack of local accounting expertise, there is need to standardize all accounting components. This report surveys bookkeeping, billing, auditing and reporting practices of a sample of 64 state funding agencies and 46 transportation operators to verify whether various aspects of accounting are a hindrance to coordinating transportation service and if anything can be done about it. It is concluded that coordination and efficiency of service providers can be facilitated through a unified, standardized accounting structure and/or increased automated processing. Further study of the problem is urged and a procedure is outlined.

Volume 2 contains appendices. Prepared by Carter-Goble Associates, Incorporated with Applied Resource Integration, Limited.

Department of Transportation, Department of Health and Human Services DOT-I-82-31, Mar. 1982, v.p., Figs., 4 App.

ORDER FROM: OST

24 389407
AN APPROACH FOR MICROCOMPUTER NEEDS ANALYSIS: GREATER PORTLAND TRANSIT DISTRICT
Portland Metro, public transit agency for Portland, Me., has 43 vehicles and 73 employees. Transit properties of this size are now acquiring computers for various purposes. Recognizing this trend, UMTA awarded Metro a Section 6 grant to acquire a small computer and package software. Several new applications were first developed for Metro's existing PDP-8 computer already used for accounting and word processing. Metro then acquired an Apple II Plus with software for the following applications: Cross tabulation of operator run numbers and times for payroll preparation; labor distribution to interface between payroll and general ledger; route/revenue analysis; route mileage calculations; budget projections. This report hs the follwoing chapters: Introduction; each application area for which use of a computer was considered; presentation of a general hardware configuration recommended for Metro; development of a computer system at Metro. Two important elements in discussion of the plan are general recommendations for package software and suggested phase of implementation.

Ostroff, H
Multiplications, Incorporated, Urban Mass Transportation Administration, American Public Transit Association, North Carolina Department of Transportation DOT-I-84-37, Mar. 1984, 42p, 1 Fig., 3 Tab., 2 App.

ORDER FROM: OST

24 389766
INNOVATION AND INCREMENTAL IMPROVEMENT IN BUS TRANSIT PASSENGER DATA COLLECTION—EXECUTIVE SUMMARY
The objectives of the research are: (1) to identify the potential for innovation and for incremental improvement in bus transit passenger data collection, and (2) to develop and test data collection and processing methodologies. An inventory of 58 transit properties in the United States

with 100 or more peak hour buses showed a wide range of techniques being used to collect both total passenger and Section 15 data. The results of the analysis were used to develop an evaluation methodology to aid transit managers in selecting an improved data collection procedure. A final case study illustrated the potential for integrating Section 15 with a regular total passenger counting program.

See also PB84-183243.

Smith, RL, Jr
Wisconsin University, Madison UMTA-WI-11-0008-84-1, Dec. 1983, 10p

ORDER FROM: NTIS PB84-183235

24 389767
INNOVATION AND INCREMENTAL IMPROVEMENT IN BUS TRANSIT PASSENGER DATA COLLECTION

The objectives of this project are: (1) to identify the potential for innovation and for incremental improvement in bus transit passenger data collection, and (2) to develop and test data collection and processing methodologies to give transit managers and operators the ability to make needed improvements. Data collection techniques for both total passengers and the Section 15 Reporting System are considered as well as techniques for integrating management information system and Section 15 data requirements.

See also PB84-183235.

Smith, RL, Jr
Wisconsin University, Madison UMTA-WI-11-0008-84-2, Dec. 1983, 113p

ORDER FROM: NTIS PB84-183243

24 389831
CORPORATE PLANNING WITHIN THE PARIS TRANSPORT AUTHORITY

Ten years ago, the R.A.T.P. decided to reorganize its planning procedures to meet the challenges of a rapidly changing environment. The system which evolved has become an essential management tool both for external relations (consultations with the public authorities concerning the R.A.T.P.'s medium-term projects) and for internal organization (staff information and participation). The system embraces two quite distinct but interacting spheres: strategic planning and what is usually termed functional and operational planning (i.e. the drawing up of five-year action programmes in the various sectors). After describing how this decentralized and adaptable system evolved, the author describes the present state of R.A.T.P. corporate planning with particular emphasis on the consultation aspect.

Genet, A **French Railway Review** Vol. 2 No. 3, June 1984, pp 189-192

ACKNOWLEDGMENT: British Railways
ORDER FROM: North Oxford Academic Publishing Limited, 242 Banbury Road, Oxford OX2 7DR, England

24 389893
USING MANAGEMENT INCENTIVE CONTRACTS. TECHNICAL ASSISTANCE BRIEFS

Management incentive clauses may be incorporated in contracts which transit operating agencies make with private managements to improve productivity and establish clear priorities. Transit management services may thus become more attractive for private sector participants. Financial incentives may be used to encourage improved performance in target areas or when overall contractor performance is only acceptable and a competitive market for the contract exists. Several examples of these types of contracts are given. For successful use of incentive clauses, the agency must define clearly the performance it hopes the contractor to achieve. Performance indicators can be used to evaluate management performance, but the degree of authority, control and accountability a management firm has does vary from system to system. Payments to management firms should be tied to the indicators and methods of payment include unit rate, incremental amount, proportional amount, one-time bonus and fee pool. The two contract types utilized are cost-plus-incentive (or award) fee, or the fixed price incentive contracts. It is important to design an incentive system the agency can afford and one that will motivate the management firm.

Urban Mass Transportation Administration No Date, 7p

ORDER FROM: UMTA

24 389894
UMTA GEOGRAPHIC DATA BASE MANAGEMENT WORKSHOP, ALEXANDRIA, VIRGINIA. FINAL REPORT

The workshop was to evaluate and synthesize recent experience with Geographic Data Base Management (GDBM) technology and to determine whether: (1) data base management technology can be used to effectively promote data sharing among agencies, and (2) geography can be used as an effective common denominator in support of agency applications. The specific objectives were to: Assess current geographic data base management technology and its potential impact on the transportation planning process during the next decade; Evaluate current implementation strategies of UMTA contractors; and Synthesize current experience and arrive at a consensus on appropriate approaches for data base design and implementation. The workshop was organized into four major sessions of contributed papers and discussion concerning the following topics: (1) GDBM Opportunities for Transportation Planners: Needs and Requirements for the 1980's; (2) Data Base Management Directions and Alternatives; (3) GDBM Experience and Current Research; and (4) GDBM Implementation Scenarios. This final report reviews major highlights of the workshop in context of its objectives; identifies major workshop themes: and determines a series of recommendations to guide UMTA/FHWA in future research and investments in this area.

HDR Systems, Incorporated, Urban Mass Transportation Administration, Federal Highway Administration 1983, v.p., 8 Fig.

ORDER FROM: HDR Systems, Incorporated, 103 Oronoco Street, Alexandria, Virginia, 22314

24 389895
UMTA GEOGRAPHIC DATA BASE MANAGEMENT WORKSHOP, ALEXANDRIA, VIRGINIA, MARCH 2-4, 1983

This geographic data base management workshop was organized to evaluate and synthesize recent experience with geographic data base management technology. The purpose of this guide is to provide an overview to the topic of geographic database management. Outlines are provided to identify key concepts and issues involved with data base management; data models; implementation options; and geographic models. Results of a questionnaire on current experience and approaoches are included along with pertinent articles by conference participants. Included in the guide is artwork illustrating each of the above topics.

HDR Systems, Incorporated 1983, v.p., Figs., Tabs., Refs., 1 App.

ORDER FROM: HDR Systems, Incorporated, 103 Oronoco Street, Alexandria, Virginia, 22314

25 386165
DEVELOPMENTS IN STAGE CARRIAGE BUS FARES BEFORE AND AFTER THE TRANSPORT ACT 1980
Prior to the Transport Act 1980 stage carriage bus fares were controlled by conditions attached to road service licences by the traffic commissioners. In October 1980 the Act removed such control in all but exceptional circumstances. The study discussed in this report was designed to track the development of stage carriage bus fares in a sample of areas from January 1978 to January 1983 to discover whether or not any significant differences between the pre-and post-act periods could be discerned. The results indicated that there had been no increase in the rate of magnitude of fare rises, that there was some evidence of moves away from overall fare scales by large public bus companies, that promotional fares were being used on a wider scale, that most fare agreements set up in sites of competition prior to the Act were holding, that there were relatively few examples of new competition and that the use of traffic commissioner reserve powers to prevent either undercutting or over-pricing was almost non-existent. Because of the limited emergence of new competition, it appeared that factors other than the Act had had a greater influence on the general course of events: these were the economic recession, the falling rate of inflation, the outcome of local government elections in May 1981 and the differing subsidy policies of county councils. (Author/TRRL)

Coe, GA Jackson, RL **TRRL Laboratory Report** No. 1098, 1983, 18p, 3 Fig., 5 Tab., 4 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275235)
ORDER FROM: TRRL

25 386177
FARE CHEATING IN THE EIGHTIES [ZWARTRIJDEN IN DE JAREN TACHTIG]
After a short description of the search strategy and the bases used for the search, a brief overview of the problem is presented, under the headings of economic and social problems. Fare cheating is in particular a problem of urban public transport. The increasing amount of fare cheating has produced a more determined attitude towards the prevention of it throughout West Europe. In big cities experiments are being carried out with different methods. New research methods have shown bigger numbers of fare cheaters than expected. Fare cheating seems to be promoted by automatic fare collection systems. Enforcement and better surveillance are needed. (TRRL) [Dutch]

Haagsman, D
Ministerie van Verkeer en Waterstaat Monograph Apr. 1983, 58p, 1 Fig., 2 Tab., 6 Phot., 55 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 274552), Institute for Road Safety Research SWOV
ORDER FROM: Ministerie van Verkeer en Waterstaat, Directie Voorlichting Documentat en Biblio, Plesmanweg 1-6, The Hague, Netherlands

25 386327
DENVER FREE FARE PROJECT AS A "HABIT BREAKER"
The note assesses the impact on bus ridership of the year-long free fare experiment in Denver, Colorado. Data on ridership from February 1977 through October 1980, which includes 1 year before and 1 one-half after the experiment, are used to estimate the elasticity of ridership when the fare is reduced to zero and when it was reinstated. A cost-benefit analysis argues that the free fare demonstration projects may be justified.

Singell, LD (Colorado University, Boulder); Schifferli, E
Transportation Science Vol. 17 No. 4, Nov. 1983, pp 464-470, 7 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

25 386367
RECOMMENDATIONS TO IMPROVE THE FARE STRUCTURE
The Port Authority of Allegheny County (PAT) transit system serving Pittsburgh sought a review of its zone structure to establish achievable improvements and to produce immediately additional revenue to overcome decreases in federal and state subsidies. The fare system was found to vary accourding to mode, type of service, characteristics of the rider, distance traveled and method of fare payment. Recommendations on fare zones called for an equalization of radial zone widths and an increase in pricing for outer zones so that uniform route-mile charges would apply throughout the system. While PAT marketing has increased use of prepaid fares, it was recommended that discounted ticketing cover a specific number of rides and that the level of discounting be decreased. No change was recommended in transfer charges but it was found advantageous to liberalize somewhat the transfer privileges. Other changes were recommended in passes, shopper and employer-bases passes, and in commuter train fares because of the premium nature of the service. A two-stage set of overall fare increases were recommended to reduce PAT's operating deficits while some sort of dedicated transit tax be sought.

Barton-Aschman Associates, Incorporated, Baker (Michael, Jr), Incorporated, Port Authority of Allegheny County May 1982, 114p, 22 Fig., 28 Tab.

ORDER FROM: Barton-Aschman Associates, Incorporated, 820 Davis Street, Evanston, Illinois, 60204

25 386369
FARE SUBSIDIES TO ACHIEVE PARETO OPTIMALITY—A BENEFIT COST APPROACH
Studies on optimal fare subsidy have generally been based on welfare analyses and have not considered deficits explicitly in the objective function. This paper presents a different way of deriving Pareto optimal subsidies in deficit situations. It treats deficits explicitly in the objective function and shows that the resulting subsidy is sufficient to yield Pareto optimal outcome. From the models developed and the numerical example, it has been concluded that the rule is to make the subsidies inversely proportional to transit average cost elasticity. Providing subsidies which depend jointly on fare elasticity and average cost elasticity could yield outcomes which are consistent with federal policies. The analysis further shows that marginal cost pricing defines the efficiency frontier where user benefits equal increased loss to the operator. Furthermore, transit fare subsidy is shown to be efficient so long as it is calculated using the optimal subsidy formula developed in the paper.

Obeng, K (North Carolina Agricultural and Technical State U)
Logistics and Transportation Review Vol. 19 No. 4, Dec. 1983, pp 367-384, 4 Tab., Refs.

ORDER FROM: British Columbia University, Canada, Faculty of Commerce, Vancouver V6T 1W5, British Columbia, Canada

25 387691
ATTITUDES TOWARDS THE AUTOMATIC FARE COLLECTION SYSTEM (AFCS): PATRON STUDY
Interviews were conducted with a thousand Metrorail patrons early in 1984 by a professional survey organization. The goal was determination of public sentiment concerning the Automatic Fare Collection System (AFCS) used by Washington Metropolitan Area Transit Authority. The multiple-choice questionnaire focused mainly on the respondent's use of and reaction to the AFCS equipment. There were a number of conclusions. Patrons are more generally satisfied with AFCS than indicated by the statements of public officials or the media. The more familiarity users have with AFCS, particularly the farecard vendors, the more dissatisfied they are. Patrons are slow to detect operational improvements in AFCS equipment; increased awareness should increase satisfaction. To reduce queuing at vendors, farecard purchases should be diverted from rush hours at the entry point. An alternative means of reducing queuing is to increase the minimum value of each farecard purchased. WMATA adoption of the minimum-fare entry policy has reduced patron's use of the Add-fare machines. Awareness of WMATA fare card advertising programs has increased dramatically.

Washington Metropolitan Area Transit Authority Res Rpt. Mar. 1984, 25p, 1 App.

ORDER FROM: Washington Metropolitan Area Transit Authority, Consumer Research Section, Office of Marketing, Washington, D.C., 20001

25 387696
TRANSIT FARE PREPAYMENT: A GUIDE FOR TRANSIT MANAGERS. EXECUTIVE SUMMARY
Transit fare prepayment programs have grown rapidly. They represent methods that substitute for cash at the time the trip is taken and include passes, commuter tickets, permits and tokens. Four primary benefits have been documented. Three benefit the transit operating agency—savings in

coin handling, savings in operating costs by speeding passenger loading, and increased revenue from interest paid on advanced cash. Passengers are benefitted by increased convenience. Minor benefits include increased off-peak riders, targeted markets with appropriate pricing, and improved image of the operating agency. The benefits of prepayment are generally found to outweight the costs, which are found to vary with the size of the transit agency. Marketing of prepayment involves identification of the target markets, weighting the advantages and disadvantages of alternate plans, and evaluation of the costs of different plans. Pricing of prepayment plans has sometimes overemphasized discounts; other factors must be considered.

OFEGRO, Incorporated, Urban Mass Transportation Administration No Date, 6p

ORDER FROM: OFEGRO, Incorporated, 3612 Twelfth Street, NE, Washington, D.C., 20017

25 387702
GRADUATED-BASED FARE COLLECTION. EXECUTIVE SUMMARY
This examination of several studies and research projects on the topic of graduated fare systems suggests that consideration must be given to issues of equity and efficiency in fare structures. While graduated fare systems may work in some communities, there may be operating difficulties elsewhere. A study in Albany, N.Y., showed that a medium size city can switch from flat fares to a distance-based structure and increase its revenue without losing riders while operating a system that is equitable. A California study found that implementing graduated fares would incur higher administrative costs and pose inconvenience for passengers. Careful consideration must be given to every element necessary for the transistion from flat to graduated gares. While there are a number of successful applications on rapid transit systems, there are few bus systems using graduated fares. It is expected that the situation will change as the potential of graduated fares is more fully exploited.

OFEGRO, Incorporated, Urban Mass Transportation Administration 1983, 5p, 1 Tab., 1 Phot.

ORDER FROM: OFEGRO, Incorporated, 3612 Twelfth Steet, NE, Washington, D.C., 20017

25 387868
BEFORE/ AFTER FARES STUDY: FINAL REPORT
A before and after study study was undertaken to assess the effects on bus and tram patronage of the fare changes introduced by the South Australian State Transport Authority in August 1981. The study essentially involved collection and analysis of two inter-dependent groups of data on bus and tram patronage: 1) routine ticket sales data (fortnightly statistics) from August 1980 to November 1981, 2) special surveys of ticket usage by bus inspectors and special analysis of bus driver running journals for a "before" period (July 1981) and an "after" period (November 1981). The study analyses estimate a 6 per cent fall in adult ridership as a result of a 23 per cent average fare increase. This implies an arc elasticity of demand with respect to fare of-0.31 for adult travel, ie, a 10 per cent fares increase would result in a 3.1 per cent ridership decrease. This value corresponds very closely with that found in previous studies, both in Adelaide and elsewhere. Owing to the limitations of the data available and the inherent random variability in patronage, there is considerable uncertainty attached to this overall result. The 95 per cent confidence interval for the elasticity (ie, the range within which there is a 95 per cent probability of the true value lying) is estimated as about-0.04 to-0.60. In any assessment of fares elasticities, it is necessary to analyse and allow for underlying trends and random (day-to- day) variations in patronage. Thus this study involved investigation of these factors. A number of issues which should be considered in design of any future study of fares changes are discussed.

Department of Transport, South Australia Monograph Jan. 1982, 64p, 3 Fig., Tabs., 3 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 272087), Australian Road Research Board
ORDER FROM: Department of Transport, South Australia, GPO Box 1599, Adelaide, South Australia, Australia TRRL

25 387932
BACK TO PUNCHING TICKETS
Portland's Tri-Met has modified its experiment with self-service fare collection after 18 months so that effectively the demonstration has ended. When the program did not work out as anticipated and costs began to escalate, UMTA would not increase its funding and Tri-Met was forced to end the program. Factors of a local nature, however, were primarily responsible. The anticipated 2 percent fare evasion rate turned out to be 8 percent in actual practice. Equipment reliability was much lower than anticipated, particularly on the buses. Equipment maintenance costs then soared. Then recession not only cut into ridership (and revenues) but decreased receipts from a regional payroll tax dedicated to transit. Attempts to fine and prosecute fare evaders were stymied by local law enforcement officials and courts. As enforcement and equipment performance declined, riders got the impression that Tri-Met was not backing its experimental fare system. In June 1984 it returned to paper transfers and ticket punching. Self-service inspections are now conducted only at the periphery of the fare-free downtown area; when Tri-Met's light rail line becomes operations, the full self-service fare collection will be instituted there.

Metro Vol. 80 No. 4, July 1984, 3p, 2 Phot.

ORDER FROM: Bobit Publishing Company, 2500 Artesia Boulevard, Redondo Beach, California, 90278

25 389281
ANALYSIS OF TRANSIT FARE INCREASES: THE CASE OF THE SOUTHEASTERN MICHIGAN TRANSPORTATION AUTHORITY (SEMTA)
This paper details the results of a study of a 15 cent across the board increase in fares carried out in July of 1981, by the Southeastern Michigan Transportation Authority (SEMTA). Based on behavioral hypotheses, data from the same riders were gathered both before and after the fare increase (i.e. A panel); econometric methods tailored to these data were used. A limited dependent variable model ("Tobit") was developed to account statistically for the fact that some people stopped using transit entirely (i.e. Had zero trips after the fare increase). The results indicate that sensitivities to the fare increase among riders in this sample vary noticeably across types of service. In particular, transit trip-makers in the off-peak appear to be nearly twice as sensitive as those in the peak periods. It is clear that a wide variety of factors influence the use of bus transit. Even if transit service variables (e.g. Headways) are virtually constant during the period of study (as was true in the SEMTA system), many non-transit factors (e.g. Whether a person works, location of job, location of home) change continually for enough riders to make a difference. Conclusions drawn about riders' sensitivities to fare increases which do not account for changes in non-transit factors are likely to be erroneous. Because of the special nature of the data (from on-board surveys in the before case) and the several layers of statistical and theoretical concerns which arose, a number of issues were identified for further research. For the covering abstract of the conference see IRRD 276520. (Author/TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume II.

Damm-luhr, DL (Department of Transportation)
Colloquium Vervoersplanologisch Speurwerk 1984, pp 121-141, 2 Fig., 4 Tab., 25 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276555), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

25 389314
CONCESSIONARY TRAVEL SURVEY 1981
This report is primarily concerned with the conclusions of a household interview survey and on-bus surveys undertaken in order to assess the value of travel arising from the county-wide concessionary travel scheme. Part 1 of the report gives a brief description of the present concessionary travel scheme, while part 2 deals with the origin and purpose of the surveys. The methodologies and conclusions of the county-wide household survey and the on-bus surveys undertaken in respect of national Welsh and the principle independent operators are described in parts 3, 4 and 5 respectively.

Gwent County Council Monograph 1981, 23p, 8 Fig., 1 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 276491)
ORDER FROM: Gwent County Council, County Hall, Cwmbran, Gwent, England

25 389368
SELF-SERVICE FARE COLLECTION ON THE SAN DIEGO TROLLEY
The San Diego Trolley (owner by the Metropolitan Transit Development Board) began operations in July 1981 using self-service fare collection (SSFC). Passengers must have proof of payment consisting of a single-ride ticket bought at a vending machine located at one of the 18 stations, a multi-ride ticket validated at one of the same machines, a transfer, or a monthly pass. About one-third of riders are checked by a team of inspectors who issue citations, or notices to appear in court, to fare evaders. The usual penalty for fare evasion is to forfeit $20 bail plus a $10 court fee. The 33 ticket machines have performed well in the opinion of Trolley staff, with a record of better than 96% in-service availability. Analysis of boarding times indicates that SSFC on the Trolley saves about 3.4 minutes per 16-mile run. On the average, 0.5% of passengers checked do not have proper proof of payment. The use of court citations has proved workable, although 20% to 40% of cited passengers ignore the citations indefinitely. Passengers have generally positive attitudes toward the SSFC system. Total annual cost (including annualized capital) for SSFC has been estimated at $444,000 or $.11 per passenger. Conventional fare collection would have much higher operating costs and lower capital costs.

Koffman, D Rhyner, G Trexler, R
Crain and Associates, Incorporated, Urban Mass Transportation Administration, (DTS-64) Final Rpt. UMTA-CA-06-0158-84-1, DOT-TSC-UMTA-84-16, May 1984, 144p, 25 Fig., 14 Tab., 3 App. Contract DOT-TSC-1408/1755
ORDER FROM: UMTA

25 389391
THE FARE CUTTER CARD: A REVENUE-EFFICIENT AND MARKET-SEGMENTED APPROACH TO TRANSIT PASS PRICING
Recently, many transit properties have studied or instituted prepaid passes as part of marketing programs designed to retain existing riders and attract new riders. At the same time, transit properties are facing severe financial problems. As a result there can be conflict between the marketing department that wishes to offer an attractive fare mechanism that offers a substantial discount and the financial department that is concerned about lost revenue and free rides. To resolve this conflict, the Greater Bridgeport Transit District (GBTD) has introduced the Fare Cutter Card as past of a comprehensive demonstration of market-based fare policies. This card (actually a permit) has a substantially lower initial cost than an unlimited-use pass but requires a $0.25 cash-drop for each ride. The card is therefore more affordable to low-income users while returning revenue to GBTD for all rides taken. Different approaches to implementing the Fare Cutter Card may enable a major extension of fare prepayment without additional loss or a major reduction in revenue losses allocated with fare prepayment, while maintaining the existing level of use. The GBTD experience to date with the Fare Cutter Card is preliminary, but the card appears to be popular with riders. In this paper the analytical issues associated with the assessment of permits as compared with unlimited-use passes are outlined, the benefits of tailoring prepaid mechanisms to the characteristics of user submarkets are summarized, and marketing-related benefits of the Fare Cutter Card approach are discussed.

This paper appeared in Transportation Research Record No. 947, Transit Management and Services.

Oram, RL (Greater Bridgeport Transit District); Spielberg, F (SG Associates, Incorporated); Milione, V (New York Institute of Technology) **Transportation Research Record** No. 947, 1983, pp 28-34, 5 Fig., 5 Ref.

ORDER FROM: TRB Publications Off

25 389392
AC-MUNI JOINT MONTHLY PASS: A LOOK AT THE FIRST STEP TOWARD FARE INTEGRATION IN THE SAN FRANCISCO BAY AREA
The first joint monthly transit pass in the San Francisco Bay Area was introduced in September 1981. Purchasers of the new pass were surveyed in October 1981, and the trends in joint and separate pass sales were monitored. The pass was targeted at a specific segment of the commuter market, and apparently it was successful in reaching that market. Purchasers of the new pass are extremely satisfied with it; administration is simple; distribution is centralized and inexpensive; and revenue losses from a promotional discount are minimal. Since introduction of the joint pass, however, sales have flattened, which reflects the restricted market and the diminishing value of the promotional incentive because of rising fares. Local efforts are continuing toward developing a more integrated regional fare system on which to base interoperator pass prices, a technological development project to adapt rapid transit station automatic fare gates to accept joint passes, and a promotional effort to increase pass sales through employers.

This paper appeared in Transportation Research Record No. 947, Transit Management and Services.

Markowitz, J (Metropolitan Transportation Commission)
Transportation Research Record No. 947, 1983, pp 34-41, 6 Tab., 5 Ref.

ORDER FROM: TRB Publications Off

25 389393
REGIONAL TRANSIT PASS FOR SAN DIEGO: A KEY TO OPERATING EFFICIENCIES AND RIDER CONVENIENCE
A regional transit pass was developed by the San Diego Metropolitan Transit Development Board (MTDB) in order to present transit services provided by multiple operators as a single unified system to transit riders. In an effort to reduce the total cost of providing transit service in the metropolitan area, the existence of multiple operators has been supported by MTDB during the past several years. The positive competition from multiple operators can lead to lower unit operating costs for the region. Nevertheless, lack of coordination among the various operators can result in rider confusion and a subsequent loss of ridership. The success of a regional transit pass depends on the coordination of many elements. If such coordination is achieved, the pass can present services provided by multiple operators as a single unified system. The regional transit pass program is described, the key steps toward its development and implementation are identified, and a preliminary assessment of the impacts of the program on operating efficiencies and rider convenience is presented.

This paper appeared in Transportation Research Record No. 947, Transit Management and Services.

Lerner-Lam, E (San Diego Metropolitan Transit Development Board)
Transportation Research Record No. 947, 1983, pp 41-45, 2 Fig., 7 Tab., 5 Ref.

ORDER FROM: TRB Publications Off

25 389394
SKETCH-PLANNING EVALUATION OF EMPLOYER-BASED SUBSIDIZED TRANSIT PROGRAM
A sketch-planning evaluation of an employer-based subsidized transit pass program for the Southeastern Pennsylvania Transportation Authority (SEPTA) is described. The purpose of the evaluation was to determine if the project could produce substantial transit ridership increases, which could in turn lead to a reduction in automobile hydrocarbon emissions and justify the inclusion of the project in the state implementation plan. Constraints in data availability required that a coarse back-of-the-envelope analysis be performed by using limited empirical information from other cities. The results of this study indicated that a small ridership increase would occur along with an increase in SEPTA revenue, but that questions about the feasibility of implementing the proposed program made it unworkable. The methodology used in the evaluation, however, highlights the usefulness of planning techniques in preliminary program evaluation. The methodology also mades apparent the value of data from outside sources, particularly the extensive data available from projects in the UMTA Service and Management Demonstration program.

This paper appeared in Transportation Research Record No. 947, Transit Management and Services.

Ziering, EA (Caliper Corporation) **Transportation Research Record** No. 947, 1983, pp 45-51, 1 Fig., 1 Tab.

ORDER FROM: TRB Publications Off

25 389792
REVIEW OF TRANSIT SERVICE AND PRICING OPTIONS
Service reductions and flat fare increases are likely to be ineffective in achieving the goals and managerial objectives of public transit. A conceptual structure for evaluating service and pricing changes is proposed and market-differentiated pricing and service are suggested. Three classes of pricing options are examined: distance-based fares, time-of-day pricing. pricing, and service-based fares. The use of transit passes and other implementation issues are reviewed. Both long-range planning and real-time control options designed to improve service reliability are discussed and evaluated based upon available studies. The paper concludes with recommendations for future study.

Daskin, MS (Northwestern University, Evanston) **Journal of Advanced Transportation** Vol. 17 No. 3, 1983, pp 219-251, 51 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

25 389814
JUST THE TICKET
Describes the new British Railways system based around 3000 ticket issuing machines known as Aptis (all-purpose ticket issuing systems).

Engineer Vol. 258 No. 6676, Mar. 1984, pp 31-32, 1 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Morgan-Grampian Limited, Morgan Grampian House, 30 Calderwood Street, London SE18 6QH, England

25 389818
INTERCONNECTION OF THE VIENNA EAST REGION [DER VERKEHRSVERBUND OST-REGION]
Interconnection of tariffs for the Eastern Regions, the first phase of which is came into service on 3 June 1984, involves an area of more than 7000 sq km and about 2.3 million inhabitants. 1600 km of line will be available to customers once Vienna lines and local and regional railways (Vienna-Baden line) have been interconnected. A single tariff system will be much more practical and cheaper for users. [German]

Czimmermann, F **Gemeinwirtschaft** No. 4, 1983, pp 45-50, 1 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Jugend und Volk Verlagsgesellschaft, Tiefer Graben 7, A-1014 Vienna, Austria

25 390112
PEAK LOAD TRANSIT PRICING: THEORY AND PRACTICE
This paper argues that peak load pricing could relieve many of the transit industry's current financial problems by generating much needed revenue income, increasing efficiency and boosting ridership. However, time-of-day fares probably wouldn't significantly alter some of the maldistributive effects of uniform pricing. The paper initially reviews the theory of peak load pricing with regard to its applicability to the transit field and then examines competing pricing rationales. Empirical data from three California transit properties are then used to test these theories and to contrast the efficiency and equity implications of flat versus peak load pricing. Although the case for peak load transit pricing seems compelling, a number of obstacles still stand in the way of its widespread acceptance in America.

Cervero, R (California University, Berkeley) **Journal of Advanced Transportation** Vol. 16 No. 3, 1982, pp 209-230, 35 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

26 386192
FARES AND ROAD CASUALTIES IN LONDON
Various data for the period January 1978-April 1983 have been analysed in order to estimate the size and statistical significance of such recent changes in numbers of road casualties in London as may have been associated with changes in London Transport fares. Trend, seasonal variation, British Rail fares, petrol prices, severe winter weather and recent rail strikes are taken into account in the fitting of log-linear regression models to casualty data for different classes of road user. Alternative sets of models are fitted with and without a term representing the special effect of the large fare increase of March 1982. Using a method described in the report, these sets of models are used to provide higher and lower estimates respectively of the excess casualties in the year May 1982-April 1983 compared with the numbers that would have been expected if the fare increase of March 1982 had not taken place, together with standard errors of these estimates. The higher estimate is that the excess represented about 11 per cent of total casualties for the year, or just over 6000, with a standard error of about 2700. The lower estimate is about 7 and a half per cent, or just over 4000 with a standard error of about 1100. Most of the excess is accounted for by pedal cyclists and users of cars or taxis, and for these classes of road user the evidence for a substantial excess of casualties is strong. Little effect on the number of pedestrian casualties is indicated. For other classes of road user the balance of probabilities is that there were some excess casualties, but the estimated excess numbers lie within the range of error of the modelling. No indication is found of any effect of London Transport fares on the severity of casualties. Values of those model parameters that are directly related to London Transport fares are discussed, and details of the fitted models are appended. (Author/TRRL)

Allsop, RE
University College, London Monograph Aug. 1983, 13p, 3 Tab., 1 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275648)
ORDER FROM: University College, Gower Street, London WC1E 6BT, England

26 386276
HEALTH HAZARD EVALUATION REPORT NO. HETA 80-039-1179, LONG ISLAND RAILROAD, NEW YORK, NEW YORK
In November 1979, NIOSH was requested to determine if there had been an excess number of birth defects among the children of the maintenance employees and if these defects had been caused by exposure to 2, 4, 5-trichlorophenoxy-acetic acid (2, 4, 5-T), a herbicide used for weed control along the tracks of the LIRR. To assess the possible health hazard, NIOSH investigators compiled a list of all live births from 1973 to 1979 among the members of the Union Local. Medical insurance claims for this list of live births were obtained from the union health insurance system, and all claims for problems which may be congenitally related, diagnosed during the first year of life, were extracted. No definite excess of birth defects related to 2, 4, 5-T exposure was found in the evaluation.

Honchar, P
National Institute for Occupational Safety & Hlth HETA-80-039-1179, Sept. 1982, 16p

ORDER FROM: NTIS PB84-148923

26 386277
HEALTH HAZARD EVALUATION REPORT NO. HETA 82-061-1152, NEOPLAN USA CORPORATION, LAMAR, COLORADO
On March 9, 1982, NIOSH investigators conducted the initial industrial hygiene survey and collected breathing-zone air samples for measurement of zinc oxide, cadmium, and silver. The silver and cadmium levels were below laboratory detection limits. A follow-up industrial hygiene and medical evaluation was conducted on May 11, 1982. Breathing-zone air samples were again collected for zinc oxide, cadmium, and silver. All levels were well within the evaluation criteria. On the basis of the environmental and medical data and personal employee interviews, NIOSH investigators concluded that a health hazard did exist to zinc oxide at Neoplan USA Corporation at the time of this survey.

Gunter, BJ Reno, SJ Thoburn, TW
National Institute for Occupational Safety & Hlth HETA-82-061-1152, Aug. 1982, 14p

ORDER FROM: NTIS

26 386335
EQUIPMENT AND ELECTRIC APPLIANCES IN A FIRE SITUATION [LES INSTALLATIONS ET LE MATERIEL ELECTRIQUE FACE A L'INCENDIE]
Texts of papers presented during a seminar held at Gif-sur-Yvette on 12 and 13 October 1983, on the three following themes: actual experiences of fires and lessons drawn from the protection of electrical installations against fire; choice of equipment and material with regard to their flame resistance; large-scale fire simulation to study smoke evacuation and fire fighting means. A paper is devoted to the flame resistance of electrical cables without halogens in RATP's underground network and the choice of materials in rail transport. [French]

Societe des electriciens, electroniciens & radioel SNCF 331 P 10 V1, 1983, 271p, 10 Tab., 10 Phot., 10 Ref., 10 App.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Societe des electriciens, electroniciens & radioel, Paris, France

26 386987
HIGHWAY ACCIDENT REPORT, VALLEY SUPPLY COMPANY, TRUCK TOWING PLOW, ANCHOR MOTOR FREIGHT, INCORPORATED, AUTO CARRIER TRUCK AND NEW YORK STATE ASSOCIATION FOR RETARDED CHILDREN SCHOOL BUS, STATE ROUTE 8, SOUTH OF HOLMESVILLE, NEW YORK APRIL 5, 1983
A multiple-vehicle accident near Holmesville, N.Y., claimed the lives of five persons traveling in a bus used to transport handicapped persons. The accident involved two collisions—an impact between a detached, free-rolling farm plow and a tractor-semitrailer and the subsequent head-on collision between the tractor-semitrailer and the bus carrying the handicapped individuals. The flatbed truck towing the plow was found to be operating at excessive speed and without proper securement to the towed unit. The bus, purchased by New York State under a federal grant program, was operated by a local social service organization known as Community Work Shop, an affiliate of the New York Association for Retarded Children. The bus was not classified as a schoolbus by NYSDOT, and thus not required to meet federal motor vehicle safety standards applicable to schoolbuses. CWS believed its vehicle did meet such standards, including structural requirements. Such minimum standards, particularly for hauling the handicapped, should apply in all states, the National Transportation Safety Board recommended. While the inside of the emergency exit was marked with a sign, there was no such indication on the outside of the bus, nor was there any indication that some occupants might need special assistance to evacuate the bus. NTSB recommended that NYSDOT assure improved evacuation procedures, including placards on the outside of mass transportation vehicles routinely carrying handicapped persons, and proper labeling of all emergency exits inside and outside along with assuring their ready accessibility. It was also recommended that CWS drivers wear seat belts when operating their vehicles.

National Transportation Safety Board No Date, n.p.

ORDER FROM: NTIS PB84-916201

26 386988
TRAINING MANUAL FOR HUMAN SERVICE RISK MANAGERS
Whenever an agency becomes involved in transportation, the agency then becomes involved in risk management and insurance because transportation is inherently subject to the risk of accidents which may inflict bodily injury or accidental death upon either program beneficiary or the general public. This is especially true when agencies purchase vans and transport large loads of physically handicapped, elderly, young, or mentally handicapped individuals. Insurance does not reduce risk but only spreads the financial consequences of catastrophic losses. Insurance is not the only requirement that must be met before vehicles can be operated. Accidental death and injury may be caused by the way agency managers select and train drivers, maintain vehicles, conduct accident reviews, hold safety meetings, and select and equip vehicles. The cost of insurance coverage may be reduced by cutting the uncertainty with which the underwriter is required to view the agency's insurance application. Risk management is thus an important management function.

Davis, FW Dotterweich, WW Burchalter, DA Cleary, T

Tennessee University, Knoxville, Department of Health and Human Services, Office of the Secretary of Transportation Final Rpt. DOT-I-83-16, Nov. 1980, 148p, Figs., Tabs., 3 App.

ORDER FROM: OST

26 387627
BENEFITS OF ADVANCE PLANNING TO MEET TRANSPORTATION EMERGENCIES
Advance planning for effective response to transportation emergencies was the topic of TRB Conference Session 82 at the 1983 Annual Meeting. This report summarizes topics discussed and is organized according to common themes covered by each speaker. A definition of transportation emergency is an extrordinary event that causes congestion, delay, confusion, and/or general disruption of one or more transport modes. The role of advance planning is discussed, along with the conclusion that the responsibility falls within the political base of the community with a legislative mandate necessary to establish command and control functions. Effective response is generally related to the type of incident expected to occur; to be identified are lines of authority and communication channels. Disaster response exercises are a key component of advanced planning. Among benefits attributable to advanced planning are reduced delays to travelers, faster medical attention, shorter disruption in area transportation, energy savings, and improved coordination among involved agencies and the private sector. Improved coordination is the least quantifiable, but perhaps the most substantial of benefits.

Transportation Research Circular No. 280, June 1984, 4p

ORDER FROM: TRB Publications Off

26 387682
RAILROAD PASSENGER EQUIPMENT SAFETY. A REPORT TO CONGRESS
This Report presents the results of the Federal Railroad Administration's comprehensive examination of railroad passenger safety in response to section 702 of the Rail Safety and Service Improvement Act of 1982. Rail passenger service in the United States has compiled a superior safety record that can be attributed to the rail industry's operational and safety practices as well as the effect of FRA's extensive safety regulations. To enhance that record, FRA is undertaking several rail passenger safety initiatives: (1) Consistent with a Congressional mandate, FRA is issuing a final rule extending its Track Safety Standards to include all track used exclusively for rail commuter service; (2) To ensure continued inspection and testing of passenger car brakes, FRA is amending its Power Brake Standards, which refer to industry rules that have been cancelled; (3) FRA is issuing guidelines consistent with those developed by the Urban Mass Transportation Administration on the flammability and smoke emission characteristics of materials used in the construction of rail passenger equipment; (4) FRA will convene a Special Safety Inquiry to assess the potential impact of technological changes in passenger equipment components, such as wheels, axles, bearings, and brakes. (5) FRA will sponsor an industry-wide review of emergency procedures by passenger service providers to ensure that adequate measures for emergency preparedness are in use throughout the systems within its jurisdiction. FRA is confident that its comprehensive review of rail passenger safety and the resulting initiatives described in this Report will contribute to maintaining the rail industry's excellent passenger safety record.

Federal Railroad Administration Jan. 1984, v.p., 2 App.

ORDER FROM: FRA

26 387687
TRANSIT POLICY STUDY VOLUME 3. PEER ANALYSIS OF TRANSIT SYSTEM PERFORMANCE IN WISCONSIN'S MID-SIZED CITIES
This report presents a peer comparison of transit system performance in 11 mid-sized Wisconsin cities (over 50,000 population). It is based on information presented in Urban Mass Transit Annual Report, produced by Wisconsin DOT. The analysis uses performance indicators—ratios of one system characteristic over another system characteristic that yield unit measurements indicative of how a system performs. Unit measurements facilitate both peer comparison and analysis of an individual system over time. The 11 systems displayed wide variation in their expenditures for labor and materials, as well as in their ridership and per passenger operating revenues. While systems with below-average performance need to examine aspects of their operations, the differences may relate to factors over which transit managers have limited control. Some such factors include geography, local policies regarding fares, and service levels. Because labor costs average 70% of total costs, this is an important cost control area and may depend on local contracts and the state of labor management relations. Between 1980 and 1982 operating cost were up significantly and while most systems raised fares, ridership levels have been maintained.

Duffe, JR
Wisconsin Department of Transportation May 1983, 38p

ORDER FROM: Wisconsin Department of Transportation, Divisions of Planning & Budget & Transportation Assistance, Madison, Wisconsin, 53702

26 387694
INSURANCE PROGRAMS FOR THE RURAL AND SMALL URBAN TRANSIT SYSTEMS OF MARYLAND
Risk management for rural and small urban transit systems in Maryland is investigated. Operations in Maryland are compared with 115 small transit operations throughout the country, portrayed initially in numerical terms and then in scatter diagrams. The systems reported on liability and property damage insurance limits and premimus, loss history documentation, bid process and schedule, and broker and carrier involvement. The goal is determaination of the most cost-effective insurance coverage for such systems. The report hs four major analytical sections. Chapter II compares operating profiles, insurance expenditures and accident rates for Maryland firms with the national profile. Chapter III provides detailed information about insurance procurement, safety/risk management, and carrier/agent services. Chapter IV gives a detailed risk profile, comparing Maryland systems with the others. That chapter specifically discusses such issues as premiums (liability and collision/comprehensive) as a percentage of operating expenses, losses related to operating expenses and deductibles. Chapter V presents a series of general principles governing risk management. The final principle deals with advantages of a joint purchase alternative for the Maryland systems.
Interagency Agreement MTA-9-83-1.

Fanara, P, Jr Corsi, TM Roberts, MJ Smith, R Haig, L Young, N
Maryland University, College Park, Mass Transit Administration of Maryland 1984, 76p, Tabs., 1 App.

ORDER FROM:

26 387699
POLYCHLORINATED BIPHENYLS (PCBS) IN TRANSIT SYSTEM ELECTRICAL EQUIPMENT
This report presents the legislative history and current regulatory requirement concerning the continued use of Polychlorinated Biphenyls (PCBs) in transit system electrical equipment. Recent rule-making promulgated by the Environmental Protection Agency (EPA) is presented in summary form to aid the reader in following the chrononlogy of requirements affecting the continued operation, servicing, marking, and disposal of transit system electrical equipment which contains PCB materials. Types of transit system electrical equipment regulated by the EPA are identified and future regulatory requirements concerning allowable PCB concentration levels for specific electrical equipment are outlined. Transit system procedures for the handling of electrical equipment containing PCBs are presented. Recommendations to assist transit systems in eliminating PCBs from electrical equipment are provided.

Transportation Systems Center, Urban Mass Transportation Administration, (DTS-65) Final Rpt. UMTAMA-06-00098-84-1, DOT-TSC-UMTA-84-15, May 1984, v.p., 26 Ref., 7 App.

ORDER FROM: UMTA

26 387975
WHEELCLIMB DERAILMENT PROCESS AND DERAILMENT CRITERIA
The most widely accepted criterion for wheelclimb derailment defines an upper limit for safe operation on wheel/rail contact forces on the climbing wheel, with the limit varying with time duration of the forces. For dynamic wheelclimb processes with significant lateral velocities, lateral forces may

be measured for short time durations that are larger than those that may be sustained without derailment in steady state. To study wheelclimb derailment processes and evaluate derailment criteria, a series of derailment experiments was conducted using a one-fifth scale model of a single wheelset on tangent track subjected to static and dynamic loading conditions. The results of these experiments were compared to simulations based on a nonlinear theory developed to represent the important phenomena associated with dynamic wheelclimb. The study shows that the Japanese National Railways (JNR) and other time-duration dependent criteria based on wheel load measurements alone are unsuccessful in predicting derailment safety for dymanic wheelclimb. For wheelclimb processes involving negligible lateral velocities, the derailment limit can be estimated from quasi-steady analysis of wheel/rail forces. Evidence has been found that derailment criteria employing variables measured in addition to wheel loads may be successful in predicting derailment safety, and that diagnostic criteria may be developed for warning of impending derailment.

Sweet, LM Karmel, A
Princeton University, Federal Railroad Administration, (DTS-73) Final Rpt. DOT-FRA-ORD-84-05, DOT-TSC-FRA-83-6, June 1984, 198p, Figs., Tabs., 32 Ref., 5 App. Contract DOT-TSC-1603
ORDER FROM: FRA

26 389356
HEALTH HAZARD EVALUATION REPORT NO. HETA 81-348-1225, PUBLIC UTILITIES COMMISSION, SAN FRANCISCO, CALIFORNIA
On August 12-14, 1982, an initial survey was conducted where total dust air concentrations ranged from 0.10 to 0.56 mg/cu m; only one sample having 16 percent quartz, copper, iron oxide, vanadium, cadmium, lead, calcium, asbestos, ozone, nitrogen dioxide, nitrogen oxide, carbon monoxide, or formaldehyde. Furthermore, workers were not exposed to excessive temperatures or relative humidity. Recommendations are included in the body of the full report to help reduce workers' complaints of dust irritation.

Belanger, PL
National Institute for Occupational Safety & Hlth HETA-81-348-1225, Nov. 1982, 19p

ORDER FROM: NTIS PB84-172832

26 389396
REPORT TO WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY—HIGHWAY/RAPID RAIL COMMON CORRIDOR SAFETY ANALYSIS
A common corridor is defined as a location where two transport modes share a common right-of-way. The particular concern of this study is the corridor occupied by a rapid transit line of Washington Metro and an interstate highway in northern Virginia. Prior to opening of the transit line, a Chevrolet Blazer traveling a high speed crossed a 45-ft grassy median/drainage ditch, left the ground, struck and then breached the chain link fence atop a grade beam barrier and landed so as to block both tracks. WMATA then requested its General Engineering Contractor to analyze the I66/Metro common corridor to predict the likelihood of further breaches and provide alternatives for further enhancement of the safety of this portion of the Metro system. This report contains (1) instances of barrier hits by highway vehicles and prediction of the potential for barrier breaches on the basis of current research and statistics; and (2) alternatives for increasing Metro rider safety in the I-66/Metro common corridor. Nine alternatives and their costs are listed as means for improving safety.

De Leuw, Cather and Company May 1984, v.p., Figs., Tabs., 2 App.

ORDER FROM: De Leuw, Cather and Company, 1201 Connecticut Avenue, NW, Washington, D.C., 20036

26 389398
HEAVY RAIL TRANSIT SAFETY 1983 ANNUAL REPORT
The Heavy Rail Transit Safety 1983 Annual Report is a compendium and analysis of heavy rail transit accident and casualty statistics reported by the eleven heavy rail transit systems in the United States during 1983, under UMTA's Safety Information Reporting and Analysis System (SIRAS).

Daley, DM
Transportation Systems Center, Urban Mass Transportation Administration, (DOT-65) UMTA-MA-06-0152-84-1, DOT-TSC-UMTA-84-23, July 1984, 30p, 1 App.

ORDER FROM: UMTA

26 389761
UNIFORM TRANSIT SAFETY RECORDS SYSTEM FOR THE COMMONWEALTH OF VIRGINIA
The report, describes the development of a uniform transit safety records system. This system was designed to provide decision makers with the technical information needed to identify a wide variety of different safety problems. The document includes information on the system's planning and design, the process of data collection and loading, and file storage and processing. The system was directed primarily to the recording of information about traffic accidents involving transit vehicles, but may also be applicable to incidents of crime or vandalism. The report draws upon the experience of fifteen transit providers within the State of Virginia, as well as fifteen other states. The report has some technical segments, and is probably most applicable for smaller transit systems, although it will also have value for the larger ones.
Portions of this document are not fully legible.

Bowman, MA
Virginia Highway & Transportation Research Council VHTRC-81-R39, DOT-I-82-21, Feb. 1981, 214p

ORDER FROM: NTIS PB84-190669

26 389835
CONSIDERATION OF SAFETY IN LONG RAILWAY TUNNELS ON THE RATP
The confined space in the tunnels of urban railway systems can cause apprehension and although it would be inaccurate to say that the accidents that have occurred in them were a catastrophe, the public is nonetheless concerned about the effectiveness of the rescue methods adopted in the event of a mishap. After reviewing the risks at present run by passengers, the author gives details of the coordination between the services that go into action of an accident does occur. The methods employed and the procedures followed have been agreed by a working party made up of responsible RATP staff and representatives from the headquarters of the Paris Fire Brigade. Simulation exercises are now carried out every year in a long tunnel for the purpose of training staff and ensuring that the procedures followed are the right ones. [French]

Favreul, J **Revue Generale des Chemins de Fer** Vol. 103 May 1984, pp 253-260

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

26 389845
REDUCING FIRE RISKS IN ROLLING STOCK CONSTRUCTION MATERIALS
This article describes research into the behaviour of materials in fires, so that the effects of smoke production (opacity and toxicity) can be considered together with the effects of combustion. These studies led to the establishment of a system in which materials are classified under two headings, covering both their tendency to catch fire and the degree to which they produce smoke once they are burning. This, in turn, allows informed decisions to be taken concerning the conditions under which different types of rolling stock are used. The authors of this article describe experiments carried out in France and in other countries, including Japan, the U.S.A. and Sweden, as well as halfscale tests in R.A.T.P.'s 27 m cube caisson. Steps have already been taken internationally to specify the type of model to be used in fire tests and the general conditions under which they should take place, but further work needs to be done in this direction to standardize testing and make results more generally applicable. Technical collaboration between the S.N.C.F. and the R.A.T.P. has proved to be very valuable and enabled both corporations to improve their fire safety performance.

Bousquet, G Muraire, R **French Railway Review** Vol. 2 No. 3, June 1984, pp 163-174

ACKNOWLEDGMENT: British Railways

ORDER FROM: North Oxford Academic Publishing Limited, 242 Banbury Road, Oxford OX2 7DR, England

26 389860
FIRST ARTICLE BUS TESTING
To assist transit operators in evaluating new bus designs and avoid untested vehicles, UMTA has supported development of a test plan covering safety, performance and reliability of the vehicle and major subsystems. Any use of this plan is voluntary. First article buses are defined as the first 10 units of the production line for delivery to a U.S. transit authority and are of a design that has not been used in U.S. revenue service or includes major changes in configuration or components critical to sustained revenue operations. The plan covers testing of standard, heavy-duty 35-or 40-ft transit buses but can be modified in any way a transit agency desires or can be used for testing vehicles of other configurations. A procurement can include first article buses although the test plan and costs would be subject to negotiation. The basic plan calls for manufacturers to perform nonrevenue tests and for the transit agency to make revenue tests. UMTA does not plan to become involved in testing or in finding the tests of newly designed buses. The test plan requires the transit agency to have data on comparable buses. Data would include mean mileage between subsystems failures, frequency of servicing, and man-hours required for servicing. Careful record keeping is required on the plan. Knowledge gained by using the test plan can help in developing future specifications.

Technical Assistance Briefs Vol. 3 No. 3, 1984, 6p, 1 Fig.

ORDER FROM: UMTA

26 389881
SCRTD BUS ACCIDENT ANALYSIS FOR JANUARY-JUNE 1982
This study of alighting accidents involving buses of Southern California Rapid Transit District was accompanied by definition of a series of alternatives for possibly alleviating the problem. Two accidents resulting in serious injury to passengers exiting rear doors of buses focused attention on the situation, but an overall analysis was made initially. Alighting accounted for on 4.9% of SCRTD's total accidents and 3.2% of accident costs. It was found that AMG and Flexible type Advanced Design buses had disportionate incidences of alighting accidents in relation to their numbers in the SCRTD fleet. Accidents were also analyzed in terms of weather, lighting conditions, front or rear exit, and victim's age and sex. Suggested alternatives were: Restrict exiting to rear door only; provide added handrails at front and rear doors to assist elderly who constitute a disportionate number of victims; undertake individual accident investigations; or continue monitoring general accident statistics.

Jones, GP Long, WY
University of Southern California May 1983, 23p, Figs., 1 Tab., 7 Ref., 4 App.

ORDER FROM: University of Southern California, Institute of Safety and Systems Management, Los Angeles, California, 90007

26 390151
TAXI'S ON PUBLIC TRANSPORT LANES [TAXI'S OP OPENBAAR VERVOERSTROKEN]
In many municipalities taxis are allowed to make use of the highway lanes which are exclusively for public transport. Apart from aspects of traffic engineering there are also aspects of traffic safety. If everywhere in the Netherlands taxis are allowed to use public transport lanes the driving behaviour of taxi drivers must guarantee the safety of other road users. Therefore an accident analysis has been carried out in Amsterdam on those places where taxis use public transport lanes. It is shown that on such lanes they are less recognizable as vehicles with special priority and also that most taxi drivers drive too fast. Results and recommendations for education and enforcement are presented. (TRRL) [Dutch]

Bureau Goudappel Coffeng BV Monograph May 1983, 12p, 1 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 276735), Institute for Road Safety Research SWOV
ORDER FROM: Bureau Goudappel Coffeng BV, P.O. Box 161, Deventer, Netherlands

28 386384
EDUCATING THE MEDIA
Bus operating agencies need to have a long-term program for educating and informing the public about the bus industry. This involves continuing and in-depth treatment, since superficial and spasmodic efforts will not be productive. Radio, television and the press are vital, and the better understanding that reporters and broadcasters have, the better "press" the bus industry will get. At the state level a well-organized bus association should be supplying information to the media via a trained contact who has a professional relationship with media representatives. The statewide agency should also assist local agencies. The local bus operator needs also to know his area's key people in the print and broadcast media, providing verbal information or issuing press releases to them. In the case of small organizations without a full-time community relations representative, the president or general manager probably will fulfill this function. The payoff for good media relations is increased receptiveness by the general public and special publics to the problems and new ventures that confront bus operations.

Smerk, GM (Indiana University, Bloomington) **Bus Ride** Vol. 20 No. 2, Apr. 1984, p 78

ORDER FROM: Friendship Publications, Incorporated, West 2627 Providence, P.O. Box 1472, Spokane, Washington, 99210

28 387638
PUBLIC TRANSIT'S SURVIVAL AND PROSPERITY IN THE 1980S: EFFECTIVE MARKETING MANAGEMENT CAN LEAD THE WAY
Fiscal pressures caused by rising operating costs, limited farebox revenues, and reductions in government operating subsidies are forcing public transit agencies to seek changes in the way they do business. Survival and future growth will depend on selection of a management approach that will help public transit adapt to changes in environmental conditions. Effective marketing management has proven in the business world to be a trademark of many longstanding successful companies. A study of how the tools and practices of modern marketing management can be harnessed by the public transit industry to help weather the current fiscal crisis and prosper in the late 1980s and beyond is presented. First, the need for a change in transit management philosophy-from the traditional operations view to that of marketing-is estabilshed. Then, a structured analysis of the marketing management process interwoven with public transit applications is described.

This paper appeared in Transportation Research Record No. 936, Public Transportation and Transit Operations Planning.

Couture, MR (Transportation Systems Center) **Transportation Research Record** No. 936, 1983, pp 47-55, 5 Fig., 23 Ref.

ORDER FROM: TRB Publications Off

28 387664
TRANSIT RIDERSHIP DOUBLES IN COLUMBUS—ENTHUSIASM AND INNOVATION BY COTA IS WHY
Central Ohio Transit Authority (COTA) has experienced growing ridership, revenues and monthly pass sales. Two-thirds of its bus fleet will be new since 1982 at the end of 1984. The two maintenance facilities are new, along with a pair of central business district Express terminals to reduce on-street waiting and congestion. The Teleride passenger information system is credited with major increases in off-peak, Saturday and Sunday ridership by making schedule information available by phone at all times. Households in proximity to bus stops receive schedules and transit maps automatically. Computers are used for map preparation, schedules and timetable typesetting. Cable TV is also used for disseminating COTA information. COTA's success is credited in large part to public awareness. Various techniques are used for collecting passenger data, and for applying conclusions made from such collection. COTA has the benefit of a share of the region's sales tax and is now looking at various/options for a developing surplus and for the future of the tax itself.

Bus Ride Vol. 19 No. 3, May 1984, pp 46-49, 5 Phot.

ORDER FROM: Friendship Publications, Incorporated, West 2627 Providence, P.O. Box 1472, Spokane, Washington, 99210

28 387911
PUBLIC-PRIVATE PARTNERSHIPS-SYNERGY IN PUBLIC TRANSIT
Starting in the 1960s public transit lost its private-sector orientation as most such companies were taken over by public agencies. Takeovers had come as a result of massive losses of ridership and of support for transit services. Now local office holders do not understand transit's role and this is further complicated by transit users' inability to communicate their need for transit. The result is termed "isolation" which is also exacerbated by other factors. Transit managers have placed high priority on the mechanics fo transit and low priority on developing a real constituency in failing to make their systems valuable to a wider range of potential users in their communities. The success of Valley Metro in Roanoke, Va., in involving itself in a major downtown urban renewal project with the private sector is a type of activity which can aid in constituency development. Other Valley Metro activities have included ridesharing and parking, community service projects, and joint promotion with private businesses. Valley Metro's efforts are ongoing and changing, reflecting the needs of the community and of the transit system. Transit managements' responsibility is to seek private-public partnership opportunities that build ridership and develop backing for transit.

Callahan, WE, Jr (Greater Roanoke Transit Company) **Transitions** 1984, pp 27-37, 1 Phot.

ORDER FROM: ATE Management and Service Company, Incorporated, Editor, 617 Vine Street, Suite 800, Cincinnati, Ohio, 45202

28 389297
MARKETING FOR PUBLIC TRANSPORT-PROBLEMS AND PROMISES
Post-war transport planning priorities have neglected public transport for a long period of time. This situation was reinforced by the consistent effort of the automobile industry to increase the distribution of their products. Now the time has come to try to motivate people to change their behaviour voluntarily in favour of public transport. Unfortunately current marketing and advertising strategies are limited in their effectiveness towards achieving this goal. The techniques which are necessary for successful interaction with the (potential) public transport users can readily be developed with the systematic use of knowledge which is ready available. This paper is aimed at providing the stimulus for such an undertaking. For the covering abstract of the conference see IRRD 276520. (TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume II.

Broeg, W (Institute for Empirical Social Research, Munich); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 373-383, 23 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276571), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

28 389370
SOUTH CAROLINA TRANSPORTATION MARKETING MANUAL
This marketing manual was prepared specifically to aid the transit systems of South Carolina by providing marketing knowledge, examples and procedures available throughout the U.S. Transportation management planning and marketing professions have made a substantial contribution to the transit ridership increases in recent years through the development of workable marketing procedures, and through the design and implementation of creative approaches to the unique problem of selling transit services to an automobile-oriented society. The manual is designed to cover the planning, development, execution and refinement of a marketing program sequentially. Sections discuss the following: Public perception; government/political leaders; business community; media; passenger information; merchandising and promotions; passenger amenities; routing/scheduling; personnel; maintenance; fares; and planning. There is information on target marketing and measuring the impact of marketing.

Carter, Goble, Roberts, Incorporated, Office of the Governor, South Carolina DOT-I-84-18, Sept. 1980, 197p, Figs.

ORDER FROM: OST

28 389385
LOW-COST TRANSIT IMPROVEMENT FEASIBILITY STUDY
After the Greater Bridgeport Transit District (GBTD) purchased 4 private bus companies in 1979-1980, it set out to provide high quality service by upgrading and expanding the bus fleet, improving coverage and headways, and unifying services and maintenance (Phases 1 and 2 Service Improvements). The GBTD focused on developing low-cost techniques for increasing ridership. The objective of this study is to develop low-cost strategies that would divert auto trips to mass transit. Two major areas are addressed: 1) marketing and public relations, and 2) service monitoring. A literature search for low-cost techniques already in use by other transit operators identified 13 marketing and public relations techniques and 1 service monitoring technique. Criteria for evaluating resources necessary to implement the proposed techniques and the implementation of them are also discussed. The final chapter of this report discusses the service monitoring set of techniques under the heading of The Operations/Planning Interface Program. This program discusses the means by which the Planning Staff receives qualitative data about GBTD services, namely: the Operators Committee, the Operator Suggestion Program, the Operator "Ride-Along" Program, and the Customer Communications Procedure. In addition, two other public information techniques are discussed—Operator Information Cards, and Operator Information Booklets. Both the Marketing and Public Relations techniques and the Service Monitoring techniques met various levels of success. The most successful, according to the authors, was the Operator Suggestion Program.

Greater Bridgeport Transit District, Urban Mass Transportation Administration Final Rpt. UMTA-CT-09-0026-84, H-491, June 1984, 73p, 3 App. Contract UMTA-CT-09-0026
ORDER FROM: UMTA

28 389395
CAR DRIVERS TEST PUBLIC TRANSPORTATION: A MEASURE TO ENCOURAGE PERSONS TO SWITCH TO PUBLIC TRANSPORTATION
Most of the advertising created by managers of public transportation systems in the Federal Republic of Germany has necessarily adhered to the classical methods of product marketing, i.e., campaigns to improve the image of public transportation and advertising targeted at the general public. However, it is doubtful whether such methods are suitable for service-oriented industries, especially public transportation. A series of special studies have revealed that persons do not use public transportation because they are not informed about the supply and because of their subjective perceptions of different aspects of the public transportation system. This means that one of the primary goals of efficient advertising is to inform persons about the public transportation system. The Stuttgart Integrated Public Transportation System took a decisive step in this direction with its campaign, Car Drivers Test Public Transportation. In this campaign, persons who were willing to use public transportation on a trial basis for a period of 1 month were selected through their places of employment. The social-scientific study done by Socialdata to accompany the campaign had two basic goals: (a) determine what percentage of the test persons continued to regularly use public transportation after the month of testing had been completed, and (b) study the effect of practical experiences with public transportation on the attitudes that persons previously inadequately informed about public transportation supply would then have toward public transportation. For this purpose, surveys were done of travel behavior before, during, and after the test, and studies were done of travel behavior before, during, and after the test, and studies were done to determine the opinions of the persons surveyed.

This paper appeared in Transportation Research Record No. 947, Transit Management and Services.

Broeg, W Foerg, OG (Socialdata GmbH); Moetsch, G (Verkehrs- und Tarifverbund Stuttgart) **Transportation Research Record** No. 947, 1983, pp 51-56, 5 Tab., 7 Ref.

ORDER FROM: TRB Publications Off

29 386306
THE EFFECTIVENESS OF TELEPHONE INFORMATION SERVICE IN TRANSIT
This report analyzes the effectiveness of telephone information services provided by public transit authorities in the United States. The report is based primarily on the results of fifteen case studies conducted at diverse transit authorities, as well as a literature search. The following technologies are examined: 1) microfiche and computerized methods of data retrieval; 2) automatic-call-distributor equipment with management information system (MIS) capability; and 3) computerized rider information systems (CRIS). In addition, institutional and labor issues involved in the provision of telephone information service are discussed. The report provides both an issue-by-issue analysis as well as a description of how each case study site provides telephone information, including performance measurements, costs, and benefits. A draft of this report was reviewed by each case study site which provided primary data, and by the Transportation Systems Center and Urban Mass Transportation Administration. Their comments have been incorporated into the final report in a manner which ensures that the objectivity of the assessment is not compromised.

Cutler, MR Potter, RF
Dynatrend, Incorporated, Urban Mass Transportation Administration Tech Rpt. Feb. 1984, n.p. Contract DTRS-57-80-C-00085
ORDER FROM: Dynatrend, Incorporated, 21 Cabot Road, Woburn, Massachusetts, 01801

29 386349
TRAIN INFORMATION SERVICE FOR PASSENGERS
Railway information service covers a very wide range in the nature of passenger transportation. The first half of the article describes the extended general information service which includes foreign railway examples, and the latter half mentions an information service system for train traffic which has been studied synthetically and installed at Ohmiya station for practical use. Railways would be more willingly used as a convenient public transportation facility if the passengers could obtain necessary and sufficient information about them.

Kimura, Y **Railway Technical Research Inst, Quarterly Reports** Vol. 24 No. 3, Sept. 1983, pp 97-102, 6 Tab., 4 Phot., 4 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: ESL

29 386391
THE CCIS EXPERIMENT: COMPARING TRANSIT INFORMATION RETRIEVAL MODES AT THE SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
This report documents the results of a controlled experiment performed in the Telephone Information Section of the Marketing Department at the Southern California Rapid Transit District (SCRTD) in Los Angeles. The Telephone Information Section is the site of a prototype deployment of automated transit information systems (ATIS) technology known as the Computerized Customer Information System (CCIS). Through CCIS, the SCRTD hopes to (1) reduce the cost of providing telephone information; (2) increase telephone information productivity and (3) improve the level of service provided by the information agents. A controlled experiment was designed and implemented to measure differences in productivity and response accuracy between information agents using automated and manual retrieval methods. In the course of the experiment, a predetermined set of 36 itinerary-type transit information questions was asked to each of nine test agents. Analysis of the results showed that statistically significant differences in performance were discernible among agents of varying skill/experience levels and between retrieval modes. It was concluded that CCIS is indeed a viable alternative to manual information retrieval methods and has potential for further application in transit telephone information operations.

Phillips, RO
Hill (Wilson) Associates, Incorporated, Urban Mass Transportation Administration, (DTS-64) Final Rpt. UMTA-MA-06-0126-84-4, DOT-TSC-UMTA-84-1, Mar. 1984, 112p, 2 Fig., Tabs., 6 App. Contract DTRS-57-81-00054
ORDER FROM: NTIS

29 386927
AUTOMATIC TIMETABLE INFORMATION SYSTEM (AFI) USING VIDEOTEX SYSTEMS—ON SITE TRIAL [AUTOMATISCHES FAHRPLAN-INFORMATIONSSYSTEM AFI IM BILDSCHIRMTEXT-FELDVERSUCH]
An information system designed to improve access to the complex timetabling arrangements for local journeys in large conurbations has been developed, to enable passengers to call up timetable information on videotex systems. The article describes the aims of these systems and their design parameters. It describes the design of the AFI system, and what information it provides, then sums up its future prospects. [German]

Veysseyre, M **Dornier-Post** No. 3, 1983, pp 20-23, 3 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Dornier GmbH, PR-Department, Postfach 2160, D-8000 Munich 66, West Germany

29 386967
PASSENGER INFORMATION SYSTEMS
A technology update on passenger information systems including digitally recorded speech and VDU's.

Modern Railways Vol. 41 No. 427, Apr. 1984, pp 198-199

ACKNOWLEDGMENT: British Railways
ORDER FROM: Allan (Ian) Limited, Terminal House, Shepperton TW17 8AS, Middlesex, England

29 387692
SOCIO-ECONOMIC IMPACT ASSESSMENT OF AUTOMATED TRANSIT INFORMATION SYSTEMS (ATIS) TECHNOLOGY
This report is the final product of a program to assess the socio-economic impacts of automated transit information system (ATIS) technology deployments on the transit industry's telephone information/marketing function. In the course of this program, three separate deployment were evaluated: The Computerized Customer Information System (CCIS) at the Southern California Rapid Transit District (SCRTD) in Los Angeles; the Automated Information Directory System (AIDS) at the Washington, DC Metropolitan Area Transit Authority (WMATA); and the Transit Information Computer (TIC) at the Metroplitan Transit Commission (MTC) in Minneapolis-St. Paul, which was not part of the UMTA ATIS program. Results of the SCRTD and WMATA evaluations are documented in three companion reports to this volume. The smaller-scale MTC evaluation is documented in Appendix C of this volume. The purpose of this report is to present common developmental and operational problems encountered at these three deployments for the general information of other transit authorities across the nation that might be interested in assessing the potential of ATIS implementation to improve their telephone information/marketing capabilities.

Phillips, RO
Wilson Hill Associates, Incorporated, Urban Mass Transportation Administration, (DTS-66) Final Rpt. UMTA-MA-06-0126-84-3, Mar. 1984, 154p, 3 Fig., 19 Tab., 3 App. Contract DTRS57-81-00054
ORDER FROM: UMTA

29 387860
AN ASSESSMENT OF THE INFORMATION GIVEN IN RAILWAY TIMETABLE-LEAFLETS
A comparison of the rail services given in timetable-leaflets avaible free from British Rail with those found in the full passenger timetable has revealed that the former often miss out many useful services. Leaflets frequently refer to travel via only one route, when another route can also have useful services. (A)

Hutchinson, TP (Coventry Lanchester Polytechnic) **Journal of Consumer Studies and Home Economics** Vol. 5 1981, pp 239-246, 6 Fig., 2 Tab., 4 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276501)
ORDER FROM: Blackwell Scientific Publications Limited, Osney Mead, Oxford, Oxfordshire, England

29 390124

SAN FRANCISCO INTERNATIONAL AIRPORT

San Francisco International Airport is located in San Mateo County, fourteen miles south of downtown San Francisco, on the west shore of San Francisco Bay. The Bayshore Freeway (U. S. 101) provides access to the airport from the north and south, and Inter-state 380 connects route 101. Owned and operated by the City and County of San Francisco, San Francisco International Airport (SFIA) is the eighth busiest airport in the world. On a typical day, 65,000 air passengers are processed through SFIA. A complex system of pedestrian and vehicular circulation is essential in order to handle all these travelers, plus thousands of well-wishers and welcomers, and 30,000 airport employees. Realizing that complete, accurate, and readily available information is one of the keys to inducing greater use of existing public transit services, Airport staff has helped to develop a user-interactive, computerized Ground Transportation Information System.

Fein, SR (San Francisco International Airport) **ITE Journal** Vol. 54 No. 6, June 1984, pp 41-45

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

31 386137
RAPID TRANSIT TO CHICAGO O'HARE
The new 7.9 mile long rail link to Chicago O'Hare Airport from the Jefferson Park terminal is described. The airport is important for transcontinental flights and as a flight transfer centre. The line runs as a double-track surface railway along the median strip of the Kennedy Expressway. Near the airport, the tracks leave the motorway, continuing through a tunnel surfacing in the median strip of the airport access road. The line finally enters another tunnel to end under the main parking building in the centre of the three air passenger terminals. Three intermediate stations have been built completely within motorway intersections. Centralised train control enables trains to be operated under cab-signal protection on either track in either direction. A 600 V d.c. traction system operates from a third rail using 48 ft long air-conditioned cars seating 43 to 49 passengers at speeds of up to 70 mile/h. When operating, the extension will not only provide a speedy, frequent service between the city centre and the airport, it will also link the airport with the entire area's extensive network of rapid transit and bus routes. It is anticipated that nearly 43000 trips a day will be made, some 23000 to and from the airport and the remainder using the intermediate links. Most of the passengers will be diverted from bus and taxis rather than from private cars which will still account for more than half the total airport traffic. (TRRL)

Garbutt, PE **Modern Railways** Vol. 41 No. 425, Feb. 1984, pp 83-85, 2 Fig., 3 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 275427)
ORDER FROM: Allan (Ian) Limited, Terminal House, Shepperton TW17 8AS, Middlesex, England

31 386139
TAIPEI STARTS DIGGING..... BUT THE METRO COMES LATER
Approval was given last July to a project that will put Taipei's main station and 3km of the west coast trunk line below ground through the city centre. This paves the way for a 10 minute service of electric commuter trains that will be designated line S1 of a proposed four-line mass rapid transit (MRT) network. A separate MRT authority is to be set up this year to construct and operate the other three lines which total 73km. (TRRL)

Railway Gazette International Vol. 140 No. 2, Feb. 1984, pp 116-118, 1 Fig., 5 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 275221)
ORDER FROM: ESL

31 386148
LOCAL AND REGIONAL PUBLIC TRANSPORT IN 10-20 YEARS [LOKALA OCH REGIONALA KOLLEKTIVTRAFIKEN OM 10-20 AAR. DELRAPPORT]
If the economic situation improves, demand for public transport will decrease by 10-15%; if stagnation continues and petrol prices rise, there will be a similar increase. Siting of housing and industrial estates will also have great influence. If the economy improves, public transport standard will have to increase to compete with cars; if economy declines, the principal problem of public transport will be to fill the need. Whatever happens, equipment and staff must be used more effectively. Buses must be more comfortable to travel in and to get on and off, which necessitates lower and longer, perhaps articulated, buses. The drivers' environment must be improved, and they must be made more aware of their service function. Electronics and computers will be used increasingly, primarily for planning, control and information. Problems regarding economy and financing will continue. Grants at present cover 50-60% of operating costs, and are not likely to rise further. Other forms of financing must be found. Increased cooperation and coordination is needed betwen e.g. Buses and taxis so that the latter can be used on demand at times of low traffic. The whole of the public transport system, i.e. Planning, control and operation, maintenance, frequency, stops and vehicles must all be improved and geared to passengers' needs. (TRRL) [Swedish]

Kollektivtrafikberedningen KTB Rapport 1983:14, 1983, 67p, 10 Fig., 8 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 275011), National Swedish Road & Traffic Research Institute
ORDER FROM: Kollektivtrafikberedningen, P.O. Box 1339, Solna, Sweden

31 386169
LONDON TRANSPORT PLAN 1984/85-1986/87
This document sets out proposals for making the bus and underground networks of London more efficient, cheaper to run, easier to use and more competitive. It is divided into four parts. Part 1, the background, covers the market, and the legal, planning and financial frameworks. Part 2 outlines the plan and the main strategies and choices made. Part 3, the programs, details bus and rail plans and policies, support services and ancillary businesses. Longer term aspects are discussed in Part 4. (TRRL)

London Transport Executive Monograph June 1983, 61p, Figs., Tabs.

ACKNOWLEDGMENT: TRRL (IRRD 275050)
ORDER FROM: London Transport Executive, 55 Broadway, London SW1H 0BD, England

31 386178
THE CHANGE, A WEAK LINK IN THE TRANSPORT CHAIN. AN ANALYSIS OF THE CHANGE BETWEEN DIFFERENT PUBLIC TRANSPORT SYSTEMS [DE OVERSTAP, EEN ZWAKKE SCHAKEL IN DE VERPLAATSINGSKETEN. ANALYSE VAN DE OVERSTAP TUSSEN VERSCHILLENDE OPENBAAR VERVOERSYSTEMEN]
The change in public transport is the weak link in the whole system of transport. A project group of Delft University of Technology had the aim: to design and to evaluate improved and new kinds of provisions for users of public transport in relationship with the change between different public transport systems. The change between metro and bus in the neighbourhood of Rotterdam was chosen by the group for a test study. Aspects of quality, accuracy, waiting time, walking distance, time table, level of service, information, frequency and delay are considered. (TRRL) [Dutch]

Doornenbal, JW
Delft University of Technology, Netherlands Monograph July 1982, 164p, Figs., Tabs., Phots., 26 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 274551), Institute for Road Safety Research SWOV
ORDER FROM: Delft University of Technology, Netherlands, Centrum voor Vervoers en Verkeerswezen, P.O. Box 5038, 2208 Delft, Netherlands

31 386235
THE PARIS-NORD SUBURBAN STATION: COMPLETION OF CONSTRUCTION WORK ON THE LOW-LEVEL STATION
Since 1977, the Paris-Nord station has been the scene of extensive construction work jointly undertaken by the S.N.C.F. and R.A.T.P. to allow through-running of trains of the RER (Regional Express) Line B and S.N.C.F. systems, the interconnection point being the low-level part of the new station. Additions to the original project include a bus station and surface terminal facilities for suburban lines not connected directly to the RER system, with the aim of creating a specifically surburban terminal within the limits of the old Gare du Nord. The result is a fully integrated transport complex with excellent interchange facilities.

Deminiere, M Gebarowski, C **French Railway Review** Vol. 2 No. 1, Feb. 1984, pp 41-44

ACKNOWLEDGMENT: British Railways
ORDER FROM: North Oxford Academic Publishing Limited, 242 Banbury Road, Oxford OX2 7DR, England

31 386246
KOREA: HECTIC PACE OF SUBWAY CONSTRUCTION STRAINS RESOURCES
With Seoul's circular Line 2 virtually finished, work is forging ahead on Lines 3 and 4 although it is clear that the original December 1984 completion date will not be met. Electrification of KNR routes to Euijeongbu and Susaeg will expand the total network of subway and commuter lines into a 220 km regional metro by 1989, only 15 years after the first joint KNR-Subway line opened.

Jae-Myong, K **Railway Gazette International** Vol. 140 No. 2, Feb. 1984, pp 107-108

ACKNOWLEDGMENT: British Railways
ORDER FROM: IPC Transport Press

31 386267
CLOSER LOOK: THE 1982 WORLD'S FAIR TRANSPORTATION SYSTEM. PHASE 2 REPORT
This report is a detailed follow-on to an earlier study of the transportation arrangements for the Knoxville World's Fair. Building on the earlier analysis, this study explores several key elements of the system in quantitative detail. Topics covered include the involvement of transportation agencies; planning standards used in designing the Fair's transportation system and supporting elements; functional components such as roadways, parking, and buses; regulations pertaining to the services; and the effects of the costs of the services. The report also includes a summary of 45 lessons learned which may help planners of similar events.

Blasius, W Hipp, T Margiotta, R
Knoxville-Knox County Metropolitan Planning Comm DOT-I-83-29, July 1983, 242p

ORDER FROM: NTIS PB84-155019

31 386275
TRAVEL BEHAVIOUR DURING TRANSPORT STRIKES IN 1980 AND 1982 [REISEVANER UNDER TRANSPORTSTREIKENE I 1980 OG 1982]
This report analyses the changes of travel behavior in the morning peak during a transport strike in spring 1982. The traffic data was mainly collected in the Oslo region. A questionnaire survey was carried out on three bus routes after the strike. [Norwegian]

Froeysadal, E
Norwegian Institute of Transport Economics ISBN-82-7133-439-5, Nov. 1983, 103p

ORDER FROM: NTIS PB84-151638

31 386288
SPECIALISED BUS SERVICES IN THREE THIRD WORLD CITIES
In recent years operators of public transport bus services in Third World cities have increased their operation of dual services. As well as ordinary stage-carriage services, specialized services (providing, for example, more speed and comfort) are operated mainly on high demand corridors or to middle-income residential areas. The report describes the operational characteristics of specialized bus services in two Indian cities, Hyderabad and Delhi, and in Bangkok, Thailand. In addition, socio-economic characteristics and trip details of passengers are examined and an assessment made of the extent to which the services meet the objectives expected of them. It is possible that dual services, such as those described, may become the normal operating system of the future in most Third World cities. A basic and inexpensive ordinary service can be operated for low income users and a more expensive service operated for middle income users who can better afford the cost of higher quality.

Maunder, DAC Fouracre, PR **TRRL Supplementary Report** No. 811, 1983, 27p

ORDER FROM: NTIS PB84-164235

31 386340
AN INTERIM BALANCE SHEET FOR THE SCHIPHOLLIJN [DE SCHIPHOLLIJN: EEN TUSSENBALANS]
Results of a passenger-survey of the Schiphollijn, the railway link to Schiphol airport. By means of these results the effects of this new railway line are compared with the aims and goals of town and country planning and with transport policy. [Dutch]

Gestel, PW van Nozeman, EF **Stedebouw en Volkshuisvesting** Vol. 64 No. 12, Dec. 1983, pp 632-640, 8 Tab.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Samsom Uitgeverij BV, Postbus 4, AM Alphen a den Rijn, Netherlands 2400

31 386376
MOVING THE WORLD
Southern California Rapid Transit District will be utilizing its bus-only system for transportation for the 1984 Summer Olympic Games in Los Angeles. Widely dispersed housing for participants and sites for the various competitions up to 200 miles apart will produce many new travel trips in the nation's second megalopolis where highways already operate far beyond design capacity. Starting a year in advance, the SCRTD Olympic Task Force has been planning and implementing plans for facilities, equipment, fares, schedules and staff. There will be 550 buses operating exclusively on 25 special routes at peak when regular transit services are not supposed to suffer any degradation. Up to 5000 charter buses may be at the events and will have to be parked and serviced, even through they are not part of SCRTD operations. SCRTD will receive little aid from the Olympic organization and will have to finance its service on its own while keeping a separate set of accounts for the operation. It is expected they will bus about 400,000 new riders daily, up from the present ridership of 1.6 million per day. A separate box describes preparation for the New Orleans Worlds Fair.

Metro Vol. 80 No. 2, Mar. 1984, 4p, 1 Phot.

ORDER FROM: Bobit Publishing Company, 2500 Artesia Boulevard, Redondo Beach, California, 90278

31 386386
WE ARE MAKING MANAGERS MORE RESPONSIBLE
British Railways' London & South East sector is the largest BR passenger operation, primarily commuting and extending about 100 km from London. This diverse network of subsidized commuter operations is closely coordinated with London Transport. Integration with this rapid transit system includes some through ticketing. In L&SE plans are 10 electrification projects and new rolling stock. The first steps in automating fare collection are now under way as some lines are also converted to one-man operation with ticket barriers eliminated at smaller suburban stations.

Railway Gazette International Vol. 140 No. 4, Apr. 1984, pp 264-266, 1 Fig., 4 Phot.

ORDER FROM: ESL

31 386387
OSAKA'S PRIVATE RAILWAYS AN EXAMPLE THAT OTHERS MIGHT FOLLOW
Japan has a series of privately owned commuter railways that have always been private-sector enterprises operated profitably, unlike other nations where deficit-ridden suburban operations are now proposed to be separated from the basic national railway system. The 5 big interurban private railways of the Kansai region are examples of managerial enterprise which have been gaining ridership even as automobile ownership in the region is increasing. Fare policies for the lines are described, noting that their pricing levels are appreciably lower than competitive services operation by Japanese National Railways. Government policies include tax-free benefits for employer-provided commuter fares, discouraging of private automobile commuting, and providing of grade crossing protection and separations. All the private lines are owners of diversified enterprises including feeder buses, real estate, engineering and construction firms, and travel agencies. Labor relations, management development and productivity are emphasized.

Jones, M (Oxford Polytechnic, England) **Railway Gazette International** Vol. 140 No. 4, Apr. 1984, pp 295-298, 2 Fig., 1 Tab., 6 Phot.

ORDER FROM: ESL

31 386393
TYNE & WEAR FORMULA CUTS COSTS AND PULLS IN CUSTOMERS
The last section of the 55 km light rail network centred on Newcastle-upon-Tyne was opened on March 24, less than 10 years after work started. Public transport patronage is already 10 per cent up over the decade despite a sharp fall in employment, while road congestion has been relieved because buses feed the metro instead of running into the city centre. Tyne & Wear metro has won an enviable reputation for reliable service despite staffing levels that are low by international standards.

Howard, D (Tyne and Wear Passenger Transport Executive) **Railway Gazette International** Vol. 140 No. 5, May 1984, pp 351-355, 3 Fig., 2 Tab., 6 Phot.

ORDER FROM: ESL

31 386396
BRANCH OPENING MARKS THE TURN IN SOUTH HILLS UPGRADING SCHEME
The Port Authority of Allegheny County spent several years investigating alternative methods of replacing Pittsburgh's last 36 km of tram routes. Eventually, it was decided to upgrade them as part of a $750m program to improve public transport, and the first stage of the scheme opens for business on April 15.

Millar, WW (Port Authority Transit) **Railway Gazette International** Vol. 140 No. 5, May 1984, pp 362-363, 5 Phot.

ORDER FROM: ESL

31 386935
THE IMPORTANCE OF DEVELOPING RAILWAY INTERCONNECTIONS [ZUR BEDEUTUNG DES KNOTENAUSBAUS]
Large towns and urban sprawl areas can only exist as viable social units if they have a well organised transport system. The sheer volume of traffic, but also other factors such as national energy consumption, make the railway the obvious choice. The railways are therefore putting an enormous amount of effort into developing railway interconnections. However owing to the considerable cost involved this work can only be undertaken in stages. [German]

Meissner, A **Eisenbahn-Praxis** Vol. 27 No. 5, Oct. 1983, pp 191-193, 1 Tab., 5 Phot., 5 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Transpress VEB Verlag fuer Verkehrswesen, Franzoesische Strasse 13/14, Postfach 1235, 108 Berlin, East Germany

31 386937
METROS IN THE USSR IN 1982 [METROPOLITENY SSSR V 1982 G]
In 1982 total metro line length in the USSR was 364 km (241 stations), that is 22% of the total metro line length in the world. This brochure provides information on the development of metro networks and metro traffic figures for eight Soviet cities. [Russian]

TsNITTEI No. 1, 1983, pp 1-17, 1 Tab., 6 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Kamkin Bookstore, 12224 Parklawn Drive, Rockville, Maryland, 20852

31 386946
DEVELOPMENT AND FUTURE PROSPECTS FOR URBAN TRANSPORT IN BRAZIL. CHARACTERISTICS AND PROBLEMS OF A BRAZILIAN NETWORK: THE SITUATION IN MACEIO [EVOLUTION ET PERSPECTIVES DES TRANSPORTS URBAINS AU BRESIL-CARACTERISTIQUES ET PROBLEME D'UN RESEAU D'AUTOBUS BRESILIEN: LE CAS DE LA VILLE DE MACEIO]
The first article gives a general outline of the question of urban transport in Brazil, and describes policy development in this field over the last few years, stressing recent trends and present needs. The second article concentrates on the situation in Maceio, a specific example which illustrates the special problems of medium-size Brazilian towns.

Vichet, JC Tanaka, J **TEC, Transport, Environment, Circulation** No. 61, Nov. 1983, 15p, 2 Fig., 5 Tab., 10 Phot., 6 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: TEC, Transport, Environment, Circulation, 11 Place Adolphe Cherioux, F-75015 Paris, France

31 386949
CHESTER COUNTY/NEW CASTLE COUNTY TRANSIT SERVICE STUDY
This report examines the feasibility of establishing regularly scheduled, fixed-route bus service between points in southern Chester County/West Chester, Pennsylvania, with New Castle County/Wilmington, Delaware. The report provides: a history of local transit; inventory of early and existing services and facilities; land use; demographics; trip patterns; legal and jurisdictional implications; and funding sources. Recommendations are made to provide transit service between the two points, mainly through the extension of existing DART service along U.S. Route 202. The Study results confirm the perception that a strong orientation of southern Chester County residents towards the State of Delaware is a continuing event.

Chester County Planning Commission, Urban Mass Transportation Administration Jan. 1984, 75p

ORDER FROM: UMTA

31 386951
SUFFOLK COUNTY BUS ASSESSMENT STUDY. PHASE 2
This report summarizes the comprehensive plan of the Suffolk County Bus Service Improvement Program, begun in 1980, to develop a countywide transit system that would facilitate inter-community travel along major corridors. It was designed to establish new routes to upgrade service and to extend service to the unserved/under-served communities. Phase 1 implementation involved contracting with private operators, integrating conventional fixed-route bus operations with local feeder services, and staging implementation on a route-by-route basis over a 12-month period. Successful implementation resulted in increased ridership, contract with 8 carriers now carrying 8,400 daily passengers, recovery of 28 percent of its operating costs throught the farebox, and contracting with ATE Management and Service Company to evaluate Phase 1 and establish a direction for Phase 2. This report discusses the findings and recommendations that set-up the framework for Phase 2 and includes Phase 2 goals and objectives, service plan, performance audits, management information and monitoring, capital plan, conclusions and recommendations. The report suggests ways in which the County can transition from Phase 1 implementation into long range management of a growing system. It states that after 4 years of operation, both County and carriers agree that contracting for service with private carriers was the prudent way to go.

Shinnick, RW
ATE Management and Service Company, Incorporated, Urban Mass Transportation Administration Final Rpt. UMTA-NY-09-0075, Apr. 1984, 111p Contract D000610 TS E-691
ORDER FROM: UMTA

31 386964
MANCHESTER INVESTMENT NEEDED NOW
The author describes the twin-pronged strategy devised by BR and authority transport planners with the aim of dramatically improving rail services in the Manchester area.

Abbott, J **Modern Railways** Vol. 41 No. 427, Apr. 1984, pp 212-216

ACKNOWLEDGMENT: British Railways
ORDER FROM: Allan (Ian) Limited, Terminal House, Shepperton TW17 8AS, Middlesex, England

31 386993
TRANSPORTATION FACTS FOR THE METROPOLITAN BOSTON REGION/1983
This publication provides as much information about as many forms of public and private transportation within the Boston metropolitan region as feasible. Only the most basic data about each mode of transportation is included, avoiding data refined with the use of complex assumptions. The book's predominant formats for presenting information are tables, graphs and maps, all of which are referred to as exhibits. The study area is the 152 communities in eastern Massachusetts defined as the Boston Metropolitan Region. Most information refers to the entire region, but some data covers only the areas served by the Massachusetts Bay Transportation Authority or the Metropolitan Area Planning Council region. The chapters include: Socioeconomic Characteristics; Travel Patterns; Air Transportation; Land Transportation/Private (Network, Accidents, Parking, Ridesharing, Bicycle Transportation); Land Transportation/Public (Jurisdictions-Fares, Rapid Transit, Commuter Rail, Special-Needs Transportation, Taxi); Water Transportation; Transportation Legislation; Sources; Bibliography; Index; Map.

Central Transportation Planning Staff 1983, 269p

ORDER FROM: Central Transportation Planning Staff, 27 School Street, Boston, Massachusetts, 02108

31 387591
SHOULD WE HAVE MORE INTERCHANGES?
The article summarises a paper presented to the Institute of Highway Engineers in December 1983 at a conference on transportation in the conurbations. Guiding principles for establishing a successful interchange are outlined. The author suggests that both road and rail transport have developed more quickly in the UK than the interchanges between them. The M25 motorway is given as an example to show how such interchanges are not considered at the planning stage-there are no interchange stations where the motorway cuts several main railway lines. Usually the different parties involved in interchange projects use different assessment criteria, cost sharing is contentious and there is no established focus of responsibility for developing such schemes. It is suggested that the level of contribution should depend upon the relative benefits in increased fare revenue gained by the different parties. Outside metropolitan counties the county surveyor should give a much higher priority to the development of interchange. Any future reorganisation of transport in the metropolitan counties should make clear who is responsible for promoting interchange. (TRRL)

Prideaux, JD (British Railways Board) **Modern Railways** Vol. 41 No. 426, Mar. 1984, pp 142-143, 3 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 276068)
ORDER FROM: Allan (Ian) Limited, Terminal House, Shepperton TW17 8AS, Middlesex, England

31 387597
TRAFFIC MANAGEMENT SCHEMES AND BUS TRAFFIC [TRAFIKSANERING OCH BUSSTRAFIK]
Measures usually taken in conjunction with traffic management schemes to assist bus traffic are: (1) prohibition of traffic other than buses on a certain street, (2) one-way schemes-while increasing speeds, these result in longer distances, (3) bus lanes arranged either at the side or in the centre of a street, (4) traffic lights with bus priority. Priority can be either passive or active. Prohibitions and restrictions are often insufficient since other traffic ignores them, and engineering measures therefore have to be taken. These can be: (5) construction of bumps or depressions, (6) staggered narrowing of carriageway on alt. nate sides, (7) narrowing of carriageway at certain points, (8) rumble strips or surfacing different from rest of carriageway. Bumps or depressions, staggered or narrowed carriageways achieve about the same reduction in speed. However, the easier an obstacle is made for a bus, the easier it will also be for cars to pass over it. Trials have also been carried out using barriers or booms which can be opened either automatically or physically by buses, or depressions at narrowed portions of the carriageway which can be straddled by buses but cannot be passed by cars owing to a kerb in the centre which is higher than a car's ground clearance. (TRRL) [Swedish]

Kollektivtrafikberedningen KTB Rapport 1984:2, 1984, 78p, Figs., 4 Tab., Phots., 19 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275717), National Swedish Road & Traffic Research Institute
ORDER FROM: Kollektivtrafikberedningen, P.O. Box 1339, Solna, Sweden

31 387598
MODEL EXPERIMENTS AT GAEVLE. STANDARD OF BUS STOPS, ETC [MODELLORTSPROJEKT GAEVLE. HAALLPLATSSTANDARD, UTFORMNING AV CENTRUMHAALLPLATSEN, GAANGTUNNLARS UTNYTTJANDE, HAALLPLATSTIDSSTUDIE]
With regard to improvements to bus stops, these have been divided into three categories. For green standard, safety requirements are: (1) raising of stop above carriageway, (2) provision of crossings or underpasses, (3) provision of lighting, (4) bus layby if traffic volume is high, permissible speed exceeds 50 kph, or road is narrow. Comfort requirements are: (5) provision of time tables, (6) provision of shelter, (7) provision of seat, (8) paving of surface and provision of drainage. For amber standard, safety requirements are: (9) raising of stop above carriageway, (10) provision of layby if traffic volume high, permissible speed exceeds 50 kph, or road is narrow. Red standard does not meet any safety or comfort requirements. In town centre, footways were widened and shelters erected to separate those waiting for buses from those passing by. This has had the desired effect. Of the 4 pedestrian underpasses, only 2 are frequently used. The reasons for usage are: (11) high traffic volume on the street, (12) underpass is the most direct route, (13) children of about 5 use the underpass more than older children. Public transport users are not very keen on using one underpass, the reason being that there is a more direct route to and from the bus stop than that through the underpass. (TRRL) [Swedish]

Kollektivtrafikberedningen, (0280-123X) KTB Rapport 1983:17, 1983, 38p, 19 Fig., 2 Tab., 18 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 275713), National Swedish Road & Traffic Research Institute
ORDER FROM: Kollektivtrafikberedningen, P.O. Box 1339, Solna, Sweden

31 387599
MODEL EXPERIMENTS AT GAEVLE. PASSIVE AND ACTIVE PRIORITY FOR BUSES [MODELLORTSPROJEKT GAEVLE. PASSIV OCH AKTIV BUSSPRIORITERING]
A traffic management scheme carried out to reduce the number of cars on a street also incorporates passive priority for bus traffic. This comprises: (1) a bus lane before traffic lights which has the effect that passage in north-south direction is possible only for buses, (2) green waves between stops, (3) priority for buses in allocating green periods, (4) more space for public transport due to reduction in number of cars. This has helped conditions on one bus route, while on another delays have occurred. At another crossing, buses are given active priority, and this has cut previous maximum delay of 10 minutes to 45 seconds, without other traffic being unduly delayed. A Volvo traffic analyzer is used to evaluate journeys. This computes: (A) trip time components, (B) trip time variations over parts of the route, (C) speed variations over parts of the route, (D) mean speed, stops, disturbances, (E) times between stops, (F) times at stops as a function of number of people boarding the bus. (TRRL) [Swedish]

Kollektivtrafikberedningen, (0280-123X) KTB Rapport 1983:18, 1983, 41p, Figs., 2 Tab., 12 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 275712), National Swedish Road & Traffic Research Institute
ORDER FROM: Kollektivtrafikberedningen, P.O. Box 1339, Solna, Sweden

31 387601
THE EFFECTS OF GIVING BUSES PRIORITY AT JUNCTIONS CONTROLLED BY TRAFFIC SIGNALS. AN EVALUATION METHOD [EFFEKTER AV BUSSPRIORITERING I SIGNALREGLERADE KORSNINGAR. EN VAERDERINGSMETOD]
A method is described whereby buses are given priority at traffic light controlled junctions. The effects considered are time gained by passengers and gains by the bus company in the form of fewer stops, better working environment for drivers, and possibility of reducing number of buses in operation. The effects on other vehicular traffic, cyclists and pedestrians are not included. Therefore, if loading at the junction is near capacity, the national economic value of bus priority may be grossly overestimated. Calculations are in two stages. In the first, the difference with and without priority is calculated regarding the mean delay and stopping percentage, for typical high and low traffic conditions. In the second stage, the consequences of these differences are calculated for passengers and the company, per hour and line, and for the junction for 1 year. Stage 1 is based on probability calculations whose reliability is difficult to judge. More accurate calculations would require simulation. A particular uncertainty in stage 2 is the effect of bunching in conjunction with high operating frequency. Choice of representative conditions for high and low traffic is difficult. Indications are, however, that bus priority is cost effective for both passengers and bus company. (TRRL) [Swedish]

Storstockholms Lokaltrafik AB No. UHR 500, 1983, 63p, 18 Fig., 9 Tab., 21 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275702), National Swedish Road & Traffic Research Institute
ORDER FROM: Storstockholms Lokaltrafik AB, Box 6301, Stockholm, Sweden

31 387602
RAIL/ROAD INTERCHANGES
This paper is concerned with passenger interchange between railways and all forms of road transport. The paper discusses the theory of interchange,

interchange catchment areas, the appropriate location of interchanges and important design features. It goes on to discuss various lessons which can be learnt from the existing experience of interchange and to suggest changes in the institutional arrangements to encourage more rapid development in the future. (Author/TRRL)

This paper was presented at the national conference of the Institution of Highways and Transportation on "Transportation in Conurbations" held in London on 1st and 2nd December 1983.

Prideaux, JD (British Rail) **Highways and Transportation** Vol. 31 No. 4, Apr. 1984, pp 12-16, 1 Fig., 1 Tab., 5 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275895)
ORDER FROM: Institution of Highways and Transportation, 3 Lygon Place, Ebury Street, London SW1, England

31 387659
NEW FIXED-ROUTE BUS SERVICE IN A SMALL URBAN AREA

Johnson City, Tennessee, which had a population of 39,310 in 1980, initiated a new fixed-route, fixed-schedule bus service in October 1979. This transit service provided an opportunity to quantify the impacts of a traditional transit system on a small community. The findings of a study covering the first 9 months of operation are presented. The study attempted to identify the short-term impacts on travel patterns, retail business, operation of social service agencies, and so on. It was found that the transit service had low ridership and that most of the users were either the very young, who used the service primarily for school trips, or the old, who used it primarly for shopping trips. The service appeared to have had a positive impact on retail business, especially in the downtown area, although it was not possible to quantify the amount of impact. Other types of impacts and some dilemmas encountered are discussed, and a few guidelines for the planning and design of similar services in small communities are presented.

This paper appeared in Transportation Research Record No. 931, Transportation and Land Use Planning.

Chatterjee, A Wegmann, FJ (Tennessee University, Knoxville) **Transportation Research Record** No. 931, 1983, pp 115-119, 2 Fig., 3 Tab.

ORDER FROM: TRB Publications Off

31 387663
LIGHT RAIL SYSTEMS THROUGHOUT THE WORLD [STADTBAHNEN IN ALLER WELT]

Light rail has developed as a mode that largely meets the demands for an optimum transport standard in medium sized cities. It has the potential for evolution from a streetcar system to full-scale rapid transit. Some LRT systems have tracks that run in public roads, causing operating problems or requiring that they be screened from other traffic. Capacity is intermediate between that of buses and rapid transit. LRT is suitable for speeding the flow of public transport in cities that previously used only buses. The capital investment of a LRT system is lower than that for rapid transit, facilitating the approval of such a project. Electrically powered LRT systems cause little or no pollution and are less affected by fuel shortages than buses. Case studies are taken from Australia, Belgium, Federal Republic of Germany, France, Italy, Netherlands, North America, East Europe, Austria and Switzerland. [German]

Groche, G **UITP Revue** Vol. 33 No. 1, 1984, pp 41-48

ORDER FROM: International Union of Public Transport, Avenue de l'Uruguay 19, B-1050 Brussels, Belgium

31 387666
GALVESTON ISLAND TRANSIT DEVELOPMENT PLAN 1983—1988 PERFORMANCES OF URBAN BUS TRANSIT SYSTEMS

In 1974 the City of Galveston Texas, purchased the existing private transportation company and formed Island Transit, a publicly owned transit system providing local bus service to the developed areas of Galveston. Day to day operations are provided by contract agreement with City Coach Lines, Inc. Island Transit owns fifteen 43-passenger GMC coaches and two 1982 Ford vans. All buses are 1976 models, radio equipped, and in good conditions. On-site maintenance facilities are equipped to do routine work and current preventive maintenance programs are excellent. Eight routes serve the densely populated and highly developed east end of Galveston Island. Recent development growth and changing federal funding requirements generated this study to re-examine the role and future of Island Transit. In this report, the system goals established by the City provide guidance for Island Transit, namely: public support for public transportation; mobility for transit dependents; safe, reliable, and informative passenger service as well as amenities such as bus shelters, benches, etc.; and service expansion to newly developed areas. The study scope includes: a review and analysis of existing transit service; an examination of existing and future land use patterns and demographic characteristics; a review and analysis of financial conditions; and development of recommended system and service improvements. The report concludes that all basic ingredients for a viable transit system already exist and improvements can be made without major capital expenditure. All that is needed is a dedicated local commitment to encourage ridership through recommendations made in this report and to provide local match funds necessary to obtain federal dollars.

Tomazins, AR
Houston-Galveston Area Council, Urban Mass Transportation Administration UMTA-TX-09-0202, Jan. 1984, 92p Contract PA-11-0029
ORDER FROM: UMTA

31 387678
GUIDELINES FOR THE DESIGN OF TRANSIT RELATED ROADWAY IMPROVEMENTS

The purpose of this report is to provide a uniform guide to the development and design of various transit related roadway improvements. This is a technical document which reflects the current transit related factors which traffic engineers, architects, planners, and developers should consider during the design process for streets and highways, as well as residential, commercial, and industrial developments. The report covers several topic areas which include: design vehicle operating characteristics; roadway facilities; traffic control devices; park and ride lots; passenger shelters; bus stop design; handicapped transportation; and ridesharing considerations. Much of the information is also useful for school buses and other larger vehicles. In addition, the report identifies by subject matter, the appropriate person to contact to answer various transit related questions. The authors note that the information contained in this report should not be used by the designer as standard details on which to base a final design, but rather as recommended criteria that are valuable in attaining good designs and which should be considered when designing transit facilities. The Guidelines contained in this report both update and expand the substance and coverage of the previous report, which was adopted by the Metropolitan Transit Commission in July, 1975.

Jessup, DR Wormer, G van Preston, H
Short-Elliot-Hendrickson, Incorporated, Urban Mass Transportation Administration UMTA-MN-09-0042-83-1, May 1983, 126p

ORDER FROM: NTIS PB84-124148

31 387861
A REPORT ON THE POTENTIAL FOR THE CONVERSION OF SOME RAILWAY ROUTES IN LONDON INTO ROADS

A sample of ten rail route sections, on seven radial and orbital routes in the greater London region, was examined, all of them less heavily used than the main trunk routes. For each route an assessment was made of the financial impact on the Board of conversion, taking into account the additional costs for trains which would have to be diverted and for providing alternative transport for passengers, together with the losses in revenue from discarded rail traffic. These losses were set against railway operational and infrastructure cost savings and the projected road revenue, and the rates of return were calculated. The physical characteristics of the routes were examined. Experience elsewhere with narrow roads was studied, and special design standards were postulated. Estimates were made of potential traffic capacities. Preliminary capital cost elements were estimated for all engineering work. The physical aspects of traffic tolls-numbers of booths, site requirements and costs-were examined to ascertain whether or not direct tolling was feasible. Where it was decided that the closure of passenger services created a need for a replacement bus service, the net costs were estimated and debited to conversion. Details are given of the routes,chosen and of the conclusions reached.

Posner, M Parker, GB Sherman, A Foster, C
British Railways Board Monograph Mar. 1984, 58p, 3 Fig., 6 Tab., 12 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276486)
ORDER FROM: British Railways Board, Euston Square, PO Box 100, London NW1 2Dz, England

31 387871
SPEED LIMITING MEASURES AND THE BUS [SNELHEIDSREMMENDE MAATREGELEN EN DE BUS]
Regulations designed for limiting speed such as road humps often cause difficulties for bus traffic. The driving speed of the bus is the main problem. The design of regulating speed must be such that the driving speed of the bus is smaller than the driving speed of the car. Recommendations and layouts are presented for ten different kinds of speed limiting provisions which cause fewer difficulties for buses. [Dutch]

Dam, PW
Ministerie van Verkeer en Waterstaat Monograph Apr. 1982, 78p, Figs., 31 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276178), Institute for Road Safety Research SWOV
ORDER FROM: Ministerie van Verkeer en Waterstaat, Plesmanweg 1-6, The Hague, Netherlands

31 387877
BICYCLES & PUBLIC TRANSPORTATION: NEW LINKS TO SUBURBAN TRANSIT MARKETS
This book examines the role that bicycle access can play in increasing transit ridership while cutting transit costs, energy use and air pollution. Research on bike-and-ride was conducted in Japan, Europe and the U.S. There are case studies, planning guidelines, funding suggestions, methods for cost control and marketing strategies.

Replogle, MA
Bicycle Federation No Date, 180p

ORDER FROM: Bicycle Federation, 1055 Thomas Jefferson Street, NW, Suite 316, Washington, D.C., 20007

31 387924
INTERCITY PASSENGER FACILITY PROGRAM ADDS CONVENIENCE FOR MICHIGAN TRAVELERS
Michigan Department of Transportation, starting in 1977, has funded through its Intercity Facility Program nine new transportation centers in large and small communities and 26 shelters in rural areas. Centers for 7 other cities and towns are being designed. Four goals of the Program are: (1) Assist communities in development and construction of new or improved facilities by providing conceptual guidance and financial assistance; (2) Ensure that all such centers are designed to serve intermodal needs; (3) Improve safety and comfort for passengers, stimulating increased patronage of public transit services; (4) Design centers to become self-supporting. Consideration is given in analyzing applications to population served, existing intercity and local services, unusual market contributors such as universities and military installations, and ability to increase public transit ridership and reduce its costs. Existing buildings, in some cases railroad stations, have been renovated for the new use. The centers variously contain facilities for local and intercity buses, Amtrak passenger trains, local paratransit, state and local government offices, and a variety of private enterprises.

Bus Ride Vol. 20 No. 4, July 1984, pp 56-58, 5 Phot.

ORDER FROM: Friendship Publications, Incorporated, West 2627 Providence, P.O. Box 1472, Spokane, Washington, 99210

31 387928
GATWICK EXPRESS: THE RAILAIR LINK TAKES OFF
British Railways, with a 40% share of all passengers passing through Gatwick Airport, is now established in an expanding market because of its high-speed service to the center of London. This facility, south of the city, has grown in importance and, starting in 1979, BR began to offer special EMU train services to the airport station. Beginning 1984 BR began push-pull service with electric/diesel locomotives and main-line passenger cars forming the Gatwick Express to and from Victoria Station. Cars have been altered to provide extra space for travlers' luggage. BR is marketing its new service with special passenger information and handling. Already British Caledonian passengers can check their luggage through from Victoria to destination; BR hopes to expand this service to all airlines.

Perren, B **Modern Railways** Vol. 41 No. 428, May 1984, pp 247-250, 6 Phot.

ORDER FROM: Allan (Ian) Limited, Terminal House, Shepperton TW17 8AS, Middlesex, England

31 387966
SAN JUAN URBAN CORE TRANSIT SYSTEM. FINAL ENVIRONMENTAL IMPACT STATEMENT
The Puerto Rico Department of Transportation and Public Works is proposing the construction of a transportation system in the San Juan Metropolitan Area that will use water and land transportation modes. The proposed project will connect, by means of a waterway, Old San Juan and Catano with the New Center of San Juan in Hato Rey. Almost 2 miles of the Martin Pena Channel will be dredged and upgraded to improve its navigability. A 180' wide channel between bulkheads is preferred over the other five waterway alternatives considered. Improvements to the existing terminal facilities at Old San Juan and Catano are contemplated. The construction of a new multimodal terminal facility in Hato Rey is part of the proposed project. To serve the new terminal from land, four different alternatives for busways were considered in order to connect it with Plaza Las Americas Shopping Center and Bithorn/Clemente Sport Complex. The busway along the metro right-of-way is preferred. This document discusses and analyses the impact of each alternative as well as the No-Build alternative.

Urban Mass Transportation Administration, Puerto Rico Department of Transport & Pub Works Aug. 1983, v.p., 13 Fig., 21 Tab., 4 App.

ORDER FROM: UMTA

31 389309
GIVE THE BUS A WIDE BERTH [GEEF DE BUS DE RUIMTE]
By the continuing increase of vehicle ownership the existing highways within built up areas are becoming more and more overcrowded. In spite of the fact that road administrators use various measures and provisions to make traffic safe and to let traffic reach its destination quickly, journey times are increasing. The likelihood of an accident is also increasing. Measures for restraining traffic sometimes provide a solution, but mostly for a short time only, and a solution at one place always creates a problem at another place. The increase of the infrastructure is not always possible. Public transport is also confronted with these problems. The user of public transport is confronted with slower and less reliable public transport, and a number of measures for traffic restraint reduce the comfort for the passengers and the bus driver. Specifications are presented here for the desired and minimum dimensions for the infrastructure. The desired dimensions are selected in such a way that normal exploitation of the bus is possible, while at the minimum dimensions the flow of the bus is hindered because it can only be driven at a low speed and with decreased comfort. [Dutch]

Noord-Zuid-Hollandse Vervoer Maatschappij NV Monograph Apr. 1983, 45p, Figs., Phots., 15 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276515), Institute for Road Safety Research SWOV
ORDER FROM: Noord-Zuid-Hollandse Vervoer Maatschappij NV, P.O. Box 514, Haarlem, Netherlands

31 389324
MEASURES FOR THE IMPROVEMENT OF TRAMWAY CAPACITY, SPEED AND REGULARITY, AND LIGHT RAIL TRANSIT IN CITIES [MERE ZA POVECANJE KAPACITETA, BRZINE I REGULARNOSTI TRAMVAJSKOG I LAKOG SINSKOG SAOBARACAJA U GRADOVIMA]
This paper presents a survey on the role and significance of public transport in cities and the potential performance of rail sub-systems, tramway and light rail transit. With the aim of achieving better transport, and of improving travel speed and regularity of vehicle's movements to increase the attractiveness of the services, a number of measures are proposed. They are grouped according to the areas they affect: terminals, intersections, stopping places, operation management, design of vehicles, tracks, etc. The proposed measures are described together with their possible application and expected effects. It is concluded that the present difficulties in financing

the development of public transport and related infrastructure facilities should by no means slow down the planning, research and design processes. Conversly, necessary conditions must be provided and solutions prepared for immediate enforcement of the proposals. For the covering abstract of the whole conference see IRRD 273856. [Serbian]

Stefanovic, G (Zavod Za Studije I Projektovanje Gbs-A) **Zbornik III Jugo Savetovanje Tehn Regul Saobracaja** Apr. 1983, pp 519-530, 7 Fig., 1 Tab., 3 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 277141)
ORDER FROM: Savez Inzenjera I Tehn Saobracaja I Veza Jugo, Drustvo Inzenjera I Tehnicara Saobracaja I Veza Novi Sad, Novi Sad, Vojvodina, Yugoslavia

31 389331
1982 WORLD'S FAIR TRANSPORTATION SYSTEM EVALUATION
This report describes the highway, transit and other transportation arrangements made to accommodate visitors to the Knoxville World's Fair, how they were planned, and how they worked. Functional components of the transportation system discussed include parking, roadway improvements, transit services, provisions for emergency vehicles, shuttle buses, and pedestrian circulation links. The report also includes a summary of the lessons learned in planning of such provisions, covering permit applications, transportation plan implementation, relations between public agencies and fair promoters, marketing to tour groups, and specific lessons for each of the major transportation components. The report includes many maps and diagrams illustrating the changes that were made. The report should be of special interest to those planning transportation in conjunction with major exhibitions, sporting events, air shows, county or state fairs, and similar events which draw large numbers of people over a short period of time.

See also TRIS 389332.

Office of the Secretary of Transportation DOT-I-83-4, Dec. 1982, 184p

ORDER FROM: OST

31 389332
A CLOSER LOOK: THE 1982 WORLD'S FAIR TRANSPORTATION SYSTEM
This report is a more detailed companion to an earlier study of the transportation arrangements for the Knoxville World's Fair. Building on the earlier analysis, this study explores several key elements of the system in quantitative detail. Topics covered include the involvement of transportation agencies; planning standards used in designing the Fair's transportation system and supporting elements; functional components such as roadways, parking, and buses; regulations pertaining to the services; and the effects of the costs of the services. The report also includes a summary of 45 lessons learned which may help planners of similar events.

See also UMTRIS 31 389331, 8402.

Office of the Secretary of Transportation DOT-I-83-29, July 1983, 245p

ORDER FROM: OST

31 389336
ALTERNATIVE IMPROVEMENTS FOR THE DOWNTOWN: A PORTION OF THE SHORT RANGE TRANSIT IMPROVEMENT STUDY FOR VIA METROPOLITAN TRANSIT, SAN ANTONIO, TEXAS
The report documents the assessment of existing traffic conditions in downtown San Antonio and describes projected impact of employment growth on traffic and transit systems. Eight alternative improvement plans for downtown transit were developed and analyzed. They include: a no-build option; a half mall; a full mall; a single centrally-located transit center; a transit center in the northwest area of the downtown; a pair of transit centers connected by a mall; a routing scheme in which buses would circulate around the periphery of downtown; and a pair of transit centers with circulator bus service operating between them. All eight alternatives were evaluated against quantitative and qualitative criteria measuring automobile and transit accessibility to the downtown; levels of economic activity; cost to the public; and aesthetic and environmental concerns. The full mall alternative and both alternatives incorporating single transit centers were determined to have the greatest potential to improve downtown transit service. On balance, the mall concept was deemed most advantageous. Three conceptual design configurations were examined, and one is presented in an illustrative plan in the report.

Prepared in cooperation with Turner, Collie and Braden, Incorporated and Fleet Maintenance Consultants, Incorporated.

Rice Center, VIA Metropolitan Transit, San Antonio Metropolitan Planning Organization Tech Rpt. Oct. 1983, 122p, Figs., Tabs., 5 App.

ORDER FROM: Rice Center, 9 Greenway Plaza, Suite 1900, Houston, Texas, 77046

31 389794
SUBWAY IN RIO DE JANEIRO
One of the most interesting technical features which characterized the implementation of the subway system in Rio de Janeiro was the necessity of reorganizing its confused mass transit system. The subway system became the third element in the city's mass transit system-the other two elements are the urban bus and suburban railway systems. The basic principle that guided the reorganization was the integration of the subway system with the existing bus and railway systems, specifically connecting railway routes with bus routes and bus routes with subway routes, and developing a fare rate system.

Soares, LR (US AID in Brizil) **ITE Journal** Vol. 53 No. 7, July 1983, pp 18-21

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

31 389802
THE VIEW FROM THE TOP
Britain's south-eastern corner has one of the densest and most heavily-used railway networks in the western world. Since creation of business sectors on British Rail in 1982, responsibility for the operation of that network has fallen on the Sector Director, London & South East.

Abbott, J **Modern Railways** Vol. 41 No. 428, May 1984, pp 235-238, 4 Fig., 2 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Allan (Ian) Limited, Terminal House, Shepperton TW17 8AS, Middlesex, England

31 389807
EFFECT ON REGIONS OF THE CFF'S ZUERICH-KLOTEN CITY-TO-AIRPORT LINK [DIE REGIONALEN AUWIRKUNGEN DER SBB-FLUGHAFENLINIE ZUERICH-KLOTEN]
In urbanised areas surrounding large cities the Zurich-Kloten city-to-airport link has had positive economic effects. In the Zurich canton, it is mainly the area where the line has been built (Kloten and surrounding area) which has benefited, followed by Winterthur and its surrounding area. Overall, the city of Zurich itself and other parts of the canton have recorded some losses in revenue. [German]

Prader, G Bodmer, R
Basler (Ernst) und Partner Mar. 1984, 15p, 10 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Basler (Ernst) und Partner, Zurich, Switzerland

31 389834
RAPID TRANSIT IN CANADA
A series of short articles on rail expansion plans in Toronto, LRT in Alberta hit by economic slump, British Columbia transit expansion, and Montreal's plans for expansion in urban transport.

International Railway Journal Vol. 24 No. 5, May 1984, 9p

ACKNOWLEDGMENT: British Railways
ORDER FROM: Simmons-Boardman Publishing Corporation, P.O. Box 530, Bristol, Connecticut, 06010

31 389848
SUBURBAN SERVICE IN NORTH AMERICA TODAY—WHICH WAY WILL WE GO?
The current situation of suburban rail services is reviewed. Differences between seemingly similar services—urban transit, commuter service, suburban rail service and regional rail—are discussed. The suburban rail commuter is described as the true intermodal traveler. Differences of the political backgrounds of the inner-city compared to the suburbs complicate implementation of programs to improve service and suggest deep problems over the long term. Because the transition of suburban rail service from the private to public sector has been so recent, it is difficult for many to recognize that the profit of the service is in the lower total transportation costs for the community as compared to a cash dividend. Existing railroad lines in many cities have the potential of being a cost-effective solution to traffic problems, although the specific solutions vary widely, ranging from the operation of new commuter trains over the lines of a heavy railroad (Toronto) to a completely new light rail system (San Diego).

Eisele, DO **Journal of Advanced Transportation** Vol. 18 No. 1, 1984, pp 25-36

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

31 389857
LRT LIGHTS UP THE WEST
Modern light rail systems are already running in San Francisco and San Diego while projects already underway will put four new LRT systems in operation in California and Oregon by 1988. The rebuilding of the San Francisco Muni system and the building of the San Diego Trolley have given impetus to other such projects. Portland, OR, began construction of its 15-mile Banfield LRT project in 1982 with service to begin in 1986. This will be accompanied by new LRT projects in Santa Clara County (19 miles), Sacramento (18 miles) and Los Angeles County (22 miles). Elsewhere in California Orange County veters rejected a sales tax that would hve financed a 38-mile LRT system, but other funding alternatives are now being investigated. The charateristics of the various lines are compared and details are given.

Middleton, WD **Railway Age** Vol. 185 No. 9, Sept. 1984, 5p, 4 Phot.

ORDER FROM: ESL

31 389861
MUNICIPAL BUS OPERATION: PROBLEMS AND PROSPECTS IN NIGERIA
Urban public transit in six of Nigeria's major cities is examined with particular emphasis on municipal bus operations. These operating agencies are beset by internal and external problems which inhibit effective service. Urban public transit in Nigeria is dominated by private operating using minibuses which produce services that are unsafe, unreliable, uncomfortable, and erratic. Not only are government-owned operations beset by private competition but they are also adversely affected by problems of fleet maintenance, poor road conditions, inadequate training and management shortcomings. There is urgent need for federal, state and local governments to give legal and financial support to urban public transit, with socioeconomic goals as the principal objective. Private operations should be controlled by restricting entry and imposing regulation. Municipal services should be confined to high-density primary routes with private operators supplying feeder services. Such a system is important in providing an alternative to the private automobile.

Adeniji, K (Ibadan University, Nigeria) **UITP Revue** Vol. 33 No. 2, 1984, pp 106-111, 2 Tab.

ORDER FROM: International Union of Public Transport, Avenue de l'Uruguay 19, B-1050 Brussels, Belgium

31 389866
A DESIRE NAMED STREETCAR
Advocates say that the latter-day successor to the electric trolley car, the Light Rail Vehicle (LRV), can have the speed, comfort and attractiveness to bring rail transit at a fraction of the cost of heavy rail systems which operate on expensive, grade-separated rights-of-way. The experience of San Diego, Calgary, Edmonton, Toronto, Boston, Philadelphia, San Francisco the Pittsburgh suggest that some of these claims have merit. In the 1970s a combination of municipal ownership of transit facilities, UMTA funding and the two fuel crises forced a rethinking of the streetcar's potential for building and rebuilding cities. The blurred distinction between some of the current light rail projects and full rapid transit are discussed. The ability of light rail to use a variety of right-of-way configurations is an advantage; off-the-shelf vehicle technology is available. LRVS are being sited, planned and financed with a sophistication that was not a factor in old-style street railway development; most are corridor oriented. Some of the problems with the current enthusiasm for this mode are included in the article.

Plous, FK, Jr **Planning** Vol. 50 No. 6, June 1984, pp 15-20, 8 Phot.

ORDER FROM: American Planning Association, 1313 East 60th Street, Chicago, Illinois, 60637

31 389877
LITTLE CABLE CARS BACK CLIMBING HILLS OF SAN FRANCISCO
San Francisco's cable cars returned to service in the summer of 1984 with the rejuvenated 40-car fleet operating over the same 3-line, 69-block long system which had also been completely rebuilt. This restoration represents $60 million in public and private funding. The entire operation was completely shut down for 2 years as streets were completely reconstructed with new rails, cable channels and even new public utilities. San Francisco Municipal Railway began a marketing program early this year and had to retrain the cable-car gripment and conductors for the resumption of the operation. San Francisco tourism relies heavily on cable cars; they are also an accepted commuting mode.

Mass Transit Vol. 11 No. 8, Aug. 1984, 5p, 2 Phot.

ORDER FROM: Mass Transit, 337 National Press Building, Washington, D.C., 20045

31 389878
THE CHOICE OF A LIGHT TRANSIT SYSTEM FOR LONDON'S DOCKLAND
With construction scheduled to start soon, London Transport will be spending L77 million on a line which will be a radical departure from its conventional "underground" railway and is London's first venture into Light Rail Transit. The Docklands area of the city's east end is a special target of urban renewal for an abandoned commercial area. Government funding has been provided for the LRT option which was selected on the basis of studies. Configuration of the planned systems, its interchanges, traction system, energy supply and signaling are described.
This paper was presented at the "Electrifying Urban Public Transport" conference held in Blackpool.

Clarke, WR (London Transport Executive); Cotton, AR (Kennedy and Donkin) **Electric Vehicle Developments** No. 18, 1984, pp 20-21

ORDER FROM: Research Applications Limited, City University, Northampton Square, London EC1V 0HB, England

31 390139
PASSENGERS FLOCKING TO HONG KONG'S MODERNIZED FIVE STAR SUBURBAN RAILWAY
Hong Kong's 21.1-mile Kowloon-Canton Railway Corp. (KCRC) has been completely rebuilt, double tracked and electrified for handling the increased flow of commuters from major new towns which the Government is building to relieve population pressures on Kowloon and Hong Kong Island. A Transmark study, subsequently implemented, resulted in replacing virtually every structure to produce a completely new suburban railway. A new electric multiple-unit car fleet was acquired. Automatic fare collection has been introduced and steps taken to coordinate KCRC operation with Hong Kong's Mass Transit Railway, the recently opened rapid transit line. There are no subsidies for transit operators in Hong Kong yet KCRC is expected to be profitable by the late 1980s. KCRC is now studying a light rail transit line to extend its service into another series of suburban areas.

Tomlinson, D **Mass Transit** Vol. 11 No. 9, Sept. 1984, 4p, 2 Phot.

ORDER FROM: Mass Transit, 337 National Press Building, Washington, D.C., 20045

31 390141
MULTIMODAL CENTERS OFFER KEY TO EFFICIENT TRANSIT
Multimodal transit centers are being built with increasing frequency in the U.S. Coordination of transportation modes—private automobiles, local and intercity buses, Amtrak, rail commuter services, rapid transit and/or light rail transit—becomes much more feasible when these various carriers share terminal facilities. Passengers are found to respond positively to the opportunity to use connecting modes. Planners see four benefits: Offering of better service, attraction of new ridership, increasing efficiency and effectiveness of existing systems, and bolstering of community development plans. Another version of this center concept, the park-and-ride facility, can also serve as a focal point for timed-transfer coordination of local bus transit services. Not only do these facilities involve careful design but they should also represent a coordination of involved modes and integration of public and private sector developments.

Mass Transit Vol. 11 No. 9, Sept. 1984, 3p, 4 Phot.

ORDER FROM: Mass Transit, 337 National Press Building, Washington, D.C., 20045

31 390148
INDEPENDENT SUCCESS WITH UP-MARKET SERVICES
This article, based on research recently carried out at the Polytechnic of Central London (PCL), examines the role of up-market services by independent operators and analyses the users of such services and discusses their purpose for using the services and how else they might have travelled. A number of independent operators specialising on a single corridor, with high quality (i.e. Video, refreshments, etc.) services, have been quite successful since the deregulation brought about in the UK since the 1980 Transport Act. The authors report the results of on-vehicle passenger surveys carried out by PCL students on the following routes: London-Exeter (Glennline): Blackburn-Manchester-London (LEN Wright Travel); South Shields-Newcastle-London (Blueline). Estimates have been made of the total share of the coach market held by the independents on the routes in question by comparison with comparable services (eg National Express Rapide). The results of the survey are tabulated. One of the major limitations of the independent services is the lack of marketing at the London end of the operations. (TRRL)

Kent, A White, P (Polytechnic of Central London) **Coaching Journal and Bus Review** Vol. 52 No. 4, Feb. 1984, 3p, 1 Tab., 2 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 276804)
ORDER FROM: Travel and Transport Limited, 122 Newgate Street, London EC1A 7AD, England

31 390156
ACROSS THE HUMBER BRIDGE
A description is given of some of the services that have entered operation since the opening of the Humber bridge in 1981. The main development has been Route 350 of the NBC subsidiary East Yorkshire, linking Hull and Scunthorpe. It was originally intended to use coach-type vehicles on the route but has proved so successful that double deckers have had to be used. The setting up of the route was co-ordinated by Humberside county council who constructed a sub-rail interchange at Barton upon Humber. This connects the bus route with the hourly rail services to the East coast at Grimsby and Cleethorpes. Other routes now operating are between Hull and Grimsby and Cleethorpes and a service between Hull and Lincoln. Traffic surveys have shown that the new services have generated considerable new traffic by linking communities that were previously divided before the advent of the new bridge. (TRRL)

Coaching Journal and Bus Review Vol. 52 No. 5, Mar. 1984, pp 50-51, 2 Fig., 1 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 276806)
ORDER FROM: Travel and Transport Limited, 122 Newgate Street, London EC1A 7AD, England

31 390161
SOME OBSERVATIONS ON THE PRESENT AND FUTURE PERFORMANCE OF SURFACE PUBLIC TRANSPORTATION IN THE UNITED STATES AND CANADA
The outlook for surface public transportation from now until the end of the century is examined in this paper. A review of current performance in the USA and Canada is followed by a consideration of expected developments in the nature of the economy and of likely locational/land use trends. The implications of these for transport needs in the future is matched against the characteristics of surface public transport modes generally, with light rail transit providing a specific example. (Author/TRRL)

Sullivan, BE (Alberta Department of Economic Development) **Transportation Research. Part A: General** Vol. 18A No. 2, Mar. 1984, pp 111-123, 1 Fig., 5 Tab., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 277273)
ORDER FROM: ESL

31 390163
THE ORGANIZATION OF PUBLIC TRANSPORT IN DENMARK
The sharp contrast between the public transportation needs of greater Copenhagen and provincial Denmark has led to significant differences in policy and organizational structure for public transport in the two regions. Outside Copenhagen the period 1965-75 saw a rapid decline in rural public transport supply and a rise in special services (school buses, etc). A 1978 law requiring county councils to prepare comprehensive regional transport plans reversed this trend. Most counties now have economically responsible transport corporations which contract with public and private operators for service. School routes have been opened, train and bus schedules have been coordinated and zonal fare systems have been introduced. In greater Copenhagen urban sprawl has promoted a gradual public take-over of most transport services in the region, culminating in an almost all-pervasive "public works" type of transport corporation under regional authority in the late 1970s. (Author/TRRL)

Rallis, T Meulengracht, K (Royal Technical University of Denmark); Vilhof, P (Cowiconsult, Virum, Denmark) **Transportation Research. Part A: General** Vol. 18A No. 2, Mar. 1984, pp 163-175

ACKNOWLEDGMENT: TRRL (IRRD 277268)
ORDER FROM: ESL

31 390177
METRO CONSTRUCTION UNABATED
This article reviews the developments in rapid transit systems, especially underground railways, taking place around the world in Athens, Atlanta, Baghdad, Baltimore, Bangkok, Barcelona, Beijing, Belo Horizonte, West Berlin, Bochum, Brisbane, Budapest, Buffalo, Caracas, Charleroi, Chicago, Cleveland, Cologne-Bonn, and Detroit. (TRRL)

International Railway Journal & Rapid Transit Rev Vol. 24 No. 5, Apr. 1984, 4p, 2 Fig., 2 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 277258)
ORDER FROM: Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York, New York, 10014 ORIG

31 390179
THE DETERMINANTS OF LIGHT-RAIL TRANSIT DEMAND-AN INTERNATIONAL CROSS-SECTIONAL COMPARISON
An international cross-section of light-rail transit systems is examined. Demand is tested as a function of transport system, city, and population attributes. All tests confirm the standard hypotheses at high levels of significance. High levels of explanatory power support the notion of model transferability. The models developed in this paper are used to predict demand for new lrt systems now being installed in North American cities. Model outputs suggest that the official forecasts are very optimistic. (Author/TRRL)

Gordon, P Willson, R (University of Southern California) **Transportation Research. Part A: General** Vol. 18A No 2, Mar. 1984, pp 135-140, 5 Tab., 16 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 277271)

31 Conventional Transportation Services

ORDER FROM: ESL

32 386149
LOW TRAFFIC SYSTEM IN SOEDERHAMN. TRIALS WITH BUS-TAXI COORDINATION [LAAGTRAFIKSYSTEM I SOEDERHAMNS CENTRALORT. FOERSOEK MED SAM-TAXI, 10 JAN-29 APRIL 1983]
During a trial period, buses between 7 and 11 pm were replaced by taxis. A traffic company paid a taxi firm sek 600 per evening, who paid the fares to the company. Taxis could be used Monday to Friday, a single journey cost sek 6 per passenger, and collection times and routes could be varied to permit coordination with other travellers. Advantages to travellers were: (1) reduced walking distances; (2) flexibility concerning the beginning/end of journey; (3) flexible times; (4) short trip times; (5) comfort. Drawbacks were that the taxi must be ordered and may be shared with some unknown persons. A survey over 2 weeks showed that more than 60% of travellers were between 18 and 65, only 15% would ordinarily have taken a taxi, more than half used the service more than once a week, and 80% were prepared to pay sek 8 per single journey. Over 80% thought the scheme good or very good. The taxi firm's business increased by 40%. The costs to the traffic company were largely unchanged; the taxi firm made a gain of sek 30000. Advantages to the traffic company were: easier bus and driver scheduling,increased sales. Advantages to the taxi firm were: reduced costs, better operation, increased and changed tasks for drivers and controllers. (TRRL) [Swedish]

Kollektivtrafikberedningen KTB Rapport 1983:16, 1983, 30p, 10 Fig., 10 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 275010), National Swedish Road & Traffic Research Institute
ORDER FROM: Kollektivtrafikberedningen, P.O. Box 1339, Solna, Sweden

32 386219
THE JOURNEY TO WORK: A STUDY OF DRIVE-ALONE/CAR-POOL CHOICE
A study of drive-alone/car-pool choice has been carried out using a disaggregate binomial logit model and data from a travel-to-work survey of staff at the atomic energy research establishment at Harwell. The work represented the first stage of a more general investigation of travel-to-work behaviour. Modelling format followed that of earlier drive-alone/car-pool choice studies, being based on the analysis of a data sub-set relating to individuals who either drove or car pooled. The work clearly showed the way in which various factors affect propensity to pool including distance to work, distance from potential pooling partners (there were indications that these had to be of a similar level in the job-grade hierarchy, and not necessarily nearest neighbours), sex and demands for cars from other household members. While the model that was developed was able to predict the behaviour of markedly different groups of Harwell workers well, there were some discrepancies from the findings of the earlier drive-alone/car-pool studies: possible reasons are discussed. More fundamentally, however, limitations of the modelling structure, which are likely to lead to overestimation of the effect of increased petrol price on the level of car pooling, are indicated. (Author/TRRL)

Tunbridge, RJ Jackson, RL **TRRL Supplementary Report** No. 815, 1983, 18p, 1 Fig., 6 Tab., 11 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275692)
ORDER FROM: TRRL

32 386291
STRATEGIC MARKETING FOR RIDESHARING PROFESSIONALS
A management perspective on market planning is described along with the purposes of this guidebook. The phases of market planning described here are: determine program strategy, assess market situation, design market strategy, develop implementation plan, and establish evaluation criteria.

Klein, N
Alliance to Save Energy DOE/CS/24448-T5, Nov. 1982, 434p Contract FG01-80CS24448
ACKNOWLEDGMENT: Energy Research Abstracts
ORDER FROM: NTIS DE83015772

32 386292
MARKETING AND INVESTMENT STRATEGIES TO INCREASE COMMUTER RIDESHARING. FINAL REPORT
The objectives of the Vanpooling Project were to increase private sector investment in vanpooling and to teach ridesharing promoters how to develop effective marketing strategies. Findings of ASE's initial market analysis indicated a need for efforts in two areas: investment and marketing. The Vanpooling Project was therefore divided into two components, both directed at accelerating the market penetration of commuter ridesharing. The first component consisted of a training program designed to increase the number of ridesharing agencies that use a systematic approach to plan their marketing efforts. A procedural guidebook titled, Strategic Marketing for Ridesharing Professionals, was produced.

Portions are illegible in microfiche products.

Alliance to Save Energy Final Rpt. DOE/CS/24448-T4, July 1983, 290p Contract FG01-80CS24448
ACKNOWLEDGMENT: Energy Research Abstracts
ORDER FROM: NTIS DE83015771

32 386312
LEVEL OF SERVICE AND IMPROVEMENT PLAN FOR PUBLICO CARS FOR PONCE METROPOLITAN AREA
The purpose of this report is to present the general findings regarding the publico car system (66 percent 4-door sedans; 34 percent vans) that serves the Ponce metropolitan area, Puerto Rico, and the recommended improvement plan. Ponce is considered to be the second major city of the Island (180,046 pop.) and an important commercial, industrial, and education center (150 industries and 10,000 employees). Seventy-three authorized routes provide direct service to or within the Ponce and 922 authorized publico cars. The 38 urban and rural routes provide coverage of the major populated areas. The 35 intercity routes cover all surrounding cities including the metropolitan areas of San Juan, Caguas, and Mayaguez. This report describes the present system; future trends and projections; alternative systems such as public bus system, franchise of routes, and supplemental public service. The study findings reveal that: 1) users of the system appear relatively satisfied with the present system, and 2) drivers of the system are dissatisfied with the present system—high cost of gasoline, competition from other non-authorized drivers, lack of system homogeneity, traffic congestion, poor conditions of the highways, and general economic conditions.

SYNECTICS for Management Decisions, Incorporated, Urban Mass Transportation Administration UMTA-PR-09-0005, 1984, n.p.
Contract PR-09-0005
ORDER FROM: UMTA

32 386363
THE MTC COMMUTE ALTERNATIVES PROGRAM EVALUATION
The Commute Alternatives Program (CAP) originated during the 1979 energy shortage when MTC began to promote flexible work hours among San Francisco Bay Area employers. This report evaluates the success of CAP over its first 3 years to make recommendations for improvement. It is concluded that: (1) Effect of marketing CAP training to employers has accumulated slowly but steadily; (2) Current MTC training course meets the basic needs of new coordinators; (3) Coordinators encounter needs for added training, particularly in the marketing area; (4) In downtown areas with limited parking and good transit service, CAP can be successful in a short time; (5) In suburban areas with adequate parking and less transit service, CAP success requires significant coordinator time, resources for marketing, sincere employer commitment, and coordinators with initiative, creativity and persistence; (6) In suburban areas travel behavior changes slowly; (7) Several cities now require CAP to mitigate traffic impacts of new development.

See also Commute Alternative: A Manual for Transportation Coordinators (TRIS 378931) and Carpool Handbook (TRIS 378932).

Bachman, S
Metropolitan Transportation Commission Jan. 1984, v.p., 15 Tab., 7 App.

ORDER FROM: Metropolitan Transportation Commission, Ashby Avenue and Domingo Avenue, Berkeley, California, 94705

32 387673
A STUDY TO ASSESS THE IMPORTANCE OF PERSONAL, SOCIAL, PSYCHOLOGICAL, AND OTHER FACTORS IN RIDESHARING PROGRAMS
An in-depth investigation of the ridesharing programs in the Baltimore and suburban Washington, D.C. areas was needed in light of the apparent difficulty in increasing ridership on the existing ridesharing programs. Many of the studies done on ridesharing suggest that social, psychological and other personal factors may influence ridesharing as much as economic factors such as saving gasoline. To understand personal, social, psychological and other factors affecting ridesharing programs, the "Ridesharer Survey" was designed and administred. The analysis of this survey was performed from two different aspects. One involved general statistics. Here, all the ridesharers were considered as one group and their general characteristics were analyzed. The other was a comparative statistical analysis in which ridesharers were grouped into different categories, such as by income, age, sex, marital status and race etc. and their statistics were compared to determine how these variables affect ridesharing. An "Agency Survey" was performed to study in a systematic way the reasons for varying levels of effectiveness of ridesharing programs offered by different organizations. The objectives of the agency based survey were to find: 1) the relationship between employee size and the number of employees engaged in ridesharing programs; 2) the role of the Vango program in Maryland; and 3) the effectiveness of specific incentives offered by various agencies. The incentives included were: 1) free parking; 2) preferential parking; and 3) subsidies for ridesharers.

Ayele, M ,Byun, J
Morgan State University, Urban Mass Transportation Administration, (1-526002033B8) Final Rpt. UMTA-MD-11-0005-84-1, Jan. 1984, 96p, 5 Fig., Tabs., 2 App. Contract MD-11-0005
ORDER FROM: UMTA

32 387679
TAXICAB OPERATING CHARACTERISTICS
Privately owned and operated, the taxi industry in an important but vulnerable segment of the urban transportation industry—vulnerable to adverse economic conditions stemming from rising costs and governmental subsidies to its competitors. Trends such as industry decline and shift from employee-driver to owner and lease drivers generated serious concern among policymakers and others interested in urban transportation. This report documents the national survey of taxicab operators conducted in the spring of 1982 to assess operational and economic conditions in the industry. Survey questionnaires were sent to each known taxicab operator on the mailing list of the International Taxicab Association. Over 900 operators (30 percent of the industry) responded. Every state is represented in the sample, and no state produced more than 9.3 percent of the responses. The survey shows that the taxicab industry is an important provider of transportation services. It includes, at a minimum, over 3,000 taxi organizations that operate over 100,000 vehicles and carries at least 30 percent as many passengers as all urban buses in the U.S., and at least 76 percent as many as all rail vehicles. Taxis generate more revenue than the entire public transit industry. Areas charted and discussed in this survey report are: 1) industry structure/size; 2) labor/work force; 3) vehicles and fuel; 4) productivity and economy; and 5) fare structures.

Gilbert, GG Burby, RJ Feibel, CE
North Carolina University, Urban Mass Transportation Administration UMTA-TX-06-0011-82-1, Sept. 1982, 60p, Tabs., 1 App

ORDER FROM: UMTA

32 387681
VANPOOL DEMONSTRATION PROJECT (UNIVERSITY OF KENTUCKY)
A vanpool demonstration project was operated at the University of Kentucky for the period May 2, 1983, through March 31, 1984. One van originated in Berea (roundtrip 90 miles) and another in Richmond (roundtrip 60 miles). Many problems associated with a vanpool operation were minimized because the riders were University employees and van ownership remained with the University. It was found that personal contact with potential vanpool riders was much more effective then letters and questionnaires in the effort to generate initial ridership. Because vanpools had not previously been operated extensively in this area, it was difficult to convince potential riders of their cost-effectiveness. For this reason, the fare was set at a low rate initially and increased later in an attempt to recover full costs. As an indirect result of the success of the University vanpool program, the Transit Authority of Lexington—Fayette Urban County Government began operating two additional vanpools for University employees. Because the Transit Authority has capabilities to operate a vanpool program, a decision was made to transfer the University's program to that agency at the end of the demonstration project.

Pigman, JG Agent, KR
Kentucky University, Federal Highway Administration Final Rpt. UKTRP-84-10, Apr. 1984, n.p. Contract Project 4-TSM-KY-03
ORDER FROM: Federal Highway Administration, 400 7th Street, SW, Washington, D.C., 20590

32 387704
TRANSPORTATION BROKERAGE DEMONSTRATION—BRIDGEPORT, CONNECTICUT
Since August 1978, the Greater Bridgeport Transit District (GBTD) has been engaged in a test of multimodal transportation brokerage. It is an ambitious effort aimed at revolutionizing the role of a public transit operator in planning and operating a regional transportation systems. GBTD's mission is to implement a diversified transportation network using a Transportation System Management (TSM) process, with services designed to meet the needs of specific markets. The components of this plan range from conventional fixed-route bus to both public and privately operated paratransit, including shared-ride taxi and employment-centered/subscription bus. Other major components include: strategic pricing and fare integration methods; development and application of advanced management and planning tools, linked to development of a large-scale management information system (MIS) capability; and a community and economic development role assumed by the Transit District. Accomplishments of the brokerage through the period of this interim report include: development of a core fixed-route bus system and a performance monitoring system to control its operation; a community-based minibus system, with alternating peak feeder and off-peak circulation service schedules, a consolidated social service agency transportation network; a market-based fare prepayment program; and a program for eliciting funding support form the private sector. Planning for shared-ride taxi, user-side subsidies, employment-centered bus, and the broad-based management information system were still in progress at the time of this report.

Kuzmyak, JR
Comsis Corporation, Urban Mass Transportation Administration, (DTS-64) Intrm Rpt. UMTA-CT-06-0008-83-2, DOT-TSC-UMTA-84-4, Apr. 1984, 152p, 17 Fig., 6 Tab. Contract DOT-TSC-1753
ORDER FROM: UMTA

32 387872
MARKETING RESEARCH INTO CARPOOLING IN THE REGION OF 'S-HERTOGENBOSCH [MARKTONDERZOEK NAAR CARPOOLING IN DE REGIO 'S-HERTOGENBOSCH]
A report is presented on a marketing study for carpooling in the region of 'S-Hertogenbosch, the capital of the province of Noord-Brabant in the Netherlands. The main purpose of the study was to see whether there were real possibilities for the setting up of a carpooling system. 322 drivers who were living outside the city but were working in the city were interviewed. The main results were that 17.7% were already participating in some kind of carpooling, 20.4% had previously used carpooling, 8.3% use carpooling sometimes, and 53.1% had not used carpooling before. The demand for carpooling is increasing with the increasing cost of fuel and the decrease in income caused by the economic recession. Environmental aspects, such as the reduction of air pollution and energy conservation play only a minor role. [Dutch]

Stadsgewest 'S-Hertogenbosch Monograph July 1983, 74p, Figs., 24 Tab., 9 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276180), Thunderbird Enterprises Limited
ORDER FROM: Stadsgewest 'S-Hertogenbosch, Weidestraat 2, Rosmalen, Netherlands

32 387874
THE DRIVE IS ON TO DEREGULATE TAXICABS
The trend toward taxi deregulation, started in the late 1970s, has been given a boost as the Federal Trade Commission (FTC) has charged that

taxi regulation in Minneapolis and New Orleans amounts to collusion. For more than 50 years regulations limiting the number of cabs in certain cities have kept the supply low. A growing number of cities are now deregulating as the market for taxi services has been declining and developing a smaller patronage base. With deregulation, the number of cabs has generally increased and service appears to have improved. Fares have not, however, declined. This is in part due to the fact that regulation often functioned to keep fares low. Deregulation has had a negative effect on quality of service at airports and has sometimes been followed by new controls there. Tight regulation generally has resulted in the growth of unofficial or gypsy cabs with inadequate insurance to supplement those that operate legally but in short supply. Deregulation is seen as reducing the problems with gypsy cabs and improving service.

Business Week No. 2849, July 1984, pp 92-93

ORDER FROM: McGraw-Hill, Incorporated, 1221 Avenue of the Americas, New York, New York, 10020

32 387910
PRIVATE SECTOR, PUBLIC NEED, AND L.A. TAXI
The City of Los Angeles watched the number of taxicabs decline from 1500 to 1000 over the past few years, giving it very low cab service per population unit as compared with other major cities. Los Angeles' overall development into a low-density suburban sprawl pattern has been detrimental to all public transportation. With growing traffic congestion and higher parking rates, a demand developed for improved cab service. LA Taxi was successful bidder for a franchise to operate 274 additional cabs. LA Taxi is a joint venture of Private Sector System and ATE Management and Service. Foundation of the LA Taxi proposal was its quality control. Specific control points include: Driver recruitment and training; vehicle acquisition and maintenance; daily operations management; computer support; and response to customer comments.

Jacobs, D (Wilmington Cab Company) **Transitions** 1984, pp 13-26

ORDER FROM: ATE Management and Service Company, Incorporated, Editor, 617 Vine Street, Suite 800, Cincinnati, Ohio, 45202

32 387944
PARKING-REQUIREMENT REDUCTION PROCESS FOR RIDESHARING: CURRENT PRACTICES, EVOLVING ISSUES, AND FUTURE DIRECTIONS
Current U.S. practices in instituting the process of reducing parking supply requirements when ridesharing at the development site reduces parking demand are reviewed. Key issues regarding developer support for such reductions, how programs are legally guaranteed and monitored, and who pays for such reductions are discussed. Finally recommendations on factors to consider when such a process is carried out are presented.

This paper appeared in Transportation Research Record No. 940, Transportation Management, Finance, and Pricing Issues.

Tenhoor, SJ Smith, SA (JHK and Associates) **Transportation Research Record** No. 940, 1983, pp 44-51, 1 Fig., 1 Ref.

ORDER FROM: TRB Publications Off

32 389323
POSSIBILITY OF USING SHUTTLE SERVICES AND CARPOOLING IN YUGOSLAVIA [BOLJE KORISCENJE VOZNOG PARKA UVODJENJEM NOVIH NACINA PREVOZA PUTNIKA]
Within the transport system consisting of a network, vehicles and an organisation, changes in the organisation can be made easily and at a low cost. Between high-capacity vehicles for public transport, private cars and taxis, there is room for operation of small vehicles collectively organized. Possibilities of introducing new organized forms of transport by shuttle services and car pooling are discussed. These modes are already developed in many countries and partly in Yugoslavia. A wider use of these modes of transport would save transport costs considerably compared to private cars and taxis, and it would also provide better transport facilities without significant investment in these systems. The possibilities and effects of introducing new systems are observed with the aim of promoting these forms of transport. For the covering abstract of the conference see IRRD 273856. [Serbian]

Jovanovic, N Jovic, J (Saobracajni Fakultet, Beograd) **Zbornik III Jugo Savetovanje Tehn Regul Saobracaja** Apr. 1983, pp 507-517, 3 Fig.

ACKNOWLEDGMENT: TRRL (IRRD 277140)
ORDER FROM: Savez Inzenjera I Tehn Saobracaja I Veza Jugo, Drustvo Inzenjera I Tehnicara Saobracaja I Veza Novi Sad, Novi Sad, Vojvodina, Yugoslavia

32 389335
RIDESHARING RESOURCES FOR THE WASHINGTON, D.C. COMMUTING AREA
This document is a listing of resources available to Washington area commuters who wish to share their ride to work using car pools, van pools or public transit. The document is published by Commuter Club, an areawide ridesharing program of the Metropolitan Washington Council of Governments. Since 1974, Commuter Club has been providing free computer matching services to area residents seeking to join car or van pools. Currently, Commuter Club is joined into a computer network with ridesharing programs operated by Alexandria, Fairfax County, Montgomery County, Prince William County, the Maryland Mass Transit Administration, and the Tri County Council of Southern Maryland. The agencies in this network share resources and maintain a single common pool of applicants for the purpose of providing the best possible service to commuters. Commuter Club is financially aided through grants from the D.C. Department of Public Works, the Maryland Department of Transportation, the Virginia Department of Highways and Transportation, and the Federal Highway Administration; and through a grant from the U.S Department of Transportation, Urban Mass Transportation Administration.

Metropolitan Washington Council of Governments July 1984, 11p

ORDER FROM: Metropolitan Washington Council of Governments, 1875 Eye Street, NW, Suite 200, Washington, D.C., 20006

32 389343
COST-EFFECTIVENESS ANALYSIS OF TVA EMPLOYEE TRANSPORTATION INCENTIVE PROGRAM
The employer-based program, the Commuter Pooling Demonstration Program of the TVA in Knoxville, Tennessee, is reviewed, emphasizing its benefits and costs. Although these programs have been apparently successful, there is a lack of readily accessible data on their benefits and costs. These benefits and costs are quantified and the nonquantifiable implications of TVA's employee rideshare program in Knoxville are identified. Development of the program, the stages of development, the impact on vehicles used for commuting and employer's benefits are discussed.

Federal Energy Administration, Department of Energy May 1977, 32p

ORDER FROM: NTIS FEA/D-77/297

32 389361
PRIVATE SECTOR OPTIONS FOR COMMUTER TRANSPORTATION
This study examines the institutional and economic feasibility of increasing the utilization of the private sector to provide and organize commuter transportation services. These include both private services not subsidized with public funds—private commuter bus service, buspools, and employer vanpool programs, and privately provided services sponsored by public agencies—privately contracted commuter bus service and transit agency vanpooling programs. Based on case studies of urban areas where these services exist, the report determines that they demonstrate significant economic advantages compared to transit agency commuter bus services, but face major institutional and market obstacles to widespread adoption.

Teal, RF Giuliano, G Brenner, ME Rooney, SB Jacobs, JK California University, Irvine, Urban Mass Transportation Administration Final Rpt. UMTA-CA-11-0022-2, Apr. 1984, 182p, Tabs., Refs., 1 App. Contract UMTA-CA-11-0022
ORDER FROM: UMTA

32 389752
TAXI REGULATION IN A FREE ENTRY MARKET. A CASE STUDY OF WASHINGTON, D. C.
This study examines taxi regulation in a free entry market, regulatory trends and regulators willingness to encourage increased private sector participation in public transportation. The specific objectives of this research project were to: 1) Analyze in detail the current state of taxi regulations in a free entry market; 2) Identify and analyze any regulatory trends in the free entry market; 3) Ascertain and delineate the local public body's point of view on taxi regulation in the area; 4) Determine the willingness of local government to encourage greater private sector participation in public transportation; and 5) Formulate recommendations and strategies for increasing private sector participation in public transportation. The research team focused on four areas of taxi regulation: entry controls; fare policy; operating standards and financial responsibility. A case study approach was used to examine and analyze the current state of taxi regulation in a free entry market, the local regulatory process and regulators' willingness to encourage increased private sector participation in public transportation. Both primary and secondary data sources provided the base of information used to identify, delineate and assess regulatory issues and formulate recommendations. Data collection and interviews were conducted in Washington, D.C. The authors of this report recommend that the Urban Mass Transportation Administration should consider monitoring the taxi regulatory atmosphere and changes in the District of Columbia. The implications of the proposed changes and their effect on the District's efforts to integrate taxi services with public mass transportation should be of particular interest, both locally and nationally.

Lyons, DL
District of Columbia University, Urban Mass Transportation Administration Final Rpt. UMTA-DC-11-0015-84-2, Oct. 1983, 207p Contract DC-11-0015
ORDER FROM: NTIS PB84-189208

32 389754
PRIVATE SECTOR OPTIONS FOR COMMUTER TRANSPORTATION. EXECUTIVE SUMMARY
The study examines the institutional and economic feasibility of increasing the utilization of the private sector to provide and organize commuter transportation services. It is an evaluation of the private sector's potential to assume a major role in the delivery of collective forms of commuter transportation. The private sector options analyzed in this study are commuter transportation strategies for which the private sector is, at a minimum, responsible for organizing and financing the service. These options include: commuter bus service provided by private bus companies—either unsubsidized or operated under contract to a public agency; employer organized commuter ridesharing programs; and vanpooling services organized by transit agencies, private employers, and ridesharing agencies. By examining the use of these strategies in several metropolitan areas, this study seeks to determine the conditions under which they are utilized, to identify the obstacles to more widespread adoption, and to assess their appropriateness and cost-effectiveness. Because a variety of economic, legal, political, and organizational factors affect the feasibility of those strategies, this study addresses both their institition and economic dimensions. Six major types of private sector strategies are examined in this study. They are: 1) privately provided unsubsidized commuter bus service; 2) contracts with private bus operators for commuter services; 3) service turnovers from public transit agencies to private operators; 4) facilitating private commuter bus services through marketing and equipment assistance; 5) transit agency ridesharing programs; and 6) employer sponsored ridesharing programs. Private sector strategies were examined in eight metorpolitan areas where they have been an important aspect of commuter transportation. These areas are: Boston, Massachusetts; Hartford, Connecticut; Norfolk, Virginia; Newport News, Virginia; San Francisco Bay Area-North Bay, California; San Jose, California; Los Angeles, California; and Houston, Texas. Based on these case studies of urban areas where private sector transportation exists, the authors have determined that the service demonstrates significant economic advantages compared to transit agency commuter bus services, but face major institutional and market obstacles to widespread adoption.

Teal, RF Giuliano, G Brenner, ME Rooney, SB Jacobs, JK
California University, Irvine, Urban Mass Transportation Administration Final Rpt. UMTA-CA-11-0022-84-1, Apr. 1984, 15p Contract CA-11-0022
ORDER FROM: NTIS PB84-218189

32 389755
URBAN TRANSPORTATION DEREGULATION IN ARIZONA. EXECUTIVE SUMMARY
This research reports on the first year impacts of urban transportation dergulation in Arizona. It examines the impacts of deregulation on the taxi, airport limousine, private buses, and demand-responsive transportation industries in Phoenix and Tucson, Arizona and certain small cities, and as many new modes that might be initiated after deregulation, such as jitneys. The Phoeniz Airport, Sky Harbor International, was also a major focus of the analysis. The first year results of the Arizona experience are also compared to the impacts of taxi regulatory change in other cities. The report considers the advantages, disadvantages, and policy implications of complete deregulation of private urban common carriage transportation, as well as explaining the observed pattern of impacts. The primary objectives of the research were to: 1) provide information from the Arizona experiment on the public question of whether economic deregulation of urban passenger transportation results in benefits to transportation providers and urban travellers; 2) determine and evaluate the probable characteristics of unregulated markets in common carriage urban passenger transportation in Arizona and generalize the results to other urban areas; and 3) document short-run market adjustment processes following deregulation. Entry, exit, prices, productivity, and profitability were included in the analysis as were the topics of service innovation, changes in market size, effects upon compting modes, and implication for public transportation. Major tasks of the study consisted of: 1) an extensive review of the transportation literature pertaining to deregulation; 2) the development of a methodology to form hypotheses concerning impacts of deregulation; and 3) collection and analysis of empirical data from Arizona cities for the first year following deregulation.

Teal, RF Berglund, M
California University, Irvine, Urban Mass Transportation Administration Final Rpt. UMTA-CA-11-0027-84-1, Apr. 1984, 16p Contract CA-11-0027
ORDER FROM: NTIS PB84-218551

32 389787
NATIONAL TAXICAB MARKET IN NON-METROPOLITAN CITIES
There is practically no systematic knowledge of the functional structure of the national taxicab industry in small metropolitan areas, cities with a population of less than 265,000. Using a questionnaire as the basis for this article, the authors examine various dimensions of the taxicab industry in small metropolitan cities. This research documents various facts and test certain hypotheses based on neoclassical economic theory. Results of this study contribute to establishing a rational policy, whereby taxicab service is a complementary and integral part of an efficient urban transport system.

Ross, MH (Western Michigan University); Simmons, B
Transportation Quarterly Vol. 38 No. 2, Apr. 1984, pp 311-327

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

33 386138
PURSUING VALUE FOR MONEY IN SCOTTISH TRANSPORT
In a discussion of transport policy economics, concerning Scotland's public transport system, the author evaluates the distribution of financial resources for the support of such services. Difficulties of providing adequate transport links are created in rural areas by problems of distance, isolation and the need to include sea passages in some cases. The development of low-cost express coach services between the main Scottish centres following the 1980 Transport Act has benefitted, for example, those dependant on public transport although such services are considered to threaten the viability of rail services supported by local authorities. Although competition within a transport mode, and between modes, must be allowed for maximum efficiency, there are rural areas where there is only sufficient demand to allow one operator supported by a subsidy. Aspects of policy discussed include the pursuit of increased efficiency throughout the area, the provision of adequate infrastructure and the payment of operating subsidies where necessary. (TRRL)

Stewart, A **Transport (London)** Vol. 4 No. 4, July 1983, pp 12-15, 1 Fig.

ACKNOWLEDGMENT: TRRL (IRRD 275238)
ORDER FROM: City Press Limited, Fairfax House, Colchester, Essex CO1 1RJ, England

33 386142
MOBILE SERVICES IN RURAL AREAS
The aim of this investigation was to make recommendations which might increase the social usefulness of mobile and delivery services in rural Britain at a minimum cost. The work involved a nationwide survey of service provivion in rural areas and an appraisal of about twenty specific mobile services mainly in the United Kingdom, but also in Europe. Accessibility problems in rural Britain were studied, and three kinds of mobile services were defined, which could solve such problems: roadside services such as mobile shops and libraries, delivery and collection services, and peripatetic services such as branch surgeries and bank sub-branches. The nation-wide survey looked at seven delivery services (coal, milk, newspapers, meals on wheels, bread, meat and paraffin). One full chapter centres on the post office and examines the scope for making fuller use of its frequent doorstep service. Doorstep delivery of milk, mobile shops and retail delivery services, mobile libraries, delivery of social services, health care activities, mobile services used in the fields of education, play and leisure, and mobile banks are also considered. It is recommendedd that mobile services be evaluated as part of wider alternatives strategies of service deliveries; that service providing agencies reconsider the boundaries within which they operate; that vehicles and drivers be used to capacity by taking on extra functions at marginal cost; and that fieldworkers be given some room to adapt the service to local conditions. (TRRL)

Moseley, MJ Packman, J
East Anglia University, England Monograph 1983, 255p, Figs., Tabs., Phots., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 275025)
ORDER FROM: East Anglia University, England, School of Environmental Sciences, Norwich, England

33 386193
RURAL TRANSPORT 1977-1983: A SELECT LIST OF MATERIAL BASED ON THE DOE/DTP LIBRARY
This bibliography on rural transport updates the previous DOE/DTP library listing on this subject, (Bibliography 17E, 1976). It includes therefore a consideration of the problems and policies since 1977 when it was clear that the serious decline in services required new, unconventional approaches, a need that has continued to be dominant up to the present time. The selection of literature presented is based on the DOE/DTP library and has been arranged chronically in order to illustrate the developments over time of different policies and planning and to relate the surrounding debate and discussion accordingly. (TRRL)

Lambert, CM
Department of the Environment, England, Department of Transport, England Bibliog 17B: Suppl, Nov. 1983, 48p, 177 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275649)
ORDER FROM: Department of the Environment, 2 Marsham Street, London SW1P 3EB, England

33 386236
LOCAL RAIL SERVICES IN THE NETHERLANDS: COST-SAVING MODERNISATION
In the light of renewed interest in the substitution of buses for rural rail services in Britain, it is interesting to note that the Dutch have decided to retain railway services rather than institute replacement express bus services in a rural part of the Netherlands-although the rail services have been radically altered to meet changed conditions. Allan Dare made a study tour in the autumn of 1982 of lines in the rural north of the Netherlands as a guest of NS; here he presents his findings.

Dare, A **Modern Railways** Vol. 41 No. 426, Mar. 1984, pp 130-134

ACKNOWLEDGMENT: British Railways
ORDER FROM: Allan (Ian) Limited, Terminal House, Shepperton TW17 8AS, Middlesex, England

33 386338
EXPERIENCE GAINED AND LESSONS LEARNED AFTER 18 MONTHS OF COOPERATION BETWEEN THE DB AND URBAN TRANSPORT COMPANIES [ERFAHRUNGEN UND LEHREN NACH 18 JAHREN VERBUNDPARTNERSCHAFT]
No Abstract. [German]

Stertkamp, W **Die Bundesbahn** Vol. 59 No. 10, Oct. 1983, pp 687-691

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Hestra-Verlag, Holzhofallee 33, Postfach 4244, 6100 Darmstadt 1, West Germany

33 386953
USE OF AN ACTIVITY SIMULATION MODEL TO ASSESS RURAL BUS SCHEDULES
This paper considers the times of departure and of return of a bus stop by examining the question of interactions between the detailed timing of a bus service and the lifestyles of potential passengers. A case study is described in which an activity simulation model was used to assess how the population of a small village would be affected by a number of alternative bus timetables proposed for the service linking the village with the local regional centre. It is suggested that this modeling approach offers considerable advantages over generalized cost based models in those circumstances-such as in rural locations and at low service levels-when the exact timing of buses may be the overriding factor which decides whether a particular bus trip can take place or not. Further, because the technique is based on examination of people's lifestyles, it enables policy makers and bus operators to assess the social effects of changes (usually reductions) in service levels which may be made on economic grounds.

Clarke, M
Oxford University, England TSU/REF-237, Nov. 1983, 22p

ORDER FROM: NTIS PB84-169226

33 386992
CAN YOU GET THERE FROM HERE?
As urbanization ceased in the decade of the 1970s, the spread of population to rural areas presents new challenges and opportunities for mass transportation. Rural transportation can often offer—due to government and community support—convenience previously possible only in metropolitan areas. The article discussed development of the mix of fixed-route and paratransit services which can be tailored to serve areas of low population density. UMTA Section 18 funding (transferred from FHWA) allows states to fund transit in rural and small urban areas. Section 18 money comes from the Mass Transit Account of the Highway Trust Fund, supplemented from UMTA Section 9A. Both capital and operating assistance are possible. APTA has made rural transportation a specific area for its activities. Other organizations with this same goal are National Association of Transportation Alternatives, and Rural America. Community Transit Services operates small systems for counties or cities on a service contract basis. Changing government emphasis on efficiency could present new opportunities for private operators. The experience of the Cambria County, Pennsylvania, Transit Authority is described.

Gentile, J **Metro** Vol. 80 No. 3, May 1983, 5p, 4 Phot.

ORDER FROM: Bobit Publishing Company, 2500 Artesia Boulevard, Redondo Beach, California, 90278

33 387578
DECLINING RURAL BUS NETWORK SYMPTOMATIC OF THE TIMES?
The article examines the position in Norfolk, covering three aspects: the background to the recent changes; how the changes have affected services in one particular area of north east Norfolk since 1975; and the implications for the future of local bus services. For some years before 1982, Eastern Counties (a National Bus Company subsidiary) had suffered heavy losses due to a very low level of subsidy from the county council. In November 1982, substantial cuts were made in the rural areas. The area examined has lost almost half its bus journeys over the last eight and a half years. This loss has brought about a decline of the local shops and other services in the area. The county council takes the view that replacement services could be obtained through local independent operators and self-help schemes, but public transport in rural areas remains a commercial activity responding to market forces of demand and supply and it becomes very difficult to offer a service to meet reasonable requirements for travel. (TRRL)

Surveyor Vol. 163 No. 4784, Mar. 1984, pp 12-14, 1 Fig., 2 Tab., 1 Phot., 4 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276075)
ORDER FROM: IPC Specialist and Professional Press Limited, Surrey House, 1 Throwley Way, Sutton, Surrey SM1 4QQ, England

33 387594
PLANNING FOR RURAL ACCESSIBILITY PROVISION: WELFARE, ECONOMY AND EQUITY
Although there have been a great many studies of rural accessibility, the vast majority have been concerned only with basic survey and evaluation, with very little systematic attempt at developing methodology for improving rural access standards. This paper is based upon previous work using the time-space approach to evaluation and policy appraisal, and considers its extension into planning. This can only be done under the guidance of crucial policy-decisions on the accessibility targets desired, cost limits, and criteria for the distribution of (access) benefits such as the degree of social/spatial equity. Policy options and their implications are discussed, and a planning framework outlined. (Author/TRRL)

Nutley, SD (City of Liverpool College of Higher Education) **Environment and Planning A** Vol. 16 No. 3, Mar. 1984, pp 357-376, 11 Fig., 1 Tab., 26 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275860)
ORDER FROM: Pion Limited, 207 Brondesbury Park, London NW2 5JN, England

33 387616
TRIP LENGTHS AND MODAL SPLIT OF RURAL TRAFFIC [AFSTANDSGEDRAG EN VOERTUIGKEUZE VAN PLATTELANDSVERKEER]
This article describes the results of roadside interviews on rural roads in the south of the Netherlands. These interviews were carried out to develop a simulation model for traffic movements on these roads. Additionally, six trip purposes (home-to-work, shopping, services, social, commercial, recreation) and four transport modes (cars, lorries, mopeds plus bicycles, and others) are distinguished. (TRRL) [Dutch]

Heijden, TG van der (Instituut voor Cultuurtechniek en Waterhuishouding) **Verkeerskunde** Vol. 35 No. 2, Feb. 1984, pp 80-82, 4 Fig., 2 Tab., 8 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275801), Institute for Road Safety Research SWOV
ORDER FROM: Royal Dutch Touring Club ANWB, Wassenaarseweg 220, P.O. Box 93200, The Hague, Netherlands

33 387639
LOW COST PLANNING TECHNIQUES FOR ASSESSING RURAL TRANSPORTATION NEEDS
Economic conditions in many areas of the county have forced severe budget cuts for many government services. This is especially true in rural areas, where local governments have been forced to examine critically the types and extent of services they provide. Two services being examined carefully are public and social agency transportation services. Some recent experiences are presented for planning public transportation services in a rural, four-county region in North Central Wisconsin (which currently has little public transit). The counties involved are all experiencing budget cuts and, thus, an initiation of public transit services was being considered within the context of rising costs shrinking budgets, and skeptical local politicians. Although basic conditions in the area are not unusual, this planning process was unique in that (a) a service was planned that will require no local government subsidy, (b) agency transportation services were considered as an integral part of the regional public transit service, and (c) transit services were tailored to the origin and destination densities of the local area being served. The final plan involved opening up agency services to the public and charging a fare, establishing a carpool/vanpool program, and establishing a subscription bus service. Some general observations concerning rural public transportation today are also drawn from the project.

This paper appeared in Transportation Research Record No. 936, Public Transportation and Transit Operations Planning.

Worthington, H (Ecosometrics, Incorporated) **Transportation Research Record** No. 936, 1983, pp 55-60, 3 Tab., 2 Ref.

ORDER FROM: TRB Publications Off

33 387640
COMPUTERIZED MANAGEMENT INFORMATION SYSTEMS FOR TRANSIT SERVICES IN SMALL URBAN AND RURAL AREAS
Before 1980 few transit properties in small urban and rural areas used computer aided information systems. In the last several years, however, these transit agencies have begun to use computers to assist in tabulating information related to operations; administration; billing and accounting; and planning, monitoring, and evaluation. This increased use can be attributed to advances in computer technology as well as to the belief that such computers can improve efficiency and the delivery of transit service. The primary purpose of this research was to review nine automated management information systems (MISs) with respect to their hardware and software characteristics, initial and ongoing costs, and capabilities. This review is carried out within an evaluation framework that facilitates the conduct of a systematic, comprehensive review, in such a manner that transit professionals with little or no computer experience will understand major differences among the MISs and the various options available to automate the processing of information. Other issues regarding the implementation of MISs are also addressed, including staff requirements and available sources of funding for both fixed and recurring costs. The major conclusions of the research are (a) most efforts to computerize transit information system in small urban and rural areas focus on paratransit services; (b) a comprehensive, low-cost, easy-to-use MIS is needed for fixed-route and fixed-schedule services in small urban and rural areas; and (c) steps should be taken to ensure that the national computer directory to be developed under the direction of NCTRP addresses the need of transit providers in small urban and rural areas.

This paper appeared in Transportation Research Record No. 936, Public Transportation and Transit Operations Planning.

Collura, J Bonsignore, R McOwen, P (Massachusetts University, Amherst) **Transportation Research Record** No. 936, 1983, pp 60-68, 1 Fig., 7 Tab., 10 Ref.

ORDER FROM: TRB Publications Off

33 387641
PROVIDING INNOVATIVE RURAL TRANSPORTATION SERVICES UNDER SEVERE BUDGET CONSTRAINTS
As many local planning departments face lower departmental budgets, hiring freezes, and consolidation of various planning functions, the creative application of traditional planning techniques specifically to small-scale rural transportation projects becomes increasingly important. It is necessary in continuing to provide the informational support needed to compete for reduced program funds against an increasing pool of fundable projects and to distribute those funds fairly throughout a large and often diverse rural population. The purpose of this study was to find low-cost ways to apply those traditional planning techniques to the specific needs of a rural community. The low-cost application presented uses secondary data that are available from published sources to rank communities in a political

jurisdiction according to their transportation needs. Ranking such areas according to the proportion of the population that is transit dependent is a first step in the political decision-making process to be followed by an actual estimate of transit ridership using demand models specifically calibrated for rural areas. The technique was used in preparing the transit element of the County of Rock, Wisconsin, Transportation Study.

Knapp, SF Burkhardt, JE (Ecosometrics, Incorporated)
Transportation Research Record No. 936, 1983, pp 69-75, 6 Ref., 5 App.

ORDER FROM: TRB Publications Off

33 387655
WORK LOCATION ESTIMATION FOR SMALL URBAN AND RURAL AREAS
A disaggregate specification for job search location choice is developed based on a binary logit structure. The proposed model includes a set of economic and a set of transportation level-of-service variables and can be used for implementing transportation and economic policies to improve service-area economic development. Transportation and Socioeconomic data from four Minnesota towns-Cloquet, LeSueur, Austin, and Albert Lea—are used for model testing and validation. The proposed specification predicts job search destination choice correctly up to 77 percent. Despite substantial differences across test town pairs, parameter statistical significance generally increases with sample size and model predictive power is not strongly influenced by location of application. Travel conditions for the period of expected employment are found to play a role in determining location choice. For all communities studied, expected length of employment is the strongest determinant of choice.

This paper appeared in Transportation Research Record No. 931, Transportation and Land Use Planning.

Stephanedes, YJ (Minneapolis University); Eagle, DM (Minnesota University, Minneapolis) **Transportation Research Record** No. 931, 1983, pp 83-90, 7 Tab., 20 Ref.

ORDER FROM: TRB Publications Off

33 387697
RURAL TRANSPORTATION. EXECUTIVE SUMMARY
Rural transportation, the product of social services programs of the 1960s, have made significant progress in the past few years. This occurs when local officials, transportation providers, business people and citizens address the problems collectively. They are learning how to become involved in the transportation planning process, where to obtain technical information and assistance, and how to exchange their experiences. It has been proven that successful rural transportation programs are initiated at the local level; local officials are most effective in demonstrating the need for improving or establishing local transportation systems; the importance of coordinating existing programs; and the cost effective use of planning, operating and financial resources. The future success of rural transportation services depends upon the cooperative efforts of federal, state and local officials and the imaginative, creative and productive approaches such as those currently being demonstrated by localities around the nation.

OFEGRO, Incorporated, Urban Mass Transportation Administration 1984, 7p, 3 Phot.

ORDER FROM: OFEGRO, Incorporated, 3612 Twelfth Street, NE, Washington, D.C., 20017

33 387698
RURAL MANAGEMENT ASSISTANCE PROJECT: PARATRANSIT CASE STUDIES
Case studies of four paratransit systems in Pennsylvania were made to provide a description of the process of development and historical basis for each project, along with an evaluation of the performance of the systems with respect to their original goals and objectives. The Bureau of Public Transit and Goods Movement Systems of Pennsylvania Department of Transportation is interested in how these projects performed with respect to the Commonwealth's overall goals of fostering rural public transportation and in coordinating agency transportation. Each of the four systems is quite distinct, representing differing conditions and opportunities that may not be applicable to other areas. One is a fixed-route work trip system for factory workers in a 4-county area. The second is a consortium of social agencies serving a 6-county area. The third is a private non-profit brokerage system for coordinating service for the transportation disadvantaged of a single county. The fourth is a cooperative effort between social service agencies and taxi operators for contracted shared rides. Each system has made changes since its beginning. All are attempting to provide rural public fare-paying transport. Each case study is in five major sections: Introduction; How and why project started; Initial operations, Evolution to the present; and Summary of findings.

Carter-Goble Associates, Incorporated, Pennsylvania Department of Transportation, Office of the Secretary of Transportation Final Rpt. DOT-I-83-22, Jan. 1981, v.p., Figs., Tabs., 1 App.

ORDER FROM: OST

33 387869
PLANNING RURAL PUBLIC TRANSPORTATION-THE BATHURST EXPERIENCE
Based on the results of a 1983 household survey of the rural region around Bathurst, the travel behaviour of rural residents is analysed and the needs of the transport disadvantaged highlighted. According to the survey some 35 per cent of adults in the rural community around Bathurst did not have private transportation available to them and were restricted in their access to activities such as shopping and medical services. The lack of public transport further compounds this accessibility problem. As conventional public transportation cannot be sustained in rural areas, the paper discusses an unconventional rural public transport option and outlines the major obstacles to be overcome for the planning and implementation of innovative rural public transport services. It is concluded that although unconventional transport services improve the accessibility of disadvantaged rural people they may require subsidies as high as 60 per cent of total costs. Possible methods for reducing the amount of subsidy have been discussed.

Loong, KY Hogan, RJ (Bureau of Transport Economics, Australia)
Municipal Engineering in Australia Vol. 11 No. 1, Mar. 1984, v.p., Figs., 4 Tab., 9 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 272095), Australian Road Research Board
ORDER FROM: Australian Road Research Board, P.O. Box 156, Bag 4, Nunawading, Victoria 3131, Australia

33 389276
DEFENDING PUBLIC TRANSPORT OR WHY AND HOW TO PROTECT
Rural public transport is declining in sparsely populated parts of the Netherlands. This is due, in part, to a steady depopulation of small villages but decline is selfsustaining and confirmed by the national standards for level of service (nvs) based on mean ridership levels. In 1981 an application of somewhat stricter standards (for reasons of economy) caused considerable decrease of the level of service in some areas. A before and after study was undertaken by the first author on about 40 bus lines. It was sponsored by two provinces-worried about the quality of life in the countryside-and carried out in cooperation with the regional bus operators-worried about their prospects. Though two-thirds of the passengers experienced problems, in particular those on weak lines with sharply decreased level of service were severely affected. Regarding the apparent value of rural transport for its users we set out to develop a transport system integrating conventional public transport with specialist and community transport. Its purpose was threefold: to increase the general level of service without increasing deficits, to serve the needs of different user-categories as indicated by the study mentioned and to protect conventional public transport. This might be attained by dropping traditional geographic (and legal) boundaries between different systems and by utilizing different components dependent on changes in volume and character of demand during the day and the week. For the covering abstract of the conference see IRRD 276520. (TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume II.

Boer, E de Klinkenberg, J (Delft University of Technology, Netherlands); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 53-58, 1 Fig., 3 Tab., 11 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276550), Institute for Road Safety Research SWOV

ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

33 389278
EFFECTS OF REDUCTION OF PUBLIC TRANSPORT LEVELS IN RURAL AREAS; A SIMULATION STUDY
The study presented in this paper is part of a larger research program, that was initiated by the Dutch Ministry of Transport, and studies the relationship between public transport provisions and life styles in rural areas. The effects of three hypothetical reductions in service on the activity patterns of inhabitants of small villages with-at the moment-good public transport, were simulated with the computer program CARLA. This program is based on a household level activity model, which aims to simulate the mechanisms whereby a bus passenger assesses the convenience of a new bus service. The three tested timetables were: (1) a timetable, constructed according to the system for standardizing the level of service provisions in regional transport (nvs), based on a reduction in passenger demand of 50 per cent; (2) a minimum service with four runs per day and (3) a service, using the same number of runs as the 50 per cent timetable, but based on the preferences for departure and arrival times of public transport users. The results of the simulation were discussed with a small number of respondents. The 50 per cent service cuts did produce some inconvenience for bus users and their households, but most respondents could maintain all their current activities. The specific timing of the buses seems to be important: when asked to choose between the 50 per cent service and the 50 per cent preference service, most respondents chose the 50 per cent preference service and motivated their choice with the better timing of the buses. The minimum service had a far greater effect on the life styles of the respondents; most respondents could not use this bus service without major changes in their activity patterns. Consequently, a substantial number of them would switch modes. The most affected are the elderly and, to a lesser extent, the school children. For the covering abstract of the conference see IRRD 276520. (Author/TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume II.

Knippenberg-den Brinker, C van (Groningen University, Netherlands); Lameijer, IHK (Ministry of Transport); Clarke, MT (Oxford University, England); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 73-84, 1 Fig., 4 Tab., 9 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276552), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

33 389349
RAILWAYS IN RURAL AREAS
The report discusses the economic aspects of maintaining railway services in areas of low population density, and considers the following topics: financial performance of rural railways, and comparative studies—alternatives to rail, cost effectiveness and benefits from rural rail service provision.

Kilvington, R
Oxford University, England TSU/REF-242, Feb. 1984, 31p

ORDER FROM: NTIS PB84-168004

33 389806
THE MYTH OF RAILWAYS SUPPOSEDLY VICTIM OF COMPETITION FROM THEIR OWN ROAD SERVICES [DAS MARCHEN VON DER UNTERNEHMENSEIGENEN KONKURRENZIERUNG DER SCHIENE DURCH DEN BUS]
With short-distance passenger traffic outside densely-populated areas declining regularly, the DB is having increasingly to replace regional trains by road services. The development of private car ownership and the tendency for people to move out of conurbations have brought about a radical change in the pattern of short-distance public transport. The DB must adapt to the new situation and organise its rail and road service offer in a way that guarantees modal complementarity: this formula will give customers value for money and ensure profitability for the DB. [German]

Stertkamp, W **Die Bundesbahn** Vol. 60 No. 40, Apr. 1984, pp 253-256, 1 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD

ORDER FROM: Hestra-Verlag, Holzhofallee 33, Postfach 4244, 6100 Darmstadt 1, West Germany

33 390136
THE SIXTH NATIONAL CONFERENCE ON RURAL PUBLIC TRANSPORTATION. FINAL REPORT
The conference theme, Facing the Challenge of Productivity, resulted in extensive discussion of performance indicators. Different uses of indicators by states and local systems, applying performance indicators to personnel issues, and typical ranges for specific indicators were discussed. Whether performances of different rural systems could be compared and whether distribution of funds should be based on such statistics were debated. State officials need information generated by performance indicators to make the case for maintaining or increasing rural transit subsidies; Michigan, Iowa and Pennsylvania all have such programs which were described. Personnel performance can be affected by motivation and goal-oriented evaluations. Because the conference preceded the transfer of Section 18 funding from FHWA to UMTA, there was extensive description of the new procedures. Two alternatives for delivery of service which generate interest were use of private operators under contract to transit or social-service agencies, and the use of school buses to provide other services in rural areas. Computers are being used by rural systems for a wide range of operating and accounting procedures. Good accounting and financial management should allow managers to make decisions which can improve productivity. Transit operators should realize that their operations represent relatively insignificant issues for many local officials and it is important to gain support of the community so that political leaders will also respond by giving their support. Discussion of paratransit vehicles centered on rehabilitation over new purchases and on the unreliability of features incorporated in vehicles for transportation of the handicapped.

Ecosometrics, Incorporated, Federal Highway Administration, Office of the Secretary of Transportation Final Rpt. DOT-I-83-52, Nov. 1983, n.p., Refs., 7 App.

ORDER FROM: OST

33 390143
LOCAL CHOICE IN PUBLIC TRANSPORT. CONSULTATION PAPER
The report, issued as part of government policy as a consultation paper, discusses suggested changes in the organisation of transport services in Wales. Such changes would include the option that more transport decisions might be taken by local county councils with suitable financial arrangements. It is emphasised that a modern public transport system is needed to complement the economic and industrial growth measures now being taken in Wales to promote facilities for manufacturers, the tourist industry, and transport in rural areas. The report discusses the social and economic need for transport services in rural areas for journeys to work, school and shopping facilities as those without access to private transport seek greater mobility. A number of options are proposed, for which comments are invited, concerning local authority financing of bus and rail transport services. (TRRL)

Prepared in cooperation with the Welsh Office.

Her Majesty's Stationery Office Monograph July 1984, 12p

ACKNOWLEDGMENT: TRRL (IRRD 278429)
ORDER FROM: Her Majesty's Stationery Office, The Hayes, Cardiff, Cardiff, Wales

33 390166
AFTER THE BUS. SOCIAL EFFECTS OF REDUCTIONS IN RURAL BUS SERVICES
TEST was asked by Friends of the Earth to study the decline in rural bus services. After pilot studies in Norfolk and Hereford & Worcester, four cases studies were undertaken. One was of conditions immediately before a bus service cut in Devon and Oxfordshire, and after one had been made in Norfolk and Gwynedd. Social effects are widespread: essential trips are curtailed, and rural residents' freedom of choice and access to life-enhancing opportunities are limited. If cuts continue, villages could become dormitories, with many second and retirement homes for the better off, while the car-less become isolated or drift to towns. The report concludes that rather than let rural buses decline, they should be improved. Not only would this enhance many people's lives, it would conserve fuel and reduce road accidents, air and noise pollution. The alternative is stark: the run-

down and later abandonment of services tend to be terminal: the market for bus use may well go. (TRRL)

Transport and Environment Studies.

Friends of the Earth Limited Monograph Test Report 59, July 1984, 60p, Figs., Tabs., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 278199)
ORDER FROM: Friends of the Earth Limited, 377 City Road, London, England

34 381477
COUNTING THE COST OF CONCESSIONARY FARES
Pricing implications of the concessionary fares scheme operated by Surrey County Council are investigated. The study by W.S. Atkins Planning was to assess the fairest level of payment to be made to bus operators and examine the characteristics of permit holders and the impact of the scheme upon them. Three inter-related surveys were conducted: (1) an in-bus survey to provide primary information from a simple questionnaire, (2) a survey of households, and (3) a study of a seven-day log completed by each interviewee. Results showed that 75 per cent of those travelling above pensionable age made use of the scheme and that females outnumbered male passengers by a ratio of three-to-one. Shopping was the most frequent journey purpose and the quality of service appeared to be the major concern of permit holders. People making the most journeys were willing to pay higher charges. The scheme appeared to generate up to 30 per cent additional journeys by permit holders. Compensation to bus operators was very sensitive to the level of generated traffic assumed, but seemed to vary considerably for a sample of five schemes. (TRRL)

Mellor, AD Davies, RF (Atkins's Planning) **Surveyor** Vol. 162 No. 4755, Aug. 1983, pp 18-19, 1 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 272852)
ORDER FROM: Business Press International Limited, Surrey House, 1 Throwley Way, Sutton, Surrey SM1 4QQ, England

34 386143
MOBILITY FOR THE ELDERLY AND THE HANDICAPPED. PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON TRANSPORT FOR THE ELDERLY AND HANDICAPPED AT CAMBRIDGE, APRIL 4-7 1978
This conference was sponsored jointly by the Loughborough University and the Florida State University. The following papers were presented: Transportation problems of the elderly and handicapped-an overview of United States experience (Revis, JR); French policy in relation to the transport of persons with reduced mobility (Artaud-Macari, J); The mobility of the elderly and disabled in Great Britain: an overview (Graden, JM); Belgian problems in the area of the mobility of elderly and handicapped people (Harboort, J); An overview of transportation for the mobility disadvantaged in Canada (Dunwoodie, C); Public transport and the physically disabled (Flores, JL and Remy, E); Swedish experience in modifying vehicles and infrastructure (Brattgaard, SO); Additional costs involved in designing public transport systems (Blennemann, F and Pajonk, E); The adaptation of production cars to the needs of disabled people (Gazely, I and Haslegrave, CM); The use of the underground system by people of impaired mobility (Penton, JH); Equipment design for elderly and handicapped transport systems (Revis, BD); Passenger problems on moving buses (Brooks, BM, Edwards, HM, Fraser, CR, Levis, JA and Johnson, MA); Transport and the elderly: requirement, problems and possible solutions (Hopkin, JM, Roson, P and Town, SW); Understanding travel (Skelton, N); Using community resources to develop mobility for the disadvantaged (O'Flaherty, K). (continued on IRRD 275035). (TRRL)

Ashford, N Bell, WG Revis, R Artaud-macari, J Garden, JM Harboort, J Dunwoodie, C Flores, J-L Remy, E Brattgard, S-O Blennemann, F Pajonk, E Gazeley, I Haslegrave, CM Penton, JH Revis, BD Brooks, BM Edwards, HM Fraser, CR Levis, JA Johnson, MA Hopkin, JM Robson, P Town, SW Skelton, N O'Flaherty, K
Loughborough University of Technology, England Monograph No Date, 378p, Figs., Tabs., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 275034)
ORDER FROM: Loughborough University of Technology, England, Loughborough LE113TU, Leicestershire, England

34 386144
MOBILITY FOR THE ELDERLY AND THE HANDICAPPED. PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON TRANSPORT FOR THE ELDERLY AND HANDICAPPED AT CAMBRIDGE, APRIL 4-7 1978 (CONTD)
(Continued from IRRD 275034). The mobility of elderly people: the influence on retirement and former life style (Matalon, B and Averous, B); Lifestyles and the changing transportation needs of the elderly in Los Angeles (Wachs, M); Activity and access to opportunity-a welfare perspective in the design of transport policies for the elderly (Benwell, M); Social integration of the physically handicapped: problem statement, method of study, first results (Poulenat-Aballea, C); The role of voluntary transport (Norman, AJ); Concessionary travel schemes for the elderly in England and Wales (McTavish, AD); Concessionary fares on public transport in England and Wales (Glover, JG); Recent USA experience with transportation service innovations for elderly and handicapped persons: user-side subsidies, accessible transit and co-ordinated services (Sahaj, L); The Texas experience (Fisher, J); Barriers to air travel (Sack, A and Shaver, LA); Safety aspects of air transportation of handicapped persons (Frantzen, C); Special transport service and modification of conventional public transport services (Simonsen, S); A new SNCF experiment for its handicapped clients (Presson, G); Transport for elderly and handicapped persons (Przepiora, JW and Wallin, TC); Mobility of the disabled in the urban environment (Buchanan, J and Chamberlain, MA); Walking speeds and walking habits of elderly people (Dahlstedt, S); Transport for the elderly and handicapped in rural Scotland (Gregory, P); Transportation for human services-a system operator's viewpoint (Harman, LJ). (Continued on IRRD 275036) (TRRL)

Ashford, N Bell, WG Matalon, B Averous, B Wachs, M Benwell, M Poulenat-aballea, C Bailey, JM Norman, AJ McTavish, AD Glover, JG Sahaj, L Fisher, J Sack, A Shaver, LA Frantzen, C Simonsen, S Presson, G Przepiora, JW Wallin, TO Buchanan, J Chamberlain, A Dahlstedt, S Gregory, P Harman, LJ
Loughborough University of Technology, England Monograph No Date, 378p, Figs., Tabs., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 275035)
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34 386145
MOBILITY FOR THE ELDERLY AND THE HANDICAPPED. PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON TRANSPORT FOR THE ELDERLY AND HANDICAPPED AT CAMBRIDGE, APRIL 4-7 1978 (CONTD)
(Continued from IRRD 275035). Rural transportation needs and demands: definition and measurement in the case of the rural elderly (Lago, AM and Burkhardt, JE); Planning for the transportation disadvantaged: a classification of user groups (Hood, TC, Bell, TL and Heathington, KW); A public transport service for physically handicapped persons in Nancy (Bolze, C); Public transport for the handicapped in Stockholm (Berg, I); State of the art demand-responsive Systems for the transportation handicapped (Texieira, D); Transport for the disabled in western Canada (Navin, FPD); Agent/broker coordinated paratransit service for elderly and handicapped persons in Allegheny Co, Pennsylvania (Millar, WW); Improving elderly and handicapped service vehicle productivities under conditions of low vehicle density (Brigham, TB and Bass, E); Developing policies for the mobility of disabled people in the United Kingdom (Large, P); Theoretical and methodological approach to the transport problems perceived by elderly and handicapped persons (Dessertine, A); Coordinating transportation for human service agency clients (Saltzman, A); Alternative policies to meet the travel needs of the elderly and the handicapped (Hillman, M); Transport equity and inequity for the elderly and handicapped (Paaswell, RE and Appelstein, MJ). (TRRL)

Ashford, N
Loughborough University of Technology, England Monograph No Date, 378p, Figs., Tabs., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 275036)
ORDER FROM: Loughborough University of Technology, England, Loughborough LE113TU, Leicestershire, England

34 386263
SHEFFIELD STUDY: BUS USERS' SURVEY
The effectiveness was studied of two bus entrance modifications designed to facilitate boarding for the elderly and ambulant physically handicapped. One modification was a split step for double deck buses. The other was to enable single deck buses to kneel. The aim was to find out who, if anyone, benefited from the modifications and who might require other types of modification. Following a feasibility study, off-vehicle interviewing was chosen. User dependence on the modifications could not be identified owing to the limited number of modified vehicles. Boarding was the least difficult act for most passengers, moving within the bus was the most difficult, and

alighting was more difficult than boarding. Step modifications were identified as relevant to the major problem for the ambulant disabled. Most users were worried about the bus moving off whilst they were taking their seats or alighting. Driver training and awareness were considered to be equally significant compared with the design modifications.

See also PB84-151968.

Benwell, M
Cranfield Institute of Technology CRANFIELD-CTS-19, Apr. 1983, 35p

ORDER FROM: NTIS PB84-151943

34 386264
SHEFFIELD STUDY: BUS BOARDING SURVEY
The effectiveness was studied of two bus entrance modifications designed to facilitate boarding for the elderly and physically handicapped. One modification was a split front step for double deck buses. The other was to enable single deck buses to kneel. Data were gathered by observers in Sheffield buses. Passengers were not interviewed but categorized by appearance, use of special passes, etc. Elderly people were found to prefer the lower step when a split step was available. The straight step produced lower average boarding times. Conclusions were not drawn on the effect of kneeling buses on boarding times because the drivers rarely knelt them. This was taken to emphasize the importance of the "driver element" in the use of the modification. It was suggested that drivers think that kneeling the buses prevents them from maintaining their schedules.

See also PB84-151943.

Oxley, PR
Cranfield Institute of Technology CRANFIELD-CTS-20, Apr. 1983, 30p

ORDER FROM: NTIS PB84-151950

34 386265
SHEFFIELD STUDY: THE DRIVER SURVEY
The attitudes and opinions of bus drivers were studied concerning two bus entrance modifications designed to facilitate boarding for the elderly and physically disabled. One modification was a split step for double deck buses. The other was to enable single deck buses to kneel. Results were analysed in tabular and histographical form. The split step modification was thought of as a positive aid to passengers by drivers. Very few drivers used the kneeling mechanism as a matter of course. Drivers often thought that kneeling the buses increased running times. Statistical analysis of drivers' responses could not be extended beyond limited subjects. Drivers were skeptical about the reliability and maintenance of the kneeling mechanism, but automation of the mechanism would eliminate their resentment of having to judge when to use it.

See also PB84-151950.

Benwell, M
Cranfield Institute of Technology CRANFIELD-CTS-23, Apr. 1983, 28p

ORDER FROM: NTIS PB84-151968

34 386289
MARKET SEGMENTATION OF THE TRANSPORTATION-HANDICAPPED: AN ASSESSMENT OF THEIR NEEDS
The personal transportation needs and perceptions of handicapped people in a small urban area (Greensboro, NC) were studied using a priori and a posteriori market segmentation techniques. Six handicap categories—wheelchair confinement, difficulty walking, visual impairment, hearing impairment, tactile impairment (difficulty grasping or holding), and communications (speech) impairment—were included in the study. Respondents were interviewed regarding their present travel mode(s), frequency, and purposes, and their attitudes toward three hypothetical levels and qualities of service. On the basis of these results, specific recommendations are made for service and vehicle modifications.

Benjamin, J Sen, L
North Carolina Agricultural and Technical State U A/T-TI-44-RR-82, UMTA-NC-11-0009-83-1, June 1982, 176p

ORDER FROM: NTIS PB83-251231

34 386415
RESULTS OF A PARAMETRIC COST ANALYSIS OF DIFFERENCES BETWEEN URBAN AND RURAL TRANSPORTATION SERVICES FOR TRANSPORTATION-DISADVANTAGED PERSONS
It has been difficult in the past for local transportation service providers serving transportation-disadvantaged persons to accurately understand what their services should or will cost. This information is important for localities that contemplate the initiation, expansion, or evaluation of transportation services that differentiates among the various types and levels of service is important for federal, state, and local program managers because many use this information to apportion and distribute funds among local projects. A portion of the results from a study conducted by Ecosometrics, Inc., for the Administration on Aging, U.S. Department of Health and Human Services, is presented. The differences in costs of transportation services for the elderly in urban and rural areas are evaluated. Nevertheless, many of the services included in the study serve other transportation-disadvantaged groups; thus the results are applicable to multiclient services as well. Further, the parametric cost analysis performed in the study has analytical value beyond the differences in costs in urban and rural areas. The findings presented in the paper include (a) brief review of the literature on the differences in costs between urban and rural transportation services for the elderly, and (b) a report on the results of the parametric cost analysis performed during the study by using secondary data.

This paper appeared in Transportation Research Record No. 934, Transportation Issues Affecting the Elderly and the Handicapped: American and Canadian Perspective.

Knapp, SF Lago, AM **Transportation Research Record** No. 934, 1983, pp 1-8, 3 Tab., 14 Ref.

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34 386416
CASE STUDY OF USER-SIDE SUBSIDIES FOR THE HANDICAPPED IN MILWAUKEE COUNTY
Milwaukee County, Wisconsin, instituted a user-side subsidy program in June 1978 for handicapped users of taxi and chair-car companies. Because of the unique features of the program, a case study was undertaken by the UMTA Service and Management Demonstration program. The Milwaukee County program is funded entirely by county and state contributions. Unlike other user-side subsidy programs that serve the elderly and the handicapped, the Milwaukee County program serves only handicapped persons. Eligibility for the program is limited to the legally blind and to persons who require the use of a wheelchair, a walker, or crutches. Door-to-door transportation is provided for eligible persons who use the services of private taxi and chair-car companies. By 1982 five taxi companies and three chair-car companies accepted program vouchers. Participants pay the first $1.50 cost of a trip. The remaining cost is subsidized by the program-up to a maximum of $9.50 per trip, depending on the individual's handicap classification. Simple administrative procedures for subsidy distribution have been devised for the program and approximately 12 percent of the 1980 budget of $1 million has been spent on administrative activities. The paratransit industry in the county has expanded since the institution of the program, and providers appear to be competing actively for program ridership. Enrollment in the program by the eligible population is high, with wheelchair users making the majority of program trips. The program offers a high level of service to the most severely handicapped residents of the county, and the Milwaukee County experience should help other area administrators anticipate and meet the demand of handicapped persons for low-cost accessible service.

This paper appeared in Transportation Research Record No. 934, Transportation Issues Affecting the Elderly and the Handicapped: American and Canadian Perspective.

Lovely, ME **Transportation Research Record** No. 934, 1983, pp 9-13, 1 Fig., 2 Tab., 3 Ref.

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34 386417
QUALITY OF SERVICE IN SPECIAL SERVICE PARATRANSIT: THE USERS' PERSPECTIVE
The purpose of this paper is to develop measures of quality of service in special service paratransit and To gauge the importance of various service

attributes to users of these services. A set of service attributes was compiled, and the attributes were categorized into eight aspects of service quality. These eight aspects are reliablity and on-time performance, comfort, convenience of making reservations, extent of service, vehicle access, safety, driver characteristics, and responsiveness to the individual. Questionnaires were mailed to elderly and handicapped users of these services; the respondents were asked to rank each aspect and its corresponding attributes as to importance in achieving service quality. The questionnaire results were analyzed by using psychometric scaling techniques. The results of the analysis indicate that not all types of users place the same importance on different characteristics of these services. Users younger than 65 years old place considerable emphasis on service reliability and extent of service. Wheelchair users believe that satisfactory vehicle access is extremely important. Users older than 65 years old believe that safety is of paramount importance. The most important attributes of service quality from the standpoint of all users are then developed.

This paper appeared in Transportation Research Record No. 934, Transportation Issues Affecting the Elderly and the Handicapped: American and Canadian Perspective.

Pagano, AM McKnight, CE (Illinois University, Chicago) **Transportation Research Record** No. 934, 1983, pp 14-23, 10 Fig., 1 Tab., 13 Ref.

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34 386418
INQUIRY OF THE CANADIAN TRANSPORT COMMISSION INTO INTERCITY BUS TRAVEL FOR DISABLED PERSONS IN NEWFOUNDLAND

The objective of the paper is to (a) demonstrate how the Canadian government, acting through a requlatory body (the Canadian Transport Commission (CTC)), approached one particular issue under federal jurisdiction concerning transportation of the handicapped, and (b) present the results of its action. The issue discussed is the intercity bus service for disabled persons on the Island of Newfoundland, which is located off the eastern coast of the Canadian mainland. The Island has a population of approximately 536,0C` and is the most densely populated part of the province. The intercity service currently is provided by CN Roadcruiser, a crown agency. The inquiry (the approach chosen to investigate the issue) is described, and the findings, along with the subsequent action taken by the CTC, are given. Terms of reference of the inquiry included consideration of the most efficient service for ablebodied and disabled persons alike. The primary finding was that the use of lift-equipped buses in the regular Roadcruiser service was not the appropriate course of action. Recommendations made in the report of the inquiry were adopted by the Motor Vehicle Transport Committee. In the Committee's decision, Roadcruiser was ordered to take specific courses of action that would lead to improvements for disabled travelers on the existing service, and it was recommended that the federal government finance a 3-year experiment to develop a new transportation service that would be an integrated service, but focused on the transportation requirements of disabled persons.

This paper appeared in Transportation Research Record No. 934, Transportation Issues Affecting the Elderly and the Handicapped: American and Canadian Perspective.

Fleming, MS Silverstone, DB (Canadian Transport Commission) **Transportation Research Record** No. 934, 1983, pp 23-31, 2 Fig., 1 Tab., 8 Ref.

ORDER FROM: TRB Publications Off DOTL JC

34 386419
A CANADIAN OVERVIEW OF TECHNOLOGICAL AND SYSTEMS RESEARCH AND DEVELOPMENT ON TRANSPORTATION FOR DISABLED PERSONS

A general view of existing and planned innovations in technology and systems in Canada relating to the transportation of citizens with motor, hearing, sight, speech, or cognitive impairment is presented. Treatment of urban transportation highlights various advances in technology relevant to parallel modes. For example, the award-winning design of a wheelchair-securement/passenger-restraint system is described. Developments related to interurban systems are shown to be comprehensive because they cover problems experienced by special-needs travelers within air, rail, and surface modes, both at terminals and in transit. Canada's less-extensive applications in rural settings are also discussed.

This paper appeared in Transportation Research Record No. 934, Transportation Issues Affecting the Elderly and the Handicapped: American and Canadian Perspective.

Heron, RM Smith, BA Suen, L Alfieri, FA (Transport Canada) **Transportation Research Record** No. 934, 1983, pp 31-38, 10 Fig., 33 Ref.

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34 386420
TRANSPORTATION SERVICE FOR THE PHYSICALLY HANDICAPPED IN TORONTO—ITS STRUCTURE AND THE INTEGRATION OF COMPUTER AIDS

The structure of Wheel-the Metropolitan Toronto transportation system for the physically handicapped-and the future operating options under consideration for Toronto are discussed, and the design and implementation process of a computer-aided reservation, scheduling, and dispatching system is reviewed. The growth of the service from 8 vehicles to 53 vans and 21 taxis during the past 7 years has created changes in the current operation to accommodate an increasing demand for service. Examples of these changes are the takeover by the Toronto Transit Commission of the reservation, scheduling, and dispatching functions from a private contractor; the investigation of new procedures such as demand-responsive systems; and the use of smaller vehicles. The increasing demand for service has resulted in a growing number of trip requests that need to be processed and an increased number of opportunities for misplacement of orders and generation of errors. The computer system is being implemented to improve the efficiency of control-office tasks and to provide a high level of service to the users.

This paper appeared in Transportation Research Record No. 934, Transportation Issues Affecting the Elderly and the Handicapped: American and Canadian Perspective.

Ahlin, FJ (Toronto Transit Commission); Stopnick, R (Municipality of Metropolitan Toronto); Bookbinder, JH (Waterloo University, Canada) **Transportation Research Record** No. 934, 1983, pp 38-44, 5 Fig., 1 Tab., 8 Ref.

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34 386421
LONG-RANGE TRANSPORTATION PLANNING FOR THE ELDERLY IN ONTARIO

In Canada few long-range planning studies hve addressed the transportation needs of the rapidly growing proportion of elderly people in the general population. In this paper the characteristics of the elderly population are identified, and forecasts about this population to the year 2021 are discussed. Given these data, the elderly population is segmented into seven life-style groups, such that the group definitions are invariant through time, but the number of people in each group is allowed to change. Next technological, organizational, and service-related innovations that may be applied to five modes of transportation are enumerated. These innovations are briefly discussed, and how they might affect the seven life-style market segments is outlined. Finally, three scenarios for the future are developed to indicate which innovations are most likely to affect large groups of the elderly. Findings indicate that innovation in small-scale, locally oriented types of special transit appears to be able to increase the mobility of the largest number of elderly persons.

This paper appeared in Transportation Research Record No. 934, Transportation Issues Affecting the Elderly and the Handicapped: American and Canadian Perspective.

Wolfe, RA (Toronto-York University Joint Program in Transp); Miller, EJ (Toronto University, Canada) **Transportation Research Record** No. 934, 1983, pp 44-51, 3 Fig., 5 Tab., 4 Ref.

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34 386422
TRANSPORTATION OF THE ELDERLY AND THE HANDICAPPED IN RURAL AREAS: THE MANITOBA EXPERIENCE

A transportation service for the elderly and the handicapped in small towns and rural municipalities is described. This service is supported by grants from the province of Manitoba and is administered at the community level. Actual operations are usually undertaken by a local organization that deals

with the handicapped. Available ridership and cost data are discussed. Problems encountered in attempting to estimate the number of potential users are examined along with possible conflicts with local taxi and ambulance services. The advantages and disadvantages of working through local governments are outlined. It is concluded that it is provide a satisfactory level of service at reasonable cost in areas where it is traditionally considered difficult, if not impossible, to provide such services.

This paper appeared in Transportation Research Record No. 934, Transportation Issues Affecting the Elderly and the Handicapped: American and Canadian Perspective.

Wallace, J (Manitoba Department of Highways and Transportation)
Transportation Research Record No. 934, 1983, pp 51-55, 3 Tab.

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34 386725
RECENT DEVELOPMENTS IN SPECIAL TRANSPORT FOR DISABLED PEOPLE

Recent developments in services have focussed predominantly on the need to provide disabled people with transport akin to a bus or taxi offering them, as much as possible, services similar to those enjoyed by able-bodied people. In most cases this has therefore involved the use of adapted vehicles (e.g. with lifts or ramps) capable of carrying people who cannot bend easily, cannot climb steps or who may be confined to a wheelchair. It is the intention of this paper to concentrate on these new schemes, including some of the older ones which are sympathetic to the new ideas. A list of relevant schemes was therefore compliled from various sources and is presented in full in the appendix.

Bailey, J Appleby, L
Oxford University, England TSU/REF-239, Dec. 1983, 82p

ORDER FROM: NTIS PB84-168202

34 386948
EASYRIDE: SPECIALIZED TRANSPORTATION SERVICE IN NEW YORK CITY (PHASE II REPORT)

The EASYRIDE demonstration involved a door-to-door specialized transportation system which served elderly and handicapped residents of the Lower East and West Sides of Manhattan. The demonstration, operated under the auspices of the non-profit Vera Institute of Justice, began in June 1977, and ran through March 1982. This final report covers the period from July 1979 through the end of the demonstration. During the course of the demonstration, EASYRIDE evolved into an 18-vehicle operation providing as many as 7300 trips per month. EASYRIDE successfully secured a broad array of grants, service contracts, and private contributions for a total revenue base in excess of $800,000 per year. In developing this mix of funding, EASYRIDE was able to offer a multi-purpose service with minimal restrictions on "mixing" riders. During the period covered by this report, EASYRIDE instituted three major changes: 1) In May 1980 EASYRIDE installed two-way radios in all vehicles; this contributed to improved productivity through the reduction of deadheading and vehicle dead time. 2) In the summer of 1980 EASYRIDE automated much of its record-keeping and scheduling procedures, thereby improving the efficiency and accuracy of these processes. 3) Finally, in the Fall of that year EASYRIDE expanded its service area into the Lower West Side of Manhattan, thereby increasing its overall rideship substantially. Following these changes, EASYRIDE's cost per trip dropped significantly: the average figure for the fiscal year preceding the improvements (1979-80) was $15.36 per trip, while the subsequent year's average figure was $12.36 per trip. The average cost per trip for the final three years was $12.84. The average monthly ridership for the three-year period was 5704; nearly 18% of these trips originated in the West Side, 73% in the East Side, and the remainder in other parts of New York City. The average productivity for the first year of the report period was under 3.8 trips per driver hour; this improved to over 5.0 in the last year. Over the course of the demonstration, EASYRIDE provided a high quality—though rather high cost—specialized services that was valued highly by users, community groups, funding agencies, and city officials. As the demonstration ended, EASYRIDE was making renewed efforts to secure new sources of funding so as to continue to provide this service.

Fleishman, D
Multisystems, Incorporated, Urban Mass Transportation Administration, (DTS-64) Final Rpt. UMTA-MA-06-0049-84-2, DOT-TSC-UMTA-84-3, Mar. 1984, 100p Contract DOT-TSC-1756
ORDER FROM: GPO

34 387585
MOBILITY AND TRANSPORT FOR ELDERLY AND HANDICAPPED PERSONS. PROCEEDINGS OF A CONFERENCE HELD AT CHURCHILL COLLEGE, CAMBRIDGE, JULY 14-16 1981

The following papers were presented at the conference: Social service transport: transport for elderly and handicapped persons (Hitchcock, A); Belgian policy on mobility of elderly and handicapped persons (Harboort, J); An overview of developments in the United States in transportation for the elderly and handicapped (Bell, WG); Recent developments in provision for the mobility of the handicapped and elderly in France (Benwell, M); Meeting the transportation needs of the disabled: the role of the Canadian Transport Commission (Silverstone, DB); Handicapped transportation: myths, reality and roles for the future (Latham, GR and Langille, D); Equity in rural Michigan (Mobey, MG); Housing location and transport for the elderly (Paaswell, RE, Weinstein, E and Nalepa, M); Application of the concept of social need in the planning of transport services for elderly and disabled people (Bailey, JM); Market segmentation of the transportation-handicapped in a small urban area of the United States (Benjamin, J, Sen, L and Walther, E); Determining the accessibility of the elderly in urban areas (Southern, AC); Applications of the concept of equity to cost allocation: two approaches (Collura, J and Cope, DF); Physical and attitudinal barriers to transportation access for disabled persons (Tait, JJ); The special transport service for the handicapped within Stockholm county (Berg, J and Christensson, L); Citizen involvement inproves transit planning: a bay area perspective (Piras, P, Weinstein, C and Lankasky, K). (continued on IRRD 275905). (TRRL)

Ashford, N Bell, WG Rich, TA Hitchcock, A Harboort, J Benwell, M Silverstone, DB Latham, GR Langille, D Mobey, MG Paaswell, RE Weinstein, E Nalepa, M Bailey, JM Benjamin, J Sen, L Walther, E Southern, AC Collura, J Cope, DF Tait, JJ Berg, I Christensson, L Piras, P Weinstein, C Lankasky, K
Gordon and Breach Science Publishers Limited, (0278-3819) 1982, 383p, Figs., Tabs., Phots., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 275904)
ORDER FROM: Gordon and Breach Science Publishers Limited, 42 William IV Street, London WC2N 4DE, England

34 387586
MOBILITY AND TRANSPORT FOR ELDERLY AND HANDICAPPED PERSONS. PROCEEDINGS OF A CONFERENCE HELD AT CHURCHILL COLLEGE, CAMBRIDGE, JULY 14-16 1981 (CONTD)

(continued from IRRD 275904). The operation of work of two voluntary transpor schemes (Hedley, R); Working toward mobility with handicapped and elderly persons (Snyder, MH); Transport service for disabled people in Stockport, England (Lewis, RJ); Research project "Telebus" for the handicapped in Berlin (West) (Pajonke, E); Managing scarce resources for elderly and handicapped transportation through careful market segmentation: The Port Authority of Allegheny County experience (Millar, WW and Alschuler, DM); Provisions for the handicapped in Dutch bus design (Lubberding, JW); Performance evaluation of alternative forms of coordinated specialized transportation (Miller, JH); Wheelchair travellers' response to lift-equipped buses operating in a fixed route transit system (Falcocchio, JC); Transportation services for the elderly and handicapped: special versus mainstream systems (Wallin, TO); Dats: review of an operating system (Langille, D, Wilks, S, McGarry, K and Latham, G); Platform-vehicle interface of a rail system—stumbling block for the handicapped (Leimbach, KR); A model program to assure use of technology transferred from state government to local transportation providers (Standish, BJ and Stevens, S); Microcomputer applications in the management of paratransit operations (Giangrande, RV and Harman, LJ). (continued on IRRD 275906). (TRRL)

Ashford, N Bell, WG Rich, TA Hedley, R Snyder, MH Lewis, RJ Pajonk, E Millar, WW Alschuler, DM Lubberding, JW Miller, JH Falcocchio, JC Wallin, TO Langille, D Wilks,

S McGarry, K Latham, G Leimbach, KR Standish, BJ Stevens, S Giangrande, RV Harman, LJ
Gordon and Breach Science Publishers Limited, (0278-3819) 1982, 383p, Figs., Tabs., Phots., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 275905)
ORDER FROM: Gordon and Breach Science Publishers Limited, 42 William IV Street, London WC2N 4DE, England

34 387587
MOBILITY AND TRANSPORT FOR ELDERLY AND HANDICAPPED PERSONS. PROCEEDINGS OF A CONFERENCE HELD AT CHURCHILL COLLEGE, CAMBRIDGE, JULY 14-16 1981 (CONTD)
(continued from IRRD 275905). Investigation on a combined brake-throttle actuator for the modification of standard automobiles for the disabled (Peters, OH, Fligge, U, Frembgen, S and Nemitz, W); A simple car conversion designed to increase the independence of wheelchair users (Hawken, MB, Hodgson, S and Harris, JD); An ergonomic evaluation of a physically disabled (Heron, RM, Rutenberg, U and Nishizaki, R): Some recent developments in computer technology for some recent developments in computer technology for transportation of elderly and handicapped persons (Simpson, AU); Equipment and maintenance requirements for bus operations serving the elderly and the disabled (Brogan, JD and McKelvey, FX); Tests of a wheelchair restraining module (Kinghorn, G); A behavioral approach to interorganizational coordination among human service transportation agencies (Busko, MV and Saltzman, A); Community initiatives and the contribution of the "voluntary sector" towards local coordination of "special transport" in Britain. Policy proposals for Milton Keynes, Buckinghamshire, England (Lightfoot, G); Coordinated transportation demonstration results (Burkhardt, JE); A statewide approacht to interagency and intergovernmental coordination of public transportation and human services transportation resources through consolidated sub-state regional transportation planning and operations (Sharpe, LE); Billing rate analysis for paratransit operating agencies (Steinmetz, WR and Kraus, JE). For paper by Hitchcock, A: Social service transport: transport for elderly and handicapped persons, see IRRD 275907. (TRRL)

Ashford, N Bell, WG Rich, TA Peters, OH Fligge, U Frembgen, S Nemitz, W Hawken, MB Hodgson, S Harris, JD Heron, RM Rutenberg, U Nishizaki, R Simpson, AU Brogan, JD McKelvey, FX Kinghorn, G Busko, MV Saltzman, A Lightfoot, G Burkhardt, JE Sharpe, LE Steinmetz, WR Kraus, JE
Gordon and Breach Science Publishers Limited, (0278-3819) 1982, 383p, Figs., Tabs., Phots., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 275906)
ORDER FROM: Gordon and Breach Science Publishers Limited, 42 William IV Street, London WC2N 4DE, England

34 387588
"SOCIAL SERVICE" TRANSPORT: TRANSPORT FOR ELDERLY AND HANDICAPPED PERSONS
This report reproduces a discussion by four authors, led by Bieber, A, IRT, Paris, at an ECMT round table held in Paris in March 1980. It follows on with a summary of the discussion by national experts present under the chairmanship of Polak, JB, University of Groeningen. It presents international comparisons of transport experience in regard to the elderly and handicapped. An attempt is made to identify the needs of this sector, to find solutions to the problems through use of specialised services, use of existing transport facilities and adjustments to various transport modes, and by means of other measures. (see also IRRD 275904, 275905 and 275906). (TRRL)

Hitchcock, A (Transport and Road Research Laboratory), Ashford, N (Loughborough University Of Technology); Bell, WG (Florida State University); Rich, TA (University South Florida)
Gordon and Breach Science Publishers Limited, (0278-3819) 1982, pp 3-6

ACKNOWLEDGMENT: TRRL (IRRD 275907)
ORDER FROM: Gordon and Breach Science Publishers Limited, 42 William IV Street, London WC2N 4DE, England

34 387595
ASSESSING RATERS' POLICIES IN EVALUATING PROPOSED SERVICES FOR TRANSPORTING THE PHYSICALLY HANDICAPPED
The methods of retranslation and policy capturing were used to assess evaluations of proposed transportation services for the physically handicapped. Subjects (N = 102) participated in a 2 x 2 x 2 x 2 experimental design in which they were classified according to their occupation (college student vs Department of Transportation employee), the amount of thought (i.e., salience) they had given to the problem of transporting the physically handicapped, and whether or not the costs of the transportation services were presented to them. The dependent variable was an acceptability rating for supplemental bus equipment used to transport the handicapped. Analysis of variance results revealed that occupational classification and salience exhibited statistically significant effects on the acceptability ratings. The results are discussed in the context of policy-capturing research as a means of identifying social preferences for policy formation. (Author/TRRL)

Stein Allen, J Muchinsky, PM (Iowa State University, Ames)
Journal of Applied Psychology Vol. 69 No. 1, Feb. 1984, pp 3-11, 2 Fig., 4 Tab., 15 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275857)
ORDER FROM: American Psychological Association, Incorporated, 1200 17th Street, NW, Washington, D.C., 20036

34 387674
USE OF VOLUNTEERS IN THE TRANSPORTATION OF ELDERLY AND HANDICAPPED PERSONS
The special transportation needs of older Americans which have come to be recognized in recent years will continue in the next century. This report is a descriptive analysis of a variety of volunteer programs which provide transportation to elderly and disabled persons. By examining 13 such programs, it was possible to understand and describe how such programs operate, what clients they serve, what volunteers they utilized and how the volunteers were recruited. Most volunteer programs are organized as either a nonprofit organization or as a government unit. Transportation is generally provided to some or all of the following: Medical facilities, nutrition centers, senior centers, social service agencies, and schools. Most volunteer transportation services are available only on weekdays and clients must request service at least 24 hours in advance. Vehicles are generally owned by the individuals who serve as drivers and are compensated for the fuel they consume. Extraordinary liability insurance must be provided. About two thirds of the drivers are male and are retired persons. Most perform the work because of the satisfaction they receive in helping others. A series of recommendations are made.

Green (Del) Associates, Incorporated, Urban Mass Transportation Administration Final Rpt. DOT-I-84-02, Jan. 1984, 141p, Phots.

ORDER FROM: OST

34 387875
USER-SIDE SUBSIDY PROGRAMS FOR SPECIAL NEEDS TRANSPORTATION
User-side subsidy, the concept addressed in the handbook, offers means for improving the mobility of selected individuals in a community without establishing new transportation services or providing direct operating subsidies to existing transportation providers. Under a user-side subsidy program, transportation subsidies are distributed directly to the traveler in the form of reduced-price tickets, vouchers, or scrip, which can be used as payment for trips taken with participating service providers. User-side subsidy programs have been successfully implemented in a large number of sites across the United States, typically to provide special needs transportation services to elderly or handicapped individuals who cannot use conventional transit services. Accordingly, emphasis in the handbook is on programs involving paratransit modes, such as taxis and chair-car services, as opposed to fixed-route bus operations. However, much of the information presented is applicable to any transportation service arrangement. The handbook is divided into two parts—Program Planning and Program Implementation.

Harrison, F Neumana, L Atherton, T
Cambridge Systematics, Incorporated, Urban Mass Transportation Administration Handbook DOT-TSC-UMTA-83-35, June 1983

ORDER FROM: UMTA

34 387912
VOLUNTEER CONTRACTING: THE EXPERIMENT WORKS
A cost-effective transportation alternative for Huntsville and adjacent northern Alabama communities has been the development of a community-government partnership in which the City of Huntsville has provided reconditioned vans and van maintenance while areas requiring transport services provide volunteer operators and fuel for shopping, medical, educational and recreational trips. This self-help program has each volunteer group incorporated into a non-profit community improvement association which provides management, drivers and fuel for its own services. The county government provides insurance. A total of 21 neighborhood and rural communities now have service for their elderly, minority or low-income residents. There is no tax support for drivers or gasoline. Taxpayer cost per community is probably less than 20% of the operating costs of conventional paratransit and covers maintenance, insurance and administration. The concept is being explored for meeting public transport demands for activity centers such as shopping malls, initially for persons of higher income who are unable to drive. Such communities would be expected to cover maintenance and insurance costs.

Doom, IF Griner, CS (Huntsville Department of Transportation)
Transitions 1984, pp 39-46

ORDER FROM: ATE Management and Service Company, Incorporated, Editor, 617 Vine Street, Suite 800, Cincinnati, Ohio, 45202

34 387921
SEATTLE METRO ELDERLY AND HANDICAPPED SERVICES: A CASE STUDY
This case study describes and assesses the specialized transportation programs provided by Seattle METRO. While METRO does not directly provide specialized transportation services for the elderly and handicapped, METRO funds a taxi scrip program in the City of Seattle and King County and a Rural Van Program in the rural areas of King County where taxi service is limited.

Walther, ES
North Carolina Agricultural and Technical State U DOT-SRP-84-4, Oct. 1983, 13p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS PB84-181130

34 387922
COLORADO SPRINGS TRANSIT ELDERLY AND HANDICAPPED TRANSPORTATION SERVICES: A CASE STUDY
This case study reviews and assesses the specialized transportation program provided by Colorado Springs Transit. The City of Colorado Springs purchases transportation from three private non-profit organizations. In addition, the conventional transit system is over 50% accessible. A description of the services provided and funding along with the city's evaluation of the program is included.

Walter, ES
North Carolina Agricultural and Technical State U DOT-SRP-84-2, Aug. 1983, 10p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS PB84-180504

34 387973
TRANSPORTATION DEVELOPMENT PLAN FOR TOWN OF NORTH HEMPSTEAD: PARATRANSIT FEASIBILITY STUDY
This final report documents the authors' background investigations, analyses, findings and recommendations relative to improved services for the transportation disadvantaged residents of the Town of North Hempstead, New York. The intent is to identify and correct the transportation needs of the transportation disadvantaged. It includes an evaluation of the feasibility of a paratransit system within the Town, recommendations for improvements to existing facilities, and analysis of potentials for implementing study recommendations. Closely related to these objectives is a policy constraint that precludes additional financial commitment by the Town and requires that future services, resulting from this study, be operated by non-Town agencies and organizations. In this report, a detailed inventory of transportation services is described; demand estimates are presented and methodology is described. In addition, this report also includes an analysis of options for providing commuter parking at remote facilities linked by bus service to rail stations. The report states that although transportation provided for senior citizens is generally excellent (Town spends $86,000 per year for senior citizens services), there are virtually no Town-supported or Town-sponsored services for the handicapped. Recommendations are made for: 1) promoting a demand-responsive project for wheelchair-bound and other handicapped persons; and 2) developing a satellite parking program at the Port Washington train station.

Clark (Frederick P) Associates, North Hempstead, Town of, Urban Mass Transportation Administration Final Rpt. UMTA-NY-09-0064, Nov. 1982, 98p, Figs., Tabs., 3 App. Grant UMTA-NY-09-0064
ORDER FROM: UMTA

34 387976
THE ADEQUACY OF TRANSPORTATION FACILITIES IN MINORITY COMMUNITIES FOR THE ELDERLY, AND LOW INCOME GROUPS—THE PROBLEMS OF RESIDENCE AND ACCESSIBILITY
The primary objective of this study was to assess and record the types of transportation services available to the elderly, handicapped, and economically disadvantaged groups and compare selected transportation system to community facilities. This study samples a population of elderly, handicapped, and low income participants within the metropolitan area of Jackson, Mississippi. Most of these respondents were on income maintenance programs and experiencing hardship in private transportation cost. The situation was compounded when these groups had to travel to and from doctor's offices, grocery stores, social service agencies and shopping centers. The major conclusion of this research project are: (a) that the perferred form of travel among low income groups was the bus, the middle and high income respondents usually drove their cars; (b) the elderly attend to their business affairs between late morning and early afternoon, (c) the majority of handicapped used the bus between 6:00-8:00 a.m.; (d) the travel pattern of the low income seemed to be worked related; (e) the common mode of non-work related travel utilized by the respondents was the automobile; (f) the predominant modes of transportation are buses, taxis, minibuses and automobiles; (g) bus users tend to allocate more time than necessary to traveling in order not to be late, and (h) the survey indicate a low capacity utilization as well as a low revenue cost ratio.

King, J, JR
Jackson State University, Department of Transportation Final Rpt. 82-045, Dec. 1983, 160p, 63 Tab., Refs., 3 App. Contract DTRS-5683-C-0036
ORDER FROM: DOT

34 389317
GOING PLACES: TWO EXPERIMENTS IN VOLUNTARY TRANSPORT
This report describes two experiments set up by the Centre for Policy on Ageing. One, a voluntary car service: Plymouth community transport, was to test the effect of providing a large social car scheme in an urban area, the other: the Birmingham share transport experiment, was to encourage the shared use of minibuses. It describes their objectives, their operation during the period of CPA funding, their successes and their difficulties, and their subsequent history. For the first experiment, details are given of the scheme and its management, costs and subsidies, drivers (identity, motivation and turnover), passengers (eligibility, age and mobility), user groups. For the Birmingham shared transport experiment, data are presented of the scheme and its management, user organisations, attitudes to sharing. Issues arising from the experiments, door-to-door transport for individuals and vehicle sharing, are discussed. A guide to sources of information on community transport is appended.

Hedley, R Norman, A
Centre for Policy on Ageing Monograph 1984, 62p, 9 Tab., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 276781)
ORDER FROM: Centre for Policy on Ageing, Nuffield Lodge Studio, Regent's Park, London, England

34 389347
ORANGE COUNTY TRANSIT DISTRICT ELDERLY AND HANDICAPPED SERVICE: A CASE STUDY
This case study reviews and assesses the specialized transportation program provided by the Orange County (California) Transit District. The Orange County Transit District operates a demand responsive system, Dial-A-Ride, which services the general public as well as the elderly and handicapped population. A description of the services provided and the system's funding arrangement is included.

Walther, ES
North Carolina Agricultural and Technical State U, Office of the Secretary of Transportation Final Rpt. DOT-SRP-84-3, Aug. 1983, 12p

ORDER FROM: NTIS PB84-180298

34 389355
PLANNING SERVICES FOR TRANSPORTATION-HANDICAPPED PEOPLE: DATA COLLECTION MANUAL
This report describes a data collection process for use by local transportation planning agencies and transit operators in designing and evaluating public transportation services for mobility-limited elderly, handicapped, or similar persons. The manual provides step-by-step procedures for each of the individual data collection techniques which comprise the process. The manual describes use of areawide phone surveys, census data factoring of the phone data, small subgroup survey techniques, and monitoring of ongoing service. A variety of actual forms and survey instruments used in these processes are included as appendices.

Dornan, D Middendorf, D
Peat, Marwick, Mitchell and Company, Office of the Secretary of Transportation, Urban Mass Transportation Administration Final Rpt. DOT-I-83-40, Aug. 1983, 228p, Apps.

ORDER FROM: NTIS PB84-175702

34 389375
INCREASING SENIOR CITIZEN USAGE OF THE BUS SYSTEM
The Metropolitan Suburban Bus Authority (MSBA) provides public bus transportation to Nassau County, New York. The system has a fleet of 335 buses that averages about 100,000 daily trips on the 49 routes that serve the 300 sq. mile area. Usage of the MSBA bus system has grown at a faster rate among the elderly than among the population as a whole. From 1975-1980, elderly population in the County increased 8 percent while elderly ridership of the bus system increased 244 percent. Some senior benefits instituted by MSBA on the system are: half-fare policy starting at age 60; discounts at all times; 125 buses with wheelchair lifts; 178 buses with a kneel; friendly drivers; and an acceptable fare policy. This report identifies and discusses those strategies that will increase the senior citizens' use of the bus system. It examines and discusses such issues as routing and scheduling, fare policy, senior attitudes, timetable design, user-side subsidies, and public awareness of the bus system. The study concludes that: 1) bus routing and scheduling serve the senior population adequately; user-side subsidy for increasing bus use is a real possibility; and marketing strategies should emphasize the leisure pass, and improve the quality and distribution of public announcements. This report could be of value to those persons, agencies, and organizations engaged in service planning.

Purcell, FT Libert, H
Nassau County Planning Department, Urban Mass Transportation Administration Final Rpt. TS 392, Aug. 1983, v.p., 11 Tab., 7 App. Grant NY-09-0054
ORDER FROM: Nassau County Planning Department, 222 Willis Avenue, Mineola, New York, 11501

34 389759
PROJECT TO INCREASE THE LEVEL OF PATRONAGE FOR PUBLIC TRANSIT AMONG SPECIAIIZED GROUPS: PHASE I. EXECUTIVE SUMMARY
This project focuses on transit management as it relates to marketing to the transportation disadvantaged. It is designed to stimulate ridership and to improve the image of public transit generally through a marketing program tailored to the needs of special users. The objectives of the project are: (1) To examine existing marketing techniques in urban areas which are potentially applicable to increasing public transit ridership and revenues; (2) to analyze, through market research, the mobility wants, needs, and preferences of disadvantaged groups and potential users; (3) to develop techniques for increasing The measurable ridership and public awareness among special users, namely the transportation disadvantaged; and (4) to assess the impact of these marketing techniques and to develop data that will provide specific guidance to transit professionals for effectively incorporating marketing into planning and decision-making. This study was designed to increase the level of public transit patronage among special user groups in the Houston, Texas Metropolitan Area. The first phase of the project entailed assessing community needs for the elderly, handicapped, poor, minority groups, and youth. Based on the inventory of needs and the demographic characteristics of these special user groups, the findings of other studies, and transit-related information from a representative sample of community agencies and groups, a marketing/education plan to promote public transit ridership will be developed. This latter task will comprise the second phase of the project. Therefore, objectives one and two were completed during Phase I of this study and documented in this report and objectives three and four will be completed during Phase II of the project.

Lede, NW Cooper, LC Thompson, L Wade, DA
Texas Southern University, Urban Mass Transportation Administration Final Rpt. UMTA-TX-11-0014-84-1, Mar. 1984, 6p Contract TX-11-0014
ORDER FROM: NTIS PB84-197979

34 389760
TRANSPORTATION FOR OLDER AMERICANS: ISSUES AND OPTIONS FOR THE DECADE OF THE 1980'S
This report describes demographic and other changes which will influence the design, funding, and implementation of transportation services for the elderly. Based in part upon workshop material from a 1980 Mini-conference on transportation for the aging, and data from the 1970 and 1980 Census, the report explores demographic, economic, and social changes among the elderly, and addresses their transportation implications. The document also analyses three major issues which will have particular implications for these services: inflation, energy, and "frail elderly" and what their presence will mean for transportation. The report should be especially useful for the staffs of state and local elected officials, and for those planning transportation services for the elderly.

Bell, WG Revis, JS
Florida State University, Tallahassee DOT-I-83-42, Apr. 1983, 70p

ORDER FROM: NTIS PB84-194570

34 389888
LISTS: TRANSPORTATION BROKERAGE FOR THE ELDERLY AND HANDICAPPED IN LANCASTER, PA
The Lancaster Integrated Specialized Transportation System (LISTS) is a transportation broker serving Lancaster County, Pennsylvania. The system was initiated in 1977 and matches the resources of private, specialized transportation providers with the transportation requests of human service agencies. LISTS also arranges specialized transportation for the local transit authority and for a state-funded transportation program for the elderly that serves the entire county. The LISTS system serves a coordinating function only and operates no vehicles of its own. All of its transportation costs are funded by the agencies and programs sponsoring transportation. LISTS' administrative costs are reimbursed primarily through a community development block grant from the Redevelopment Authority of Lancaster and a 4 percent surcharge paid by transportation clients. LISTS' total administrative expenses for fiscal year 1981-82 were $66,917, and average monthly administrative costs were 15.6 percent of total costs. LISTS has developed a competitive environment within which it contracts with service providers. Such competition has enabled LISTS to hold real transportation costs at a low level. In 1977 dollars, the average cost per trip was $1.24 in 1979 and $1.27 in 1981-82. Over 40 human service agencies are affiliated with LISTS, although many use the service infrequently. LISTS' monthly ridership has averaged between 14,000 and 15,000 since 1979. Agencies not affiliated with LISTS tend to have limited transportation needs or have volunteer help and donated vehicles available. The broker's primary limitation has been its difficulty in servicing trips by rural, non-ambulatory residents. Despite this limitation, LISTS has provent to be an effective model for providing low-cost, specialized transportation service in an area with a large rural population.

Charles River Associates, Incorporated, Urban Mass Transportation Administration, (DTS-64) Final Rpt. UMTA-MA-06-0049-84-6, DOT-TSC-UMTA-84-21, June 1984, 136p, 11 Fig., 30 Tab., 2 App. Contract DOT-TSC-1757
ORDER FROM: UMTA

34 389889
USER-SIDE SUBSIDIES FOR THE ELDERLY AND HANDICAPPED IN LAWRENCE, MASSACHUSETTS
Funding provided by the Service and Methods Demonstration (SMD) Program of the U.S. Department of Transportation, Urban Mass Transportation Administration, was used to subsidize the bus, taxicab, and wheelchair lift-equipped van travel of elderly and handicapped residents of Lawrence, Massachusetts, in a program that began in July 1978. Eligible persons registering for the program could buy tickets that allowed them to make a cab journey at half the normal fare, or to ride the bus for one cent instead of the fifteen-cent fare paid by elderly non-participants in the program. Most of the subsidized lift-equipped van rides cost participants $2.50, one-third of the price billed by the service provider. The program produced positive outcomes for the people registering for it as well as for the taxi industry. Project use grew steadily from the outset and resulted in modest increases in mobility for the registrants, who tended to come from the most mobility-disadvantaged segments of the eligible population. The taxicab element of the program was continued under local sponsorship after the termination of demonstration funding. The lift-equipped van element was terminated during the demonstration by the withdrawal of the single service provider, but was reinstated in the post-demonstration phase under local sponsorship. The bus element of the program was not continued beyond the cessation of federal funding, largely because of administrative and institutional considerations.

Charles River Associates, Incorporated, Urban Mass Transportation Administration, (DTS-64) Final Rpt. UMTA-MA-06-0076-84-1, DOT-TSC-UMTA-84-20, June 1984, 218p, 18 Fig., 31 Tab., 5 App. Contract DOT-TSC-1757
ORDER FROM: UMTA

34 390147
TRANSPORT FOR THE DISABLED. PART 1
This article is the first of a two-part survey into the problems of disabled people in using public transport, the methods of overcoming them and the equipment in use. The upsurge of interest in recent years in the provision of transport for disabled people is described. In considering the use of regular bus services by disabled people, the author points out that the balance has to be struck between the benefit to the relatively few who would benefit from the more elaborate type of equipment and the impairment in terms of speed and carrying capacity for the many carried in the normal way. The point is illustrated by reference to the situation in St. Louis, Missouri in 1978 when some 157 buses were fitted with wheelchair lifts, but the facility received very little use, averaging a total of only 3-4 trips per day. It is said to be more effective to provide specialised facilities where they can be in relatively frequent use and not attempt to equip large numbers of service buses to deal with categories of passenger who will make very rare use of them. Some of the developments in the private hire and specialised tour areas are described and a review of several operational schemes is included. These include the Plymouth and Devon Mobilitybus and the Southdown County rider scheme linking Lewes and Peacehaven in Sussex. (TRRL)

Townsin, A **Coaching Journal and Bus Review** Vol. 52 No. 5, Feb. 1984, pp 34-38, 7 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 276805)
ORDER FROM: Travel and Transport Limited, 122 Newgate Street, London EC1A 7AD, England

34 390150
TRANSPORT AND THE HANDICAPPED. COMPREHENSIVE APPROACHES OR PIECEMEAL MEASURES
The purpose of the paper is to provide an introduction to an issue which is badly in need of more comprehensive and systematic treatment: ready access by the elderly and handicapped to the full range of activities and places which are meant to be enjoyed by all. The thesis outlined here is intended to serve as a counterpoint to what might be called the "504 Transbus approaches" where emphasis is given to a single, often highly emotional issue, such as the full adaptation of the urban transport system to all the needs of all of the handicapped, though the issue ultimately is interpreted as ensuring only that the disabled will be able to get on board and ride in reasonable safety on a waiting vehicle. The guidelines issued by the U.S. Administration on Ageing (HEW) in January 1978 interpreted this clause to mean that any U.S. Federally funded program or activity, when viewed in its entirety must be readily accessible to, and usable by, handicapped persons. The Department of Transportation (DOT) rules for implementing Section 504 guarantee handicapped persons their civil rights with respect to the use of public transit systems, but due to the barriers which still remain in the community, improvement in mobility is questioned. Current estimates of the cost of full accessibility vary between $5-$8 billion, to be spent over the next 30 years. Many argue that accessible transit is a less effective alternative for improving the mobility of handicapped individuals than solutions involving combinations of paratransit and conventional transit. The high cost of implementing the changes mandated by DOT's rules for Section 504, coupled with predictions that these changes would remove barriers for relatively few users, has created considerable controversy. For the covering abstract see IRRD 276750. (TRRL)

Britton, **FEK Voice of the Pedestrian** No. 17, 1982, pp 24-38, 2 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 276751), Institute for Road Safety Research SWOV
ORDER FROM: International Federation of Pedestrians, Van Monfoortlaan 11, 2596 SN The Hague, Netherlands

41 386146
URBAN AREA STRUCTURE AND JOURNEYS TO WORK DURING THE 70S [BEBYGGELSESTRUKTUR OCH ARBETSRESOR UNDER 1970-TALET]
This report is mainly a follow-up of the results presented in "Meddelanden Fraan Geoteborgs Universitets Geografiska Institutioner, Series B No. 64, 1979". Structural shifts in urban areas and changes in commuting patterns are analysed, considering types of housing, journeys to work, and size of urban areas and structural balance between residential areas and work areas. (TRRL) [Swedish]

Lorentzon, S
Gothenburg University, Sweden Monograph 1983:1, Mar. 1983, 57p, 13 Fig., 18 Tab., Refs., Apps.

ACKNOWLEDGMENT: TRRL (IRRD 275019), National Swedish Road & Traffic Research Institute
ORDER FROM: Gothenburg University, Sweden, Kulturgeografiska Institutionen, P.O. Box 3016, S-400 10 Gothenburg, Sweden

41 386153
MAN AND HIS TRANSPORT BEHAVIOUR. PART 1A. TELECOMMUTING— PROMISES AND REALITY
The use of modern telecommunication facilities technically enables the substitution of physical commuting by telecommuting. The assessment of the potential substitution between transport and telecommunication requires not only that telecommunications be recognized as an element in the transport system, but furthermore that the broad implications of physical and electronic movement be considered. Various studies of this issue have suggested that telecommuting will have positive effects on urban areas as more jobs cease to require physical travel. By contrast, this paper takes a critical approach to the actual potential of telecommuting. Although the social benefits may be larger, the non-monetary costs born by the individual telecommuter are likely to discourage wide-scale transitions to this type of work. This assessment is based both on theoretical reasoning derived from research in sociology of work, and on some preliminary empirical analysis. (Author/TRRL)
The paper was presented at the fourth world conference on Transport Research, Hamburg, 1983.

Salomon, I (Hebrew University, Jerusalem) **Transport Reviews** Vol. 4 No. 1, Jan. 1984, pp 103-113, 1 Tab., 25 Ref.
INVESTIGATOR: Rankine Road

ACKNOWLEDGMENT: TRRL (IRRD 275244)
ORDER FROM: Taylor and Francis Limited, 4 John Street, Basingstoke, Hantshire RG24 OPR, England

41 386154
ALLOCATING SUBSIDIES TO PUBLIC TRANSPORT: SOME THEORETICAL AND PRACTICAL CONSIDERATIONS
Economic developments, particularly in recent years, have led to a revived interest in the efficacy of government expenditures. One area of government interest where discussions are particularly lively is public transport. Public transport is a service to the public of a country or region which seldom seems able to pay its own costs. Politicians argue that the purpose of public transport is not to make money but to contribute with improved accessibility to the social well-being of society. The concept of social well-being has two unpleasant features, namely, that it is complex and that it is vague. They are probably to blame for the fact that discussions of social well-being are either so general that no meaningful conclusion can be drawn from them or that they do not go beyond giving highly specific, often almost trivial examples of (the lack of) social well-being, leaving entirely open the question how such examples fit in a general concept of social well-being. After the introduction to the problem a general model for public transport will be presented in which both the level of service and the fare are introduced as instruments to increase the contribution of public transport to social well-being. It will be shown that, although in principle the marginal benefit-cost approach has to be considered as the best approach to problems of public transport, financial constraints could become so severe that a monopolistic approach is used instead. After this theoretical part of the paper it is shown how the model could be estimated and prepared for use in a system of optimum allocation of funds for public transport. (TRRL)

Klassen, LH Vogelaar, H Wagenaar, S (Netherlands Economic Institute) **Transport Reviews** Vol. 4 No. 1, Jan. 1984, pp 43-72, 4 Fig., 13 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275242)
ORDER FROM: Taylor and Francis Limited, Rankine Road, Bosingstoke, Hantshire RG24 OPR, England

41 386155
ROMSEY AREA TRANSPORT STUDY
The paper reviews a study, centered on the town of Ramsey, undertaken by the National Bus Co (NBC) and the Hampshire County Council (HCC) to evaluate the effects of constraint on public expenditure and the demands of loss-making social bus services against a background of declining patronage. The bus network covers 77% of its costs with fares revenue, with some 92% of the shortfall met by the HCC with revenue support grants of about L130000. The study examined total passenger journeys and, from results tabulated of journey modes and purposes, anticipated how such a demand pattern might be met given a purely commercial approach to conventional bus operations with no cross subsidy. The scope for improved services and lower fares on commercially attractive routes was examined and an assessment made of the most cost effective means of meeting social transport needs. The main conclusions consider level of fares, co-ordination of principle transport resources, use of unconventional solutions, and scope for future improvements. (TRRL)

Jones, D (Hampshire County Council); Beaman, D (National Bus Company) **Transport (London)** Vol. 4 No. 4, July 1983, pp 20-21, 1 Fig., 2 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 275237)
ORDER FROM: City Press Limited, Fairfax House, Colchester, Essex CO1 1RJ, England

41 386172
CAR USE: A SOCIAL AND ECONOMIC STUDY
In-depth interviews were used to examine household activities, trip generation and car use for work journeys, use and non-use of cars for journeys to school, patterns of shopping among car owning households, travel for social and leisure activities and the role of the car. The perceptions of motoring costs and responses to cost changes are analysed together with the company financing of household cars and its effects on their usage. Ownership of a second car and decisions regarding the usage of the latter are investigated. The main findings of the research are summarised, and appendices give details of the in-depth interviewing approach and methodology, and of the main and pilot surveys conducted. (TRRL)

Dix, MC Carpenter, SM Clarke, MI Pollard, HRT Spencer, MB (Oxford University, Transport Studies Unit)
Gower Publishing Company Limited Monograph 1983, 267p, Figs., Tabs., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 275026)
ORDER FROM: Gower Publishing Company Limited, Gower House, Croft Road, Aldershot, Hampshire, England

41 386175
URBAN AND REGIONAL CHANGE, MIGRATION AND COMMUTING—THE DYNAMICS OF WORKPLACE, RESIDENCE AND TRANSPORT
A key factor in the spatial structure of metropolitan areas is the relationship between workplace and residential location. This is particularly critical in any attempt to model the changes in structure which result from intra-metropolitan moves of employment and households. This paper attempts to provide a more satisfactory framework for understanding the dynamics of these changes. Empirical evidence is presented for the London region based on both aggregate data from unpublished census material and the Greater London Transportation Study and disaggregate survey material from a specially commissioned household interview survey. (Author/TRRL)

Vickerman, RW (Kent University, England) **Urban Studies** Vol. 21 No. 1, Feb. 1984, pp 15-29, 7 Tab., 33 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 274963)

ORDER FROM: Longman Group Limited, Journals Division, Fourth Avenue, Harlow, Essex, England

41 386176
PUBLIC POLICY AND RESIDENTIAL MOBILITY IN DUTCH CITIES
It seems clear that it is no longer sufficient to study mobility in and of itself: it is important to understand the dynamics of mobility in the wider context of the urban structure and the context of local and national policy. The research in this paper offers further evidence in support of this approach. The research indicates that while the contextual effects of differing housing composition are relevant to the explanation of variation in mobility rates, most of the explanation (beyond that offered by demographic variables) is related to government policy in the housing market. The choices which are made by municipalities or the national government (growth centers, renewal subsidies) with respect to the type of dwelling stock which is constructed (owner/renter, subsidized/private) is of considerable significance to an individual household's possibility of adjusting its housing consumption. The choice by a municipality of a certain approach to the relative proportions of the housing stock in the private owner, private renter and subsidized sections is not new. But whether the composition of the newly built stock is of greater importance than the standing stock was not clear. The basic evidence from the study emphasizes that the considerable variation in aggregate (internal) mobility rates (from .01 for Emmen to .11 for Groningen) is largely explained by demographic characteristics of the city. But both the proportion of subsidized new units and the existence of renewal subsidies offer significant additional explanatory contributions. (TRRL)

Clark, WAV (California University, Los Angeles); Everaers, PCJ (Free University, Amsterdam) **Tijdschrift voor Economische en Sociale Geografie** Vol. 72 No. 6, 1981, pp 322-333, 8 Tab., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 274565), Institute for Road Safety Research SWOV
ORDER FROM: Brill (EJ), Oude Rijn 33 A, Leiden, Netherlands

41 386182
SOME PROBLEMS IN ASSESSING THE SOCIAL EFFECTS OF TRANSPORT RELATED PLANS
Transport related changes can have direct effects in the form of accessibility changes, changes in barrier effects, changes in local environmental conditions, and/ or pricing changes. Behavioural responses to these may take the form of decisions: (1) to change travel behaviour, (2) to change destination(s), (3) to change residential location, (4) to resist direct effects that are judged deleterious, and/ or (5) to oppose the changes altogether. Any assessment of longer-term social effects demands some consideration of all five categories of decisions, but especially of the first and the third. Methods are available for the systematic study of all five, although firm prediction presents some problems. It is suggested, however, that "rough and ready" assessment is possible, based on a knowledge of the relationships currently pertaining between residential location, travel behaviour and social characteristics of the population, and on a perspective of present patterns of residential differentiation and mobility. This approach to assessment is discussed in the context of two case-study areas of Melbourne. The paper reports results of ARRB project 311, application of social impact assessment. (Author/TRRL)

King, RJ (Melbourne University, Australia) **Australian Road Research** Vol. 13 No. 4, Dec. 1983, pp 271-284, 5 Fig., 1 Tab., 23 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 271928), Australian Road Research Board
ORDER FROM: Australian Road Research Board, P.O. Box 156, Bag 4, Nunawading, Victoria 3131, Australia

41 386183
USING TRANSPORT HOME INTERVIEW DATA TO MODEL THE DISTRIBUTION OF HOUSEHOLDS
Considerable effort and money has been directed at collecting, editing and correcting data to study transport systems. These data have primarily been used to model the movement of people throughout the transport system. Little effort has been directed at using these data to study the influence transport systems have on the distribution of households in urban areas. However, since these data are collected at the household level it would appear that there is potential for using these data to develop such models. This paper presents an exploratory study of the usefulness of the data to model the distribution of households in Melbourne. It starts by determining those variables collected for the 1964 Melbourne transport study that may influence the distribution of households. These variables are then used to develop a logit model of the distribution of households in Melbourne. The development of such models using other transport study data is also discussed. (Author/TRRL)

Ford, J Young, W
Monash University, Australia, (0156-2126) Working Paper 83/10, Nov. 1983, 14p, 2 Fig., 7 Tab., 25 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 271924), Australian Road Research Board
ORDER FROM: Monash University, Australia, Department of Civil Engineering, Wellington Road, Clayton, Victoria 3168, Australia

41 386186
MAN AND HIS TRANSPORT BEHAVIOUR. PART 2C. PLANNING AS A SUBSTITUTE FOR IMPLEMENTATION: A BICYCLE CASE STUDY
Researchers, planners and politicians alike have emphasized the need for systematic planning prior to the introduction of new transportation measures and schemes. Innovations ranging from the construction of new freeways to the encouragement of mode shift are therefore usually the result of detailed studies and extensive planning. With unsettling frequency, however, the planning has come to replace implementation. The governing body identifies a problem area and commissions either a government planning department or a consultant to develop a plan which outlines needs and proposes measures which address the problem. The problem usually has two groups of people anxious to solve it; individuals who are being affected in their day-to-day living or travel, and longer-term planners (usually politicians) who see it in terms of both extended community planning and votes. The plan satisfies both sides temporarily, but becomes an effective planning tool only if implemented. Unrealistic plans and unwilling implementors have left a trail of plans which have been ends in themselves. Examples from bicycle planning in Australia show how the use of plan formulation can be either an essential element leading to the implementation of a planning scheme, or an expensive substitute for positive action. A feature of plans which have been implemented is an integrated approach which makes extensive use of data collection to ascertain the needs of the population. A feature of the unimplemented plans is their concentration on the feasibility of introducing physical elements into the transport infrastructure without studying the travel demand. It is concluded that the greater the concentration on individual needs and constraints, the less likely that planning will come to replace the implementation of a scheme. (TRRL)

Ampt, E (State Transport Study Group, Australia) **Transport Reviews** Vol. 4 No. 2, Apr. 1984, pp 201-212, 1 Tab., 10 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275745)
ORDER FROM: Taylor and Francis Limited, Rankine Road, Basingstoke, Hantshire RG24 0PR, England

41 386188
MAN AND HIS TRANSPORT BEHAVIOUR. PART 2A. WALKING AS A MEANS OF TRANSPORT
The article discusses the work of previous researchers who have suggested that walking is a neglected mode of transport and that its significance is often overlooked in transport policies and plans to the detriment of travellers in general and, in particular, of those dependent on walking. An exception to this conclusion is the recognition of the value of pedestrianizing shopping centres in town and city centres for a number of environmental reasons. The article is designed to (a) present evidence on the demand for, and the importance of, walking as a means of transport and its application to unresearched situations; (b) consider what provisions are made for pedestrians in transport plans; and (C) suggest what policy problems require further research. (TRRL)

Hitchcock, A Mitchell, CGB **Transport Reviews** Vol. 4 No. 2, Apr. 1984, pp 177-187, 2 Fig., 5 Tab., 17 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275743)
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41 386196
CAR OWNERSHIP AND CAR USAGE; DIRECTIONS FOR FURTHER RESEARCH [AUTOBEZIT EN AUTOGEBRUIK; RICHTINGEN VOOR VERDER ONDERZOEK]
Car ownership is known to be one of the most important determinants of mobility. Consequently much research has been carried out to analyse the complex relationships which lead to car ownership and car usage, and to develop forecasting models. However, recent experience has shown that these models cannot accurately predict changes in car ownership and car usage in situations when real incomes are lowering and the real costs of car usage are rising. Further research is needed to develop models which incorporate the dynamics of choice behaviour. Two possible directions of research are indicated, which are panel analysis and stated preference analysis. Panel analysis can be successfully used to develop models based on observed behaviour, while stated preference analysis can be used to explore future choice behaviour under changing conditions. The insights obtained in both types of research will improve our understanding of the relationships determining car ownership and car usage, and will enable us to forecast future levels of car ownership and car usage more accurately. (Author/TRRL) [Dutch]

Kroes, EP Jetten, J **Tijdschrift voor Vervoerswetenschap** Vol. 19 No. 4, 1983, pp 371-376, 1 Fig., 1 Tab., 11 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275506), Institute for Road Safety Research SWOV
ORDER FROM: Netherlands Institute of Transport, Polakweg 13, 2288 GG Rijswijk, Netherlands

41 386199
PUBLIC TRANSPORT DETERMINANTS AND NORMATIVE DISTRIBUTION [OPENBAAR PERSONENVERVOER-BEINVLOEDENDE FACTOREN EN VERDELINGSNORMEN]
This article has two parts. The first part consists of a survey of determinants (price, quality, income, car availability) of public transport ridership, followed by a breakdown of public transport trips by car availability and social group. The influence of income on the use of public transport facilities is small and negative. This is the result of two roughly balancing factors. The influence of income on the use of public transport is as such positive, but there is the stronger negative influence via the car availability, the positive influence of income on car availability in combination with the strongly negative influence of car availability on ridership. This influence of car availability on ridership is demonstrated with average trip-rates for those with and without a car available within different social and income groups. Comparing social groups, it appears that students are the most fervent users; self-employed people are strikingly absent. Differences between income-groups are comparatively small. The second part consists of an answer to the question whether the distribution of ridership over income groups could be meaningfully compared with a normative distribution, and, if so, whether the latter distribution could be calculated. The first question is answered in the affirmative, on a two stage reasoning: public transport subsidies are distributed over income groups as the distribution of ridership, and the distribution of subsidies is relevant for a government who cares for the distribution of income (wealth). The calculation of a normative distribution of the subsidy-taken equal to the distribution of trips-starts with the public goals, for which public transport is meant to be instrumental: maintaining mobility, furthering the attainability of destinations, and reduction of car traffic, where car traffic is troublesome. The main problem is to describe clearly the categories of people who should, with these goals in mind, be the users. A normative distribution was calculated for local and for non-local public transport respectively. These distributions are definitively experimental. Discriminative characteristics were car availability, size of home-town, and population density. The empirical distribution is not very different from the calculated normative distribution. Only the students (in the first income group) cash much more of the subsidies for public transport than they should, according to the norm. (Author/TRRL) [Dutch]

Ruitenberg, L (Sociaal En Cultureel Planbureau) **Tijdschrift voor Vervoerswetenschap** Vol. 19 No. 4, 1983, pp 327-338, 1 Fig., 3 Tab., 9 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275502), Institute for Road Safety Research SWOV
ORDER FROM: Netherlands Institute of Transport, Polakweg 13, 2288 GG Rijswijk, Netherlands

41 386204
TRAVEL CHARACTERISTICS OF SEVEN FRENCH CITIES
Seven pairs of household surveys in French towns in the 1960's and 1970's are compared to elucidate the effects of car ownership and land use trends on trip patterns. Car ownership and use rose rapidly at the expense of public transport in large cities and two wheeler use in small cities. The changes in mode use when a car was acquired were similar everywhere, but these changes were smaller than the background changes taking place within households with unchanged car ownership. These background changes were related to the city size in such a way that mode use in all the cities was tending to become more uniform. Two wheeler use was much higher than in British cities but has been declining and this together with increasing urbanisation of the smaller cities is probably responsible for the relative stability of public transport usage per person in smaller cities, where it has been increasing in households without cars. Car owning households are tending to migrate to the suburbs, a trend which militates against public transport, so that it seems likely that the current stability of public transport patronage will be a transient effect and that long term decline will follow, as has occurred in Britain. (Author/TRRL)

Johnston, RH **TRRL Laboratory Report** No. 1106, 1983, 41p, 6 Fig., 11 Tab., 3 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275675)
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41 386213
REASONS FOR CAR ACQUISITION
In order to understand how individual decisions contribute to the overall growth in car ownership, a small scale social research exercise, using in-depth interviews, looked at the reasons people have for acquiring a first or additional household car. The study shows that it is possible to identify a range of different motivations for car acquisition, which are related to demographic variables, lifestyle and the role of financial circumstances in the decision to buy a car. It also shows that conventional assumptions about the car as a household commodity, and about increases in ownership being permanent, may not be valid at the disaggregate level. The report concludes with a discussion of how such data may assist in understanding the overall pattern of growth of car ownership. (Author/TRRL)

Town, SW **TRRL Supplementary Report** No. 808, 1983, 8p, 2 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275686)
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41 386282
USE OF PRINCIPAL COMPONENTS ANALYSIS TO IDENTIFY TRENDS IN TRAVEL, FUEL ECONOMY AND FUEL DEMAND. ANALYSIS MEMORANDUM. TASK 23, SUBTASK 3
This preliminary work with Principal Components Analysis (PCA) shows the power of the technique in searching for possible trends and patterns in the data. The results presented show that overall intensity of use is more important than any cyclical patterns in determining how much a vehicle will be driven. While the expected seasonal driving cycle is present in the data, so are a number of other patterns that appear to be roughly equal in importance. At this point PCA does not provide much guidance in sorting out the eleven eigenvectors of nearly equal magnitude. The analysis does indicate that the straightforward seasonal trend is really a more complicated combination of several different patterns.

Energy and Environmental Analysis, Incorporated DOE/PE/70045-T5, Oct. 1982, 19p

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41 386298
REDUCTION OF WORK TRIP LENGTH THROUGH HOME MORTGAGE SUBSIDY INCENTIVES. EXECUTIVE SUMMARY
This study analyzes the geographically restricted home mortgage subsidy program at Princeton University in Princeton, New Jersey. The objective of the program is to ensure that the University remains residential by offering faculty and senior level staff incentives to purchase a home in the Princeton area. Financed by the University out of its general endowment, the mortgage program applies to first mortgages only. This report examines the potential reduction of vehicle miles travelled (VMT) resulting from mortgage subsidies to households willing to live within a specified distance of the workplace of a household member. The paper presents the need for a

geographically restricted loan policy; theoretical evidence supporting such a policy; empirical analysis of the results of the Princeton mortgage program with respect to VMT, energy consumption, and air pollution; and means of inducing the private sector to participate in such a program. The work trip characteristics of Princeton University employees are compared to work trip characteristics of employees at comparable Princeton-area employees. The results of this study suggest that the Princeton University mortgage subsidy program has reduced Princeton employee work trip VMT and gasoline consumption at a reasonable cost.

The main document to this Executive Summary, under the same title, is UMTA-NJ-11-0009-83-2.

Kornhauser, AL Ash, TM Rinderle, C
Princeton University, Urban Mass Transportation Administration
Final Rpt. UMTA-NJ-11-0009-83-1, Nov. 1983, 5p Contract NJ-11-0009
ORDER FROM: NTIS PB84-145077

41 386299
REDUCTION OF WORK TRIP LENGTH THROUGH HOME MORTGAGE SUBSIDY INCENTIVES
This study analyzes the geographically restricted mortgage program at Princeton University in Princeton, New Jersey. The objective of the program is to ensure that the University remains residential by offering faculty and senior level staff incentives to purchase a home in the Princeton area. Financed by the University out of its general endowment, the mortgage program applies to first mortgages only. This report examines the potential reduction of vehicle miles travelled (VMT) resulting from mortgage subsidies to households willing to live within a specified distance of the workplace of a household member. The paper presents the need for a geographically restricted loan policy; theoretical evidence supporting such a policy; empirical analysis of the results of the Princeton mortgage program with respect to VMT, energy consumption, and air pollution; and means of inducing the private sector to participate in such a programs. The work trip characteristics of Princeton University to work trip characteristics of employees at comparable employees are compared Princeton-area employees. The results of this study suggest that the Princeton University mortgage subsidy program has reduced Princeton employee work trip VMT and gasoline consumption at a reasonable cost.

The Executive Summary to this report, under the same title, is UMTA-NJ-0009-83-1.

Kornhauser, AL Ash, TM Rinderle, C
Princeton University, Urban Mass Transportation Administration
Final Rpt. UMTA-NJ-11-0009-83-2, Nov. 1983, 95p Contract NJ-11-0009
ORDER FROM: NTIS PB84-145085

41 386303
THE IMPACT OF METRORAIL ON TRIP MAKING BY NEARBY RESIDENTS: THE VAN NESS CASE STUDY
This report analyzes the effects of a rail extension on travel by residents of a close-in Washington community for both work and non-work travel. Expected results based on transportation models are stated and the findings discussed in relation to them. A paired comparison is made possible by two separate interviews of the same individuals. Significant increases were found in transit use for both work and certain categories of non-work trips. No change was found in daily trip generation rates. Interpretations for these findings are presented.

Dunphy, RT
Metropolitan Washington Council of Governments Jan. 1984, 39p

ORDER FROM: Metropolitan Washington Council of Governments, 1875 Eye Street, NW, Suite 200, Washington, D.C., 20006

41 386321
EFFECTIVE WIDTH OF PEDESTRIAN CORRIDORS
A proposed definition and method for calculating effective width reductions from pedestrian data is presented. Pedestrian distributions observed in a survey conducted in a pedestrian tunnel at Carleton University, Ottawa, Canada, were used to calculate effective width reductions under various conditions. The reductions calculated for walls ranged between 5.5 in. and 8.7 in. This is less than one-third of the 18 in. suggested by most researchers. Experimentation with obstacles, such as a waste receptacle adjacent to one wall, resulted in even lower effective width reductions. It is concluded that effective width reductions generally assumed in current design practices are overestimated.

Habicht, AT (Wallace (RS) and Associates); Braaksma, JP **Journal of Urban Planning and Development** Vol. 110 No. 1, Jan. 1984, pp 80-93, 14 Ref.

ACKNOWLEDGMENT: EI
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41 386353
TRAVEL FINDINGS REPORT UPDATE: CHANGES IN TRAVEL BEHAVIOR
The first segment of Metrorail, Metropolitan Washington's rapid rail transit system, opened in 1976. The system has grown in increments since then. In September 1981, COG published an initial report describing changes in travel behavior related to the first four years of operation of the Metrorail system. This report is an update of the analyses conducted for the first travel findings report, focusing on the subsequent three years of trial operations, and providing current information on the ridership characteristics by operating phase, changes in total transit travel, and changes in travel to the central employment area. Also, a series of quantitative indicators, developed to monitor and compare transit service, use and impacts over time, are computed and presented. This report is produced as part of the Metrorail Before-and-After Study conducted by the Council of Governments.

Metropolitan Washington Council of Governments Sept. 1983, 109p, Figs., Tabs.

ORDER FROM: Metropolitan Washington Council of Governments, 1875 Eye Street, NW, Suite 200, Washington, D.C., 20006

41 386378
PRE-MARKETING FOR TODAY AND TOMORROW
Selling the potential rider on rail rapid transit must begin long before the line is ready for operation. Premarketing is defined as the introduction of marketing techniques into the very earliest phases of transit planning. In the past business and politicians would agree on a common course of action and the transit system would be in place while often ignoring the ideas of those who would become its most consistent supporters as riders. Premarketing played a role for Metropolitan Atlanta Rapid Transit, Metro-Dade in Miami, and MTA in Baltimore. Managers of these rapid transit projects garnered community support long before going to UMTA for planning and design funding. Experiences of the three systems are described with major attention given to Miami.

Morris, B **Metro** Vol. 80 No. 2, Mar. 1984, 5p, 5 Phot.

ORDER FROM: Bobit Publishing Company, 2500 Artesia Boulevard, Redondo Beach, California, 90278

41 386402
PUBLIC TRANSPORTATION: SOLVING THE COMMUTING PROBLEM? (DISCUSSION)
In this paper journey-to-work data from the 1980 census are used to provide a perspective on how well public transportation is coping with the increasing spatial complexity of metropolitan communities. The data show that about 6 percent of all workers in the United States used some form of public transportation to commute to work. Most commuter use of public transit occurred in the Northeast. Transit use among workers was lowest in the South. About 67 percent of all workers who used public transportation lived in the central city of a metropolitan area. The number of workers who use public transportation to commute to work in the United States dropped by about 487,000 between 1970 and 1980-a decline of approximately 7 percent. Significant declines in transit use occurred in each region except the West. The Northeast experienced the most drastic decline-about 596,000 workers or 17 percent. In contrast, about 378,000 more workers used public transportation in the West in 1980 than in 1970, an increase of 67 percent. The decline in commuter use of public transportation is closely associated with the movement of people and jobs to places where public transportation is not available or easily accessible. The continued shift of the population from the North to the South and West means that the public transportation market is moving from regions that have the most transit service to regions that have the least. Furthermore, the nonmetropolitan sector of the country, where public transit is virtually nonexistent, is growing faster than metropolitan areas. Finally, in recent years within

metropolitan areas, the suburbs have far surpassed the central cities in population growth, Many large central cities, where transit is concentrated, have experienced losses of population. In addition, increasing suburbanization of employment and population has resulted in a predominance of lateral commuting in large metropolitan areas-intersuburban work trips for which public transportation is not well acclimated.

This paper appeared in Transportation Research Record No. 928, Improving the Quality and Efficiency of Transportation Data.

Fulton, PN (Bureau of the Census); Markowitz, J (Metropolitan Transportation Commission) **Transportation Research Record** No. 928, 1983, pp 1-10, 13 Tab., 7 Ref.

ORDER FROM: TRB Publications Off DOTL JC

41 386405

COMPUTERIZED METHOD FOR UPDATING PLANNING DATA BASES USED IN TRAVEL DEMAND FORECASTING

Data bases that have been created for use in urban transportation studies describe the urban environment for only one point in time. With the exception of simple manual techniques, no provision has been made for updating these planning data bases on a continuing basis. The objective of this study was the design and implementation of a computerized information system capable of supporting the continuing socioeconomic data requirements for the travel demand forecasting phase of the urban transportation planning process. Agency operating and administrative records from state and local governments serve as system input. The system performs a geographical analysis that determines the home base locations for these records and, hence, the data that they contain. Subsequent to this geographical analysis, the system aggregates the data on a small area basis required by the travel demand models in the planning process. Requirements for data confidentiality established by law for certain socioeconomic data led to the development of a mathematical model that predicts the income variable. The model is based on harmonic analysis and is specified as a Fourier series. The transportation planning information system developed during the course of this research is capable of synthesizing, on a small area basis, the demographic and employment data used in the transportation planning process for urban study areas that have populations less than 500,000. This conclusion is supported by the findings from system implementation and testing in Greensboro, North Carolina.

This paper appeared in Transportation Research Record No. 928, Improving the Quality and Efficiency of Transportation Data.

McPherson, LW Heimbach, CL Goode, LR (North Carolina Department of Transportation) **Transportation Research Record** No. 928, 1983, pp 27-35, 7 Fig., 2 Tab., 7 Ref.

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41 386697

CALCULATIONS FOR DEFINING A BALANCED DISTRIBUTION OF PLACES OF WORK AND DWELLINGS AS A CRITERION FOR THE ASSESSMENT OF ENERGY CONSUMPTION DUE TO PASSENGER TRANSPORT

Saving energy for transportation is not only possible by technical improvements of cars, but also by changing the settlement structure in order to shorten the distance covered. It is especially essential to balance the number of places of work and of dwellings. So, this criterion should be considered in planning and siting decisions. In this paper, the difference and the quotient of working and living places are proposed as indicator for the degree of balance. Thereby, it is important to differentiate between the different industrial domains. The spatial units chosen are not administrative units, but geometric overlaping circles. The proposed indicators are tested for two concrete examples: for Baden-Wuerttemberg, a country situated in the south-west of the FRG, and for the "Mittlerer Neckarraum", a region of Baden-Wuerttemberg. [German]

Portions are illegible in microfiche products.

Friedrich, R Kaemmerer, W
Stuttgart University, West Germany Vol. 9 No. 8, IKE-8-6, Jan. 1983, 82p

ACKNOWLEDGMENT: Energy Research Abstracts
ORDER FROM: NTIS DE83751304

41 386728

IMPACT OF TRANSPORTATION POLICY ON THE SPATIAL DISTRIBUTION OF RETAIL ACTIVITY

This research identifies relationships between transportation policy and the location of retail activity by modelling three key components of the spatial distribution of retail sales: (1) shopping travel and its relationship to household characteristics, transportation service, and attributes of shipping destinations; (2) household retail expenditures and their distribution among alternative retail centers; and (3) entry of retail firms at alternative locations in response to perceived profitability. Specific models included: (1) a joint disaggregate model of mode and destination choice for home-based shopping at major regional shopping centers; (2) a joint disaggregate model of mode, destination, frequency, and purpose for noon-hour trips by downtown office workers; (3) procedures for translating trip distributions into forecasts of retail sales; and (4) a multinomial logit model of competition by stores for retail floorspace. The models have been used to forecast the spatial distribution of retail sales for various hypothetical policy alternatives.

Kern, CR Lerman, SR Parcells, RJ Wolfe, RA
New York State University DOTRSPADMA5084-13, Oct. 1983, 145p

ORDER FROM: NTIS PB84-171511

41 387577

INTERDEPENDENCIES OF COMMUTING, MIGRATION, AND JOB SITE RELOCATION

Although one of the main aims of many national-spatial studies for decentralization is to keep the population from concentrating in certain areas, modern economic industrial growth is said to require the spatial concentration of the means of production. The article discusses what degree of decentralization is acceptable without sacrificing productivity to an unreasonable degree. The question is then examined of how far the means of production can be centralized in order to maximise GNP and prevent a level of population concentration considered socially undesirable. The importance of commuting then becomes an important aspect of transport policy as the availability of a high-speed, efficient, low cost public and private transportation network means that the residential population can remain in a more dispersed pattern than that of their workplaces. (TRRL)

Yapa, L Polese, M Wolpert, J (Pennsylvania University, Philadelphia) **Economic Geography** 1971, pp 59-72, 1 Fig., 8 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 275950)
ORDER FROM: Clark University, 950 Main Street, Worcester, Massachusetts, 01610

41 387596

OPTIMISATION OF BUS TRANSPORT IN AURANGABAD REGION

In order to accelerate the socio-economic development of rural areas, road transport seems to be the most suitable form of transport for such areas. With this premise, and in order to ensure that investments in this sector would give the maximum possible benefits, it was felt that a study should be made of an existing bus transport system, where the objective should be to maximise accessibility while minimising possible future investments. Such a study was carried out in the Aurangabad region, and the results are presented in this paper. The paper first presents the graph-theoretic indices that were applied in this study, and then proceeds to analyse the bus-route network with respect to these indices. These indices incorporate the dispersion, accessibility, circuity and comprehensiveness of the networks, the population served, length of bus routes, density of bus routes, and the transport serviceability index. (TRRL)

Srinivasan, NS Sanyal, D Chandrasekhar, B Jai, DE (National Transp Planning & Res Centre, Trivandrum) **Indian Roads Congress, Journal of** Vol. 44 No. 1, Nov. 1983, pp 141-189, 17 Fig., 12 Tab., 2 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275845)
ORDER FROM: ESL

41 387609
TRAFFIC AND TRANSPORT IN RELATIONSHIP WITH SOCIOLOGICAL DEVELOPMENTS [VERKEER EN VERVOER IN RELATIE TOT MAATSCHAPPELIJKE ONTWIKKELINGEN]
The role of traffic and transport in their relationship with sociological developments is outlined. The historical phenomena which have caused this are mentioned. The spatial dispersion for transport and a number of other sociological functions as these have developed during recent years in our society, and the effects of a clearly visible economic recession, together with the higher prices of energy-intensive products and services are discussed. For the near future there will be a discrepancy between the demand of transport and the development of the operating costs. Budgetary applications in the private and governmental field, as well as a further consideration of the spatial and urban planning structure will be the inevitable consequences. Re-urbanisation, the bigger concentration of working and living environments and the connecting land and urban development are possible directives for a solution. A more integral approach by all parties in a narrow correlation with a more intensive cooperation of the traffic and transport science is essential. For the covering abstract of the symposium see IRRD 275817. (TRRL) [Dutch]

Op weg naar 2000. De Toekomst van het Personenvervoer te Land.

Klaassen, LH (Nederlands Economisch Instituut)
Delft University of Technology, Netherlands 1983, pp 33-44, 5 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275818), Institute for Road Safety Research SWOV
ORDER FROM: Delft University of Technology, Netherlands, Centre for Transportation Engineering, P.O. Box 5038, 2208 Delft, Netherlands

41 387611
DEVELOPMENT IN THE MOBILITY OF PERSONS, A LOOK INTO THE FUTURE [ONTWIKKELINGEN IN DE PERSONENMOBILITEIT: EEN TOEKOMSTVERKENNING]
Important influences on transport use which can be expected in the future are presented. Besides a certain decrease in the transport supply and the correlated influence on the freedom of selection of transport possibilities, a limit on the spending budget of the users of transport in relationship with the increasing costs of transport can be predicted. Demographic factors and other changes in the traditional sociological patterns lead to another activity pattern and therefore into a different mobility pattern. A return to use of the moped and more selective use of the car is expected. New transport modes will not be introduced before the year 2000. Rather, an individualisation of public transport, supported by micro-electronics is expected. Attention must be given to the improvement of an optimal integration between public and private transport. For the covering abstract of the symposium see IRRD 275817. (TRRL) [Dutch]

Op weg naar 2000. De Toekomst voor het Personenvervoer te Land.

Barkhof, J (Royal Dutch Touring Club ANWB)
Delft University of Technology, Netherlands 1983, pp 69-88

ACKNOWLEDGMENT: TRRL (IRRD 275820), Institute for Road Safety Research SWOV
ORDER FROM: Delft University of Technology, Netherlands, Centre for Transportation Engineering, P.O. Box 5038, 2208 Delft, Netherlands

41 387614
FOR LACK OF PUBLIC TRANSPORT [BIJ GEBREK AAN OPENBAAR VERVOER]
A survey was carried out among inhabitants of four small villages in the Netherlands (800-1000 inhabitants each) on mobility problems caused by poor public transport. All income classes, social backgrounds etc were involved. It was found that a reduction in public transport facilities leads to less social contact, less frequent shopping elsewhere and instead more shopping in the village (more expensive) or shopping trips together with others. Some may consider moving out altogether or stopping work. Young people feel they cannot spread their wings. There is a special role for the "Buurtbussen", small buses driven by volunteers. (TRRL) [Dutch]

De Boer, E (Delft University of Technology, Netherlands);
Brouwer, W (Dwars, Heederik En Verhey) **Verkeerskunde** Vol. 35 No. 2, Feb. 1984, pp 64-68, 1 Fig., 4 Tab., 2 Phot., 10 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275799), Institute for Road Safety Research SWOV
ORDER FROM: Royal Dutch Touring Club ANWB, Wassenaarseweg 220, P.O. Box 93200, The Hague, Netherlands

41 387631
PERCEPTIONS OF WHO BENEFITS FROM PUBLIC TRANSIT (ABRIDGMENT)
Developing a cost-sharing program for public transit has been identified as one of the most critical issues in the transportation field today. Ideally the cost burden of public transit should be distributed among users and different tiers of government according to the share of total benefits each receives. Measuring, much less distributing, the full range of benefits, however, is almost impossible to carry out with any degree of precision. On the whole, empirical evidence suggests that the benefits of transit have been fairly modest, accruing primarily to users who live in large urban areas. The provision of improved mobility to the needy, relief of congestion, and improved land uses are the primary social benefits. Other benefits are of secondary importance. In the absence of suitable empirical data, knowledgeable state and local transit officials were surveyed to determine who benefits from transit services. There appeared to be a strong consensus that roughly one-half of the total benefits accrue directly to users, one-quarter to local residents in general, and the remaining one-quarter evenly to constituents of state governments and the federal government. This pro-rata distribution matches current expenditure patterns fairly well; however, there appears to be a common belief that the role of the user in sharing costs should be expanded somewhat and the role of governments should be contracted. This is quite consistent with current fiscal policy. Ultimately, however, any decision on transit cost-sharing must be political, keeping in mind what a currently known transit benefits.

This paper appeared in Transportation Research Record No. 936, Public Transportation and Transit Operations Planning.

Cervero, R (California University, Berkeley) **Transportation Research Record** No. 936, 1983, pp 15-19, 2 Fig., 2 Tab., 10 Ref.

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41 387637
FACTORS INFLUENCING TRANSIT USE IN EUROPEAN AND U.S. CITIES
Insights into the underlying factors influencing urban transit travel in the United States and Europe are provided. Transit use in European and American cities was analyzed through regression analysis and by comparing conditions in three cities of similar size. Regression equations were developed using transit usage intensity, transit supply, metropolitan area density, and car ownership. These equations revealed significant differences between U.S. and European cities. Such differences were related to dissimilar economic, social, and cultural factors in the two continents. The influences of these factors on transit usage are discussed, and a conceptual model is presented showing how they affect choice of transit mode.

This paper appeared in Transportation Research Record No. 936, Public Transportation and Transit Operations Planning.

DeMenezes, JT Falcocchio, JC (Polytechnic Institute of New York) **Transportation Research Record** No. 936, 1983, pp 44-47, 2 Fig., 5 Tab., 7 Ref.

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41 387684
A EUROPEAN STUDY OF COMMUTING AND ITS CONSEQUENCES
The report evaluates the travel demand of an industrial society and presents a review of research in this field within the member states of the European Economic Community. The study considers the effects of commuting on human behaviour but does not include the design of, or the investment in, transport infrastructure. Patterns of travel to work are examined and also the connections between travel, home and workplace which vary according to physical and spatial factors, level of economic development, treds and policies in land use, and transport and cultural differences in social organisation. The report is divided into four parts. Part A provides a background to the study while Part B considers the relationship between commuting and other aspects of daily life for the traveller and for society as a whole. Part C makes a detailed and technical analysis of the processes that produce particular forms of travel behaviour by examining the role of

particular transport and spatial variables. Part D uses the main themes emerging from the report to discuss the implications for the study of living and working conditions. Areas for future research are identified.

See also no. 382839, section 41, UMTRIS Bulletin 8401.

Pickup, L Town, SW (Transport and Road Research Laboratory)
European Foundation Improvement of Liv & Work Cond 1983, 210p, Refs.

ACKNOWLEDGMENT: TRRL (IRRD 271591)
ORDER FROM: European Foundation Improvement of Liv & Work Cond, Loughlinstown House, Shankill, Dublin, Ireland

41 387905
PUBLIC TRANSPORTATION: ANOTHER GAP IN RURAL AMERICA

With an increasing recongnition of the importance of transportation to economic health and quality of life of an area, it has become apparent that rural America lags in terms of resources and services. No more than 3 percent of federal aid for public transport goes to areas outside major urban centers, even through rural areas contain 25 percent of the population. While a 1982 survey showed over 5300 human service agencies providing specialized transportation services, private automobiles perform a high percentage of non-urban travel. This means that households in rural areas are forced to devote a larger share of their smaller income to transportation. An index of unmet need is developed as a general indicator for federal, state and local policy making. Data suggest that while non-urban households have somewhat greater access to private vehicles along with shorter journey-to-work times, the need for transportation in such areas is substantially higher than in metro areas. This differential is greatest in the South. In rural areas with concentrations of poor and minority populations, the lack of adequate transportation is most pronounced.

Rucker, G **Transportation Quarterly** Vol. 38 No. 3, July 1984, pp 419-432, 5 Tab.

ORDER FROM: Eno Foundation for Transportation, Incorporated, P.O. Box 55, Saugatuck Station, Westport, Connecticut, 06880

41 387974
URBAN TRAVEL TRENDS: HISTORICAL QUESTIONS AND FUTURE FORECASTS

The objective of this study was to investigate the effects of telecommunications substitutes for travel, urban land use patterns, rescheduling of work activities; and their impacts on urban travel patterns. As a result of this research effort and what has occurred over the past decade, the report also provides some forecasts and hypotheses on future urban travel trends. Some of the anticipated trends show that trips for family and personal business will increase along with work trips. Total trips are expected to increase, while trips for educational, social and recreational purposes will decline. Socio-economic and demographic conditions, such as increasing household formations, growth in the labor force and aging of the population were seen to have greater influence on total travel trends than the effects of particular technological developments. Recent growth in transit ridership will continue, however, at a declining rate of growth which may be the result of expected continued growth in carpooling and vanpooling.

Eckmann, A Scott Price, D
Match Institution, Urban Mass Transportation Administration Final Rpt. DC-06-0439-84-1, May 1984, 91p, 8 Fig., 18 Tab.

ORDER FROM: UMTA

41 389248
EFFECT OF THE RECESSION ON TRAVEL EXPENDITURE AND TRAVEL PATTERNS

This paper reviews the available evidence showing how travel has been affected by the fuel price rises and recurrent economic difficulties which have followed from the initial oil crisis of 1974. The evidence is rather limited, because the most severe effects of the recession have been felt only fairly recently. Rising fuel prices have caused a measurable fall in road traffic, but the short-term elasticity is small and in the longer term the effect may be even smaller as people shift to more fuel-efficient vehicles and continue to cover much the same distance by private car while still spending much the same portion of their budget as they did previously. Car ownership has continued to increase in most countries, although at a much slower rate than before, but there has been a reduction of 4 per cent in the number of cars registered in Denmark since 1979, and there is also evidence of a slight decline in household car availability in the Netherlands since 1980. Road traffic has fallen more sharply than car ownership in Denmark, by 11 per cent between 1978 and 1981, and several other countries have also shown reductions in traffic recently. However, most of these appear only in the statistics for the latest year and, as was the case in 1974, they may be strictly transient. In most countries, the trend has been upward throughout the recession. The likely effects of the recession on public transport are also reviewed: it seems that the availability of subsidy has been a dominant factor in the trends, though there is some evidence of a shift from car to public transport in Denmark, and the rise in unemployment has caused a loss of patronage in the UK. Overall, though, it seems likely that, unless the future holds a longlived and sizeable reduction of real disposable incomes, the general tendency will continue toward increased dependency on the private car and dispersing land use patronage which are difficult to serve by public transport.(a) for the covering abstract of the conference see IRRD 276520.

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume I.

Bly, OH (Transport and Road Research Laboratory); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 3-24, 3 Fig., 21 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276522), Institute for Road Safety Research SWOV
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41 389249
INCOME DECLINE AND TRAVEL BEHAVIOUR-SOME RECENT DUTCH FINDINGS AND RESEARCH ORIENTATION

This paper presents an overview of research in the Netherlands which deals with the influence of income on travel behaviour, and more particularly with the effects of income decline. The emphasis lies with research conducted on behalf of the central government. After an indication of the relevance of this work to transport planning, some recently concluded projects and some views about the effects of income decline on travel behaviour are discussed. Particular attention is given to a project in which the authors have been involved recently. This project consists of a series of interviews with people who have experienced a serious decline in disposable income in the past. Their adaptations to this situation are studied, with special attention to changes in travel behaviour. The sample does not allow quantitative predictions to be made, but conclusions about the types and directions of changes are derived. Next, the paper looks at the relevant research projects that are currently underway or have not yet started. Some suggestions are made about how the gaps in knowledge and forecasting instruments, that in the opinion of the authors still exist, might be filled. Finally, some conclusions are drawn, with respect to the influence of income decline on travel behaviour, and with respect to the kind of research needed. For the covering abstract of the conference see IRRD 276520. (Author/TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume I.

Baanders, A (Ministry of Transport and Public Works); Kremernass, J (Institute of Social Research on Policy); Ruijgrok, CJ (Traffic and Transportation Group-Tno); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 25-44, 7 Tab., 27 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276523), Institute for Road Safety Research SWOV
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41 389251
CHANGES IN MOBILITY AND MOTORISATION PRACTICES DUE TO THE ECONOMIC CRISIS

The demographic and economic general evolution in some European countries and France is described briefly. The consequences of it in urban environment with the demand of the motor car taken as a particular example are discussed. Vehicle ownership and motor car use are mentioned. For the covering abstract of the conference see IRRD 276520. (TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume I.

Secondi, M Meteyer, F (Irt); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 63-73, 1 Fig., 6 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 276525), Colloquium Vervoersplanologisch Speurwerk
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41 389252
THE DIFFERENCE BETWEEN AGE AND AGEING FOR PUBLIC TRANSPORT POLICY: AN APPLICATION OF LONGITUDINAL ANALYSIS
Consider the simple and surely unchallengeable proposition that people change their travel behaviour over a period of time. Whenever a statistical photograph is taken of this behaviour, there must therefore be some members of the sample who are caught, as it were, in the middle of a process of change. Any mathematical or intuitive model which seeks to explain the observed behaviour by reference only to the conditions obtaining at that time will be introducing an error, and may be introducing a bias. Longitudinal, or dynamic, analysis is useful to the extent that it enables the analyst to discover features of the process of change, which are concealed in static data sets. In this paper the authors outline some general considerations in longitudinal analysis, and apply the approach to the process of ageing and its implications for public transport use. The choice of this specific example is made for theoretical and practical reasons. For the covering abstract of the conference see IRRD 276520. (TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume I.

Goodwin, PB Layzell, AD (Oxford University, England); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 75-86, 10 Fig., 4 Tab., 20 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276526), Institute for Road Safety Research SWOV
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41 389253
URBAN TRANSPORT PLANNING; PARADOXES FOR THE 1980'S
Urban transport planning in advanced industrial countries faces a set of paradoxes. Since the late 1960s the emphasis has shifted from urban highway building to car restraint and public transport priority. But car ownership has continued to rise, fortified by the fact that real costs of driving have continued to decline after the momentary rise following the energy crises of 1973-4. At the same time, population and employment tends to leave central and inner cities which can support good levels of public transport, and to relocate in small towns and rural locations where this is almost impossible and where dependence on the car in consequence tends to be almost complete. The recent approach to transport planning stresses policies to meet the demands of individual household members constrained by time and space. This approach might in turn suggest fairly radical solutions to the problem of personal mobility, no longer based on the conventional public transport wisdom. For the covering abstract of the conference see IRRD 276520. (Author/TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume I.

Hall, P (California University, Berkeley); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 87-95

ACKNOWLEDGMENT: TRRL (IRRD 276527), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

41 389255
TRAVEL BEHAVIOUR IN DENMARK IN A PERIOD OF ECONOMIC RECESSION
The results of a study of changes in travel behaviour in Denmark in recent years of economic recession are presented. Some of the findings go against expected trends. The use of public transport has increased, but so has the number of trips made by private car even though the total number of private cars in Denmark has been declining since 1979. The intention of the study is to investigate how Danish people have adapted their travel behaviour in the period of economic recession. The conclusions that can be drawn and the use of such information in the context of the Netherlands is discussed. For the covering abstract of the conference see IRRD 276520. (Author/TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume I.

Golob, JM (Porject Bureau for Integrated Transport Studies)
Colloquium Vervoersplanologisch Speurwerk 1984, pp 111-124, 6 Fig., 13 Tab., 20 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276529), Institute for Road Safety Research SWOV
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41 389256
FROM CAR TO PUBLIC TRANSPORT, THE RIGHT ANSWER TO ECONOMIC STAGNATION?
The Swedish economist Linder was one of the first scientists to draw attention to the time aspects of consumption. He established that leisure time is less in prosperous countries than in non prosperous countries. In the former the pressure on time is higher than in the latter and consequently the pressure on travel time-being a necessary evil-is even higher. A demand for faster travel modes arises, when prosperity increases. A change-over from car to public transport involves an increase in travel-time. This time can be estimated with the help of trip length frequency distributions and corresponding travel times in each distance category. It has become clear that a complete change from car to public transport adds 30 minutes to the travel time per head per day. However, this time is not available for travelling. Therefore a change-over like this involves a considerable decrease in mobility. The total household expenditure in the Netherlands is known from the "national accounts" computed by the central statistical office each year. The total cost associated with car and the total cost associated with public transport which are paid directly by the households has been computed for the years 1960-1981. These data allow computing of average proportions in household expenditure. Analysing these with least square models leads to the conclusion that the maximum expenditure on public transport is 3 per cent of the total expenditure. Car expenditure can be 13 per cent and more. Other computations show that a complete change-over from car to public transport would result in a lower expenditure of 9 billion guilders on transport as a whole. This is mostly due to the time shortage. For this reason it cannot be assumed that a change-over from car to public transport is the right answer to economic stagnation. For the covering abstract of the conference see IRRD 276520. (TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume I.

Walta, W (Dienst Verkeerskunde); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 125-136, 6 Fig., 7 Tab., 15 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276530), Institute for Road Safety Research SWOV
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41 389260
DEMOGRAPHIC SHIFTS: THE CHANGING ORGANIZATION OF SOCIETY: THE IMPLICATIONS FOR THE TRANSPORTATION PLANNING PROCESS
The paper addresses the transportation planning implications of the increasing involvement of women, increasingly with children in the paid labor force. Since the turn of the century labor force participation by women has more than doubled in both the U.S. and the Netherlands; while growing more slowly in the latter, the trend is unmistakable. The paper begins by examining the nature of these demographic trends in both countries and questioning how well current transportation planning methods represent and reflect the transportation needs of the growing number of nontraditional households. While there is a growing body of international literature which recognizes that differences between and among households are a major source of travel differences, the newer

literature is handicapped by the lack of an empirical base. The paper continues by presenting the results of in-depth empirical studies of the travel behavior of men and women in eight groups corresponding to life-cycle categories in Rotterdam and in Austin, Texas. The study reports on the trip-chaining and serve-passenger behavior of both adult parents in intact households and in single parent households. The study findings clearly support the study hypotheses; travel behavior differs between men and women in comparable situations and among families in different situations. Working women with children are the most likely to change or choose their travel patterns based on their household responsibilities, men with non-working wives the least likely. Yet while working women have very different patterns than others, men with working wives also have different travel patterns and reasons for those patterns than similarly situated men without working wives. The paper concludes that traditional and even newer disaggregate transportation planning methodologies which analyze and predict behavior using variables such as age, income or car ownership cannot possibly identify or predict the behavior of either men or women in non-traditional households nor of the growing number of single-parent households. For the covering abstract of the conference see IRRD 276520.

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume I.

Rosenbloom, S (Texas University, Austin); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 189-211, 14 Tab., 15 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276534), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

41 389261
THE GENDER-ROLE AND WOMAN'S LOW TRAVEL MOBILITY

This paper outlines the relationships between women's travel disadvantage and their gender-role in society. This relationship is evaluated with specific reference to the move of women into the labour market, a move which has altered their traditional domestic role. Having outlined the nature of women's employment, its respective planning context and their low travel mobility, the first half of the paper explains their low travel mobility in terms of gender-role constraints which take 3 forms: firstly, family role-playing and car availability; secondly, family-role activity constraints on accessibility and thirdly, the impact of gender-role on travelling conditions, specifically the difficulties escorting children and the fear of sexual assault. All of these 3 aspects are shown to affect their job choices. The second part of the paper discusses both the future prospects for women's travel mobility as their demands for employment increase and also the need for a more focused analysis on women's travel issues rather than the implicit analysis it currently receives through studying the travel issues of "households" or "family life-cycles". For the covering abstract of the conference see IRRD 276520. (Author/TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume I.

Pickup, L (Transport and Road Research Laboratory); Bovy, PHL (Editor)
Colloquium Vervoersplanologisch Speurwerk 1984, pp 213-224, 1 Tab., 26 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276535), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

41 389262
IMPACT OF CHANGING EMPLOYMENT STATUS ON HOUSEHOLD TRAVEL MOBILITY

In a period of increasing free time there is a growing interest in the impacts of this development. The social-economic situation, the increasing demand for work by women, and the demographic growth of the economically active population are responsible for a growing demand for work, and at the same time, for a decreasing labour supply. People generally will get more leisure time. What kind of activities will they follow, when there is a change in working hours? Most likely, there will be an increase in existing activities. That means, spending more time for in-home activities, and also more for activities elsewhere. These activities generate trips. An analysis of the travel behaviour of certain categories is therefore the main goal of this study. People and their households will be characterized by sex, education, employment status, age, household type, family status and household income. Trips will be described by duration, distance, purpose, destination, time and travel mode. With these characteristics and other study results a theoretical framework will be described. Then, empirical findings from a Dutch cross section survey will be presented. A description is given of the travel behavior of different categories, characterized by their degree of labour participation and their family status. The relation between personal and household characteristics on one hand and trip characteristics on the other hand will be analysed. Using multivariate methods for data reduction an attempt has been made to derive trip-activity patterns of homogeneous categories. For the covering abstract of the conference see IRRD 276520. (TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume I.

Tacken, M Kooman, CJ (Delft University of Technology, Netherlands); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 225-238, 9 Fig., 6 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 276536), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

41 389263
DETERMINATION OF DIFFERENCES AMONG HOUSEHOLD MOBILITY PATTERNS

An attempt has been made to quantify the concept of mobility. The research was conducted using data from the 1980 nation-wide OVG survey in the Netherlands. First, sixteen measures of household mobility were calculated from trip diary information. Included were measures such as daily travel time per person by various modes, trips per household per day for various purposes, and percentages of household members travelling for various purposes. These measures were then summarized in a set of statistically independent dimensions using principal components analysis. Five dimensions were found to account for about seventy-five percent of the variance in the original: two factors were related to travel for work or school purposes, one to shopping travel, one to discretionary travel, and one to travel by public transport. The 1600 sample households were then grouped on the basis of similarities with respect to the mobility dimensions using cluster analysis. Seven groups were found. Tests were then conducted to determine whether or not the groups could be distinguished on the basis of socioeconomic and demographic variables. Life cycle and income were found to have the highest explanatory power, followed by car ownership and household sixe. For the covering abstract of the conference see IRRD 276520. (Author/TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume I.

Wissen, L van Smit, H Golob, TF (Bureau Goudappel Coffeng Bv); Bovy, PHI
Colloquium Vervoersplanologisch Speurwerk 1984, pp 239-253, 2 Fig., 14 Tab., 5 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276537), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

41 389264
THE DEVELOPMENT OF THE MOBILITY IN THE NETHERLANDS

The object of interest of this study is the development of the mobility of the Dutch population and the possible influence of changing petrol prices, incomes etc on this development. The persons of the survey were grouped into a number of homogeneous population groups; that is, population groups with a homogeneous travel performance (expressed in travel distance per person per day) for the modes of transport distinguished. It appears that the most determinant segmentation criteria are the availability of a car and the personal net income, while the position in the household is also important for the groups that have no car available. The different population groups show a very consistent travel behaviour over the years

and the big differences between the groups remain nearly constant. The difference in travel behaviour (especially for the groups that have a car available) can be explained to a large extent by differences in personal net income (estimated over a five year period). The petrol price shows a small but significant influence on the travel performance for car-drivers as well as for car-passengers. For the covering abstract of the conference see IRRD 276520. (TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume I.

Hamerslag, R Immers, LH Jager, JM (Delft University Of Technology); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 255-267, 7 Fig., 1 Tab., 13 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276538), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

41 389265
TOWARDS A BETTER UNDERSTANDING OF TRANSPORTATION-RELATED CHOICES

This paper discusses some issues associated with planner's adaptation to numerous changes in today's world which affect a complex mechanism of transportation-related choices. It stresses the importance of fundamental empirical studies of travel behavior based on improved methodologies which can increase our understanding of the nature and dynamics of travel choices. The paper reports results of an analysis of travel behavior performed by using data from Hamburg, Berlin, Munich, and Baltimore. It focuses primarily on modal split and auto availability analysis as related to eight homogeneous person categories. This study reveals some interesting regularities in the auto availability/modal split relationship in analyzed cities. The research and policy implications of the relationships observed are discussed. For the covering abstract of the conference see IRRD 276520. (Author/TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume I.

Supernak, J (Drexel University, Philadelphia); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 269-287, 10 Fig., 1 Tab., 21 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276539), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

41 389268
ECONOMIC EFFECTS ON TRANSPORT AND TRAVEL-SOME EVIDENCE FROM THE UNITED KINGDOM

The course of those economic variables directly relating to transport and travel has been very different in recent years to the experience prior to 1973. However, there are many complications inherent in assessing exactly what effects they have had. This paper begins by considering the pattern of car ownership in the UK, and shows how other factors appear largely to have overruled the adverse economic effects. This suggests that there is considerable inertia in the system, and that simple cause and effect models may not be appropriate. It then goes on to consider the rather sparser evidence concerning travel patterns. Looking at overall car kilometres travelled, there appears to be a slight though noticeable inverse relation with fuel prices. The paper concludes that in order to understand what is going on, it is necessary to go to household data, and suggests a method by which this could be done, making use of the various national travel surveys available. For the covering abstract of the conference see IRRD 276520. (Author/TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume I.

Bates, J (John Bates Services); Ashley, D (Mva Consultancy); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 329-336, 4 Fig., 8 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276542), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

41 389277
STAGNATION AND PUBLIC TRANSPORT IN THE NETHERLANDS; DEMAND, COST, SUPPLY AND PLANNING

Stagnation of economic growth has a dual effect on the demand for public transport. The value and even the sign of its income-elasticity is uncertain and depends on the level of car ownership and the degree of substitution between car and public transport. The effect on various market-segments and different public transport modes will be described. The instability of crude oil prices is one of the causes of stagnation but it also influences modal-choice in passenger transport. Changes in the petrol price and their effects on the demand for public transport are discussed. Stagnation might cause an increase in the use of public transport. It is possible then that public transport becomes a victim of its own success; more passenger kilometres seem to cause either growing deficits or higher fares and downward adaptations of the level of service. After an analysis of the cost structure of different transport modes it is shown that such a gloomy picture is far too pessimistic. The flexibility in changing supply offers public transport companies the opportunity to limit cost rises. Stagnation also means that the main cost factor, labour, might increase less than the fare level and the cost of living, thus having a positive effect on the financial results. Careful planning of public transport will avoid the negative effects of stagnation and needs to anticipate an economic revival. Finally, the necessity of integral public-and private transport planning will be discussed. For the covering abstract of the conference see IRRD 276520. (TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume II.

Holtgrefe, G (Free University Amsterdam); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 59-71, 2 Fig., 9 Tab., 34 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276551), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

41 389287
TIME OF DAY, LOCATION AND HISTORY DEPENDENCES OF NONHOME ACTIVITY DURATIONS IN DAILY ACTIVITY TRAVEL-BEHAVIOUR

This study examines interrelationships among the durations of a series of activities pursued by an individual and their dependencies on the time of day, activity location, and activity history. The analysis which employs a sequential stochastic process model framework, indicates that the past history of activity engagement is the most important factor that influences the activity duration, while the effects of time of day and location are rather limited and that the inclusion of history variables makes possible an appropriate representation of the interdependencies across the activity durations. For the covering abstract of the conference see IRRD 276520. (Author/TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume II.

Kitamura, R (California University, Berkeley); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 227-244, 2 Fig., 5 Tab., 35 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276561), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

41 389288
A METHODOLOGY FOR ACTIVITY-BASED TRAVEL ANALYSIS: THE STARCHILD MODEL

This paper presents a policy sensitive approach to modeling travel behavior based on activity pattern analysis. The approach includes the formulation of a theory of complex travel behavior based on a recognition of the full range of interdependencies associated with an individual's travel decisions in a constrained environment. In the approach advanced travel is viewed as input to a more basic process this approach is that travel decisions are driven by the collection of activities that form an agenda for participation;

the utility of any specific travel decisions can be determined only within the context of the entire agenda. Based on the theory, an operational system of models, starchild (simulation of travel/activity responses to complex household interactive logistic decisions), has been developed to examine the formation of household travel/activity patterns employing a simulation approach in combination with techniques of pattern recognition, multiobjective optimization and disaggregate choice models. Initial empirical verification of the system of models is presented based on results obtained from a sample data set. Conclusions are drawn concerning the merits of activity-based procedures relative to traditional approaches to travel modeling. For the covering abstract of the conference see IRRD 276520. (Author/TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume II.

Recker, WW McNally, MG Root, GS (California University, Berkeley); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 245-213, 1 Fig., 2 Tab., 12 Ref.

ACKNOWLEDGMENT. TRRL (IRRD 276562), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

41 389290
STAGNATION AND MOBILITY
This paper is a first product of a pilot study into the overall effects of economic stagnation on mobility. In this pilot study the author hopes to define a framework for a bigger research project with as central issues: (a) how does the impact of economic stagnation in household income and work time differ from various groups in the society (as defined by various socio-economic characteristics) and as a result hereof: (b) how do changes in leisure time and income affect expenditure on mobility and mobility patterns? After a description of the study area at the macro-level, some pro's and cons of a research framework at a micro-level are being discussed. Within this research framework utility analysis and choice models play important roles. Some attention is paid to the connection between these two approaches. Special remarks are made concerning the degree of detail of the level of analysis. After a short critical introduction on the usual static concepts of choice models, three ways that might overcome the restrictions linked to a static context are discussed. (a) incorporation of dynamic elements via data or data manipulation (b) some dynamic adaptations of choice models (C) introduction of, for instance, a set of differential equations to describe dynamics at a systems level. The paper ends with a research outlook in which possibilities are mentioned to link these three methods to introduce dynamics together. For the covering abstract of the conference see IRRD 276520. (TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume II

Lierop, W van Scheele, D (Free University Amsterdam); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 281-294, 5 Fig., 17 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276564), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

41 389319
RESIDENTIAL MOBILITY AMONG COUNCIL TENANTS-THE ROLE OF TRANSPORT AND ACCESSIBILITY
This report discusses the relationship between household travel patterns and the longer term process of changing residential location among council tenants in Great Britain. The social and travel characteristics of council tenants are compared with those of home owning households and accessibility to facilities on council estates is compared with that of privately owned housing at similar residential densities. The procedures by which council tenants change residence are outlined. Four main issues are discussed: firstly, the importance of poor accessibility in motivating council tenants to move residences and what journey purposes are the most sensitive. Secondly, the pattern of residential moves made and the influence of different journey purposes on area selection. Thirdly, the extent to which council tenants can choose a new residential location, the effect of local authority residential mobility policies on council tenants' moves and the importance local authorities attach to accessibility factors in relocating tenants. Lastly, the report discusses the effects of council tenants' limited choice of home location on their satisfaction with different aspects of their travel pattern subsequent to moving residence. (Author/TRRL)

Pickup, L **TRRL Laboratory Report** No. 1100, 1984, 34p, 2 Fig., 15 Tab., 28 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276795)
ORDER FROM: TRRL

41 389322
URBAN PUBLIC TRANSPORT IN CONDITIONS OF ECONOMIC AND SOCIAL STABILIZATION [JAVNI GRADSKI I PRIGRADSKI PUTNICKI PREVOZ U USLOVIMA EKONOMSKE I DRUSTVENE STABILIZACIJE]
This paper presents a systematic and critical description of the basic components of urban public transport in Yugoslavia in conditions of economic and social stabilization. It also deals with strategies for and tendencies in the development of urban public transport, planning measures, technological and operational aspects, different forms of restrictions with the aim of promoting public transport as the main form of transport in the city. For the covering abstract of the conference see IRRD 273856. [Serbian]

Gavrilovic, S (Saobracajni Fakulter, Beograd) **Zbornik III Jugo Savetovanje Tehn Regul Saobracaja** Apr. 1983, pp 485-506, 5 Fig., 6 Tab., 10 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 277139)
ORDER FROM: Savez Inzenjera I Tehn Saobracaja I Veza Jugo, Drustvo Inzenjera I Tehnicara Saobracaja I Veza Novi Sad, Novi Sad, Vojvodina, Yugoslavia

41 389328
URBAN AND RURAL CHANGE IN WEST GERMANY
In this book attention focuses on the principal functional, spatial and morphological changes which have taken place in West Germany's cities, towns and intervening rural areas during the postwar period. Topics covered include political configuration, historical background, economic development and restructuring, and changes in the interactional relationships between city and countryside. These themes are supported by a variety of detailed local case studies.

Wild, T
Croom Helm Limited Monograph 1983, 259p, Figs., Tabs., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 276817)
ORDER FROM: Croom Helm Limited, Provident House, Burrell Row, Beckenham, Kent, England

41 389329
CENSUS 1981. WORKPLACE AND TRANSPORT TO WORK (10% SAMPLE)
This report gives statistics from the 1981 census about the area of workplace of people in a job in the week before census day, and the means of transport used between residence and workplace. The statistics are based on a 10% sample of private households and a 10% sample of people in communal establishments. All the tables are based on household resident population (present and absent) enumerated in households with at least one person present on census night, plus persons resident in communal establishments. The tables are restricted to the economically active population aged 16 or over enumerated in Scotland.

Her Majesty's Stationery Office Monograph 1984, 356P, Tabs.

ACKNOWLEDGMENT: TRRL (IRRD 276822)
ORDER FROM: Her Majesty's Stationery Office, 13A Castle Street, Edinburgh, Scotland

41 389369
PROCEEDINGS OF THE SYMPOSIUM ON URBAN PUBLIC TRANSIT AND MINORITIES: CHALLENGE OF THE 80'S SEPTEMBER 14-16, 1983
This Symposium was the beginning of meaningful dialogue between transportation professionals concerning minority participation in the transit industry. There were several general, broad-based conclusions

which the Symposium drew: Public transit systems must seek better data from transit-dependent minorities and greater coordination of public and private transportation services, in order to ensure equity for minorities; UMTA must play a major role in providing technical and informational assistance, in monitoring of the quality of services at the local level and in training of equal opportunity personnel; minority business enterprises should organize at the national, state and local levels to fight vigorously for minority participation in transit; there should be greater participation and representation of minorities in union leadership; this Symposium should be repeated, at the national level, along with a series of on-going workshops, to increase minority representation in all aspects, especially leadership and management, of the transit industry; research and training funds at the Department of Transportation should be assured for minorities, women and historically black colleges and universities.

Morgan State University, Urban Mass Transportation Administration UMTA-MD-06-0097-84-1, No Date, 84p, Phots., 2 App.

ORDER FROM: UMTA

41 390160

THE EFFECT OF SELECTED SOCIODEMOGRAPHIC CHARACTERISTICS ON DAILY TRAVEL-ACTIVITY BEHAVIOR

The hypothesis that daily travel-activity behavior is influenced by the role, life-cycle, and life-style attributes of individuals and households is examined. Daily travel-activity behavior is described by a five-state categorical variable which is defined by analytical classification of a sample of daily travel-activity patterns. The explanatory variables used in this study are age, marital status, gender, employment status, education level, presence of young children, auto-ownership, income, and residential density. Parametric maximum likelihood models of multiway contingency tables are used to test the hypothesized relationships. The statistical analyses confirm that personal daily travel-activity behavior is significantly influenced by the role, life-cycle, and life-style characteristics of individuals and their households. The statistical results also demonstrate that specific sociodemographically defined segments of the urban travel market have differential likelihood of undertaking particular daily travel-activity patterns. (Author/TRRL)

Pas, EI (Duke University) **Environment and Planning B** Vol. 16 No. 5, Apr. 1984, pp 571-581, 1 Fig., 4 Tab., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 277279)
ORDER FROM: Pion Limited, 207 Brondesbury Park, London NW2 5JN, England

41 390171

PUBLIC POLICY TOWARD THE AUTOMOBILE: A COMPARATIVE LOOK AT JAPAN AND SWEDEN

This article compares two different national approaches to regulation and promotion of the automobile. It examines how the problem was perceived, what styles of intervention developed, and how implementation of seemingly standardized solutions differed. Japan tended to view the private automobile as a socially expensive luxury until quite recently. Some features of its policy response, e.g. Low spending on roads, high motor vehicle taxes, flow from this outlook. Other aspects, such as the effective mass public safety campaigns, and the coordination between industrial and regulatory policies flow from Japan's social and cultural patterns. Sweden's policies are aimed at "civilizing" the car, not restricting it. They tended to develop in a relatively straightforward manner on the the basis of an underlying social consensus, as contrasted with the adversarial approach common in the U.S. (Author/TRRL)

McShane, MP (Massachusetts Institute of Technology); Koshi, M (Tokyo University, Japan); Lundin, O (Gothenburg University, Sweden) **Transportation Research. Part A: General** Vol. 18A No. 2, Mar. 1984, pp 97-109, 2 Fig., 6 Tab., 27 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 277274)
ORDER FROM: ESL

42 386152
ROYAL COUNTY OF BERKSHIRE PUBLIC TRANSPORT PLAN 1984-1985
In conjunction with the 1984-85 Transport Policy and Programme, the plan presents a complete statement of progress to date and details intentions for the coming year towards implementing county council public transport policies. A review of public transport in the county is included, together with a description of public transport services and the way in which the networks of services are being developed. County council expenditure on public transport is also detailed. The extension of public transport services into new development is specifically dealt with, reflecting the importance attached to planning for new services at the earliest possible time in view of the continuing pressure for large scale development in the county. Three main objectives guide the county's policy for public transport: 1) to maintain a stage carriage service network which adequately meets the needs of the county; 2) to encourage the use of public transport services in order to reduce dependence on and use private transport where overall community and transport benefits will result; 3) to optimise the use of public transport resources currently available so as to minimise rate fund support. the 1984-85 programme is briefly detailed, consultation meetings are discussed, and a method for determining provision of supplementary bus services is given. Details of fare level trends, concessionary fare schemes, stage carriage bus mileage and patronage trends, financial statistics, supplementary services, British Rail passenger movements, revenue support, school transport costs and usage, and public transport provision to new development sites are tabulated. (TRRL)

Perry, MC
Royal County of Berkshire Monograph Feb. 1984, 40p, 11 Fig., 17 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 275435)
ORDER FROM: Royal County of Berkshire, Department of the County Surveyor, Shire Hall, Shinfield Park, Berkshire, England

42 386160
A DISAGGREGATE MODELLING STUDY OF MODAL CHOICE FOR THE JOURNEY TO WORK
A disaggregate modal choice modelling investigation of travel to work at the Atomic Energy Research Establishment, Harwell, is reported. Its aim was to establish quantitatively factors affecting volume of car pooling and works bus use at the site. Models were calibrated from data provided by non-industrial (non-manual) staff both with and without cars available for their journeys. The generality of these models was subsequently checked by predictive application to other data sets for industrial (manual) workers. Subsequently the models were used to investigate the effect of various changes, such as petrol price and works bus fare increases, on modal split. Implications of the findings together with some more general aspects of disaggregate modal choice modelling are discussed. (Author/TRRL)

Tunbridge, RJ Jackson, RL **TRRL Laboratory Report** No. 1097, 1983, 28p, 2 Fig., 10 Tab., 16 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275230)
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42 386166
THE VALIDATION OF A MODEL FOR THE JOURNEY TO WORK
Previous reports have described a theoretical model based on random utility theory for the distribution of journeys to work for a given set of homes and workplaces, and an application of the model using 1971 census data for the Manchester area. The present report describes a second application which uses data from a household survey conducted in 1975 in the metropolitan county of Tyne and Wear. The survey included details of household income, and the report describes how average salaries for jobs located at representative points throughout the study area are estimated from these. It is found that these estimates are far more variable than can be explained directly by the theoretical model. Information from another source on how property values vary with location is found to be in reasonable agreemnt with the model's estimates. The model is then used to simulate the medium-term effects of changing travel costs on the pattern of work journeys. For example, it is estimated that a uniform 1.00 per cent increase in the cost of travel would increase expenditure on work journeys by 0.36 per cent and reduce travel by 0.64 per cent; it would reduce consumer surplus by 1.00 per cent of total travel expenditure. When alternative policies for urban redevelopment are studied it is predicted that consumer surplus would increase if homes or jobs were relocated nearer the city centre. (Author/TRRL)

Broughton, J **TRRL Laboratory Report** No. 1096, 1983, 22p, 9 Fig., 8 Tab., 12 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275236)
ORDER FROM: NTIS PB84-166255

42 386167
NEIGHBORHOOD INFLUENCES ON TRAVEL BEHAVIOR AND AVAILABILITY CONSTRAINTS
Traditionally, transportation demand studies have, for the most part, viewed modal choice in terms of an aggregate system-wide function. However, it seems reasonable to expect that the travel decision may be influenced by a composite of factors that include not only availability conditions, but determinants relating to neighborhood characteristics and peer-group pressures. In this paper, supply-side constraints on availability were used to segment the market and logit probabilistic choice models were fitted to each segment. It was found that inducements to individuals to alter their modal choice must consider not only cost factors and standard demographics, but also peer-group (class) constraints. System-wide approaches will fail to consider these important demand considerations. (Author/TRRL)

Naroff, JL Madden, TJ Dillon, WR (Massachusetts University, Boston) **Environment and Planning A** Vol. 16 No. 1, Jan. 1984, pp 33-47, 3 Fig., 4 Tab., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 275240)
ORDER FROM: Pion Limited, 207 Brondesbury Park, London NW2 5JN, England

42 386181
INCORPORATING ATTRIBUTE THRESHOLDS INTO MODE CHOICE MODELS
The concept of thresholds has been mentioned in the transport choice literature, but few studies of mode choice have attempted to incorporate them into a modelling context. In this paper the concept of minimally perceived attribute differences is introduced into mode choice models. For estimating the parameters of the model, maximum likelihood is employed and an experimental test is carried out on a sample of people making trips to Melbourne CBD. The model is compared with a more traditional logit model with a linear additive measure of utility. (Author/TRRL)

Bertram, D (Road Construction Authority); Young, W
Monash University, Australia, (0156-2126) Working Paper 83/8, Nov. 1983, 10p, 3 Fig., 2 Tab., 24 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 271938), Australian Road Research Board
ORDER FROM: Monash University, Australia, Department of Civil Engineering, Wellington Road, Clayton, Victoria 3168, Australia

42 386184
FEEDER TRANSPORT AND MODE CHOICE [VOOR EN NATRANSPORT EN VERVOERMIDDELKEUZE]
The article deals with the results of a study into the relations between the distances home-station + station-work and main mode choice (car versus train). The influence of these distances is quite strong. There is a preference for the station-work distance being shorter than the home-station link. Other characteristics playing an important role are available modes, length of the main (train) link etc. (Author/TRRL) [Dutch]

Enden, AC van den (Verkeers En Vervoersgroep Bi-Tno); Lohuizen, CW van (Planologisch Studiecentrum Tno) **Verkeerskunde** Vol. 34 No. 12, Dec. 1983, pp 594-600, 12 Fig., 2 Tab., 15 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 274541), Institute for Road Safety Research SWOV
ORDER FROM: Royal Dutch Touring Club ANWB, Wassenaarseweg 220, P.O. Box 93200, The Hague, Netherlands

42 386194
A MODIFIED COMPOSITE COST MEASURE FOR PROBABLISTIC CHOICE MODELLING
A modified composite cost function is proposed which overcomes the negatively problem associated with Williams's measure. Also some relationships between the random utility and entropy-maximization approaches to model formulation are explored. (Author/TRRL)

Fisk, CS Boyce, DE (Illinois University, Urbana-Champaign) **Environment and Planning A** Vol. 16 No. 2, Feb. 1984, pp 241-248, 5 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275639)
ORDER FROM: Pion Limited, 207 Brondesbury Park, London NW2 5JN, England

42 386209
URBAN TRANSPORT MODELLING WITH FIXED TRAVEL BUDGETS (AN EVALUATION OF THE UMOT PROCESS)
A new type of transport model UMOT (Unified Mechanism of Travel) has been developed by Zahavi for the World Bank (and subsequently for the US Department of Transport and the FR of Germany Ministry of Transport) as an aid to urban transport planning. The feature which distinguishes UMOT from practically all other transport models is the way it takes into account known regularities in the amount of time and money which people spend daily on travel (these are commonly referred to as travel budgets). The relationships which express the travel budgets in terms of demographic variables are expected to be transferable from town to town and so little, if any, calibration of the model is necessary. The aim of this special programme of study is to see how the UMOT model responds to changes in the major parameters and to compare predicted travel characteristics with values observed in Reading, UK. Both the original version of the model (set up for two modes-car and bus) and its extension to three modes (car, bus and walk) gave a fairly satisfactory level of fit when the model outputs were compared with the observed daily travel distances (discrepancies varying from 1 to 33 per cent) and car ownership values (1 to 4 per cent). Sensitivity analysis, however, showed that some of the elasticity values had signs which were counter-intuitive on current evidence and experience. For example, higher bus fares produced more bus travel and less car travel-as did faster car speeds. (car speed elasticity was based on a change in access time, not network speed.) it is understood from private correspondence with Dr. Zahavi during the preparation of this report that the latest version of the model gives elasticities with the expected signs except for the bus fare elasticity, which is still counter-intuitive unless one accepts that higher bus fares over the long term will results in more, not less, bus travel. (Author/TRRL)

Downes, JD Emmerson, P **TRRL Supplementary Report** No. 799, 1983, 41p, 11 Fig., 3 Tab., 13 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275681)
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42 386241
CASE REPORT: ALTERNATIVE WAY TO RUN RAILWAYS. JAN '84
Railway costs, both fixed and operational, are presently incomparable with road fixed and operational costs. Much time is spent debating transport costs and in particular the "track cost" element. Yet road and rail systems have much in common on financial, operational and engineering grounds. Here a possible alternative approach which might result in reduced transport expenditure nationally is described.

Gylee, M **Transport (London)** Vol. 5 No. 1, Jan. 1984, pp 14-15

ACKNOWLEDGMENT: British Railways
ORDER FROM: City Press Limited, Fairfax House, Colchester, Essex CO1 1RJ, England

42 386322
COST FUNCTIONS FOR TRANSPORTATION SYSTEMS
A methodology for developing predesign cost estimation functions of transportation systems is developed and applied. The emphasis is on the methodology and the evaluation of the estimation equation, the goodness of which is often taken for granted in most works on the subject. The applications merely serve the purpose of illustrating its applicability. Yet, the predesign cost estimation functions developed, one for highway pavement and another for mass transportation systems, not only illustrate the point but also prove to be useful in estimating the cost of highway pavements and mass transportation systems at the stages of conceptualization or predesign or both. The methodolgy, when properly used, gives reliable results with few historical data.

Kouskoulas, V (Patras University, Greece) **Journal of Urban Planning and Development** Vol. 10 No. 1, Jan. 1984, pp 129-142, 17 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

42 386323
TRANSPORTATION
This year promises to be a very good one for transportation consultants and contractors-even better than 1983. Transportation, paced by highway and bridge work, topped all other categories in contract volume increases last year, climbing 17% and ENR predicts further gains in 1984. Only one sector-public transit-fared badly in 1983, but projects now being planned should reverse that trend. Even airport construction remains strong despite airlines' ills. Many port and waterway projects may be turned loose. There is also a promise of major pipeline jobs. And intercity high-speed rail lines roll toward construction.

Engineering News-Record Vol. 212 No. 2, Jan. 1984, 4p

ACKNOWLEDGMENT: EI
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42 386325
FLEXIBLE AND INTEGRATED METHODOLOGY FOR ANALYTICAL CLASSIFICATION OF DAILY TRAVEL-ACTIVITY BEHAVIOR
The importance of incorporating the derived demand nature of urban person movement and the interdependence of the elemental travel episodes (trips) in analyzes of urban travel behavior is discussed. A flexible and integrated approach to the analysis of daily urban travel-activity behavior as a complex phenomenon is described. The methodology incorporates systematic indentification of classes of similar daily travel-activity patterns and the evaluation and interpretation of these groups. The approach described here comprises three stages; namely, transformation, group formation, and cluster interpretation and evaluation. Classifications produced by the methodology can be used to analyze and model relationships between daily travel-activity behavior and potential explanatory variables.

Pas, EI (Duke University) **Transportation Science** Vol. 17 No. 4, Nov. 1983, pp 405-429, 50 Ref.

ACKNOWLEDGMENT: EI
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42 386326
ALTERNATIVE VARIATIONAL INEQUALITY FORMULATIONS OF THE NETWORK EQUILIBRIUM-TRAVEL CHOICE PROBLEM
Alternative variational inequality formulations of the network equilibrium-travel choice problem are given, extending previous results to include models with non-invertible travel demand functions. These models have the characteristics that network congestion effects are taken into consideration in the travel choice model in such a way that, at equilibrium, the travel related costs are those produced by a user optimal allocation of the travel demand onto the network. The model is then developed further to allow for the possibility of dispersion in route choice.

Fisk, CS (Illinois University, Urbana-Champaign); Boyce, DE **Transportation Science** Vol. 17 No. 4, Nov. 1983, pp 454-463, 12 Ref.

ACKNOWLEDGMENT: EI
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42 386351
RATP. THE 1984-1988 CORPORATE PLAN [RATP. PLAN D'ENTREPRISE 1984-1988]
This plan highlights 3 key-factors that, in such a context, dictate RATP development: Traffic increases which alone can justify an increase in the service offered and produce new resources; need constantly to improve corporate-efficiency—and hence productivity—and to control costs; decen-

tralization, a decisive factor in developing staff motivation throughout the enterprise, and adaptability to the development of corporate environment. [French]

Regie Autonome des Transports Parisiens UIC 08 P 9, 1984, 148p, 10 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Regie Autonome des Transports Parisiens, 53 Ter. Quai des Grands Augustins, Paris, France

42 386361
NATIONAL IMPACTS OF TRANSIT CAPITAL AND OPERATING EXPENDITURES ON BUSINESS REVENUES
This report describes the results of analyses which estimate the sum of direct, indirect and induced impacts of transit capital and operating spending on business sales and revenues. It is shown that for each $100 million in capital investment for modernization of rail transit, $315 million in business revenues is generated while with the same amount spent on a new rail system creates $307 million and on bus projects, $350 million. Operating expenditures of $100 million generate $350 million in business revenue. The report describes the methodology by which the revenue impacts were calculated and describes in further detail the impacts of capital and operating expenditures on the entire economy.

American Public Transit Association Jan. 1984, 17p, 6 Tab.

ORDER FROM. American Public Transit Association, 1225 Connecticut Avenue, NW, Washington, D.C., 20036

42 386362
CITIBUS TECHNICAL STUDY
The Citibus system of Lubbock, TX, has examined its status after a year in which fares were increased and there were major management changes. The fixed-route system was studied to determine the viability of its routes and to identify areas for added marketing emphasis. Because of the fare increase, revenues did go up and ridership did not decline as much as anticipated. Elderly and handicapped travel at reduced fares on fixed-route accessible buses and by-dial-a-ride vans and minibus. The demand-responsive services are overburdened but added equipment should give some relief. Projects which will be the basis of current and future management decisions are discussed: Management information system, Five-Year Financial Plan, market-related data, emergency energy situations, contingencies involving severe weather or other local emergencies, and added service for Texas Tech. Much attention is given to development of a non-Federal transit-dedicated revenue source.

Lubbock Transit Department TX-09-0194, Oct. 1983, 53p, Figs., Tabs.

ORDER FROM: Lubbock Transit Department, Lubbock, Texas

42 386364
PLANNING AND FINANCING UBRAN MOBILITY IN TEXAS
This report reviews the status of planning for regional mobility improvements in the five major urban areas of Texas. The Regional Mobility Planning (RMP) efforts in Austin, Dallas, Houston, Fort Worth and San Antonio are compared. Key concepts in RMP are highlighted and the projected cost of federal/state related highway infrastructure requirements through the year 2000 is considered along with the public transit system performance/analysis. Existing financial resources at federal, state and local levels are identified along with deficiencies. Several funding methods with the potential to bridge the funding gap are identified for the different study areas. RMP originated in Houston when traditional transportation planning seemed incapable to dealing with the city's mobility crisis; its transportation problems continue as the most acute among the study areas. To assist the communities in closing the funding gap, 17 alternative financing mechanisms were identified and assessed in the light of need and in the likelihood of application in Texas. Finally the report provides a brief analysis of potential legislation that could strengthen the ability of the state's urban areas to meet mobility objectives.

Rice Center, Texas State Department of Highways & Public Transp Tech Rpt. Sept. 1983, v.p., Tabs., Refs., 4 App.

ORDER FROM: Rice Center, 9 Greenway Plaza, Suite 1900, Houston, Texas, 77046

42 386368
AN ECONOMIC EVALUATION OF CALGARY'S NORTH-EAST LIGHT RAIL TRANSIT SYSTEM
This paper presents a benefit cost analysis of one of the radials of an LRT system which hs been under construction in the City of Calgary. Five benefits are identified and measured. These relate to reductions in commuter travel times, congestion on the road network, automobile operating costs, parking costs and bus costs. It is concluded that these benefits fall far short of the capital and operating costs and that the project is not economic. There is also a discussion of the theoretical limitations of the analysis and of relevant externalities. It is argued that these are not of sufficient magnitude to alter the basic conclusion: the project is not in the public interest.

Taylor, S Wright, R (Calgary University, Canada) **Logistics and Transportation Review** Vol. 19 No. 4, Dec. 1983, pp 351-365, 2 Tab., 39 Ref., 1 App.

ORDER FROM: British Columbia University, Canada, Faculty of Commerce, Vancouver V6T 1W5, British Columbia, Canada

42 386392
PUBLIC PRIVATE COOPERATION FOR BETTER TRANSPORTATION
As they search for ways to cope with increasingly tight budgets, many public transit agencies are finding new partners within the private sector. More and more frequently, merchants and businesses are sharing responsibility for financing or marketing transit services. Individual arrangements vary, but many businesses, acknowledging the importance of public transit, are working with transit agencies to increase ridership and improve the quality of service and operating efficiency. Private sector cooperation currently takes many forms. Ridesharing programs are a popular means of involving the private sector in transit. Transit officials have long argued that employers who offer free parking as an employee fringe benefit should offer a comparable benefit (such as transit passes) to transit riders. Merchants have found that joint promotions with transit agencies are an effective method of advertising that also brings customers to their doors. In some instances, the business community has subsidized a desired route to insure its continued operation. Some businesses have even organized and operated transportation services. Firms have contributed funds, staff time, and other corporate resources to build or rebuild local transit facilities. Often public transit agencies and facilities that are well served by transit benefit from joint advertising campaigns. Greater cooperation between the public and private sectors in providing transportation services is the wave of the future. Examples are given in the following areas: cooperative agreements, employer passes, fare subsidy, marketing, special services, and management techniques.

Urban Mass Transportation Administration No Date, 36p, Phots.

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42 386400
INTERNATIONAL SYMPOSIUM ON SURFACE TRANSPORTATION SYSTEM PERFORMANCE. PROCEEDINGS VOLUME I
The Symposium, a 3-day meeting, produced this proceedings which consists of general and focused discussion of the state-of-the-art, policy issues, and concepts and definitions used in evaluation of the performance of transportation systems. Volume I includes 7 keynote speeches and summaries of the workshop sessions. The Symposium was for exchange of information on common approaches to policy analysis in transportation system performance. The agenda dealt with 5 specific topics of major importance and interest. For each topic 3 workshops were scheduled with presentations of technical papers preceding general discussion. The 3 subtopics focused on: State of the art; examination of performance concepts and indicators, and Policy issues and implications with identification of research needs. The 5 major topics were: Energy Conservation and the Transportation System; The Impact of the Transportation System on the Environment; Transportation and Urban Form; The Role of Transportation in Economic Development; and Transportation System Safety.
See also Volume II, TRIS 386401.

Urban Mass Transportation Administration, Federal Highway Administration, European Conference of Ministers of Transport,

Organization for Economic Cooperation and Devel, Transportation Research Board Oct. 1981, 95p

ORDER FROM: GPO

42 386401
INTERNATIONAL SYMPOSIUM ON SURFACE TRANSPORTATION SYSTEM PERFORMANCE. PROCEEDINGS VOLUME II

This Symposium, a 3-day meeting, produced this proceedings which consists of general and focused discussion of the state-of-the-art, policy issues, and concepts and definitions used in evaluation of the performance of transportation systems. Volume II includes the 50 technical papers presented at workshop sessions, and divided into the 5 general topics of major importance and interest: Energy Conservation and the Transportation System; The Impact of the Transportation System on Environment; Transportation and Urban Form; The Role of Transportation in Economic Development; and Transportation Safety.

See also Volume I, TRIS 386400.

Urban Mass Transportation Administration, Federal Highway Administration, European Conference of Ministers of Transport, Organization for Economic Cooperation and Devel, Transportation Research Board Oct. 1981, 95p

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42 386408
IMPROVING DECISION-MAKING FOR MAJOR URBAN TRANSIT INVESTMENTS

The research results contained in this report are derived from an assessment of federal, state, and local decision-making processes for major urban mass transportation investments by evaluating recent alternative analysis experiences. The assessment has identified potential improvements in policy, procedures, and use of technical information, and has produced recommendations on planning procedures for use by federal, state, and local agencies. This report provides guidance analysis of transit/highway alternatives for urban areas. State and local officials who must make transit investment decisions will find practical information on appropriate organizational structures for conducting major transit studies including guidance on coordination with officials at all levels of government, and guidance on communicating issues to staff and other parties involved at the various stages of the Alternative Analysis process as called for by UMTA. Federal officials will find recommendations on simplification or integration of federal regulations, changes in UMTA's review and approval procedures, and other actions such as training or technical assistance that could improve practice. Professionals in agencies responsible for conducting major transit studies will find planning guidelines, approaches to involving decision-makers at each stage of the process, and lessons from other areas on how to assure successful completion of each phase. State and federal professionals who review Alternatives Analyses will find an assessment of various approaches used in urban areas with differing institutional arrangements, and the identification of guidance needs of those who are undertaking Alternative Analyses. Researchers who develop methodology will find useful information on experience in various technical aspects of major transit studies and the identification of the more important needs for further research.

Stowers, JR Reno, AT Boyar, VW (System Design Concepts, Incorporated) **NCTRP Report** No. 4, Dec. 1983, 47p, 9 Tab., 2 App.

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42 386414
COMPUTER AS HORSELESS CARRIAGE: TRANSPORTATIONISTS FOR THE 1990S AND BEYOND

Individuals and organizations active in a particular technology form are often unable to perceive the direction and magnitude of change in their area when the impetus for the change is external to their technological (or disciplinary) area. An analogy between the impact of the evolving characteristics of computer systems and the development of the automobile is developed with respect to their impacts on transportation. The near future character of computer systems is examined with respect to the manner in which each characteristic is likely to impact the processes of transportation and traffic engineering. Three examples of probable impact areas in transportation engineering are discussed: (a) traffic control safety by using the principles of positive guidance control, (b) site analysis for traffic environment effects, and (c) data base development and manipulation. Lastly, and most importantly, the capability of the computer to integrate the fragmentation of specialized talents with transportation practice is discussed. This probable and most significant effect of computer-aided communication in transportation suggests that a new focus, distinct from and more broadly based than the current paths to practice will develop: i.e., the transportationist.

This paper appeared in Transportation Research Record No. 929, Education and Training.

Woodman, WF Brewer, KA (Iowa State University, Ames) **Transportation Research Record** No. 929, 1983, pp 22-25, 10 Ref.

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42 386683
MICROCOMPUTER SOFTWARE FOR TRANSPORTATION PLANNING

A survey was conducted of a number of U.S. metropolitan planning organizations and private-sector software providers. The results indicate that many types of microcomputer software useful to transportation planners are available and are being used by planners, especially in smaller- and medium-sized regions, to plan more effectively and efficiently. The largest group of microcomputer programs implement sketch-planning transportation analysis methods that do not require detailed network coding and processing. Other common areas of application are traditional urban planning methods, aids for providing transportation services such as shared-ride matching, means of predicting transportation-related impacts, and project programming and budgeting aids. A number of programs are also available that broaden the support base for using microcomputers and developing application programs for use in transportation planning. This group of programs includes interfaces with other computing hardware, travel surveying aids, statistical and data processing programs, and system development programming aids. Based on the survey of available transportation planning software, a number of observations and recommendations are made concerning the ideal future development of the area. The broad range of microcomputer systems needs to be recognized—from home-style personal computers to multiuser supermicrocomputers. Also, all program developers should adopt the goal of developing portable software, both among different computers and among different planning agencies. Finally, strong emphasis should be placed on developing ways to use microcomputers effectively as smart terminals that can access the wealth of transportation software available on larger computers.

This paper was published in Transportation Research Record No. 932, Microcomputers in Transportation.

Ruiter, ER (Building Research Station Digest); Waller, M (Metroplan, Little Rock, Arkansas) **Transportation Research Record** No. 932, 1983, pp 3-8, 6 Fig., 1 Tab., 4 Ref.

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42 386989
SYSTAN'S MACRO-ANALYTIC REGIONWIDE TRANSPORTATION MODEL: PROGRAM MAINTENANCE MANUAL

Systan's Macro-Analytic Regionwide Transportation (SMART) model is a sketch planning tool for evaluating public transportation alternatives for metropolitan areas. The model and its documentation were developed as part of the Paratransit Integration Program sponsored by the Office of Bus and Paratransit Technology and the Urban Mass Transportation Administration and by the Office of Technology and Planning Assistance of the Office of the Secretary of Transportation. The Paratransit Integration Program is concerned with the development and application of macro-analytic techniques for policy and preliminary planning at the local level. This Program Maintenance Manual describes the internal structure of the computer program, including module structure and linkage and data structures. It includes material on installation and on potential model alterations. Written for the skilled FORTRAN programmer, each installation of the SMART model computer program should have at least one copy of this manual.

Canfield, A Lim, W-Y

SYSTAN, Incorporated, Urban Mass Transportation Administration, Office of the Secretary of Transportation Final Rpt. DOT-I-83-59, Mar 1983, v.p., 11 Fig., 3 App.

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42 386990
SYSTAN'S MACRO-ANALYTIC REGIONWIDE TRANSPORTATION MODEL: APPLICATION MANUAL
Systan's Macro-Analytic Regionwide Transportation (SMART) model is a sketch planning tool for evaluating public transportation alternatives for metropolitan areas. The model and its documentation were developed as part of the Paratransit Integration Program sponsored by the Office of Bus and Paratransit Technology and the Urban Mass Transportation Administration and by the Office of Technology and Planning Assistance of the Office of the Secretary of Transportation. The Paratransit Integration Program is concerned with the development and application of macro-analytic techniques for policy and preliminary planning at the local level. This Application Manual describes the use of the model to formulate, evaluate, and compare public transit options for urban regions. It discusses the structure of the model and the purpose of each major component. It also includes detailed application information for four case studies. The document is designed for use by transit planners who must assess the suitability of the model and, if appropriate, use it to investigate urban transportation alternatives.

Fratessa, C Lim, W-Y
SYSTAN, Incorporated, Urban Mass Transportation Administration, Office of the Secretary of Transportation Final Rpt. DOT-I-83-57, Mar 1983, v.p.

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42 386991
SYSTAN'S MACRO-ANALYTIC REGIONWIDE TRANSPORTATION MODE: USER'S GUIDE
Systan's Macro-Analytic Regionwide Transportation (SMART) model is a sketch planning tool for evaluating public transportation alternatives for metropolitan areas. The model and its documentation were developed as part of the Paratransit Integration Program sponsored by the Office of Bus and Paratransit Technology and the Urban Mass Transportation Administration and by the Office of Technology and Planning Assistance of the Office of the Secretary of Transportation. The Paratransit Integration Program is concerned with the development and application of macro-analytic techniques for policy and preliminary planning at the local level. This User's Guide focuses on the preparation and formatting of data for use in the model. Examples are presented, and error messages are explained. The document builds on material in the Applications Manual and is required to run the SMART computer program.

Canfield, A Lim, W-Y
SYSTAN, Incorporated, Urban Mass Transportation Administration, Office of the Secretary of Transportation Final Rpt. DOT-I-83-58, Mar. 1983, v.p., 3 App

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42 387583
CHOICE OF TRAVEL MODE FOR WORK TRIPS: SOME FINDINGS FOR METROPOLITAN TORONTO
This study analyses modal choice decisions in metropolitan Toronto, in order to establish whether rising petrol prices, traffic congestion and environmental pollution caused by cars, would imply fewer cars and an increased use of urban public transport. The analysis is based on an extension of existing modal choice models into a model which is fully consistent with the "new demand theory" as developed by Becker, Lancaster and others. The estimation procedure adopted is the McFadden random utility model. Findings of the study help to explain why the car is used for most urban trips in Toronto in spite of higher costs than for public transport. They also show that users are more responsive to improvements in public transport services than to reduction of fares. (TRRL)

Bajic, V (St Mary's University, Halifax) **International Journal of Transport Economics** Vol. 11 No. 1, Apr. 1984, pp 79-96, 3 Tab., 25 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275963)

ORDER FROM: International Journal of Transport Economics, 8 Via GA Guattani, 00161 Rome, Italy

42 387593
LONGITUDINAL SURVEYS IN TRANSPORT: AN ASSESSMENT
Longitudinal surveys in transport are a logical development in the broadening orientation of data sources. Although single cross-section surveys will continue to predominate, the recent history of forecasting capability of models estimated on a cross-section has suggested that longitudinal surveys are required to account for important influences such as the timing of change, the role of habit and expectations, and the degree of stability and/ or growth of key exogenous forces. Alternative longitudinal data strategies are outlined, the advantages and disadvantages of each strategy discussed, and selective methodological and practical issues presented. Recent experience with a continuing five-wave panel of 1480 Sydney households, interviewed annually, is drawn upon. The often-stated concern for panel sample attrition is clarified. (Author/TRRL)

Hensher, DA
Macquarie University, Australia Res Paper 275, July 1983, 49p, 2 Fig., 9 Tab., 22 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 271972), Australian Road Research Board
ORDER FROM: Macquarie University, Australia, Balaclava Road, North Ryde, New South Wales, Australia

42 387612
THE POLICY OF THE GOVERNMENT IN RELATION TO FUTURE DEVELOPMENTS IN TRAFFIC AND TRANSPORT [HET OVERHEIDSBELEID IN RELATIE TOT DE TOEKOMSTIGE VERVOERS- EN VERKEERSONTWIKKELING]
Governmental policy in the Netherlands in relation to the future development of traffic and transport is presented. Specifically related to transport mode some options for national and European personal transport policy are discussed. An under-exposure of public transport and the increase of the road network caused by the vigorous growth of vehicle ownership in recent prosperous years are mentioned. New investments will now be required for costly new systems for railbound transport as well as urban and regional transport. Special attention must be given to further experiments with minibuses, dial a ride systems, paratransit, and the improvement of the position of cyclists and pedestrians. For the covering abstract of the symposium see IRRD 275817. (TRRL) [Dutch]
Op weg naar 2000. De Toekomst voor het Personenvervoer te Land.

Cornelissen, PAM
Delft University of Technology, Netherlands 1983, pp 91-102, 1 Fig., 2 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 275821), Institute for Road Safety Research SWOV
ORDER FROM: Delft University of Technology, Netherlands, Department of Welding Technology, 2208 Delft, Netherlands

42 387613
REQUIRED DEVELOPMENTS IN TECHNIQUE AND POLICY FOR THE WHOLE FIELD OF TRAFFIC AND TRANSPORT [WENSELIJK GEACHTE ONTWIKKELINGEN IN VAKKUNDIG EN BELEIDSOPZICHT VOOR HET TOTALE VERVOERS-EN VERKEERSWEZEN]
The desirable development of traffic and transport science and policy for the next decade is discussed. For the future traffic and transport policy, there should be a relationship between the nature and spatial dispersion of sociological activities, and the management of transport systems. It is possible to use measures in the field of traffic and transport as an important structuring instrument for policy in the field of physical planning and environment, if these measures are supported by coordinated developments in other fields, such as urban developments, dispersion of working places and so on. An integrating traffic and transport policy is needed, in particular coordination on a regional level. The central government should participate in this policy. The importance of highly qualified technical research for traffic and transport has been stressed. For the covering abstract of the symposium see IRRD 275817. (TRRL) [Dutch]
Op weg naar 2000. De Toekomst voor het Personenvervoer te Land.

Volmuller, J
Delft University of Technology, Netherlands 1983, pp 107-120

ACKNOWLEDGMENT: TRRL (IRRD 275822), Institute for Road Safety Research SWOV
ORDER FROM: Delft University of Technology, Netherlands, Centre for Transportation Engineering, P.O. Box 5038, 2208 Delft, Netherlands

42 387646
CHALLENGES TO THE FUTURE OF URBAN TRANSPORTATION PLANNING
The environment for urban transportation planning continues to change. Although a large commitment of resources is being made to this field, the future of the profession and its products may increasingly depend on the perceptions of the cost effectivness of planning on the part of local decision makers. Scarce resources and relaxation of federal planning requirements accentuate this challenge. Some key issues and choices facing urban transportation planning and planners in the 1980s are identified. Among these are the selection of the most appropriate role for analytic models, the choice of problems to solve and solutions to test, the relative role of creativity, the need to understand the implementation process, and the choice of an appropriate style for planning. The need for more introspection, self-criticism, methodological variation, and concern about ethical choices among problems, solutions, and tools is emphasized.

This paper appeared in Transportation Research Record No. 931, Transportation and Land Use Planning.

Schofer, JL (Northwestern University, Evanston) **Transportation Research Record** No. 931, 1983, pp 27-31, 14 Ref.

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42 387647
STATEWIDE TRANSPORTATION PLANNING IN MINNESOTA
Since its formation in 1976 as a multimodal agency, the Minnesota Department of Transportation (DOT) has modified its approach to statewide transportation planning in response to changes in society and transportation. The Minnesota DOT statewide transportation planning program, including the development of Minnesota's first state transportation plan in 1978, is described and evaluated. The description and evaluation are based on eight key elements; (a) being responsive to the public and the political process; (b) using mechanisms to structure and coordinate diverse planning activities; (c) conducting regular surveillance and evaluation performance and impacts of existing (and past) transportation facilities and services; (d) providing timely response to information needs of top decision makers as they respond to changes and crises; (e) developing regularly updated long-range background forecasts; (f) providing an early warning system; (g) conducting sound, in-depth policy and planning analysis; and (h) providing means to implement the approved recommendations of longer-range, broad planning activities.

This paper appeared in Transportation Research Record No. 931, Transportation and Land Use Planning.

Fausch, PA (Strgar-Roscoe, Incorporated); Plank, PC (Minnesota Department of Transportation) **Transportation Research Record** No. 931, 1983, pp 31-37, 2 Fig., 1 Tab., 6 Ref.

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42 387648
STATEWIDE TRANSPORTATION PLANNING IN UNCERTAIN TIMES
An analysis of the way in which transportation planning should be carried out at the state level in conditions of uncertainty is presented. The overriding issue in most states at the moment is that expected highway revenues will not meet expected highway needs. The approaches being taken are management's response to a need for state governments to more effectively deal with available resources. The courses of action available to the states include preservation of the existing transportation system, emphasis on possible rather than desirable improvements, a focus on specific corridors for modal trade-off, more extensive education in energy conservation, land use control to protect highway utility, early and continued public involvement, and management accountability for implementation of state transportation improvement programs.

This paper appeared in Transportation Research Record No. 931, Transportation and Land Use Planning.

Nielsen, RS (Washington State Department of Transportation) **Transportation Research Record** No. 931, 1983, pp 37-44, 7 Ref.

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42 387649
REVENUE VERSUS NEEDS: AN ANALYTIC APPROACH
To examine the difficult choices created by growing transportation needs and decreasing revenue, the Michigan Department of Transportation developed a comprehensive State Transportation Plan Within the plan, matching transportation needs in order of priority with available revenue was accomplished by using a planning process called the Transportation Revenue Investment Plan (TRIP). TRIP begins with the need that has the highest priority and continues retiring needs until all allocated revenue is spent or all needs are met. Accurate costs for the needs are determined by inflating the base-year cost to the year of revenue that is attempting to retire it. TRIP contains decision rules by transportation mode that regulate the way in which needs are retired and needs not met. TRIP output can be summarized in reports by transportation mode, year, and various other factors. Its highest utility can be seen when these summaries are displayed by means of bar charts, CALFORM maps, or network plotting. The ease with which the graphic display and summarized output of TRIP can be analyzed is beneficial in the State Transportation Plan and within the strategic planning process. In both cases, TRIP can help in evaluating the effects of alternative revenue levels and spending patterns.

This paper appeared in Transportation Research Record No. 931, Transportation and Land Use Planning.

Howe, KR Esch, RE (Michigan Department of Transportation) **Transportation Research Record** No. 931, 1983, pp 44-54, 22 Fig., 2 Tab.

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42 387650
RENAISSANCE FOR THE STATE TRANSPORTATION NEEDS STUDY
State transportation agencies are faced with continued public expectations of improved transportation service. The interrelated issues of projecting revenues and inflation, anticipating the effectiveness of alternative investment maintenance programs, assigning priorities for future service level requirements, ensuring equity, and preserving the benefits from past investments affect the ability of the states to formulate reponsive policy. An historic framework for planning has been the periodic state transportation needs study. This process, however, has fallen into disfavor as the disparity between increasing needs and the ability to retire deficiencies has grown. The Michigan Department of Transportation has restructured the needs study through a procedure for disaggregating, stratifying, and assigning priority transportation needs as input to the preparation of the state's first transportation plan. The Michigan process is basically Zero-base budgeting done for each mode for each year of a study period-in this case, 1982 to 1990. Each defined deficiency is examined to see whether its cost is avoidable; if it is avoidable, the deficiency is placed into a hierarchy of classification. A set of priority rules defined by each mode is then applied. This results in the ranked decision packages needed in order to evaluate the implications of a particular fiscal policy or monetary reality on the ability to retire transportation deficiencies. This approach enables analysts to disaggregate needs into deficiencies, assign priorities, and stratify needs by planning objectives. With this new apporach, the needs study process is reaffirmed as a valuable element in transportation planning and a vital component in evaluating alternative policy options.

This paper appeared in Transportation Research Record No. 931, Transportation and Land Use Planning.

Gotts, TL (Michigan Department of Transportation); Wilson, RA (Resource Planning Associates) **Transportation Research Record** No. 931, 1983, pp 55-61, 11 Fig.

ORDER FROM: TRB Publications Off

42 387652
APPROACH TO TRANSPORTATION PLANNING FOR A HIGHER EDUCATION SYSTEM

Concern for energy conservation in relation to campus development led to the need to develop transportation plans for each campus in the University of Wisconsin (UW) System. The major elements of the planning process used by UW System Administration and 13 university transportation planning committees in the development of the plans are described in detail. Land use studies and student housing models were developed for each campus in coordination with local and regional plans. A survey of student and employee transportation characteristics and special utilization studies were conducted, and modal characteristics were analyzed. Modal projections were made to determine transportation needs. Each university in the system submitted a transportation plan report containing planning process documentation and recommendations for Board of Regents approval. Along with transportation plan implementation, each university campus is to initiate a transportation system management program to develop and market low-capital-cost measures intended to reduce reliance on the single-occupant vehicle and to monitor and evaluate transportation systems as they affect the university.

This paper appeared in Transportation Research Record No. 931, Transportation and Land Use Planning.

Gerhard, DC (Wisconsin University, Madison) **Transportation Research Record** No. 931, 1983, pp 71-77, 5 Fig.

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42 387660
EVALUATION OF THE TRANSFERABILITY OF TRIP GENERATION MODELS FROM ONE URBAN AREA TO ANOTHER

A study was conducted to test the transferability of vehicle trip generation models from one urban area to another as opposed to using an origin-destination model for small urban areas with populations less than 250,000. The validity of each set of calibrated trip generation models was measured by the ability if the trip generation-trip distribution-traffic assignment process to duplicate traffic volumes on the street system of the urban area of Fayetteville, North Carolina. The developmental procedures for the synthesized vehicle trip productions used cross-classification analysis, a technique that specifies trip production as a function of two or more independent variables. These independent variables were related to the socioeconomic characteristics of the dwelling unit. The dependent variable was the vehicle trips produced by the dwelling unit. Regression analysis was used to develop the trip attractions. Based on the tests conducted in the study, the synthesized trip generation model was found to give essentially the same results as the origin-destination trip generation model. Therefore, it was concluded that the synthesized models adequately duplicated travel volumes in urban areas of similar size and thus that trip generation models are transferable from one urban area to another when the urban areas are of similar size.

This paper appeared in Transportation Research Record No. 931, Transportation and Land Use Planning.

Goode, LR (North Carolina Department of Transportation);
Heimbach, CL (North Carolina State University, Raleigh)
Transportation Research Record No. 931, 1983, pp 120-125, 2 Fig., 7 Tab., 2 Ref.

ORDER FROM: TRB Publications Off

42 387661
INTERACTIVE NETWORK EDIT AND DISPLAY PROGRAM FOR THE APPLE II PERSONAL COMPUTER

An interactive network edit and display program (NED), a key module in a set of programs for training transportation planners, is described. This interactive graphics program for the construction and display of highway network models acts like an electronic blackboard on which links can be drawn and their attribute values written. The NED program is written for the Apple II personal computer in UCSD Pascal, and its hardware requirements are minimal: a television set, the language card, and at least one 5.25-in. disk drive. In spite of the limited speed and capacity of the Apple, the capabilities and productivity of NED rival those of similar programs on much larger computers. The major shortcoming of the program is that it can process only small networks of the scale used for training or sketch planning.

This paper appeared in Transportation Research Record No. 931, Transportation and Land Use Planning.

Dial, RB **Transportation Research Record** No. 931, 1983, pp 126-128

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42 387667
A CASE BOOK OF SHORT-RANGE ACTIONS TO IMPROVE PUBLIC TRANSPORTATION

Short-range public transportation improvements—actions which can be fully operational within one or two years—cover a wide range of service alternatives and administrative options. Over the past decade UMTA has funded research and demonstration projects to test a variety of such actions. This volume focuses on three different travel markets: Home-to-work joruneys, special user group travel, and general-purpose travel. This report contains brief case studies summarizing the general features of each project; measuring its benefits, costs and cost-effectiveness using standard assumptions; and presenting the appraisals in standardized format. By physically restricting or pricing private automobile ownership, policymakers can provide a relative advantage to high-occupancy modes. Demographic trends suggest that future travel growth in most cities will be in medium-to low-density suburban areas, rather than in suburb-to-downtown corridors. Growing financial pressures will make it virtually impossible for policymakers to continue the transit service and pricing policies of the 1970s. Greater emphasis on short-range actions will require changes in the institutional framework for planning and decision-making.

Kirby, RF Miller, GK
Urban Institute, Urban Mass Transportation Administration Final Rpt. DOT-I-84-15, Feb. 1983, v.p., Figs., Tabs., Refs., 3 App.

ORDER FROM: OST

42 387675
AN ORGANIZATIONAL ASSESSMENT IN THE DELIVERY OF PUBLIC TRANSPORTATION SERVICES

This report provides an organizational assessment of delivery of public transportation services. It identifies, describes and documents why the present organizational structure is inappropriate for the delivery of adequate public transportation services. The report also seeks to ascertain the problems of coordination in transportation planning, whether an overlap or duplication of efforts exists, and assesses the current state of transportation planning and coordination. The general conclusions are that there are no simple answers to the organizational problem. Each area is physically different and each area's transit needs are different. However, the report does provide an institutional framework on which to base federal, state and local transportation policies.

Jackson, V Swain, D
Edward Waters College, Urban Mass Transportation Administration Final Rpt. UMTA-FL-11-0006-84-1, Aug. 1983, 110p, Refs. Contract FL-11-0006
ORDER FROM: UMTA

42 387705
DALLAS FIXED GUIDEWAY RAPID TRANSIT MODE ANALYSIS. FINAL REPORT

This report focuses on key issues which should be considered by decision makers in selecting a transit mode for Dallas, Texas, and presents a comprehensive evaluation and comparison of alternative modes, identifying important geometric and technical characteristics of each and presenting a preliminary set of unit capital and operating costs at four capacity levels. The alternative transit modes were applied in two typical Dallas corridors (highway and rail) where each was checked for total capital, operating and maintenance costs. Considerable data from manufacturers and operating systems was available for 3 of the 5 modes—light rail, pre-metro, and rapid transit. The other two—monorail and intermediate capacity transit system (ICTS)—are backed with limited or preliminary cost data. The report contains detailed information on procurement, system operation, urban integration, capital cost, operation and maintenance cost, and total annual cost issues. Within this context, a decision about the technology to deploy involves a number of trade-offs which should be made recognizing four distinct groups—users, non-users who may be affected by deployment, agency personnel who must direct its implementation and operation, and

the governing board that must establish policy and oversee operations and expansion.

Prepared in Association with AEAM Engineers Inc., Aguirre Dabney, Hastings, & Rojas, AIA Architects, Inc., Terence J. Collins & Associates, Inc., Gengenbach Engineering.

Lea, Elliott, McGean/De Leuw, Cather, Dallas, City of, Texas Final Rpt. Mar. 1983, v.p., Figs., Tabs., 5 App.

ORDER FROM: Lea, Elliott, McGean/De Leuw, Cather, 1000 West Randall Mill Road, Arlington, Texas, 76012

42 387848
POPULATION DENSITY CONSIDERATIONS FOR URBAN RAIL TRANSIT SYSTEMS
Considerable attention has been given to the relationship of population densities within an urbanized area to existing or estimated rail transit patronage. Unfortunately, much of the rail planning is conducted at the macroscopic scale with the generalized statements of "minimum" densities necessary to support a given system. To adequately assess rail transit potential, microscopic analysis along any particular rail corridor is required. Several data sources are readily available to transportation planners in developing population density profiles along an existing or proposed rail corridor.

Peterson, RL **ITE Journal** Vol. 54 No. 4, Apr. 1984, 3p, 5 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

42 387859
HUMBERSIDE COUNTY COUNCIL PUBLIC TRANSPORT PLAN 1984-1989
This is Humberside's sixth Public Transport Plan, prepared in accordance with the Transport Act 1978. It updates previously published and continuing policies to improve public transport in the county. Six chapters deal with: 1, introduction; 2, policies; 3, existing network; 4, financial resources; 5, consultations; and 6, summary.

Gill, D
Humberside County Council, (0262-5393) Monograph 29p, 2 Fig., Tabs.

ACKNOWLEDGMENT: TRRL (IRRD 276590)
ORDER FROM: Humberside County Council, Planning Department, Manor Road, Beverley, Humberside, England

42 387862
PASSENGER TRANSPORT PLANNING, MANAGEMENT AND POLICY IN JAPAN. PROCEEDINGS OF CONFERENCE HELD AT WOLFSON COLLEGE, OXFORD 1983
The following papers were presented at the conference: Trends in transport: Japan and Britain compared (White, P); A review of new transportation innovations (Toda, T): The role and performance of private railways in Kansai area (Jones, M); Transport planning and policy in Hiroshima area (Sugie, Y); Japanese National Railways: current issues (Sugiki, T). Questionnaires used in the private railways study and facts and figures from the 1982 JNR handbook are given in appendices.

Jones, M White, P (Polytechnic of Central London); Toda, T (Kyoto University, Japan); Sugie, Y (Hiroshima Universiy, Japan); Sugiki, T (Japanese National Railways)
Oxford Polytechnic, England Working Paper 75, Mar. 1984, 93p, Figs., Tabs., Phots., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 276480)
ORDER FROM: Oxford Polytechnic, England, Department of Town Planning, Gypsy Lane, Oxford ox3 DBP, England

42 387866
FORECASTING TRANSPORT DEMAND IN BUS TRANSIT BY TREND EXTRAPOLATION [PROGNOZA PROMETNE POTRAZNJE U JAVNOM GRADSKOM AUTOBUSNOM PROMETU, EKSTRAPOLACIJOM]
A numerical time series analysis and the potential application of extrapolated values in transport forecasting are presented using bus transit in Zagreb as an example. The procedure was found to be applicable in cases where influences on the development of the studied phenomenon are not presumed to depart greatly from earlier values. Forecasting values obtained in this way are primarily applicable in short-term planning. [Croatian]

Milojevic, D Pavlica, DJ (Zet, Zagreb) **Suvremeni Promet** Vol. 5 No. 3, May 1983, pp 495-498, 2 Tab., 12 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 273868)
ORDER FROM: Institut Prometnih Znanost, Gruska 20, Zagreb, Croatia, Yugoslavia

42 387876
CANADIAN TRANSIT HANDBOOK. SECOND EDITION
This handbook provides transit operating agencies, municipal, provincial and federal government agencies, suppliers and universities with a comprehensive reference and training document. There is comprehensive statistical data and state-of-the-art descriptions of the provision of public transit services in Canada. Subjects covered include: History of transit; General characteristics of Canadian transit systems; Demand characteristics; Transit surveys; Demand models; Transit technology; Capacity; Costs; Routes and networks; Bus stops and terminals; Transportation systems management; Scheduling; Service monitoring; Service control; Fleet management; Fare policy and collection; Safety and training; Organization (legal and institutional); Budget and finance; Accounting, Marketing; Labor relations; Techniques for modal comparisons; Energy, Service for the Disabled; Transit and land use.

Canadian Urban Transit Association No Date, n.p.

ORDER FROM: Canadian Urban Transit Association, 140 Bay Street, Suite 220, Union Station, Toronto, Ontario M5J 2LS, Canada

42 387879
1983 YEARBOOK OF SWISS TRANSPORT ECONOMICS [JAHRBUCH DER SCHWEIZERISCHEN VERKEHRSWIRTSCHAFT 1983]
The Yearbook is edited by Professor Claude Kaspar and includes articles on: A comprehensive approach to transport and transport policy, the costs and benefits of transport to the community, the Swiss Railway law 25 years after, distribution of the fuel tax, an alternative to the Public Transport Fund, analysis of efficiency in public transport, transport, cooperatives, and separation of political and business responsibilities in CFF management. [German]

Hochschule St Gallen 1984, 180p, 10 Tab., 10 Phot., 10 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Hochschule St Gallen, IFV, St Gallen

42 387880
PUBLIC TRANSPORT RESEARCH [LA RECHERCHE DANS LES TRANSPORTS PUBLICS]
This volume is a collection of papers (including one in English), given on 24 and 25 January 1984, at a colloquium organised by the Union of Public Transport (UTP). The 4 areas covered are: Organisation and efficiency (computerisation, working conditions); travel and society (travel to work, customer information); region and city (town planning, minimum service standards); vehicles and technology (Design of the Metro 2000; "Technological trends" by Mr. Raymond, assistant director general SNCF). [French]

Union des Transports Publics, Urbains et Regionaux Vol 1, SNCF 10 P 93, 1984, 345p, 10 Tab, 10 Phot., 10 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Union des Transports Publics, Urbains et Regionaux, 5 Rue d'Aumale, F-75009 Paris, France

42 387937
SYNTHESIS OF PRACTICE PLANNING FOR SMALL AND MEDIUM-SIZED COMMUNITIES
The objective is to provide practicioners responsible for delivering transportation service and undertaking transportation planning decisions in small and medium-sized urban areas (less than 200,000 population) with 26 case studies of effective planning approaches. The steering committee identified a selected sample of effective planning approaches used to address major transportation issues and problems. In this synthesis the case studies are in four distinct areas: (1) Assessing growth effects; (2) Data collection and management information systems; (3) Public transportation services;

(4) Programming financing and communicating with decision makers. Planning for traffic operations improvements to enhance flow and safety at spot locations or along major corridors, assessment of impacts of new land developments; and financing. In the case of growing communities, a data base is useful for planning. When communities are declining, essential transportation services have to be provided but from a diminishing resource base. Public transit offers opportunities for delivery of cost-effective transportation services, often tailored operations to meet mobility needs of special groups.

Transportation Research Circular No. 283, Aug. 1984, 29p, 1 Tab.

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42 387949
FUTURE DIRECTIONS OF URBAN PUBLIC TRANSPORTATION

This Transportation Research Special Report contains a summary of the conference; Part 1: Conference Purpose (Introduction to the Conference, H.C. Neil Peterson III, Opening Remarks, Carole A. Foryst); Part 2: why is Transit in Trouble?; Part 3: Conference Consensus Statement; Part 4: Overview papers: Effects of Energy Supply and Telecommunications on Urban Mass Transit's Future, S.J. LaBelle and M.J. Bernard III; Land Use Trends and Transit Operations, D.E. Priest and J.L. Walsh-Russo; Changes in the Economic Base of Urban Areas: Implications for Urban Public Transportation, R.V. Knight; Financing Public Transportation, R.F. Kirby; Does This Bus Go to the Future? Some Thoughts on the Future of Urban Public Transit, J.L. Schofer; and Part 5: Issues papers: Future Directions of Urban Public Transportation: Why Transit is in Trouble, H.C. Neil Peterson III; Transportation in Transition, M. Pikarsky and C. Johnson; Changing Concepts of Urban Public Transportation, C.K. Orski; Financing Government Enterprises, F.D. Raines; and How Do We Position Ourselves for the Future?, R.S. Page.

Transportation Research Board Special Report No. 199, Future Directions of Urban Public Transportation. Papers presented at a Conference on the Future Directions of Urban Public Transportation, September 26-29, Woods Hole, Massachusetts. For abstracts of individual papers see TRIS 387950 through TRIS 387962.

Transportation Research Board Special Report No. 199, 1983, 85p, Figs., Tabs., Refs., 2 App.

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42 387950
FUTURE DIRECTIONS OF URBAN PUBLIC TRANSPORTATION. CONFERENCE PURPOSE

The specific objective of the conference is to investigate the near-term outlook and policy options for urban public transportation facilities and services over the next decade and beyond. A series of five overview stage-setting papers were prepared on the subjects of energy and communications, land use and transportation, economic base, public finance, and the future of urban public transportation. These papers were summarized by the conference consultant at the start of the meeting, and the authors were given the opportunity to comment or to clarify their views. This material, including the five overview papers, is contained in Part 4 of these proceedings. In addition, a series of five issue papers directly related to various urban public transportation issues was prepared and summarized by the authors at the conference. Edited versions of these papers appear in Part 5 of these proceedings. Building on these background materials and presentations, the conference participants began a dialog in an attempt to reach consensus on future directions. The first step in the dialog was a plenary session discussion of recent trends and conditions that have been contributing to the difficulties now facing public transportation. This discussion is summarized in Part 2. After that session the conference participants broke into small discussion groups to begin the strategic planning process that resulted in the conclusions summarized in Part 3. (Author)

This paper appeared in Transportation Research Board Special Report 199, Future Directions of Urban Public Transportation. Papers presented at a Conference on the Future Directions of Urban Public Transportation September 26-29, 1982, Woods Hole, Massachusetts.

Peterson, HCN, III **Transportation Research Board Special Report** No. 199, 1983, p4

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42 387952
FUTURE DIRECTIONS OF URBAN PUBLIC TRANSPORTATION. SYNOPSIS OF PRE-CONFERENCE PAPERS

This section offers a synopsis of the five overview papers that were prepared for and provided to the participants before the Woods Hole conference. In addition, authors of the papers had an opportunity to comment further on their themes and positions. Such comments are highlighted here, and the edited texts of their papers are included for further reference. The authors and their topics are as follows: Effects of Energy Supply and Telecommunications on Urban Mass Transit's Future, Sarah J. LaBelle and Martin J. Bernard III, Argonne National Laboratory; Land Use Trends and Transit Operations, Donald E. Priest, University of Virginia and Priezac Corporation, and Joseph L. Walsh-Russo, New Jersey Department of Transportation; Changes in the Economic Base of Urban Areas: Implications for Urban Public Transportation, Richard V. Knight, University of Akron; Financing Public Transportation, Ronald F. Kirby, Urban Institute; and Does This Bus Go to the Future? Some Thoughts on the Future of Urban Public Transit, Joseph L. Schofer, Northwestern University. The list of points made by the authors includes finance, paratransit, private-sector involvement, private-sector management practices, metropolitan development patterns, and energy. (Author)

This paper appeared in Transportation Research Board Special Report No. 199, Future Directions of Urban Public Transportation. Papers presented at a Conference on the Future Directions of Urban Public Transportation, September 26-29, 1982, Woods Hole, Massachusetts.

Stowers, JR **Transportation Research Board Special Report** No. 199, 1983, pp 21-24

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42 387955
CHANGES IN THE ECONOMIC BASE OF URBAN AREAS: IMPLICATIONS FOR URBAN PUBLIC TRANSPORTATION

This paper focuses on how future city development is likely to differ from past patterns, on the increasing importance of design in rebuilding older cities so that these cities become "liveable" cities competitive with other "world class" cities, and on the potential role of transit as a design and development tool.

This paper appeared in Transportation Research Board Special Report No. 199, Future Directions of Urban Public Transportation. Papers presented at a Conference on the Future Directions of Urban Public Transportation, September 26-29, 1982, Woods Hole, Massachusetts.

Knight, RV **Transportation Research Board Special Report** No. 199, 1983, pp 46-53, 27 Ref.

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42 387957
DOES THIS BUS GO TO THE FUTURE? SOME THOUGHTS ON THE FUTURE OF URBAN PUBLIC TRANSIT

The author argues that the transit industry should diversify and give up control of much of the existing public transportation service. He points out that bigness in transit has no scale economy. He says that greater emphasis should be placed on cost-effectiveness management controls and cites an example of using statistics such as cost per passenger, rather than cost per vehicle mile, as indicators of cost effectiveness in transit. He points out that the private sector has done relatively well in a number of specialized areas including taxis, the charter business, school bus business, elderly and handicapped services, vanpools and carpool assistance. He argues that we should seek controlled competition between the public and the private sectors. He also believe that industry needs to be tough on labor issues affecting the long-term efficiency of transit, even allowing strikes if necessary, in order to tie benefits and wages to productivity. Finally, he argues in favor or shifting federal programs towards block grants, to encourage proper incentives for improved performance at the local level.

This paper appeared in Transportation Research Board Special Report No. 199, Future Directions of Urban Public Transportation. Papers presented at a Conference on the Future Directions of Urban Public Transportation September 26-29, 1982, Woods Hole, Massachusetts.

Schofer, JL **Transportation Research Board Special Report** No. 199, 1983, pp 59-66, 24 Ref.

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42 387958
FUTURE DIRECTIONS OF URBAN PUBLIC TRANSPORTATION: WHY TRANSIT IS IN TROUBLE
This paper reviews the transit industry situation in terms of market share, efficiency, pricing, capital needs and image and concludes that the transit industry is in serious trouble. It then reviews the many factors that have contributed to this state of affairs: economic conditions, gasoline prices, demographic shifts, America's leve affair with automobiles, the lack of secure and predictable funding sources, Federal Government action, insufficient R&D, and poor management and/or union recalcitrance. Finally in others an opinion on what steps the transit industry should take to manage successfully in the 1980s.

This paper appeared in Transportation Research Board Special Report No. 199, Future Directions of Urban Public Transportation. Papers presented at a Conference on the Future Directions of Urban Public Transportation, September 26-29, 1982, Woods Hole, Massachusetts.

Peterson, HCN, III **Transportation Research Board Special Report** No. 199, 1983, pp 69-71

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42 387959
TRANSPORTATION IN TRANSITION
It is proposed that the current transportation crisis is both the death rattle of outdated institutions for delivering transportation services, and the painful birth of many new delivery systems. In the coming years, the public sector must reduce its financial commitments and gain better control over its costs. Scarce public resources will have to be focused more carefully on specific attainable objectives. Greater financial contributions from users will also be required. Options available to meet nearly everyone of these challenges fall under the general umbrella of greater use of private sector providers.

This paper appeared in Transportation Research Board Special Report No. 199, Future Directions of Urban Public Transportation. Papers presented at a Conference on the Future Directions of Urban Public Transportation September 26-29, 1982, Woods Hole, Massachusetts.

Pikarsky, M Johnson, C **Transportation Research Board Special Report** No. 199, 1983, pp 72-74

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42 387960
CHANGING CONCEPTS OF URBAN PUBLIC TRANSPORTATION
Urban transportation in America is undergoing a major appraisal and, emerging from these grassroots reappraisals, is a wealth of innovative ideas about the ways local transportation can be more effectively managed, provided, and paid for. These new approaches are divided into seven headings, and reviewed: (1) Developer involvement in transportation improvements; (2) Private-sector sponsorship of transportation services; (3) Transportation management associations; (4) Downtown transportation management; (5) Private operation of transit services; (6) Decentralizing service delivery; and (7) Private financing of transit infrastructure.

This paper appeared in Transportation Research Board Special Report No. 199. Future Directions of Urban Public Transportation. Papers presented at a Conference on the Future Directions of Urban Public Transportation, September 26-29, 1982, Woods Hole, Massachusetts.

Orski, CK **Transportation Research Board Special Report** No. 199, 1983, pp 74-78

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42 387962
HOW DO WE POSITION OURSELVES FOR THE FUTURE?
Key issues that must be assessed and evaluated to ensure transit industry's vitality are identified: goals funding, service, markets, labor and productivity. An approach to "futuring" is suggested: strategic planning, a management tool already used by the private sector but that should be explored by public-sector transit agencies.

This paper appeared in Transportation Research Board Special Report No. 199, Future Directions of Urban Public Transportation. Papers presented at a Conference on the Future Directions of Urban Public Transportation, September 26-29, 1982, Woods Hole, Massachusetts.

Page, RS **Transportation Research Board Special Report** No. 199, 1983, pp 80-82

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42 387965
ALTERNATIVES ANALYSIS AND DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR MAJOR TRANSIT CAPITAL INVESTMENTS
The St. Louis Central/Airport Corridor connects Metro East, downtown St. Louis, Clayton, and the Airport/McDonnell-Douglas complex. Five primary alternatives are considered to improve transit in the corridor: 1) no-action; 2) transportation system management (TSM); 3) busway; 4) light rail transit (LRT); and 5) light rail transit with shuttle bus service (to Clayton). The following effects of each of the alternatives are considered, as appropriate: transportation; economic development; displacement; neighborhood; visual and aesthetic; air quality; noise and vibration; ecosystem; water; energy; historic, archaeological, and cultural; parkland, and financial effects. The findings of the AA/DEIS study and the public hearing-AA/DEIS comments will be used to select a preferred alternative for the corridor.

Urban Mass Transportation Administration, East-West Gateway Coordinating Council May 1984, v.p., Figs., Tabs., 1 App.

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42 387981
DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE DOWNTOWN SEATTLE TRANSIT PROJECT
The environmental impact statement evaluates proposed solutions to transit congestion in the Seattle Central Business District. In addition to discussing existing conditions and 1990 "No-Action" conditions, four basic "action" alternatives (some of which have several options) are addressed: two Transportation System Management options, one Nonintercept Mall option, six Mall with transit Center options, and three Tunnel options. The document describes these alternatives and evaluates the probable social, economic and physical environmental impacts associated with the project. A Metro Council preferred alternative for preliminary engineering consisting of an electric-only transit tunnel with a circulation system and surface improvements is also described.

Urban Mass Transportation Administration, Municipality of Metropolitan Seattle-METRO, Seattle, City of Mar. 1984, n.p., 87 Fig., 61 Tab., 12 App.

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42 387982
ALTERNATIVES ANALYSIS/DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE QUEENS SUBWAY OPTIONS STUDY IN BOROUGH OF QUEENS NEW YORK CITY, NEW YORK
This Draft Environmental Impact Statement has been prepared to provide information on options for improvement of subway service for the Borough of Queens, New York. Queens is the largest of the New York City boroughs in area (115 sq mi) and second in population (1.9 million). Queens has a range of rapid transit, railroad and bus services, all heavily utilized. Despite declines in overall transit ridership, the high concentration of employment in Manhattan causes peak-hour demand to remain high. Three subway tunnels under the East River into Manhattan carry 127,200 passengers in the AM peak hour. The Long Island Rail Road operates at capacity through Queens with its two East River tunnels accommodating 43 trains in the peak hour. Some express buses and vanpools also operate between Queens and Manhattan. The proposed program calls for extensive expansion of transit service in Queens, with five options detailed by the Queens Transit Alternatives Study. Each alternative is described in a format which presents the physical characteristics, service characteristics, and environmental impacts.

Urban Mass Transportation Administration, Metropolitan Transportation Authority May 1984, v.p., Figs., Tabs., 1 App.

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42 387983
EVALUATION OF URBAN TRANSPORTATION CAPITAL INVESTMENT PROJECTS
Evaluation of capital investment alternatives should encompass assessments of efficiency, effectiveness, and equity. This report approaches the definition, interpretation, and application of these concepts. Issues covered relate to user and non-user benefits, measurement techniques and principles, evaluation techniques, relationship of evaluation to goals and objectives, and relative strengths and weaknesses of the various types of assessments. More attention is paid to the question of efficiency—the selection of projects that maximize net social benefits—and the benefit-cost framework in particular, than is typical in current professional practice. One reason for this is that the concepts of benefit-cost evaluation appear to be both poorly understood and misunderstood, with the result that efficiency analysis has not been applied as insightfully as it might be in project planning. Another reason is that the transportation planning field has been searching for an organizing framework with which to make sense out of the welter of impacts, objectives, and interests that typically surround urban transportation project decisionmaking, and the benefit-cost rubric is capable of supplying that framework. Finally, the content of investment decisions has shifted from a problem of spatially allocating an externally determined amount of new capacity, to a problem of fine-tuning a muture transportation system that is no longer expanding. It is thus important to be clearer about what is wanted and what is expected from urban transportation investments, and to know better the real costs and benefits of investment alternatives. Various kinds of effectiveness analysis are also needed, and will continue to serve an essential purpose in helping to choose among projects, but less guidance is needed in this area because the state of professional practice is close to the state of the art.

Lee, DB **Urban Mass Transportation Administration** UMTA-UGM-22, Jan. 1983, 72p, 3 Fig., 2 Tab., Refs., 3 App.

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42 387988
THE FLEXIBILITY OF DEPARTURE TIMES FOR WORK TRIPS
We examine the flexibility of departure times for the journey to work making use of data gathered in Pittsburgh, Pennsylvania. Measured travel time peaking is pronounced for trips into the Pittsburgh central business district, although the variation in travel time is low for a particular route, mode and departure time. Estimation of a logit model of simultaneous mode and departure time interval choice is reported. Departure time decisions are found to be much more flexible (elastic) than are mode choices. Some implications for dynamic or time dependent transportation system management strategies are considered.(a)

Hendrickson, C (Carnegie-Mellon University); Plank, E (PRC Voorhees Company) **Transportation Research. Part A: General** Vol. 18A No. 1, Jan. 1984, pp 25-36, 5 Fig., 7 Tab., 15 Ref.

ACKNOWLEDGMENT. TRRL (IRRD 276160)
ORDER FROM: ESL

42 388800
CONVERTING CENSUS JOURNEY-TO-WORK DATA TO MPO TRIP DATA
Data summaries from the 1980 Census will show estimates that are low when compared to Metropolitan Planning Organization (MPO) trip data for Transit usage and Average car occupancies. Any MPO planning to use the 1980 Census data to calibrate or validate transportation simulation models should be aware of this discrepancy. This presumption is based on a study conducted by the Metropolitan Washington Council of Governments/Transportation Planning Board (COG/TPB), using the 1977 Travel-to-Work Supplement to the U. S. Bureau of the Census Annual Housing Survey.

Mann, WW (Metropolitan Washington Council of Governments) **ITE Journal** Vol. 54 No. 2, Feb. 1984, pp 48-51, 7 Ref.

ACKNOWLEDGMENT: EI
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42 388805
METROPOLITAN TRANSPORTATION IN CAPE TOWN
South African urban transportation planning has over the past decades focused on the development of high cost road-orientated capital facilities. A growing awareness has however arisen in recent years that each significant addition to the road system has added to the strain on available financial resources, has generated environmental impacts, and has often induced so much additional travel that the new facility has soon needed expanded capacity.

Brand, JG (Cape Town Traffic Engineering Section) **ITE Journal** Vol. 53 No. 11, Nov. 1983, pp 10-12

ACKNOWLEDGMENT: EI
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42 389247
TRANSPORTATION PLANNING RESEARCH COLLOQUIUM 1983 HELD IN ZANDVOORT ON DECEMBER 14-16, 1983. VOLUME I AND II [COLLOQUIUM VERVOERSPLANOLOGISCH SPEURWERK 1983. VOLUME I EN II]
The purpose of the transportation planning research colloquium 1983 on transportation and stagnation, challenges for planning and research, is to provide a meeting ground for the presentation and discussion of new insights and ideas in the field of transportation planning and its relationship with spatial planning. For abstracts of the papers presented at the conference see IRRD nos 276521 to 276575. [German]

Bovy, PHL (Delft University of Technology, Netherlands) Colloquium Vervoersplanologisch Speurwerk Monograph 1984, 832p, Figs., Tabs., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 276 521), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

42 389250
THE ROLE OF PLANNING IN THE PRESERVATION OF TRANSPORTATION INFRASTRUCTURE
The physical condition, performance, and costs of transportation infrastructure deteriorates over time due to aging and use. Reversing this decline is difficult because decision makers and technical professionals prefer to concentrate on new construction. While interest in, and resources for, reinvestment have expanded in the U.S., it is not apparent how these resources can be most efficiently allocated. Planning has an important and largely unfulfilled role in these choice processes. Planning is most useful where there are real alternatives, resource constraints, and uncertainties. Each of these characteristics is present in infrastructure reinvestment. Yet such decisions are made today with little or no analysis. Actions are taken in the face of crisis, and where time is available to study options, focus is on raising facilities to the highest standards, ignoring costs and benefits. While vested political and technical interests support these approaches, there are important alternatives worthy of more careful study. In particular, stagnation and declining travel needs argue for more serious analysis of low level reinvestment, downgrading of service, and, in some cases, complete divestiture. Private sector market exit is suggested as a useful model of these options. Evaluation of specific types of benefits of transportation reinvestment, using available planning tools, is suggested as both feasible and necessary. Decision makers exhibit some willingness to consider such information in their choice process. For the covering abstract of the conference see IRRD 276520. (Author/TRRL)
Transportation Planning Research Colloquium 1983 held in Zandvoort on december 14-16, 1983. Volume I.

Schofer, JL (Northwestern University, Evanston); Bovy, PHL Colloquium Vervoersplanologisch Speurwerk 1984, pp 45-62, 3 Fig., 2 Tab., 14 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276524), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

42 389266
A LOOK AT THE CONCEPTUAL FOUNDATIONS OF THE TRANSPORTATION PLANNING PROCESS

The paper seeks to examine the behavioral foundations on which the present transportation planning process, as practiced in the U.S. is based. After outlining the planning process, data collection procedures and accuracy of the observed variables used in transportation planning and policy studies are carefully discussed. The final section of the paper is devoted to the behavioral theories about man and their relation to transportation policy and public policy in general. The section seeks to "prove" two things. First, the observed variables, whether accurately measured or not, explain only a small part of travel behavior in a utility maximizing framework of (travel) choices. The second and a more fundamental proposition is that utility maximization, no matter how broadly interpreted, is an incomplete theory about man and accounts behavior. It is then argued that this misinterpretation of the aims of human behavior is reflected in present public policy proposals. Freud's dualistic formulation of instinctual drives—the life and death instincts—is then used as a framework in an attempt to reinterpret three current transportation and public policy problems. At least to the satisfaction of the author these reinterpretations offer a convincing, more realistic and deeper understanding of the forces shaping human behavior and, if applied, will lead to a different transportation planning process in particular and to a different approach to public policy in general. For the covering abstract of the conference see IRRD 276520. (Author/TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume I.

Talvitie, A (State University of New York, Albany); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 289-307, 3 Tab., 18 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276540), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

42 389272
SYSTEMATIC SENSITIVITY TESTING IN PROJECT APPRAISAL. A METHOD OF IDENTIFYING THE UNCERTAINTY OF TRANSPORTATION FORECASTS

Traditionally, the existence of an "end-state" which can be perfectly defined has been assumed in both land use and transportation planning. This is, however, a highly questionable assumption. In the case of transportation, predicting those quantities, such as population, employment, income and the like, which determine both the volume and characteristics of travel demand is very hazardous, particularly at the local level of detail required for any demand forecasting purposes; the longer the forecasting period, the greater is the likelihood of error and the likely size of that error. These errors are likely to be compounded by errors in the demand forecasting procedures themselves. Travel demand is a complex phenomenon and, even in the best of demand models, it is possible only to capture some of the factors and interactions which govern it. A further compounding factor is the likelihood of error in the data on which these models are based. Transportation planners need demand forecasts for the evaluation of plans and policies, and for a detailed design of projects. It is important that the errors and uncertainties intrinsic in the forecasting process be recognised and explicitly treated. In this paper, the authors first review some of the sources of error and uncertainty. The authors then look briefly at some of the ways in which uncertainty can be treated in decision-making. This is followed by a description of a technique developed in the specific context of the appraisal of inter-urban highway projects in the United Kingdom. Finally, the authors discuss how such an appraisal, based on systematic sensitivity testing, could be applied to a wider variety of plans and policies. For the covering abstract of of the conference see IRRD 276520. (TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume II.

Lowe, S Richards, MG (The Mva Consultancy); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 3-14, 2 Fig., 1 Tab., 4 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276546), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

42 389279
ACCESS, EGRESS AND MODAL CHOICE

This paper discusses the influence of access and egress distance on modal choice of train versus automobile in the context of urban and regional planning and locational decisions. It may be concluded that both access and egress distance do affect the modal choice train versus automobile. Hòwever egress distances tend to be somewhat shorter than access distances. This tendency clearly relates with the availability of modes of transportation for access, egress and the central part of the trip, with the total length of the trip and with the geographical situation. For the covering abstract of the conference see IRRD 276520. (Author/TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume II.

Enden, AC van den (Traffic and Transportation Group-Tno); Lobuizen, CW van (Research Centre for Physical Planning and Housing); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 85-103, 12 Fig., 2 Tab., 17 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276553), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

42 389282
URBAN TRANSPORTATION PLANNING IN THE UNITED STATES. TRENDS AND FUTURE DIRECTIONS

For many years, the transportation planning process in U.S. cities was heavily influenced by guidelines and regulations from the Federal government. These regulations not only mandated what documents should be produced by the planning process, but heavily influenced the selection of techniques that would be used for analysis and evaluation of alternatives. Two major developments have changed this characteristic of U.S. transportation planning. First, the Federal government has adopted a more flexible approach to transportation planning, that is, not requiring as many products and process characteristics as it once did. Second, the rapid development of microcomputer technology has provided many planning agencies as analysis capability that makes them more capable of addressing short-term, system management alternatives. The purpose of this paper is to examine the current trends in transportation planning and to discuss the implication of these trends on the future direction of transportation planning in the United States. The first section of the paper briefly presents the important political, economic, and social trends that have evolved over the past 10 years and which have affected transportation planning. The next section discusses the characteristics of the transportation planning process that seem to describe the process evolving in many U.S. cities. Finally, the paper concludes with several predictions on the likely characteristics of transportation planning 10 years hence. For the covering abstract of the conference see IRRD 276520. (Author/TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume II.

Meyer, MD (Massachusetts Institute of Technology); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 143-149, 4 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276556), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

42 389292
STRUCTURAL CHANGE IN URBAN DYNAMIC MODELS

Spatial interaction patterns in an urban region are not an isolated phenomenon per se. Their developments can only be understood as the result of changes in the key components of the urban region (housing, employment, retailing e.g.). In order to describe, explain, or even predict these developments, a dynamic systems approach focussing on trajectory over time of the urban system is desirable. The main subject of this paper is an overview of dynamic urban models and theories, with a special emphasis on structural changes within an urban system. Changes can occur as a result of developments in the key variables of the system, or as the result of changes in the parameters and relationships between system elements. In

the latter case, the system is said to show structural change. For the covering abstract of the conference see IRRD 276520. (Author/TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume II.

Nijkamp, P Rima, A Wissen, L van (Free University Amsterdam); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 315-331, 1 Tab., 37 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276566), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

42 389298
RANDOM UTILITY MODELS AS PRACTICAL TOOLS OF TRAVEL DEMAND ANALYSIS: AN EVALUATION
Discrete choice, random utility models, such as the multinomial logit and multinomial probit models, provide a convenient behavioral and mathematical framework for carrying out travel demand analysis. When these models first were brought to the attention of the transportation community in the early 1970s, it was argued they had several important theoretical and practical advantages over other available travel demand modelling approaches such as the familiar four-step process. The advantages claimed for random utility models included their basis in an explicit principle of human behavior, their ability to treat an unusually wide range of travel choices and policy variables, and their ability to make efficient use of data. It was argued that these advantages enable random utility models to forecast travel more accurately and less expensively than do other models. Since the early 1970s, there has been much research and experience with random utility travel demand models, and these models are understood much better now than they were 10 years ago. The purpose of this paper is to review current knowledge of random utility modeling that affects practical travel demand analysis and to identify the implications of this knowledge for parctice. For the covering abstract of the conference see IRRD 276520. (Author/TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume II.

Horowitz, JL (Iowa University); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 385-404, 105 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276572), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

42 389304
THE INTEGRATION OF ACTIVITY AND TRANSPORTATION ANALYSES FOR USE IN PUBLIC DECISION-MAKING
A growing number of transportation decision-makers recognize the potential of activity-orientated policies (e.g. Variable working hours) for use in achieving a variety of public goals from the reduction of congestion to increasing air quality. This article contributes to meeting the resulting need for analysis of alternative activity-based policies, so that decisions about the best application of such policies can be made. After a discussion of prior studies in which activity policies have been examined, an empirical example is presented of how an activity-oriented approach could be employed to analyze future conditions. The ramifications of an activity approach for planning practice are then outlined.(a)

Damm, D (Transportation Systems Center) **Transport Policy and Decision Making** Vol. 2 No. 3, 1984, pp 249-269, 1 Fig., 2 Tab., 63 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276508), Institute for Road Safety Research SWOV
ORDER FROM: Martinus Nijhoff Publishers, P.O. Box 566, The Hague, Netherlands

42 389305
CENTRAL-LOCAL RELATIONS IN BRITAIN: THE CASE OF THE FARES FAIR POLICY IN LONDON
There is considerable debate over the responsibilities that central and local government should have over the provision of public transport in urban areas. This paper reviews various theoretical frameworks within which this policy dilemma can be investigated, and then analyses the London Fares Fair policy issue (over the period 1981-1982) within a dualist approach advocated by Saunders. The policy context in Britain is outlined together with the particular responsibilities of the Greater London Council in providing public transport services, and this provides an introduction to the case study of low fares policy. The outcomes of the successful implementation of the policy and its subsequent outlined. (Author/TRRL)

Banister, D (Bartlett School of Architecture and Planning) **Transport Policy and Decision Making** Vol. 2 No. 3, 1984, pp 275-289, 5 Tab., 31 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276509), Institute for Road Safety Research SWOV
ORDER FROM: Martinus Nijhoff Publishers, P.O. Box 566, The Hague, Netherlands

42 389306
PROJECT PROGRAMMING IN URBAN TRANSPORTATION: METHODOLOGY PREPARED FOR CAIRO, EGYPT
"Programming" is a means of identifying projects, moving them efficiently into implementation, and assuring a maximum flow of benefits through the sequencing of their implementation. Methods for seeking these objectives have been used for many years in developed countries. Comparable methods in developing countries, however, have not been as widespread. The purpose of this paper is to describe an effort at developing a systematic programming process in Cairo, Egypt. The paper not only discusses the techniques developed for application, but also the institutional environment within which programming, and hence project implementation, occurs. (Author/TRRL)

Gakenheimer, R (Massachusetts Institute of Technology) **Transport Policy and Decision Making** Vol. 2 No. 3, 1984, pp 315-334, 3 Fig., 11 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276511), Institute for Road Safety Research SWOV
ORDER FROM: Martinus Nijhoff Publishers, P.O. Box 566, The Hague, Netherlands

42 389318
THE IMPACT OF TRANSPORT POLICY ON THE CITY
One way to forecast the impact of transport policy in an urban area is to use a computer simulation model such as the Leeds Integrated Land Use-Transport (LILT) model. This model has been used to make forecasts for the city of Leeds for the period 1976 to 1991. A base forecast representing the "most likely future" was made against which the policies were tested. Even with travel costs constant in real terms, the model predicted a continuation of the trends of rising car ownership and decentralisation. The model predicted that increasing the price of fuel would slow down the decentralisation of jobs, while increasing bus fares would accelerate the process. Making buses free would encourage the growth of jobs in the city centre, especially retail and service activity. The introduction of city centre restraint in terms of a very high parking charge would accelerate the demise of the city centre and encourage suburban development. Of the four policies designed to assist the inner city, only the one making short bus trips cheaper was estimated to accelerate the outward movement of jobs. The other three policies, namely, free parking, introducing better cross-town bus services and improving road access were all estimated to slow down the decline in the number of jobs in the inner city. All the policies had a variety of side-effects which are discussed in the report. (Author/TRRL)

MacKett, RL (Leeds University, England) **TRRL Supplementary Report** No. 821, 1984, 40p, 6 Fig., 22 Tab., 10 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276801)
ORDER FROM: TRRL

42 389366
UMTA TECHNICAL ASSISTANCE. A GUIDE FOR USERS
This directory details the resources available under the Technical Assistance Program of the Urban Mass Transportation Administration. Such resources are available to transit operating agencies, state and local governments, and private industry for improving transit productivity, reliability, safety, operations, cost reduction and for enhancing the use of

information and for better planning techniques The program encompasses UMTA's research, development deployment, demonstration, engineering applications, safety, information and statistical collection, management techniques, planning, university research, and external training efforts. Sources are complete with description of available information, contacts, addresses and phone numbers.

Urban Mass Transportation Administration 1984, 26p, 4 App.

ORDER FROM: UMTA

42 389773
OSAKA AND ITS TECHNOLOGY, VOLUME 5, 1984
The Osaka Municipal Urban Engineering Information Center was established in 1982 with the objective to collect, classify and exchange theses and technical information on urban engineering and technology for reference and to extend expert advice and cooperation in the execution of various engineering projects of local governments at home and abroad. This issue contains articles on the following topics: An Evaluating System for Street Landscape and Its Application; A Demand Forecast System for Railway Passengers in the Metropolitan Area; Basic Investigation on Water Pollution Control Problems; On Characteristics of Cross-Sectional Deformation Two Single-Web Main Girder Bridges with Steep Plate Decks; Application of Fire Prevention Engineering for the Disaster Prevention City Plan; and An Outline of Activities in the Field of Polymer Chemistry at the Osaka Municipal Technical Research Institute.

See also Volume 4, PB84-118678. Color illustrations reproduced in black and white.

Osaka Municipal Urban Engineering Information Ctr 1984, 65p

ORDER FROM: NTIS PB84-180942

42 389778
EVALUATION OF URBAN MASS TRANSIT SYSTEMS IN DEVELOPING CITIES
This article is concerned with strategic issues. Its purpose is to identify which initiatives offer most prospect of improving the basis for decision making in this sector. It concludes that major improvements are achievable, that they are likely to result from evolutionary change building on the experience gained in the region over the last 5-10 years; and that they are likely to require changes to the transport planning process as a whole together with more applied research. The paper is based on experience in South East Asia with particular reference to the Philippines. The paper confronts four issues which appear to be central to improved decisions. In practice there is much evidence that the applications of government's test discount rate results (for various reasons) in much larger demands on public investment resources than are likely to be funded.

Allport, RJ Prynn, PJ **ITE Journal** Vol. 53 No. 7, July 1983, pp 30-34, 7 Ref.

ACKNOWLEDGMENT: EI
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42 389779
EVALUATION OF URBAN MASS TRANSIT SYSTEMS IN DEVELOPING CITIES-PART II
Three requirements are established as a prerequisite for meaningful evaluation: a structure plan for the city, relevant evaluation criteria against which project performance can be measured and an inter-agency forum where key issues can be resolved. The first requirement of evaluation is that a soundly based structure plan for the urban area exists which clearly establishes: (1) objectives (incorporating national objectives); (2) existing problems and the priority attached to their resolution; (3) the existing (5 year) programs of government agencies; and (4) desired changes in development; (5) a data base for sectoral planning-population, socioeconomic and land use data for the present and for selected future years.

Allport, RJ Prynn, PJ **ITE Journal** Vol. 53 No. 8, Aug. 1983, pp 20-23, 7 Ref.

ACKNOWLEDGMENT: EI
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42 389785
VARIABILITY OF INDIVIDUAL TRAVEL TIME COMPONENTS
Each of the separate components of journey time is examined for a variety of travel modes (both public and private) between a single origin and destination pair. The components of travel time considered for variability include, for each mode, walk times, wait times, in-vehicle time, and transfer times. The mean travel time is shown to be strongly dependent on departure time. The log-normal distribution proves a useful, general descriptor of in-vehicle times. Individual components of travel time on any particular journey are found not to be significantly correlated to one another.

Dandy, GC (Adelaide University, Australia); McBean, EA **Journal of Transportation Engineering** Vol. 110 No. 3, May 1984, pp 340-356, 13 Ref.

ACKNOWLEDGMENT: EI
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42 389788
TRANSIT RIDERSHIP FORECASTING-A MICROCOMPUTER APPLICATION
This article describes the advantages and disadvantages of implementing transit ridership forecasting techniques on microcomputers, taking into account necessary and desirable simplifications and modifications. One model, which has been successfully implemented on a microcomputer, will be presented as an indication of the considerations involved. Forecasting transit ridership can be accomplished by a variety of methods of varying degrees of sophistication. For example, elasticities have been estimated between ridership and a large number of travel factors including fare and headway. With these elasticities, the effects of fare and headway changes on an existing route can be quickly and roughly estimated. Other techniques, which assume ridership is proportional to the number of dwelling units in the service area, enable calculation of impacts of route extensions.

Horowitz, AJ (Wisconsin University, Milwaukee) **Transportation Quarterly** Vol. 38 No. 2, Apr. 1984, pp 297-310, 5 Ref.

ACKNOWLEDGMENT: EI
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42 389884
UMTA TECHNICAL ASSISTANCE ADVISORY SEMINAR, ANN ARBOR, MICHIGAN
The UMTA Technical Assistance Advisory Seminar was held in Ann Arbor, MI, September 13-14, 1983, bringing together over 50 transportation professionals to discuss composition and direction of UMTA Technical Assistance Programs. There was some consensus on UMTA program direction. (1) Emphasize technology transfer with recommendation that UMTA aim at enhancing the process. (2) Concentrate on near-term solutions to needs defined by the transit industry with more guidance to the ultimate users of technical assistance. (3) Give more attention to training and techniques which can improve the management of transit, stressing soft-side technologies. (4) Undertake fewer, but bigger programs with research efforts more sharply focused on carefully selected priority areas. (5) Encourage public/private cooperation among service providers with UMTA finding ways to involve private providers in the federally mandated planning process, encourage cooperation between public and private sectors and resolve labor issues. (6) Continue support for research and development performed by the private sector since the limited market provided by transit provides limited opportunity for amortizing private R&D costs.

Urban Mass Transportation Administration July 1984, 15p

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42 389891
URBAN TRAVEL TRENDS: HISTORICAL OBSERVATIONS AND FUTURE FORECASTS
The objective of this study was to investigate the effects of telecommunications substitutes for travel, urban land use patterns, rescheduling of work activities, and their impacts on urban travel patterns. As a result of this research effort and what had occurred over the past decade, the report also provides some forecasts and hypotheses on future urban travel trends. Some of the anticipated trends show that trips for family and personal business will increase along with work trips. Total trips are expected to

increase, while trips for educational, social and recreational purposes will decline. Socio-economic and demographic conditions, such as increasing household formations, growth in the labor force and aging of the population were seen to have greater influence on total travel trends than the effects of particular technological developments. Recent growth in transit ridership will continue, however, at a declining rate of growth which may be the result of expected continued growth in carpooling and vanpooling.

Eckmann, A Price, DS
MATCH Institution, Urban Mass Transportation Administration Final Rpt. DC-06-0439-84-1, May 1984, 91p, 8 Fig., 18 Tab. Contract DTUM-60-83-C-71212
ORDER FROM: UMTA

42 390109
TRAFFIC ASSIGNMENT BY TRIP TYPE USING VOLUME RESTRAINT AND LINK RESTRAINT FOR APPLICATION IN SMALL URBAN AREAS
This research involved the development of a new traffic assignment model consisting of a set of procedures for an urbanized area with a population of 172,000. Historical, social, and economic data were used as input to conventional trip generation and trip distribution models to produce a trip table for network assignment. This fixed table was divided into three trip types: external-external trips, external-internal trips, and internal-internal trips. The methodology used to develop the new traffic assignment model assigned each of the trip types by varying the diversion of trips from the minimum path. A statistical analysis indicated that assigning trips by trip types using trip diversion and volume and link restraint produces a significant improvement in the accuracy of the assigned traffic volumes.

Leftwich, DS (University of Central Florida); Heimbach, CL
Journal of Advanced Transportation Vol. 18 No. 1, 1984, pp 55-75, 21 Ref.

ACKNOWLEDGMENT: EI
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42 390110
TRAVEL DEMAND (MODAL SPLIT) ESTIMATION BY HIERARCHICAL MEASUREMENT
A stratification of the travel demand by trip-making and trip attributes has been represented more inclusively in a hierarchy system. Various elements and dimensions of the hierarchy have been hypothesized as different levels of decisions made by trip-makers. The elements contained in a set of specified matrices of travel attributes have been weighed utilizing a ratio scale, in a process of mapping transportation systems (modal) attributes with the characteristic trip-making behavior in a hierarchical demand structure. The principal output of this procedure is an estimate of the trip distribution by mode, or modal split. The estimate closely approximates the observed modal split pattern for the inter city travel problem simulated. This procedure is proposed for travel demand forecasting and planning.

Banai-Kashani, A (Memphis State University) **Journal of Advanced Transportation** Vol. 18 No. 1, 1984, pp 37-53, Refs.

ACKNOWLEDGMENT: EI
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42 390114
TRENDS AND OPTIONS FOR INCREASING THE ROLE OF THE PRIVATE SECTOR IN URBAN TRANSPORTATION
The proposed legislation for reforming the public transportation institutions in the Chicago region could make a very significant contribution toward reducing the escalating transportation operating deficits and increasing public transportation service by mandating that transportation planning be outside the control of public transportation operating agencies, that provision be made to ensure private provider representation in the planning process and that, to the greatest extent feasible, on new and on heavily subsidized routes, the choice of the transportation provider be made on the basis of better serving the region's total transportation needs.

Pikarsky, M (Illinois Institute of Technology); Johnson, CM
Journal of Advanced Transportation Vol. 17 No. 2, 1983, pp 89-102, 11 Ref.

ACKNOWLEDGMENT: EI
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42 390142
A MANUAL FOR THE APPLICATION OF FULLY COMPETITIVE CHOICE MODELS TO PLAN AND EVALUATE PRICING AND SERVICE INNOVATIONS OF THE SERVICE AND METHODS DEMONSTRATION PROGRAM
This manual discusses the application of fully competitive models (FCM) of choice to the kinds of prediction problems encountered in the Service and Methods Demonstration Programs. The foundations of the models are presented, as well as their relationships to other models. Counsel is given as to when the FCM models should be preferred over competing models, and how to implement them. The notion of dependence among the choices is explained and related to the selection of the appropriate choice model. Finally, calibration procedures are given.

McLynn, JM Goodman, K
DTM, Incorporated Revision UMTA-URT-30-82-1, Dec. 1982, v.p.

ORDER FROM: DTM, Incorporated, 6303 Tulsa Lane, Bethesda, Maryland, 20817

42 390165
PUBLIC TRANSPORT: ASSESSING THE DEMAND AND RELATED TOPICS
The following papers were presented at the seminar: Trends in demand for public transport and policy implications (Blackledge, DA); The national travel surveys (Charles, GS); Census data-some facts relevant to public transport (Bentley, RC); Converting census travel to work by bus data to passenger-journey units (Bentley, RC); Special work place statistics-the role of the Saspac extension (Dugmore, K); The use of postcodes in identifying potential public transport passengers (Hamilton, TD); Concessionary fares in non-metropolitan counties (Glover, J); Urban and rural transport: Some definitions and differences (Hibbs, J).

Davies, EM Blackledge, DA Charles, GS Bentley, RC Dugmore, K Hamilton, TD Glover, J Hibbs, J
Birmingham University, England Monograph Apr. 1984, 150p, Figs., Tabs., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 278197)
ORDER FROM: Birmingham University, England, JG Smith Building, P.O. Box 363, Birmingham, West Midlands, England

42 390172
PUBLIC ISSUES IN TRANSPORT
The following papers are presented: Public issues of transport in the West of Scotland (Westwell, AR); Central government, local government and public transport (Geeson, A): Testing the implementation of declared policy on public transport provision in South Yorkshire (Workman, H); A research design to test the long run effectiveness of A local subsidy policy (Hay, A); The causes, costs and benefits of increasing delivery distances (McKinnon, AC); Non-transport solutions to the rural transport problem (Nutley, S); The provision and funding of rural roads-the New Zealand example (White, HP). These papers were presented to the transport geography study group at the fiftieth anniversary meeting of the Institute of British Geographers held at the University of Edinburgh, January 1983. (TRRL)

Turton, BJ Westwell, AR (Strathclyde Passenger Transport Executive); Geeson, A (Cambridge City Council); Workman, H (Open University); Hay, A (Sheffield University, England); McKinnon, AC (Leicester University, England); Nutley, SD (City of Liverpool College of Higher Education); White, HP (Salford University, England)
Keele University, England Monograph 1983, 156p, Figs., Tabs., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 278025)
ORDER FROM: Keele University, England, Department of Geography, Transport Geography Study Group, Keele, Staffordshire, England

42 390187
TRAVEL ANALYSIS METHODS FOR THE 1980'S. EXECUTIVE SUMMARY
Shifts in transportation planning requirements in the 1980's will result from greater responsibilities being given states and local governments with the

consequent need for simpler and less cumbersome analytical methods. This Conference was organized around 2 sets of workshops. The first focused on 5 levels of planning and determining what issues and problems at each level would require new travel analysis methods. The second set then reviewed the state of the art for 7 analytical methods. For each workshop overview papers were prepared. The Conference findings: (1) Transportation investment decisions will require continued development and application of travel analysis methods; (2) Travel analysis methods now available are suitable for most problems and can be used immediately; (3) Newer methods are now being used extensively; (4) The 1980s should focus on technology tranfer; (5) Research on selected topics should continue. The research topics include development of simplified travel demand methods; understanding of travel behavior—particularly as influenced by social concepts; specific subjects such as goods movement, parking, pricing, ridesharing, pedestrian circulation and revenue forecasting; basic needs for travel data collection and system operations monitoring; application and use of microcomputers; forecasts of basic determinants of travel; distribution of impacts on users and nonusers.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Hartgen, DT (New York State Department of Transportation) **Transportation Research Board Special Report** No. 201, 1983, pp 3-4

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42 390188
TRAVEL ANALYSIS METHODS FOR THE 1980'S. OPENING SESSION. KEYNOTE ADDRESS

At a time when there has been significant change in national priorities and federal involvement, good planning practice must be based on sound methods and continuing attention to improvement of these methods. At the federal level two studies reflect changing priorities: (1) Comprehensive review of the urban transportation planning process undertaken jointly by FHWA and UMTA and (2) review of FHWA role in providing technical assistance to state and local planning agencies. The comprehensive review that looks at all requirements established by the 1962 Highway Act has to be accompanied by determination of the appropriate federal, state and local roles in urban transportation planning. New federal regulations do substantially reduce the heavy federal hand in planning activities that are essentially state and local concerns. Such groups conducting transportation planning are now allowed to recognize that distinct differences exist among urban areas and that there can be flexibility in meeting these needs. A unified planning work program endorsed by the Metropolitan Planning Organization will still be required to support requests for federal planning funds for communities of 200,000 population or more, but there is a significant change in provision for federal and local self-certification. The increased flexibility for state and local decisions on how to conduct the planning process is likely to result in a call for more technical assistance and sharing of procedural information. The FHWA role should be that of a central clearinghouse for dissemination of information and technology with the goal of cost effectiveness. Computer planning technology Microcomputers) supporting urban transportation planning methodology will expand at an enormous rate over the next few years.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Robertson, RB (Federal Highway Administration) **Transportation Research Board Special Report** No. 201, 1983, pp 4-7

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42 390193
TRAVEL ANALYSIS METHODS FOR THE 1980'S. WORKSHOP ON STRATEGIC PLANNING. WORKSHOP SUMMARY

This summary of the Workshop on Strategic Planning identified the main components of strategic analysis as: (1) Sensing and analyzing the environment; (2) Anticipating changes and assessing their implications; (3) Specifying objectives; (4) Providing direction; and (5) Allocating resources. It was concluded that methods appropriate for strategic analysis are available. Any failings are in the lack of an institutional climate receptive to the strategic planning function and availability of data relevant to strategic analyses. Planning agencies at all levels allocate some resources to strategic planning but issues addressed in this function must be relevant to the agency. Results of strategic studies should be made available to agencies at other levels and illustrated with samples of successful applications. A process for monitoring, analyzing and describing the societal contexts should be established. It should include and analyze forecasts from other fields (individual and institutional behavior, technology, economy, physical environment). The process should maintain, monitor and analyze multi-period data related to perceptions, tastes and values as they relate to travel behavior. The workshop recognized the need to spur interest and communication between practitioners and decision makers.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Schultz, D (Chicago, City of); Spielberg, F (SG Associates, Incorporated) **Transportation Research Board Special Report** No. 201, 1983, p11

ORDER FROM: TRB Publications Off

42 390194
ISSUES IN STRATEGIC PLANNING. WORKSHOP ON STRATEGIC PLANNING. TRAVEL ANALYSIS METHODS FOR THE 1980'S

An implicit assumption in transportation has been that there is temporal stability in travel behavior relationships. However, shifts are occuring in many of the implicit elements. Travel habits of women have changed as their role in society has shifted. Automobile ownership and operating costs have risen in real terms, affecting not only mode choice but also decisions regarding trip length and destination. The transportation issue that has the greatest public attention is the cost and supply of transportation energy, especially gasoline. Data suggest a continued trend to low-density living, although signs of a moderation or reversal may possilby be discerned. Age is related to individual travel patterns, as is the shift in population from the northeast and north central regions to the South and West. Cities of the North and East developed at densities that permit reasonable transit service and have established transit systems. New cities lack both transit systems and population densities conducive to transit use. In contrast to general assumptions, many central business districts are growing rapidly in office space and the trend is expected to continue. The most rapid growth has occurred in suburban regions where trip patterns differ from those in cities. Many freeways constructed under the Interstate program will be reaching the end of their design life during the 1980s, requiring major reconstruction and maintenance. Telecommunications may come to substitute for work trips and other travel. While existing methodologies are applicable to some of the impending planning problems, others will have to be addressed by techniques that are not presently widely adopted. In allocation of costs or benefits, demand forecasting is not the primary product, but an intermediate step.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Spielberg, F (SG Associates, Incorporated) **Transportation Research Board Special Report** No. 201, 1983, pp 12-16

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42 390195
WORKSHOP ON LONG-RANGE URBAN SYSTEMS PLANNING. WORKSHOP SUMMARY. TRAVEL ANALYSIS METHODS FOR THE 1980'S

A principal finding of the workshop was that the rate of development of new techniques for travel forecasting has outstripped the rate of innovation in planning and policy analysis practice, which has resulted in use of inappropriate, ineffective and inefficient procedures in some aspects of practice. The essential problem with respect to travel forecasting in long-range planning is failure to implement potentially more effective tools. In the U.S. the policies of federal, state and local governments provide no incentives for forecasts to be right and no penalties for being wrong. While technology is the main issue, such accomplisment is not easy and it is not apparent how to go about it. Uncertainty associated with forecasts seems to be increasing, yet the ability to define that uncertainty is exceedingly poor. Three areas need action: (1) Implementation of improved but existing methods; (2) Demonstration of application of new methods to show their utility to potential users and test their effectiveness; (3) Several key research areas need further investigation.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Stuart, DG (Barton-Aschman Associates Incorporated); Schofer, JL (Northwestern University) **Transportation Research Board Special Report** No. 201, 1983, pp 17-18

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42 390196
LONG-RANGE URBAN TRANSPORTATION PLANNING: ARE WE CREATING NEW LIFE OR RESUSCITATING A DINOSAUR? WORKSHOP ON LONG-RANGE URBAN SYSTEMS PLANNING. TRAVEL ANALYSIS METHODS FOR THE 1980'S

A large fraction of long-range transportation planning is in response to existing federal regulations and with much federal support. With a relaxation of federal requirements and growing constraints on state and local government, local decision makers will increasingly look to the cost-effectiveness of long-range planning. Some long-range planning agencies may be phased out. The existence of long-range planning institutions and activities has made possible much of the short-term decision-responsive planning that is done. Assembly and maintenance of data bases and periodic calibration of travel behavior models takes place primarily within the long-range planning agencies. Long-range planning professionals and institutions can fulfill at least 5 feasible roles: Preparation, monitoring, exploration of options, long-range budgeting, and ombudsmanship. These roles are parts of several added technical challenges for the coming years: Defining travel needs, characterizing travel benefits, evaluating distributional consequences, predicting development implications, producing inverted models for inverted planning, and reducing uncertainty in forecasting. Long range planners can help decision makers if their planning is done properly. Issues are technical, political, ethical, and interpersonal.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Schofer, JL (Northwestern University) **Transportation Research Board Special Report** No. 201, 1983, pp 18-25, Refs.

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42 390197
WORKSHOP ON PROJECT PLANNING. WORKSHOP SUMMARY. TRAVEL ANALYSIS METHODS FOR THE 1980'S

Project planning is the stage in planning processes at which facility and service alternatives are analyzed in sufficient detail to make firm implementation decisions. Project planning is (1) multimodal (highway and transit); (2) applicable in urban and rural contexts; (3) involves consideration of capital-intensive alternatives; and (4) focuses on corridors or subareas. Two fundamental approaches to demand analysis in project planning are identified as survey-based approaches, and four-step model-based approaches. The four-step model approach has been used most often in urban areas on project-planning studies for major transit or highway capital projects. The survey-based approach is associated primarily with highway and toll-road projects but is also used in operational and short-range transit planning. Key findings of the workshop were that (1) survey-based approaches are becoming more desirable; (2) integrated forecasting approaches are particularly promising; (3) existing forecasting methods handle unconventional alternatives with difficulty; (4) project planning methods should be consistent with systems-planning methods; (5) demand estimates should be expressed as ranges; (6) need for quick-response techniques in project planning is increasing; (7) basic issues must be faced in maintaining urban travel data bases. The planning process must respond adequately to information needs of decision makers, not being just a facility-improvement plan but have information useful to investment and priority-setting processes.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Gendell, DS (Federal Highway Administration); Skinner, RE, Jr **Transportation Research Board Special Report** No. 201, 1983, pp 25-27, 3 Ref.

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42 390198
WORKSHOP ON PROJECT PLANNING. TRAVEL DEMAND ANALYSIS NEEDS FOR PROJECT PLANNING. TRAVEL ANALYSIS METHODS FOR THE 1980'S

This paper reviews travel analysis needs for project planning and provides a starting point for subsequent conference discussions. The concern is project planning for both highway and transit facilities in urban and rural contexts. There are 3 interrelated objectives of project planning: feasibility determination, impact estimation, and design inputs. Requirements are changing in the 1980s with a shift toward maintaining and making better use of existing infrastructure, with greater dependence of private and nonfederal financing; with greater concern over freight movements; and with less rigidity in federal planning guidelines. There are two general approaches to project-planning travel demand: (1) Surveys and counts of existing conditions; and (2) Chains of travel demand models frequently maintained as part of the urban transportation planning process (UTPP). Both forecast approaches use special procedures and techniques to produce final demand estimates. Desirable attributes of demand analysis methods are derived from different perspectives: (1) Sound modeling practices; (2) Output requirements; (3) Emerging requirements; (4) Practical concerns.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Skinner, RE, Jr **Transportation Research Board Special Report** No. 201, 1983, pp 27-34

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42 390199
WORKSHOP ON URBAN-MICROSCALE PLANNING. WORKSHOP SUMMARY. TRAVEL ANALYSIS METHODS FOR THE 1980'S

Serving demands in the urban-microscale context will be made difficult in the 1980s by constraints on funding for new facilities and services. More private involvement in transportation in the microscale environment is seen likely. Concern has been expressed about the gap between the state of the art and the state of the practice. Often planning has concentrated on design of specific solutions without adequate consideration to defining the problem to be addressed. Barriers in such a process include; (1) lack of knowledge by planner and decision maker about available alternatives; (2) institutional arrangements prohibit planner from broad considerations of alternative solutions; (3) objectives for planning are often poorly or inexplicitly specified by the decision maker; (4) decision makers often select among alternatives; (5) analytical techniques are often inadequate to assess all alternatives. Work is necessary in the travel demand impacts of the following microscale strategies: Parking management, transit fare policies, ridesharing incentives, automobile use restrictions; pedestrian demand accommodation; and alternative transit-service types. It was felt that methods were in existence to properly assess the following with the primary need being to disseminate methods and results: Fixed-route transit service; demand-management measures, bicycle enhancement, and goods-movement data collection.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Steinmann, RP (Urban Mass Transportation Administration) **Transportation Research Board Special Report** No. 201, 1983, pp 34-36

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42 390200
URBAN-MICROSCALE PLANNING FOR THE 1980'S. WORKSHOP ON URBAN-MICROSCALE PLANNING TRAVEL ANALYSIS METHODS FOR THE 1980'S

The roles of the individual and of the public and private sectors must change to meet the realities of present-day life. The new social order should have a dramatic impact on highway and public-transit planning. Because past planning for public facilities and transit was often influenced by how much money was available and an almost limitless amount of available land, local decisions tended to be in the direction of whatever the government would pay for. In the 1970s changing demands for public transit were ignored and most attention was on fixed-route transit. Mathematical planning models will become relatively less important with many major service impacts caused by changes in legal, regulatory and institutional environments. Fixed-route transit needs to be seen as a service concept developed in the 19th century to meet travel needs of that time. It is conceded that fixed-route service is still the most effective means of moving large numbers of people along defined corridors. There is a tendency to think it essential that only one transit operator serve an urban area and that allowing more will lead to fragmentation and destruction of the system. Key elements for today's transportation planning are management and control of parking, transportation pricing, targeting recipients of subsidy, recognizing the roles of the pedestrian and cyclist, and control of autos in central zones. Examples are given to indicate that institutional changes are already taking place. It is stressed that it is no longer affordable only to fine-tune current systems. The planner of the 1980s will be faced with need for creative development of new approaches for providing transportation, focusing on market needs and services to meet them. Conventional solutions will be appropriate in many circumstances.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Bautz, JA (Urban Mass Transportation Administration)
Transportation Research Board Special Report No. 201, 1983, pp 37-41, 11 Ref.

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42 390201
WORKSHOP ON SYSTEMS OPERATIONS. WORKSHOP SUMMARY. TRAVEL ANALYSIS METHODS FOR THE 1980'S
This workshop reviewed travel analysis methods for transit fare and service proposals, including system retraction and mode substitution; the relation of supply and cost to travel demand; and strategies for maintaining revenues. Transit service marketing has been difficult because regulatory restrictions have prevented operation of services that may be justified. These critical issues were identified: (1) Deregulation impacts; (2) Financial consequences; (3) Market segmentation; (4) Social goals; (5) User side subsidies; (6) Equity. There is a wide barrier between what is known and what is done in the areas of data-collection and analysis methods. Techniques are not put into practice because of the following: (1) Inadequate computer capacity; (2) Pay levels too low to attract necessary skills; (3) Inadequate information dissemination; (4) Analytical methods too complicated for general use; (5) Lack of management support and acceptance of outputs; (6) Failure to recognize limited skills and experience in data collections; (7) Lack of documentation of survey and data-base content.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Echols, JC (Tidewater Transportation District Commission)
Transportation Research Board Special Report No. 201, 1983, pp 41-42

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42 390202
SYSTEMS OPERATIONS. WORKSHOP ON SYSTEMS OPERATIONS. TRAVEL ANALYSIS METHODS FOR THE 1980'S
Demand analysis methods usually predict transit travel by using models derived from highway planning practice. Until the Federal-Aid Highway Act of 1962, highway and transit planning were done separately; The legislation required comprehensive, continuing and coordinated planning. Traditional transportation planning is based on aggregate sequential demand models which forecast the number of trips being produced or attracted to a particular location; the trips are then allocated to travel zone by mode and logical travel routes. Predicting transit travel demand has resulted in an overemphasis on capital investment and underemphasis on service design. Transit demand analysis should be based on the fact that transit is a commodity to be packaged, priced and sold. Techniques for analyzing transit demand must be compatible with a systems management planning process. Unlike the highway demand methods, transit systems have the potential to compile a complete data set daily which could allow adjustments based on a trend. The difficulty is that equipment and techniques for doing this are usually beyond the resources of the average transit system. Because future transit services will be competing in a more deregulated environment, analytical methods must recognize that there are numerous transit products, including taxis, vans and regular transit vehicles. Operations managers require a market-oriented approach to travel demand that postures alternatives in terms of service variables.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Barbatti, J (ATE Management and Service Company, Incorporated)
Transportation Research Board Special Report No. 201, 1983, pp 43-44, 5 Ref.

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42 390203
WORKSHOP ON DATA NEEDS AND COLLECTION. WORKSHOP SUMMARY. TRAVEL ANALYSIS METHODS FOR THE 1980'S
The workshop was to assess the state of the art and current practice in the areas of data needs and collection for travel forecasting and plan development. It was found that there is need to reduce the gap between available data-handling and collection methods and current practice. There are problems with maintaining appropriate data bases in a financially constrained environment. Also in question is the accuracy, efficiency and cost-effectiveness of data collection. There is the issue of equity in transportation planning. It was concluded that data collection is one of the most ignored areas of transportation planning. There is a lack of documentation of data-collection procedures. The Transportation profession as a whole must recognize that there is an extensive discipline of survey design and execution.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Biciunas, AE (Chicago Area Transportation Study) **Transportation Research Board Special Report** No. 201, 1983, pp 47-48

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42 390204
STATE OF THE ART IN THE COLLECTION OF TRAVEL BEHAVIOR DATA. WORKSHOP ON DATA NEEDS AND COLLECTION. TRAVEL ANALYSIS METHODS FOR THE 1980'S
This paper describes the state of the art in data collection for travel behavior by using examples that represent the most recent advances in several areas of measurement. Sampling methods, the design and implementation of different survey instruments, the correction of travel data and the use of interactive measurement techniques are approached in this manner.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Brog, W (Socialdata); Ampt, E (New South Wales State Transp Study Group) **Transportation Research Board Special Report** No. 201, 1983, pp 48-62

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42 390205
DATA NEEDS AND DATA COLLECTION-STATE OF THE PRACTICE. WORKSHOP ON DATA NEEDS AND COLLECTION. TRAVEL ANALYSIS METHODS FOR THE 1980'S
The state of the practice in data collection for travel forecasting is examined with particular emphasis on behavioral travel-forecasting procedures and models. A secondary purpose is to provide data for improving or updating forecasts or for direct use in existing calibrated and validated models to predict current or future values. It is concluded that there is an extremely large gap between knowledge and practice. Some issues have not been resolved with specific concern to behavioral models of travel demand. There is also need to remove much of the indifference that exists with respect to data collection. It is necessary to recognize that the most effective data collection is finely tuned to the principal purposes of that data collection. It is important to address the problem of nonresponse to surveys. The author concludes that the most important requirement is that transportation professions recognize that there is an extensive discipline of survey design and execution, and that the undertaking of a survey is neither a diversion or a game.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Stropher, PR (Schimpeler-Corradino Associates) **Transportation Research Board Special Report** No. 201, 1983, pp 63-71, 31 Ref.

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42 390206
WORKSHOP ON TRAVEL BEHAVIOR CHARACTERISTICS AND ANALYSIS. WORKSHOP SUMMARY. TRAVEL ANALYSIS METHODS FOR THE 1980'S
The orientation was a review of alternative analytical approaches to the traditional planning and modeling process. Several areas were identified where applications can be found: Transit marketing studies; impact assessment; ridesharing agency reviews, and service for elderly and handicapped. Survey strategies and market segmentation are reasonably well utilized in practice and attitudinal analyses have been performed in a few transit, carpool and pedestrian planning studies. The workshop determined that the methods that could be incorporated into planning practice with high short-term benefits are (1) small scale data collection; (2) simulations with small groups; (3) segmentation and activity concepts and derivative analytical techniques. Planning levels for which travel behavior analysis techniques are most suited are strategic planning and project planning. Research affects practice in many more ways than through

technology transfer. Although it is essential for planners to review the transfer of research into practice, it is important to also establish new research horizons. Social and behavioral sciences, in providing a larger framework for understanding travel behavior, can be of assistance in providing information tools for better planning and anticipating directions for future work.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Tischer, ML (Federal Highway Administration) **Transportation Research Board Special Report** No. 201, 1983, pp 72-73

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42 390207
SOCIAL SCIENCES AS CONCEPTUAL RESOURCE FOR TRANSPORTATION RESEARCH. WORKSHOP ON TRAVEL BEHAVIOR CHARACTERISTICS AND ANALYSIS. TRAVEL ANALYSIS METHODS FOR THE 1980'S

Social sciences have the potential for making contributions to transportation research. Five fallacies impede thinking about transportation research and planning: (1) Transportation (mobility) and land use (settlement) are distinct events; (2) The social benefit of a transportation system is the rate at which it moves people or goods through the system; (3) Transportation is an industry; (4) Transportation is corporately proprietary; (5) Transportation is politically and culturally neutral. These fallacies become apparent when transportation is conceived as an institutionalized social activity functioning in a milieu of social organizations. Social sciences do not constitute a single discipline. The author draws a parallel between the style of thinking of social and natural scientists. He then describes the interfaces between sociology and demography, human ecology, economics, political science, anthropology, psychology and humanistic studies. It is concluded that transportation research may be conducted with the concepts proposed at the interfaces previously listed. Transportation planning is a problem of the practical intersect of the sciences of man. Studies at any intersect contribute to the understanding needed for planning. Transportation research may expand from travel behavior to matters of economic and political national policy. Social science will contribute only the cognitive elements to the knowledge. Planners must look elsewhere for moral guidelines and commitment to action.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Klausner, SZ (Pennsylvania University) **Transportation Research Board Special Report** No. 201, 1983, pp 74-82

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42 390208
CLASSIFICATION OF APPROACHES TO TRAVEL-BEHAVIOR ANALYSIS. WORKSHOP ON TRAVEL BEHAVIOR CHARACTERISTIC AND ANALYSIS. TRAVEL ANALYSIS METHODS FOR THE 1980'S

Approaches to the analysis of travel behavior are reviewed. Each approach is categorized. The categories are cross-classified according to 5 subjects: (1) Activity-based approaches; (2) Approaches using subjective variables (attitudes); (3) Approaches using population segmentations; (4) Approaches using controlled experiments; (5) Approaches directly involving choice models. A full matrix cross-classification scheme is used. A number of conclusions have emerged. Known biases in perceptions of distance, time and cost could be used to improve models involving trip hours, trip chains and activity decisions. Some nonlinear perception functions have been introduced in mode-choice models but this has not been extended to the more activity-based choice models. The estimation of logit-type choice models by using controlled simulations represents a cost-effective alternative to revealed-preference estimations. In the short term, there appears to be a possible problem with choice-based sampling techniques. In the longer term, further development of models of activity-pattern choice are particularly relevant to many modern policy questions. Attention in laboratory-experiment studies of the functional-measurement or cojoint-measurement type could usefully be directed away from mode choice and related decisions and toward activity-pattern choice.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Golob, JM (Ministry of Transp and Public Works, Netherlands); Golob, TF (Bureau Goudappel Coffeng, Netherlands) **Transportation Research Board Special Report** No. 201, 1983, pp 83-107, 361 Ref.

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42 390209
TRAVEL BEHAVIOR MODELS: STATE OF THE PRACTICE. WORKSHOP ON TRAVEL BEHAVIOR CHARACTERISTICS AND ANALYSIS. TRAVEL ANALYSIS METHODS FOR THE 1980'S

Because society is undergoing rapid change in population composition, economic structure and geographic distribution, the state of practice of behavioral models at both short-term and long-term levels of planning was examined. Use of behavioral techniques in transportation planning, analysis and evaluation has been limited. However, examples of some of the applications are detailed. Application techniques should find their way into application more rapidly than is occurring. A basic relationship between social, structural and transportation systems does exist. Social forces have become the driving force for both structural and infrastructure development over the past 20 years, as would be expected in a post-industrial society. The esential forces in determining future transport requirements are the life-style goals and attitudes that people—as individuals and groups—hold toward social organizations and institutions. Without understanding these processes, there is no way to predict the transportation technology to build for the long-term future. Transportation modeling activities have been embedded in tactical planning to produce optimal deployment of a set of given technologies. As organization of American society is undergoing major industrial and social changes, it becomes apparent that transport technologies now in place are at least obsolescent and that planning methods of the past quarter century are irrelevant for creating the cost-effective infrastructure that the emerging society will require.

Proceedings of a conference held October 3-7., 1982, Easton, Maryland.

Paaswell, RE Michaels, RM (Chicago University, Chicago) **Transportation Research Board Special Report** No. 201, 1983, pp 107-113, 13 Ref.

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42 390210
WORKSHOP ON MATHEMATICAL STRUCTURES AND UNCERTAINTY. WORKSHOP SUMMARY. TRAVEL ANALYSIS METHODS FOR THE 1980'S

Mathematical choice models representing travel behavior and based primarily on individual-choice theory were examined. Methods currently available can generally support decision-making for a wide range of planning problems. Current models are deficient in two areas: (1) Barriers need to be overcome to current use of the best available techniques for specific purposes, and (2) the behavioral content and accuracy of existing techniques needs to be improved. The models have generally failed to move into practice. It is suggested that methodological manuals, software support, instructional programming and documentation of successful applications be developed. Also important will be simplified applications (such as pivot-point methods), improved issue sensitivity, higher levels of precision and ability to apply model systems at differing levels of complexity.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Koppelman, FS (Northwestern University) **Transportation Research Board Special Report** No. 201, 1983, p114

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42 390211
MATHEMATICAL MODELS OF TRAVEL DEMAND: A STATE-OF-THE-ART REVIEW. WORKSHOP ON MATHEMATICAL STRUCTURES AND UNCERTAINTY. TRAVEL ANALYSIS METHODS FOR THE 1980'S

The modeling of transportation systems has evolved rapidly since the early highway studies of the 1950s. The author has divided the travel demand modeling field into 5 areas: Behavioral theory; measurement; model structure; estimation; and forecasting. In contrast to the rapid progress made in estimation and model structure, there has been little change in behavioral theory because it is extraordinarily complex and difficult to model. The progress in measurement has been somewhat mixed. In the area of forecasting, it is safe to argue that the problem of aggregating demand models across individuals is probably a major concern. There remain serious questions regarding travel demand modeling which has lost much of the momentum that characterized it in the 1970s. The research community sees progress being made only in fringe areas of model

structure and estimation with no great applicability; the users of new methods find recent results increasingly unintelligible.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Lerman, SR (Massachusetts Institute of Technology) **Transportation Research Board Special Report** No. 201, 1983, pp 114-127, 97 Ref.

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42 390212
EVALUATION OF DISCRETE-CHOICE RANDOM-UTILITY MODELS AS PRACTICAL TOOLS OF TRANSPORTATION SYSTEMS ANALYSIS. WORKSHOP ON MATHEMATICAL STRUCTURES AND UNCERTAINTY. TRAVEL ANALYSIS METHODS FOR THE 1980'S

Travel decisions frequently entail choices among discrete sets of alternatives such as frequencies, Destinations, modes and routes of travel. A large proportion of travel behavior research and practical travel demand analysis is oriented toward predicting the outcomes of such choices. A behavioral and mathematical framework for modeling these choices is provided by a class of mathematical models called discrete-choice random-utility models. Their advantages enable random-utility models to forecast travel demand more accurately and less expensively than do other models. This paper reviews current knowledge of random-utility modeling that affects practical travel demand analysis and identifies the implications of this knowledge for practice. The remainder of the paper consists of (1) review of the main concepts underlying random-utility models and summary of the methods normally used for developing empirical models; (2) evaluation of initially claimed advantages of random-utility models; and (3) discussion of additional issues that have arisen. The behavioral basis of random utility models and practical benefits associated therewith have been exaggerated. Their validity remains uncertain, and even if valid, does not guarantee that potentially serious errors. Several recent improvements potentially serious errors. Several recent improvements in the modeling will be ready for widespread application as soon as software for them becomes available. There are a variety of unsolved problems affecting practical application of random-utility models, involving such matters as alternative decision processes, geographical transferrability, predictability of demand for new alternatives, computational procedures for equilibrium travel demand/transport system performance, and relative merits of choice-based and exogenous sample designs.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Horowitz, JL (Iowa University) **Transportation Research Board Special Report** No. 201, 1984, pp 127-137, 104 Ref.

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42 390213
WORKSHOP ON LONG-RANGE AND STRATEGIC FORECASTING TECHNIQUES. WORKSHOP SUMMARY. TRAVEL ANALYSIS METHODS FOR THE 1980'S

This workshop was to identify travel-forecasting methods that could be applied to reach long-term planning solutions and to discuss the relation between strategic and facility-planning methods. Methods discussed were summarized and matched against a summary of the almost 30 issues from the context workshops. The methods discussed in this workshop were related to the other workshops in this framework: (1) Strategic planning should identify preferable transportation strategies or policies as an input to plan development; (2) Long-range planning should identify corridors or subareas that are deficient, identify priorities and outline a range of feasible improvements; (3) Long range regional land use and transportation planning provide a basis for subsequent use of windowing or focusing; (4) Planning should provide base-year data models; (5) Long range data base should provide immediately usable information; (6) Programming implementation depends on a project-level assessment of impacts.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Fleet, CR (Federal Highway Administration) **Transportation Research Board Special Report** No. 201, 1983, pp 137-139

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42 390214
LONG-RANGE STRATEGIC PLANNING AND FORECASTING TECHNIQUES: THE STATE OF THE ART. WORKSHOP ON LONG-RANGE AND STRATEGIC FORECASTING TECHNIQUES. TRAVEL ANALYSIS METHODS FOR THE 1980'S

This paper discusses methods and techniques for long-range strategic planning and forecasting which are at the frontier of current knowledge and will give clues as to the direction in which transportation planning will proceed in the future. Individual techniques are identified as estimation of financial resources, freight modal study, highway pavement maintenance, published master plans and performance monitoring. After examining the state-of-the-art examples, certain qualities were identified as indicating the direction of future techniques: (1) Repetitive computer operation; (2) internal comprehensiveness; (3) external linkages; (4) process orientation; (5) data base expansion; (6) retroactive checking. Success, usefulness and innovation will occur whenever there is a transportation agency that has the wit to nurture technique and the strength to submerge technique as a utilitarian part of a dynamic program.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Creighton, RL (Creighton (Roger) Associates Incorporated) **Transportation Research Board Special Report** No. 201, 1983, pp 140-144, 15 Ref.

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42 390215
STATE OF THE PRACTICE: TRAVEL ANALYSIS METHODS IN THE LONG-RANGE AND STRATEGIC PLANNING. WORKSHOP ON LONG-RANGE AND STRATEGIC FORECASTING TECHNIQUES. TRAVEL ANALYSIS METHODS FOR THE 1980'S

Because most regions can no longer finance major highway and transit capital improvements, much less emphasis is now being given to long-range planning. In this paper, two case studies—Milwaukee and Dallas/Fort Worth—are used to examine travel analysis and long range and strategic planning methods currently in use. Work of the North Central Texas Council of Governments (NTCOG) is representative of most medium-sized and larger urban regions. The Southeastern Wisconsin Regional Planning Commission (SEWRPC) has been one of the stronger metropolitan planning organizations in terms of local political support and technical capability. The two organizations are contrasted in three ways: (1) Evolving methods for strategic planning; (2) Reasons for the state-of-the-practice being generally weak; (3) Possibility of closing the apparent gap between state-of-the-art and state-of-the-practice. Practitioners can make better use of travel-analysis technical capability if actions are taken at state, federal and/or regional and local levels. These include the following: (1) Reduce analyst and decision-maker communication barriers; (2) Address inadequate funding problems; (3) Understand that short-range planning issues have long-range planning implications; (4) Stress quick-response, simpler travel analysis methods.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Stuart, DG (Barton-Aschman Associates, Incorporated) **Transportation Research Board Special Report** No. 201, 1983, pp 145-155, 12 Ref.

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42 390216
WORKSHOP ON QUICK-RESPONSE AND SKETCH-PLANNING TECHNIQUES. WORKSHOP SUMMARY. TRAVEL ANALYSIS METHODS FOR THE 1980'S

This workshop covered planning methods that can be applied in quick-response decision making, often called sketch-planning. Such techniques are defined as those that support the required decision making time frame within the given cost and staff resource constraints. Quick-response techniques were reviewed on each of five levels of planning. Strategic and long range systems planning are intended to monitor surveillance and trend analysis, anticipating problems. Quick-response methods applicable to long-term planning include what-if scenario testing and pivot-point methods. The status of quick-response methods is quite advanced. Project planning focuses on major capital-intensive transportation proposals analyzed in comparison with alternatives involving less capital or no action at all. Quick-response methods are more applicable to project planning than to other areas. Urban-microscale planning focuses on subareas. In

systems operations, studies usually have a non-capital-intensive outcome, although they may affect a variety of local rules, regulations and procedures. The status of quick-response methods is similar to that of microscale planning.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Paules, GE (Federal Highway Administration) **Transportation Research Board Special Report** No. 201, 1983, pp 156-157

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42 390217
QUICK-RESPONSE AND SKETCH-PLANNING TECHNIQUES: STATE OF THE ART. WORKSHOP ON QUICK-RESPONSE AND SKETCH-PLANNING TECHNIQUES. TRAVEL ANALYSIS METHODS FOR THE 1980'S

Urban travel analysis historically has been designed to evaluate regional transportation systems and provide design volumes. Emphasis has moved to methods to aid in making quick decision trade-offs of projects. There is also a need to screen alternatives quickly so more detailed analysis can concentrate on the most feasible transportation improvement alternatives. The paper examines the state of the art and then addresses: (1) What quick response is; (2) What some examples of currently available methods are; (3) How to take advantage of current technology. It is concluded that at one end of the scale, quick response is as simple as taking known methods and converting them to quick-response methods, giving little attention to accuracy. The ideas of quick response need to be institutionalized with manuals, training sessions and case studies. Rapid adoption of modern technology should occur—microcomputers, digitizing and plotting capabilities. Research funding should be provided for projects to develop quick response techniques in data collection, travel estimation, and use of new technologies.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Sosslau, AB (Comsis Corporation) **Transportation Research Board Special Report** No. 201, 1983, pp 157-166, 13 Ref.

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42 390218
QUICK-RESPONSE AND SKETCH-PLANNING TECHNIQUES: STATE OF THE PRACTICE. WORKSHOP ON QUICK-RESPONSE AND SKETCH-PLANNING TECHNIQUES. TRAVEL ANALYSIS METHODS FOR THE 1980'S

Many successful applications have been made of quick-response (q-r) procedures. These were made with a full understanding of the limitations of the procedures and results were viewed in the proper context. Although some accuracy may have been sacrificed, the general consensus is that q-r techniques do provide reasonable results in a realistic time frame. Recommendations are made for enhancements and further development: (1) Simplify methods for defining networks for computerized traffic assignment; (2) Develop easy-to-use software for microcomputer applications; (3) Select transferable parameters in q-r applications; (4) Given the common problem of evaluating traffic impact of new development, more complete information is needed on trip-making characteristics of shopping centers, industrial parks and similar facilities; (5) Determine transferability of data from external traffic analysis; (6) Case studies should illustrate applications of q-r procedures.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Schoener, GE (Federal Highway Administration) **Transportation Research Board Special Report** No. 201, 1983, pp 166-170, 2 Ref.

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42 390219
WORKSHOP ON TRANSIT AND HIGHWAY OPERATIONS AND MANAGEMENT TECHNIQUES. WORKSHOP SUMMARY. TRAVEL ANALYSIS METHODS FOR THE 1980'S

The focus was on methods to estimate near-term demand changes due to typical automobile, transit and paratransit projects. A number of operating and management techniques were examined to determine whether travel-analysis methods are available and used in planning. Options included transportation system management, freeways, reserved lanes, priority parking, transit fare and service changes, express bus operation and demand responsive services. Methods of travel demand analysis include traditional models, the newer disaggregate methods, and pivot-point and other hybrid procedures. The gap between state-of-the-art and state-of-the-practice is primarily institutional. It was determined that three steps can be taken: (1) Make new travel analysis methods more usable; (2) Increase the capability of practicing planners through training and retraining; (3) Improve communication between those with knowledge and those who need it. For many highway and transit operations where projects are small and benefits are not large, there is still a need for simple, accurate and easily usable travel analysis methods.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Weiner, E (Department of Transportation) **Transportation Research Board Special Report** No. 201, 1983, pp 171-173

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42 390220
TRAVEL ANALYSIS METHODS FOR SYSTEMS MANAGEMENT AND OPERATIONS: THE STATE OF THE ART. WORKSHOP ON HIGHWAY AND TRANSIT OPERATIONS AND MANAGEMENT TECHNIQUES. TRAVEL ANALYSIS METHODS FOR THE 1980'S

This paper discusses the usefulness of recent summaries and syntheses of travel response to short-term actions. A large set of state-of-the-art travel analysis methods are then briefly reviewed, yielding comments on their application, ease of use and data needs. Some issues are then suggested which need to be addressed as researchers and planners strive to improve the travel analysis methods needed for short-range transportation planning in the 1980s. It is concluded that improved communication between practitioners and researchers is an essential first step in improving the state of current practice and provide guidance for needed developments in the state-of-the-art. The uniform long-range modeling approaches developed in the 1960s for large-scale planning are clearly inappropriate for management and operations planning.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Miller, G Kirby, R (Urban Institute) **Transportation Research Board Special Report** No. 201, 1983, pp 173-178, 50 Ref.

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42 390221
TRANSIT AND HIGHWAY OPERATIONS AND MANAGEMENT TECHNIQUES: STATE OF THE PRACTICE. WORKSHOP ON TRANSIT AND HIGHWAY OPERATIONS AND MANAGEMENT TECHNIQUES. TRAVEL ANALYSIS METHODS FOR THE 1980'S

Emphasis in transportation planning has shifted to shorter-term, lower-cost improvements. The need is to adapt the procedures and analytical tools developed for planning long-range, capital-intensive projects to this new environment. Four subjects are discussed: Identification of planning applications within each of the five context areas where analysis of operations and management are important, a survey of methods currently used to examine these issues, some thoughts on gaps between the states of the art and the practice, and suggestions on priorities for the planning community in addressing these emerging planning issues. Nearly all Transportation System Management and transit management actions fall in the microscale range and 3 major groups of activities are discussed: Transit operations, traffic engineering, and ridesharing and paratransit. Three discrepancies between state-of-the-art and state-of-practice suggest priorities for the transportation planning community: (1) Closer association must be established with transportation professionals (traffic engineers, city planners and transit operations staff) whose responsibility involve travel demand issues; (2) More attention must be given to upgrading the capabilities of transportation professionals at local jurisdictions and transit agencies; (3) Correlation, synthesis and distribution of information on various management and operating strategies as they are implemented.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Ryan, JM (Urban Mass Transportation Administration) **Transportation Research Board Special Report** No. 201, 1983, pp 178-183, 19 Ref.

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43 386190
PUBLIC TRANSPORT SUBSIDIES IN CITIES
This paper discusses proposals intended to clarify the role and legality of transport subsidies in cities. The proposed legislation will also ensure better value for money since authorities will be encouraged to seek greater efficiency by reviewing and if necessary reforming management structures, and develop further opportunities for the private sector to provide urban passenger transport and ancillary services, by requiring the transport executives to review which services and facilities should be put out to competitive tender so that they can be provided most economically. (TRRL)

Her Majesty's Stationery Office, Department of Transport, England CMND 8735, Nov. 1982, 10p

ACKNOWLEDGMENT: TRRL (IRRD 275660)
ORDER FROM: Her Majesty's Stationery Office, 49 High Holborn, London WC1V 6HB, England

43 386198
TRAFFIC AND FINANCIAL ASPECTS IN THE EIGHTIES [VERKEER EN FINANCIEN IN DE JAREN TACHTIG]
In this article some financial and economic aspects of the transportation system in the Netherlands will be discussed. First a historical analysis of government policy with respect to traffic and transportation is given. This is followed by a discussion of the main goal of the government's transportation policy and the conditions under which this goal can be achieved. Special attention is given to the financing of public transportation and the road network. With respect to the financing of public transportation the authors are trying to determine to what extent government cut backs and new priorities have played a role. The building and maintenance of the main transportation infrastructure is financed from a central government fund and analysis of this shows that the government has noticeably changed its policies. However, with respect to the government regulation for financing the local road system, the authors conclude that the government objectives of transferring existing specific grants over to general grants, are being met. In conclusion the authors discuss in general terms several financial changes in the various systems with particular emphasis on the advantages and disadvantages of creating funds; general grants as opposed to specific grants and the financial requirements of public transport. (TRRL) [Dutch]

Bron, JAH Hofland, J (Instituut Voor Onderzoek Van Overheidsuitgaven) **Tijdschrift voor Vervoerswetenschap** Vol. 19 No. 4, 1983, pp 349-361, 2 Tab., 23 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275504), Institute for Road Safety Research SWOV
ORDER FROM: Netherlands Institute of Transport, Polakweg 13, 2288 GG Rijswijk, Netherlands

43 386201
STANDARDIZING URBAN TRANSPORT [NORMERING STADSVERVOER]
The author describes a simple method to establish standards for financing urban public transport. It is based on counts at crucial points in the network. Passenger kilometers are no longer calculated, but numbers of passengers and travel times of vehicles. Efficiency is rewarded and inefficiency discouraged. An example is given. (Author/TRRL) [Dutch]

Brogt, PM (Goudappel Coffeng Bv) **Verkeerskunde** Vol. 35 No. 1, Jan. 1984, 5p, 2 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275500), Institute for Road Safety Research SWOV
ORDER FROM: Royal Dutch Touring Club ANWB, Wassenaarseweg 220, P.O. Box 93200, The Hague, Netherlands

43 386237
RAIL TRANSPORT SUBSIDY POLICY IN GREAT BRITAIN
This paper consists of a structured exchange of views on the basis for rail transport subsidy in Great Britain, the purpose of which is to explore the extent to which subsidy policy for the rail transport sector can be founded on solid economic reasoning. Part 1 describes, from the point of view of a responsible official, the development of the grant system in the United Kingdom since 1962. Part 2 reviews the economic arguments for public transport subsidy as they relate to rail transport, and represents an academic statement of the possible bases on which subsidy policy could be founded. Part 3, again, from the official viewpoint, describes the way in which government decisions on subsidy have been taken, and the extent to which it has been considered possible to relate those decisions to the theoretical considerations. Part 4 contains an academic critique of that rationale.

Palmer, J Gwilliam, KM Nash, CA **Rail International** Vol. 15 No. 2, Feb. 1984, pp 23-32

ACKNOWLEDGMENT: British Railways
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43 386238
THE ECONOMIC BALANCE OF COSTS/BENEFIT OF THE PUBLIC—ACCOUNTS AND ACCOUNTABILITY SEPARATED
Characteristic of almost all railways of the western world in a free market economy and thereby also free choice of the means of transport, is their strained financial situation. The actual expenditures of the railways in some cases considerably exceed the proceeds. The deficit of the railways is normally balanced by subsidies from the public purse. The railways therefore burden the individual economic systems by an apparently irresistibly financial demand. The question therefore obtrudes itself, whether the railway system has been overtaken by other transport technologies and on account of the economic situation of the individual railway administrations had not better be abandoned. In the course of this investigation it is demonstrated on the example of the German Federal Railway, that the railways in spite of a large financial need are "profitable" for the economy and definitely have a benefit for the whole national economy.

Groeben, HJ **Rail International** Vol. 15 No. 2, Feb. 1984, pp 5-21

ACKNOWLEDGMENT: British Railways
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43 386285
TRANSIT CAPITAL PLANNING IN THE SAN FRANCISCO BAY AREA
Borrowing a concept from private sector strategic planning, this project provided the San Francisco Metropolitan Transportation Commission (MTC) with a preliminary estimate of its capital readiness to maintain and enhance the public transportation system in the San Francisco Bay Area over the long term. The assessment highlighted the minimal capital needs required to modernize and sustain the existing plant and equipment within the region. This report documents the procedure used to conduct this assessment and illustrates its application by MTC.

Holec, JM, Jr
Peat, Marwick, Mitchell and Company DOT-I-83-14, Jan. 1983, 53p

ORDER FROM: NTIS PB84-157239

43 386309
FINANCIAL PLANNING IN TRANSIT: USE OF COMMERCIALLY AVAILABLE MICROCOMPUTER SOFTWARE
This report addresses the potential of using commercially available microcomputer software for transit financial planning activities. Discussions with transit operators identified the need for inexpensive, easy to use software for ridership and fare revenue analysis, expense estimation, non-fare revenue forecasting and cash management. Specific requirements for data input, manipulation and output were developed based on three prototypical problems in each functional area. Two electronic worksheet programs and three financial modeling packages were considered as representative of the type of products available. The representative products were examined, using the defined information processing requirements, to determine how they could be applied to solve typical transit financial planning problems. This review was conducted through actual use of the products or a review of their user manuals. It was concluded that, despite some limitations, these products could meet most of the processing requirements and would provide significant assistance to transit operators throughout the financial planning process. An appendix is provided which summarizes the functions, source, approximate price, hardware configuration requirements and program limits of each product.

Dooley, T Spiller, D

Transportation Systems Center, Urban Mass Transportation Administration, (DTS-62) Final Rpt. UMTA-MA-06-0039-83-1, DOT-TSC-UMTA-83-45, Nov. 1983, 92p

ORDER FROM: NTIS PB84-176478

43 386310
RAIL MODERNIZATION BENEFITS ANALYSIS: IDENTIFICATION OF BENEFITS AND BENEFICIARIES. EXECUTIVE SUMMARY
This report presents a three-level taxonomy of benefits which may result from urban rail transit modernization projects. The levels—system performance, effects on users and operators and effects on society—are successively more important and more complex. The report recommends focussing project evaluation at the second level of the taxonomy—i.e., an operator cost savings and traveler benefits due to rail modernization. Methods for predicting and evaluating benefits in these categories are presented. A parallel taxonomy of rail modernization beneficiaries is developed, focussing on the potential for capturing some of the monetary value of benefits to contribute to modernization costs. The report concludes that explicit benefit analysis is both desirable and feasible; that there are real prospects for beneficiary participation in financing rail modernization; and that additional studies are needed to develop a solid capability to predict rail improvement benefits.

Schofer, JL Haefele, ET
Consortium of Governmental Counselors, Inc, Urban Mass Transportation Administration Final Rpt. UMTA-IL-06-0055, Dec. 1983, 171p Contract IL-06-0055
ORDER FROM: Consortium of Governmental Counselors, Inc, 1625 Hinman Avenue, Evanston, Illinois, 60201

43 386355
BUS REHABILITATION ISSUES NEED ATTENTION
The Department of Transportation's Urban Mass Transportation Administration (UMTA) provides funds both to purchase new buses and rehabilitate old buses. Recently, UMTA recoognized need to study the costs and benefits of rehabilitating buses. GAO believes that UMTA's planned study design needs several changes that would make the study more useful in developing UMTA's bus rehabilitation policy. UMTA's funding formula favors new bus purchases. Until UMTA's cost-benefit study is completed, GAO recommends that UMTA make its rehabilitation funding formula identical to the formula for new bus purchases so that UMTA's funding does not unduly influence transit authority's decision to buy new buses or rehabilitate existing buses. The Department agreed to make the new and rehabilitated buses' funding formulas identical and address some of GAO's concerns with its cost-benefit study.

Report to the Honorable Elizabeth H. Dole, the Secretary of Transportation.

General Accounting Office GAO/RCED-84-81, Apr. 1984, 21p, 3 App.

ORDER FROM: GAO-Document Handling & Info Services Facility, P.O. Box 6015, Gaithersburg, Maryland, 20760

43 386356
ALTERNATIVE FINANCING FOR URBAN TRANSPORTATION. STATE-OF-ART CASE ANALYSES
This is a summary of the use, by 43 agencies, of non-traditional techniques for funding transit and urban highway services. This report is designed to introduce public officials and transportation planners at the state and local levels to a range of available funding sources and to facilitate their efforts in determining whether these sources will be useful in meeting their area's transportation needs. The 49 brief case studies included in the report reflect the variety of efforts being made by large and small transit agencies and highway departments to cope with shortfalls in funding. These efforts were selected for inclusion, because they entailed one or more of the following characteristics: Use of non-traditional source of revenue (sources other than fare box or property tax revenues); strong involvement of the private sector; use for the first time in the transportation field (although there may have previous non-transportation applications); and creative examples of public-private cooperation.

Rice Center, Federal Highway Administration, Urban Mass Transportation Administration, Office of the Secretary of Transportation Final Rpt. DOT-I-83-54, Oct. 1983, 114p

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43 386360
TRANSIT SUBSIDY ALLOCATION TECHNIQUES: A REVIEW
As deficits have grown in recent years, transit systems have become increasingly dependent on local governments for funding. This dependence along with growing demands from other public services has placed strains on resources. The local funding of the deficit arising from transit services is often a particular problem in areas where the transit system provides service to more than one political jurisdiction. In these situations, local governments must determine the portion of the total deficit that each jurisdiction will pay. In some local areas, no attempt is made to match the subsidy a jurisdiction pays with the benefits it receives. Instead, the deficit is funded from regional taxes or general revenues and then allocated. This report describes the different approaches that have been used to address the subsidy allocation problem. The report is primarily descriptive because it is recognized that local funding decisions are political decisions and cannot be made solely on technical grounds.

Wallace, W Gougis, L
Omega Group, Incorporated, Urban Mass Transportation Administration, Office of the Secretary of Transportation Final Rpt. DOT-I-83-35, Apr. 1983, 33p, 1 App.

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43 386377
A MARK, A YEN, A BUCK, OR A POUND
An array of financial services offer transit authorities new opportunities for generating funds. California dedicates a portion of its state sales tax for transit; in other cases subsidy comes from designated general fund revenues. Employer-subsidized transit is encouraged when such contributions are tax deductible. Some local government entities can levy their own mass transit taxes. A new mechanism is safe harbor leasing which now finds financial consultants as a liaison between public transit and private corporations looking for tax benefits. This tax benefit transfer (TBT) can be an expeditious means for a transit authority to get the most cash for its benefits. Investment bankers are also leading transit systems into the bond market.

Gentile, J **Metro** Vol. 80 No. 2, Mar. 1984, 4p

ORDER FROM: Bobit Publishing Company, 2500 Artesia Boulevard, Redondo Beach, California, 90278

43 386397
MIAMI'S DOWNTOWN COMPONENT OF METRORAIL: PUBLIC-PRIVATE COVENTURE FINANCING USING A SPECIAL ASSESSMENT DISTRICT
This case study documents the chronological events, key issues, technical analyses and basis of resolution that led to the concensus decision to provide private-sector financial support for the Miami Downtown Component of Metrorail (DCM) Project. This process was initiated when UMTA indicated that DCM could receive federal capital support only if local officials could develop a "full funding" program that included evidence of major financial support from the downtown business community. Key elements of the funding program agreed upon are: (1) Creation of a non-ad valorem special assessment district in the Miami central business district to service a $20 million municipal bond issue; (2) Support for the County to utilize leverage leasing, connector fees and shared station costs to procure further private-sector support; (3) Decision that remaining capital funding be met through dedication of Miami CBD's share of tax increment financing revenues. The support proved pivotal in securing $64 million in capital funding from UMTA. The Miami DCM will encourage downtown development and link the entire CBD.

Harmon (Robert J) and Associates, Incorporated, Urban Mass Transportation Administration, Office of the Secretary of Transportation Final Rpt. DOT-I-84-16, Feb. 1984, v.p., 14 Fig., 4 App.

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43 386923
BASIC ELEMENTS GOVERNING STATE SUBSIDIES TO THE RAILWAYS
The use of a charging system based on the marginal social cost seems better than the direct determination of a contribution to infrastructure charges based on the Lima method. However, it does not provide an answer to the question: what is the value of railways to the local authority? It can only make rules so that decentralized decisions of economic factors are taken in the interest of local authorities. If this objective could be fulfilled, would not this be a very important step?

Berlioz, C **Rail International** Vol. 15 No. 2, Feb. 1984, pp 66-68

ACKNOWLEDGMENT: International Union of Railways, BD
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43 386928
REFLECTIONS ON THE CAUSES OF THE DEFICITS OF WESTERN EUROPEAN RAILWAYS [BETRACHTUNGEN UEBER DIE URSACHEN DER DEFIZITE WESTEUROPAEISCHER EISENBAHNEN]
Railway deficits are the result of state-imposed constraints, such as the obligation to provide certain services for the sake of the community and to compete with roads which are subsidised through provision of more modern infrastructure. Neither the changes in the status of the railway company nor the rationalisation policy have managed to resolve these difficulties. The only way forward is to promote greater solidarity between the state as owner and the railways, by drawing a clear dividing line between the social and the commercial functions of the railways and developing greater awareness of costs. [German]

Pycha, W **Verkehrsannalen** Vol. 29 No. 3, 1983, pp 6-9

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Verkehrsannalen, Gauermanngasse 4, Vienna 100, Austria

43 386950
INTERGOVERNMENTAL RESPONSIBILITIES FOR FINANCING PUBLIC TRANSIT SERVICES
This report sorts through the myriad issues surrounding transit subsidy policy, and provides a rationale for sharing public transit costs. A range of factors that have some bearing on intergovernmental responsibilities for financing public transit are studied. An examination of the evolution of transit subsidy policy reveals that it has been shaped largely by ad hoc responses to ever-worsening industry wide fiscal crises. Although transit programs generally received broad-based support throughout the seventies, the formulation of any coherent, unified set of goals for transit became largely subordinate to simply keeping the buses rolling. A detailed analysis of the justifications for transit subsidies generally suggests that only social equity arguments are defensible, and even then it is far more prudent to subsidize users vis-a-vis transit service providers. An analysis of transit's benefits suggests that most are of only modest importance. Still, there's a general consensus that about one-half of the transit's social benefits accrue to constituents of local governments, with the remainder split evenly among state and federal government interests. It is also found that transit's current tax mix results in a fairly neutral redistribution of income as well as a diverse and reliable source of revenue. Moreover, governmental regulations, particularly those at the federal level, are partly responsible for transit's recent cost spiral. However, local subsidies are found to be far more perverse in terms of their cost and productivity impacts. Finally, an examination of alternative scenarios reveals that the elimination of public subsidies could cause severe declines in ridership and increases in fares, particularly in small urban areas.

Cervero, R
California University, Berkeley, Urban Mass Transportation Administration Final Rpt. DOT-I-83-30, Aug. 1983, 193p Contract DOT-CA-11-0023
ORDER FROM: NTIS PB83-147520

43 386965
THE FINANCIAL RELATIONS BETWEEN THE STATES AND THE RAILWAYS: AN UNCOMPLETED OPERATION
The total amounts paid by the governments to their railways and borne by the taxpayers, represent a considerable part of the general budget of the States. However, all governments have increasingly serious budget difficulties. Can the advantages which the railways offer the community justify the sacrifices which the taxpayers as a whole are obliged to make for them?

Baumgartner, JP **Rail International** Vol. 15 No. 3, Mar. 1984, pp 47-52

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

43 387628
EMPIRICAL MODELING AND FORECASTING OF MONTHLY TRANSIT REVENUE FOR FINANCIAL PLANNING: A CASE STUDY OF SCRTD IN LOS ANGELES
Time series revenue data from the Southern California Rapid Transit District (SCRTD) in Los Angeles are used as a case study to develop empirical models and forecasts of monthly transit revenue for financial planning. Seasonal time series models for the five major types of transit revenues collected by SCRTD are specified and estimated. For all five types, the observed variation in revenue during the estimation period fits well with the values obtained from the models, as is demonstrated by the relevant regression statistics and behavioral characteristics of the model. A data split technique is used to determine the prediction capabilities of the model. A comparison of the forecasts with the actual data shows that the models perform well for forecasting purposes. Finally the models are used in a simulation mode to estimate the impact of the SCRTD June 1982 fare rollback on revenues for the next year and a half.

This paper appeared in Transportation Research Record No. 936, Public Transportation and Transit Operations Planning.

Skinner, D (Systems Development Corporation); Waksman, R (Transportation Systems Center); Wang, GH (Federal Home Loan Bank) **Transportation Research Record** No. 936, 1983, pp 1-8, 5 Fig., 3 Tab., 12 Ref.

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43 387629
ASSESSING SOFTWARE TO MEET THE FINANCIAL PLANNING NEEDS OF TRANSIT OPERATORS (ABRIDGMENT)
An evaluation of commercially available software products to meet the financial planning needs of transit operators is summarized, and the methodology used to establish functional and information processing needs of transit operators and to select potential products is reviewed. Four functional areas (ridership and fare analysis, cash management, tax revenue analysis, and expense estimation) are identified and the potential of two types of commercially available products (electronic spreadsheets and financial modeling languages) to address typical financial planning problems in these areas is described. The strong and weak points of each product type are identified.

This paper appeared in Transportation Research Record No. 936, Public Transportation and Transit Operations Planning.

Dooley, T Spiller, D **Transportation Research Record** No. 936, 1983, pp 9-11, 1 Tab., 4 Ref.

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43 387634
POSSIBLE EFFECTS OF ELIMINATING FEDERAL TRANSIT OPERATING SUBSIDIES
The Reagan Administration's proposal to phase out federal transit operating subsidies by 1985 has prompted a range of forecasts, some predicting that the transit industry will become more efficient and productive while others portend a much grimmer future. The ultimate effects of the federal cuts depend largely on the actions transit agencies take to make up lost dollars-fare increases, service cuts, increased local/state financing, or in-house efficiency improvements. Probable fare, service, and equity effects of the federal cuts among different types of transit operators are examined. A national survey of 99 transit agencies is used to develop a scenario of how federal cuts will affect transit operators. Overall, it is expected that fares will increase about 7 percent, service will decrease approximately 3 percent, and ridership will decline approximately 6 percent because of the federal cuts. Moreover, the poor will bear the brunt

of fare increases, service cuts, and increased local and state taxes caused by the phaseout of federal operating assistance.

This paper appeared in Transportation Research Record No. 936, Public Transportation and Transit Operations Planning.

Cervero, R (California University, Berkeley); Black, G (Barton-Aschman Associates, Incorporated) **Transportation Research Record** No. 936, 1983, pp 25-31, 1 Fig., 5 Tab., 11 Ref.

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43 387635
AN ANALYSIS OF LOCAL TAXPAYERS' WILLINGNESS TO FINANCE TRANSIT

A strong commitment of local tax dollars will be necessary to sustain transit service in many U.S. cities in the 1980s. Limited research has been completed on willingness to pay local taxes for transit. Factors that influenced support for a proposed special property tax millage in Council Bluffs, Iowa, are examined. Council Bluffs is a moderately low income, blue collar community within a metropolitan area of half a million people. An analytic technique known as the Automatic Interaction Detector (AID3) is applied to survey data collected through telephone interviews of 770 households in Council Bluffs. AID3 sequentially partitions a data set on the basis of maximum differences in the means of the resultant groups. Each respondent is assigned to one and only one subgroup. Results of the analysis indicate that home ownership is a major factor in the willingness to pay a local transit tax; home owners are distinctly less willing to pay than renters. Older persons are also less supportive of an additional property tax. Among homeowners, personal transit use or use by another household member is an important factor in support. The attitudes that business within the city is stimulated by transit, that low income persons are enabled to get or keep jobs, and that local government is generally performing well are highly related to willingness to pay a transit tax. The conclusion is drawn that it is important to provide transit service that conforms to the objectives of local taxpayers as well as to demand by users of the service. If these taxpayers believe that transit is making a useful contribution, they are much more likely to support a local property tax to help finance it, even if they are not making personal use of transit.

This paper appeared in Transportation Research Record No. 936, Public Transportation and Transit Operations Planning.

Forkenbrock, DJ Stroner, JW (Iowa University) **Transportation Research Record** No. 936, 1983, pp 31-36, 2 Fig., 1 Tab., 11 Ref.

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43 387636
HOW TO AVOID THE IMPENDING DISASTER IN PUBLIC TRANSPORTATION FINANCING

The imminent withdrawal of federal funding for operating assistance to public transportation agencies creates a crisis in funding. Total system deficits will rise to more than $100 million per state in a number of states in 2 or 3 years. Funding sources, cost containment strategies, and the relative political consequences of these strategies are reviewed, and questions of how much fares can be raised and how much services can be cut are examined. A composite approach to dealing with potential revenue shortfalls is presented that may provide sufficient relief in the short run.

This paper appeared in Transportation Research Record No. 936, Public Transportation and Transit Operations Planning.

Burkhardt, JE (Ecosometrics, Incorporated) **Transportation Research Record** No. 936, 1983, pp 36-43, 3 Tab., 14 Ref.

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43 387651
LONG-RANGE TRANSPORTATION REVENUE FORECASTING

Transportation financing has relied heavily on user fees such as fixed per-gallon fuel taxes and vehicle weight taxes. In many states, these tax structures have contributed to a decline in revenues because of lighter, more fuel-efficient vehicles, energy conservation, and high fuel prices. It has become increasingly important to monitor expected revenue and to propose changes in tax schemes to offset declining revenue. In Michigan, long-term revenue forecasting for transportation is a computerized process that uses forecasts of vehicle registration, miles of travel, fuel consumption rates, and a fuel and weight tax scheme. Not only tax schemes can be tested, but also economic and travel alternatives, such as what happens to revenue if people drive less and what happens if people buy fewer cars than expected. The forecasting process is not isolated from the rest of transportation planning. All output is available on computer files for later use by computerized report, graphing, and analysis programs. Many computer graphics examples are presented. During recent work in Michigan on the State Transportation Plan, the revenue forecasting work was integrated with a prioritized needs analysis with assigned priorities to compare expected revenues on a year-by-year basis to 1990. The long-range transportation revenue forecasting process is a valuable tool to use in developing a strategy for dealing with the changing environment of transportation financing.

This paper appeared in Transportation Research Record No. 931, Transportation and Land Use Planning.

Friend, AR Esch, RE **Transportation Research Record** No. 931, 1983, pp 62-70, 14 Fig.

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43 387685
TRANSIT POLICY STUDY VOLUME I. LOCAL FUNDING OPTIONS FOR WISCONSIN URBAN TRANSIT SYSTEMS

In Wisconsin transit operating costs are met primarily with fares and with subsidies from federal, state and local governments. With reductions in federal and state subsidies, local decision makers will be confronted with difficult choices regarding system funding and service levels. This report examines transit system funding options which could be considered at the local level. Under current statutes, there are three general categories of action that can be taken locally to increase transit income: fare policies; subsidies funding by local taxes or charges; and non-traditional options. Fare options include distance-graduated and time-graduated fares, along with fare prepayment including discounts. Local transit finance options include local property tax assessments, local sales tax, and motor-vehicle registration fees. Subsidy options used in other states are briefly reviewed. In evaluating taxes, they are examined in terms of feasibility, equity, yield and ease of administration. Non-traditional funding options examined are borrowing mechanisms, benefit charges, and service contracts or agreements.

Spies, R Dold, S Hicks, K Macaulay, D Martin, D Wisconsin Department of Transportation July 1982, 84p, 11 Tab., Refs.

ORDER FROM: Wisconsin Department of Transportation, Division of Planning and Budget, Madison, Wisconsin, 53702

43 387686
TRANSIT POLICY STUDY VOLUME 2. STATE URBAN TRANSIT ASSISTANCE PROGRAMS

In 1982 42 states provided almost $1.7 billion in support of public transit. This report summarizes some of the features of and trends in state transit assistance programs and looks at Wisconsin's program in light of those in other states. Great diversity is shown among states in levels of aid, uses of sid, and methods for allocating aid. Total state aid for public transit ranges from none in several states to nearly a half billion dollars in California. On a per-capita basis, Delaware leads with annual expenditures of almost $40 per person. Direct support for local bus systems averages almost $13,500 per vehicle with a median of about $3,000 and a range from zero to $125,800 (Alaska). General revenues are the most popular source of transit assistance (27 states); dedicated sources are used in 19 states (including Wisconsin). Wisconsin's support of transit ranked high anong states—12 in total aid, 11 in aid per capita, 10 in aid per vehicle and 6 in aid as a percent of bus system income. Wisconsin and 2 other states support operating expenses but not capital costs. Wisconsin and 11 other states use transportation-related sources to fund transit—fuel taxes, vehicle taxes and registration fees.

Wisconsin Department of Transportation Mar. 1983, 22p, 8 Tab.

ORDER FROM: Wisconsin Department of Transportation, Divisions of Planning & Budget & Transportation Assistance, Madison, Wisconsin, 53702

43 387690
TRANSIT POLICY STUDY VOLUME 6. PUBLIC INVESTMENT IN WISCONSIN URBAN TRANSIT OPERATING COSTS

From 1976 to 1984, Wisconsin state transit subsidies increased 711% and as a share of total transit expenditures from 12% to 35%. The increase is

due to a combination of high inflation, only small increases in transit vehicle miles traveled, and changes in transit funding formulas that have increased the portion of operating expenses paid by the state. Since 1980 much of the state's increased share has gone to make up for federal reductions and declining operating revenues. The state has a tradition of providing a high level of public services and fiscal aid to local government. Wisconsin DOT has often considered transit benefits and the state's appropriate share in providing them. As the state share increases, it is agreed that its responsibility grows in assuring that the statutory charge of maintaining and improving transit be met. Among the possibilities in assuring this are: (1) Require a certain level of service or local financial commitment be maintained; (2) Impose requirements to assure efficient transit operations; (3) Target some state aid on a discretionary basis; (4) Develop rationales for limiting future increases in state subsidies.

Duffe, JR
Wisconsin Department of Transportation Apr. 1984, 13p, 7 Tab.

ORDER FROM: Wisconsin Department of Transportation, 4802 Sheboygan Avenue, Madison, Wisconsin, 53702

43 387703
ADMINISTRATIVE IMPACTS OF PRIVATE FINANCING TECHNIQUES FOR URBAN TRANSPORTATION
The basic research question examines whether changes in local administrative practices and federal policies may be needed in order to encourage and facilitate greater use of private enterprise, investment and participation in the provision of urban transportation services. This research project has its origins in the concern that urban transit dependence on federal operating and capital subsidies may have caused local transportation agencies to adopt administrative structures and procedures designed primarily to suit federal grant requirements. Those structures and procedures may, therefore, not inhibit greater use of private sector resources in meeting transportation needs in urban areas. Moreover, federal policies may have neglected those aspects of transportation statutes which were intended to encourage private sector enterprise, investment and participation.

Windson, D
Rice University, Department of Transportation Final Rpt. DOTRSPA/DMA-50/84/19, Jan. 1984, v.p. Contract DTRS5682-C-00024
ORDER FROM: DOT

43 387908
ADVERTISING TRANSIT SHELTER PROGRAM
A program for providing bus stop shelters, developed in France, has been adopted in North America, starting in New York City. A private organization contracts to provide shelters at no cost to the transit agency or city because they are built and maintained by revenues from advertising that is placed on them. Since 1977 nine major North American cities and several smaller ones have contracted for such self-sustaining shelter programs with 12 different commercial organizations. Although advertising shelter contracts can vary in language and detail, they typically cover five major areas: General terms; financial terms; site selection; shelter specifications and maintenance; and advertising. Because of the high visibility of transit shelters and the need for coordination with several city agencies, all affected organizations need to be involved in contract development. The types, number and sizes of posters are constrained by the contracts. Some cities have been more restrictive in the regard than others.

Weisman, M (San Francisco Public Utilities Commission)
Transportation Quarterly Vol. 38 No. 3, July 1984, pp 361-374, 3 Fig., 3 Tab.

ORDER FROM: Eno Foundation for Transportation, Incorporated, P.O. Box 55, Saugatuck Station, Westport, Connecticut, 06880

43 387914
DEPARTMENT OF TRANSPORTATION SHOULD IMPROVE ITS POLICIES AND PRACTICES ON GRANT-RELATED INCOME
Many Department of Transportation grantees generate income under programs financed in whole or in part with federal assistance. Program income is a potential source of revenue for either increasing the size of transportation programs or reducing the federal government's and grantees' share of program costs. However, these objectives were not always being attained because regulations directing the grantees' use of the income did not exist or Transportation's operating administrations and grantees were not always complying with existing regulations. GAO recommends a number of corrective actions.

General Accounting Office GAO/GGD-84-5, Mar. 1984, 24p

ORDER FROM: GAO-Document Handling & Info Services Facility, P.O. Box 6015, Gaithersburg, Maryland, 20760

43 387926
LOS ANGELES METRO GETS A SLOW ORDER
After 3 decades of rail transit construction postponements, Southern California Rapid Transit District's latest 18-mile subway construction project is again on hold. Although legislation has guaranteed state and local funding for a system that eventually could extend 160 miles, UMTA has not been willing to guarantee its funding for even a segmented project that would initially construct an 8.8-mile line, the minimum that is operationally practicable. Without UMTA action, there is now prospect of loss of local support. Meanwhile SCRTD has designated its design consultants and construction managers. There are descriptions of tunnel construction methods with provision for earthquake faults, stations, power supply, standardized cars and fare collection.

Middleton, WD **Railway Age** Vol. 185 No. 8, Aug. 1984, pp 72-75

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43 387951
FUTURE DIRECTIONS OF URBAN PUBLIC TRANSPORTATION. OPENING REMARKS
In her opening remarks, the author suggests that certain assumptions about public transit may no longer be valid. Specifically, she questions the idea that publicly subsidized service is the only way to assure urban transit. In her opinion, it may be time to give private operators a larger role in urban public transportation.

This paper appeared in Transportation Research Board Special Report No. 100, Future Directions of Urban Public Transportation. Papers presented at a Conference on the Future Directions of Urban Public Transportation, September 26-29, 1982, Woods Hole, Massachusetts.

Foryst, CA **Transportation Research Board Special Report** No. 199, 1983, p 5

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43 387956
FINANCING PUBLIC TRANSPORTATION
The author questions the wisdom of going to capital-grant-only funding in a period of tight finance because of the incentive this is going to create to overcapitalize transit systems. He notes that dedicated taxes mostly sales taxes and property taxes, are being used for transit on an increasing scale around the country, but the problem is that these sources are growing too slow to match transit needs. He also discusses recent examples of restructuring of state and federal programs taking New York and Minnesota as example. Finally, the author discusses problems in the use of complicated data for allocation formulas, and argues that paratransit should be part of any formula of this type.

This paper appeared in Transportation Research Board Special Report No. 199, Future Directions of Urban Public Transportation. Papers presented at a Conference on the Future Directions of Urban Public Transportation, September 26-29, 1982, Woods Hole, Massachusetts.

Kirby, RF **Transportation Research Board Special Report** No 199, 1983, pp 54-59, 1 Tab., 9 Ref.

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43 387961
FINANCING GOVERNMENT ENTERPRISES
This paper identifies some of the many financial problems that beset public enterprises: using operating costs, the growing public suspicion of large development projects and hence, subjection to full government regulation, and the high cost and volatility of borrowing to finance capital improvements. The author then offers some suggestions that may help transit systems cope with these problems.

This paper appeared in Transportation Research Board Special Report No. 199, Future Directions of Urban Public Transportation. Papers

presented at a Conference on the Future Directions of Urban Public Transportation, September 26-29, 1982, Woods Hole, Massachusetts.

Raines, FD **Transportation Research Board Special Report** No. 199, 1983, pp 78-79

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43 389308
TWENTY YEARS OF INVESTMENT IN THE TRANSPORT SECTOR OF THE NETHERLANDS [TWINTIG JAAR INVESTERINGEN IN DE TRANSPORTSECTOR]
The authors present the results of a statistical analysis of time series as to the fixed investments in the various sectors of commercial transport in the Netherlands for the years 1959-1978. A number of exogenous variables that could possibly explain the respective levels of fixed investment had at first been selected on the basis of economic theory and the availability of data. Then, these variables were applied to the estimation of linear regression models. Particularly for sectors predominantly operating in domestic markets, national income appeared to be an important explanatory variable as to the level of investment. This refers to public transport (by rail, tram, metro and bus) and goods transport by road. In this respect, also operating revenues often proved to be significant variables. This tends to the conclusion that in the respective domestic transport markets one can, broadly speaking, discern a pattern that is amenable to the acceleration-principle. For the sectors air transport, maritime transport and inland shipping the variables concerned (all of which relate to the national economy such as interest rates, inflation and population) did not satisfactorily contribute to the relationships under investigation. This is presumably due to operation in international markets and to the long economic lifetimes of the means of transport in question. Further research should be directed to these aspects. (Author/TRRL) [Dutch]

Wesseling, J (Amsterdam University, Netherlands); Eefting, J Wolters, TJ (Centraal Bureau voor de Statistiek) **Tijdschrift voor Vervoerswetenschap** Vol. 20 No. 1, 1984, pp 18-35, 9 Fig., 3 Tab., 9 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276514), Institute for Road Safety Research SWOV
ORDER FROM: Netherlands Institute of Transport, Polakweg 13, 2288 GG Rijswijk, Netherlands

43 389327
THE LINK BETWEEN REVENUE AND RESOURCES
Sector management has the benefits of product-orientated businesses whilst maintaining the best features of the traditional geographical and functional structure. The old structure was not motivated to bring income, expenditure and price into an optimum relationship. Consequently five sections were created to shift the emphasis from cost control to revenue earning activities. The five sections are: freight: heavy or bulk goods predominantly in train loads; parcels: fast movement of mail, newspapers and small packages in some specialised rolling-stock and passenger trains; inter-city: long distance passenger traffic between main population centres; provincial: cross-country and local passenger services including the seven provincial conurbations; London and the South East: mainly commuter passenger services extending about 100 km from London. Business managers are now responsible for marketing the various sectors and also the cost of resources that they need to carry the traffic. Sector management is based on planning and accounting systems which allocate costs to the sections recognising the needs of shared resources. Net revenue accountability allows long term control of investments.

Reid, RB (British Railways Board) **Railway Gazette International** Vol. 140 No. 4, Apr. 1984, pp 258-260, 2 Fig., 2 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 276761)
ORDER FROM: IPC Transport Press

43 389337
TRANSIT CAPITAL PLANNING IN THE SAN FRANCISCO BAY AREA
This report describes an effort by San Francisco's Metropolitan Transportation Commission (MTC) to establish regional priorities for capital investment with the Bay Area transit operators. As part of this project, MTC tried to estimate the region's "capital readiness." This highlighted the minimum capital levels required to modernize and sustain the existing transit plant and equipment, and the commitment of funds which wouuld be required. The report outlines the analysis process which was used, the input data requirements, the technique's underlying assumptions, guidelines for its application, and its potential expansions to other areas. The report begins in non-technical terms, but some familiarity with financial analysis is useful in reviewing and applying latter sections of the report.

Office of the Secretary of Transportation DOT-I-83-14, Jan. 1983, 57p

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43 389397
1984 SURVEY OF STATE INVOLVEMENT IN PUBLIC TRANSPORTATION
This survey explores the direct and indirect state funding of public transportation; the sharing of transit operating costs among users, federal, state and local governments, and the methods states use to allocate founding. States now provide approximately $3 billion annually for public transportation, an increase of about $1 billion over the past two years. The survey identifies funding for urbanized and nonurbanized areas, specialized transportation, intercity buses, and for planning, research and administration. Four additional states began direct financial assistance for transit, bringing the total to 40. The report provides a breakdown by state of the share of operating costs covered by users, federal, state and local governments. There is also a state-by-state description of the basis for allocating funding for operating projects, capital projects, specialized transit and ridesharing. The most significant technical assistance projects are also listed by states. As many metropolitan areas search for stable sources of revenue for transit programs, the survey examines which states permit substate entities to levy regional or local texes for transit and the success of such levys in local referendum. The options for transfer of various UMTA funding programs is also described.

American Assn of State Hwy and Transp Officials Sept. 1984, 62p, 26 Tab.

ORDER FROM: American Assn of State Hwy and Transp Officials, 444 North Capitol Street, NW, Suite 225, Washington, D.C., 20001

43 389746
MASS TRANSIT: THE EXPENSIVE DREAM
The 1982 legislation which calls for 1 cent of the 5 cent increased Federal gasoline tax to be used for public transit is seen as having set cities to planning and building high-capital rail transit systems and extensions which are not justified. These systems have the potential for very large operating deficits which also call for more Federal subsidy, as well as increased community financial support. It is contended that requests for Federal funds will not be decided on their merits—whether a rail system will mean financial disaster for a specific city or whether it will bring the claimed benefits of reduced congestion, improved air quality and economic development. Efforts to establish criteria to rate projects meet political opposition. A series of examples from cities which are planning, building and operating rail transit are used to support the thrust of this article.

Business Week No. 2857, Aug. 1984, pp 62-69, 4 Fig., 1 Tab.

ORDER FROM: McGraw-Hill, Incorporated, 1221 Avenue of the Americas, New York, New York, 10020

43 389789
REVIEW AND ANALYSIS OF THE SOURCES OF FUNDS OF FIVE PUBLIC TRANSIT SYSTEMS
The problem of financing public transit differs fundamentally from traditional private-sector financing. With the exception of some long-term capital projects, transit systems cannot use debt financing as may private-sector enterprises. For example, the most immediate financial need of a transit system is the ability to pay production costs, i.e., operating expenses. The present discussion derives from a financial management perspective. As such it is more concerned with questions of sources of funds than with the subsidy, cost-benefit and equity topics of public finance theory. The main thrust, then, is and examination of financial resources currently utilized or under serious consideration by the case study systems.

Walther, ES (North Carolina Agricultural and Technical State U) **Transportation Quarterly** Vol. 38 No. 2, Apr. 1984, pp 233-244

ACKNOWLEDGMENT: EI
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43 389856
SPEND NOW, GET YOUR GRANT LATER
Advanced construction notes have been utilized by the Post Authority of Allegheny County, a first for the transit industry. While this method of financing has been used for highways and sewers, the Pittsburgh project is the first when this approach has been used in the transit industry. Rebuilding of the PAT light rail system was faced with delays because federal government grant funding was not expected until months after it could be used most effectively. The $37.6 million in notes, pledging that the debt would be paid with grant money, represented a strategy developed by PaineWebber Capital Markets. The money was received in June 1984 and PAT began to spend it even though the federal grant was not expected to arrive until sometime in FY1985, beginning October 1, 1984. UMTA entered into a contract for the Pittsburgh project in 1979 pledging to provide 80% of the funding. UMTA has never failed to make payments on any such commitment but the exact date when money would arrive has been uncertain. The notes are seen best suited for projects lasting several years and where work has already started. Transit agencies should also be able to sell such notes for new projects.

Deutsch, SM (Paine Webber Capital Markets) **Railway Age** Vol. 185 No. 9, Sept. 1984, p 121, 1 Phot.

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43 389879
ELECTRIFICATION OF URBAN PUBLIC TRANSPORT—PLANNING AND FINANCE
There is a highly structured statutory planning and finance system for United Kingdom transport projects. If electric public transit is to be considered as part of the future infrastructure for an urban area, it must be included in and conform to the general planning process. Because present technology renders batteries of sufficient capacity and proper configuration too expensive for any but feeder transport, electric transit must be based on systems which collect current directly from fixed conductor systems. An example of an 8-km route based on the total annual local transport capital available shows that the only electric modes for consideration are trolley bus or light rail transit and then only in larger urban areas on a limited incremental basis and with demonstrable needs and economic justification. If insufficient public finance is available for optimum public transit, consideration should be given to alternative funding such as local taxation or private investment. The existing planning processes are not directed solely toward provision of electric public transit but these processes can provide an effective and stable basis for its development. its development.

Scotney, DJS (Lothian Regional Council) **Electric Vehicle Developments** No. 18, 1984, pp 22-23, 84

ORDER FROM: Research Applications Limited, City University, Northampton Square, London EC1V 0HB, England

43 389885
RURAL AND SPECIALIZED TRANSPORTATION: UMTA PROGRAMS AND THE STATES
Well over 1500 public and non-profit transportation systems received assistance under UMTA Section 16 and Section 18 grants in 1984. The Section 18 program assists public transportation operations in nonurbanized areas; the Section 16 program provides capital assistance for transportation of the elderly and handicapped. ASHTO surveyed all states and this report gives a summary of the responses. Late in 1983 administration of the Section 18 program was transferred from FHWA to UMTA, bringing an imposition of Disadvantaged Business Enterprise (DBE) requirements, a new definition of use of other federal funds to match Section 18 grants and new time intervals for fund approval. It was found that, under Section 18, taxi systems are receiving assistance in 22 states with all but 5 permitting contracts with taxi firms to provide public transportation on a shared-ride basis. Thirty-one of 50 states use a formula for allocating funding; the differing fiscal years used by states and their recipients make program management and information collection difficult. Section 16(b)(2) is utilized by over 850 nonprofit organizations (250 for elderly, 300 for handicapped and over 300 for both). Over 1300 vehicles (vans, buses and station wagons) were purchased in the year. Vehicles are sometimes leased to other private nonprofit agencies, for-profit organizations or public bodies; 23 states allow the vehicles to be used in the vanpool mode when not being used for social service transport. Most states have procedures for disposing of older vehicles and 13 allow funds to be used for vehicle rehabilitation. Fifteen states have Section 16 management plans similar to those for Section 18. Various other data are presented in the tables.

A Report of the Task Force on Rural Public Transportation of the Standing Committee on Public Transportation.

American Assn of State Hwy and Transp Officials Aug. 1984, 46p, Tabs.

ORDER FROM: American Assn of State Hwy and Transp Officials, 444 North Capitol Street, NW, Suite 225, Washington, D.C., 20001

43 390138
TRUST FUND: A HISTORY OF STRUGGLE
Transit's dedicated source of federal funding, the 1-cent share of the 5-cent per gallon gasoline tax increase of 1982, has been subjected to continuing pressures, but it is expected that the fund will continue. Administration limits have been applied to the transit share while the highway portion (8 cents per gallon total) is being expended at a rate that could exhaust the existing surplus in the Highway Trust Fund by 1989. Because of increased highway fuel consumption, transit funds are being accumulated at the rate of $1.5 billion annually, about $400 million above original estimates. Whatever amount was to be appropriated, it seemed inevitable it would be dwarfed by requests for construction of transit projects. The history of the Highway Trust Fund and its transit-aid component are outlined, followed by observations on prospects for the future of federal funding for new-start rail transit projects.

Patrick, E **Mass Transit** Vol. 11 No. 9, Sept. 1984, pp 28-29

ORDER FROM: Mass Transit, 337 National Press Building, Washington, D.C., 20045

43 390222
WORKSHOP ON INVESTMENT AND FINANCIAL ANALYSIS TECHNIQUES. WORKSHOP SUMMARY: INVESTMENT AND FINANCIAL ANALYSIS IN TRANSPORTATION IN THE 1980'S. TRAVEL ANALYSIS METHODS FOR THE 1980'S
Analytical tools for investment and financial analysis in the highway and transit fields are generally good, although there are weak areas. The majority of areas do not need much additional research. The state of the practice is generally limited and there are barriers to implementation in virtually all areas. Even though there has been a reasonably good level of development of analytical tools in addressing critical issues, the technology transfer has been so poorly conducted that the analytical tools have almost never been utilized, particularly at the local level. Analytical tools developed often require such enormous computer and resource capabilities that local planning agencies simply are unable to use them. Models have not routinely been made readily available through time sharing or other means.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Heathington, KW (Tennessee University) **Transportation Research Board Special Report** No. 201, 1983, pp 184-188

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43 390223
STATE OF THE PRACTICE: INVESTMENT AND FINANCIAL ANALYSIS. WORKSHOP ON INVESTMENT AND FINANCIAL ANALYSIS TECHNIQUES. TRAVEL ANALYSIS METHODS FOR THE 1980'S
Financing of transportation improvements emerged as a significant issue in the latter part of the 1970s and is becoming the key issue of the 1980s. Financing mechanisms at the local level are the primary focus, looking at medium and longer-range financial planning (5-15 years) and not at near-term accounting and budgeting. Local financing mechanisms for highway and transit are categorized: Local highway financing—User-pay mechanisms, and nonuser mechanisms; Local transit financing—Broad based taxes and revenue sources, charges on motor vehicle users, charges on property benefitting from transit, borrowing strategies, joint ventures with the private sector. States and localities are faced with problems in existing revenue sources: Revenue base is not sensitive to inflation, fluctuating fuel consumption, fluctuating construction costs, sensitivity to social and

political pressures, and increasing demands for transportation facilities, services and maintenance. Specific solutions to financing are unique to each local area; new state and local revenue sources must be found. Some interaction will be necessary among transportation plans, financial plans and land use plans. Intergovernmental responsibilities for budgeting, short-range fiscal analyses and long-term financial planning must be clarified. Responsive analytical techniques are needed.

Proceedings of a conference held October 3-7, 1982, Easton, Maryland.

Maring, GE (Federal Highway Administration) **Transportation Research Board Special Report** No. 301, 1983, pp 189-197, 7 Ref.

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44 386156
DEVELOPMENTS IN LONG-DISTANCE COMMUTER COACHING FOLLOWING THE TRANSPORT ACT 1980
One effect of the Transport Act 1980 was to stimulate development of long-distance commuter coach services. A study of developments up to January 1983 is reported. Due to its large volume of long-distance commuting, London has attracted most initiatives, with steady growth following the Act in both private and public sectors. By January 1983 roughly 185 commuter coaches served London daily carrying about 7,500 passengers each way. Of these about 6,800 were regular commuters who represented 5-6 percent of the total long-distance commuting market, although a rather higher proportion from certain localities. Further potential for increased activity may exist. Most coach users previously travelled by rail, lower fares being the major reason for change. The trade-off between lower fares and slower journey speeds suggests services have their greatest potential over distances of roughly 20-40 miles. Patronage developed only slowly in many areas with operators running at a loss for some months initially before reaching financial viability. In the area of commuter coaching the Act thus succeeded in generating new services and in giving the public more choice, with gains to both users and coach operators, although at the expense of revenue loss on other modes of travel (notably rail and underground services). (Author/TRRL)

Fairhead, RD Jackson, RL Watts, PF **TRRL Laboratory Report** No. 1038, 1983, 29p, 6 Fig., 12 Tab., 7 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275225)
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44 386168
REORGANISATION OF LOCAL GOVERNMENT IN THE METROPOLITAN COUNTIES: REALLOCATION OF TRANSPORT RESPONSIBILITIES. CONSULTATION PAPER
This consultation paper gives details of proposals for the reallocation of responsibility for the transport functions hitherto carried out by the metropolitan county councils. These proposals cover public transport, highways and traffic management, trunk road agency arrangements, airports, and discussions with local authorities. (TRRL)

Department of Transport, England Monograph Oct. 1983, 6p

ACKNOWLEDGMENT: TRRL (IRRD 275052)
ORDER FROM: Department of Transport, England, 2 Marsham Street, London SW1P 3EB, England

44 386170
ROOM TO MOVE. GROWTH AND JOBS GENERATE TRAFFIC-THE NEED FOR MORE INVESTMENT IN URBAN TRANSPORT
This report considers the financial constraints which have in recent years prevented the responsible local authorities from equipping urban areas with sufficient facilities for people and goods movement to provide: an efficient infrastructure for industry and those who work in it; living and working environments capable of attracting new industrial investment in competition with towns and cities in other countries and particularly in the European community. The report also examines the effect of the constraints referred to in eight major urban areas—Clyde, Tyne and Wear, Merseyside, Greater Manchester, West Yorkshire, South Yorkshire, West Midlands and Cardiff. The details given for these areas show that even present plans, reflecting the effect of recent and current constraints rather than the respective authorities' present assessment of real needs, are in danger of not being realised within realistic timescales. Recommendations concerning the actions to be taken and the authorities who need to act, are put forward. (TRRL)

Brookings Institution Monograph 1983, 40p, 8 Fig., 12 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 275032)
ORDER FROM: British Road Federation, Cowdray House, 6 Portugal Street, London, England

44 386171
WAYS AND MEANS—A CONSUMER VIEW OF LOCAL PUBLIC TRANSPORT POLICY
The aim of this report was to provide a practical framework for the provision of local public transport. It examined the background to public and private transport, the legislative aspects concerning the provision and financing of public transport (revenue support, grants for capital investment, concessionary fare schemes, tax concessions), the representation of passengers (by the Central Transport Consultative Committee (CTCC), Transport Users Consultative Committees (TUCC), Air Transport Users Committee (AUC), and London Transport Passengers Committee (LTPC). The need is stressed for a clear policy regarding the level of support provided by local authorities and, once local public transport objectives have been established, the need to ensure that transport subsidies provide value for money. This means monitoring the aspects of transport services which concern consumers, eg, availability, accessibility, reliability, speed, comfort, information, and prices. Lastly, alternatives in local transport are examined. (TRRL)

National Consumer Council Monograph No Date, 47p, 3 Tab., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 275028)
ORDER FROM: National Consumer Council, 18 Queen Anne's Gate, London, England

44 386174
THE ORGANISATION OF PUBLIC TRANSPORT CONSORTIA. ERRORS AND PERSPECTIVES [L'ORGANIZZAZIONE CONSORTILE DEL TRASPORTO DELLE PERSONE. ERRORI E PROSPETTIVE]
The author examines the solution adopted in some regions of Italy for the formation of consortia in the public transport sector. The Italian solution is compared with that adopted in other countries and a proposal is made for a restructuring of the consortia, based on a different determination of the traffic areas in the Veneto region. (TRRL) [Italian]

Bogi, M **Vie e Trasporti** Vol. 52 No. 504/5, July 1983, pp 475-480, 2 Fig.

ACKNOWLEDGMENT: TRRL (IRRD 274965)
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44 386398
TEXAS-SIZE RAIL TRANSIT
Dallas Area Rapid Transit (DART) is taking the first steps toward building what is scheduled to be a 160-mile guideway-type transit system by 2010. Present planning is for a light rail transit (LRT) network with other alternatives to be appraised against it. Immediately DART is reducing bus fares on its existing system and making plans for expansion of bus services. Dallas population is expected to grow 40 percent by the time the LRT system (or its alternate) is completed. Financing is assured by a designated one-cent local-option sales tax for a separate political district created by the State of Texas. With a $3.5 billion guideway system in prospect, supplier interest is intense. Planning guidelines are already established. Meanwhile the other major transit system in Texas, Houston, is rethinking the approach which led to a voters' defeat of its proposed rapid transit system funding in 1983.

Fahrenwald, B **Railway Age** Vol. 185 No. 5, May 1984, pp 69-70

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44 386724
COACH AND RAIL COMPETITION IN A DEREGULATED MARKET
This paper reviews the reality of changes in the inter-urban market since the enactment of the 1980 Transport Act. Most of the detailed information contained herein relates to developments in the East Midlands area of England, which has been the subject of an SSRC research project.

Kilvington, RP
Oxford University, England TSU/REF-228, 1983, 20p

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44 386963
INSTITUTIONAL ORGANISATION OF URBAN PUBLIC TRANSPORT IN CONURBATIONS
In this article are considered the main characteristics of developments achieved from the institutional standpoint these past fifteen years, taking examples from the organisation of urban transport in France and abroad. The analysis is made on the basis of three divisions corresponding to the principal constituent parts making up the institutional framework of urban

passengers at separate fares in certain circumstances;-problems affecting the bus industry in Scotland are treated in a separate chapter.
Prepared in cooperation with the Scottish Office.

Her Majesty's Stationery Office, Department of Transport, England
CMND 9300, 1984, 78p, Figs., Tabs., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 276779)
ORDER FROM: Her Majesty's Stationery Office, 49 High Holborn, London WC1V 6HB, England

44 389330
TRANSPORT ASPECTS OF THE 1984 PUBLIC EXPENDITURE WHITE PAPER. FIRST REPORT FROM THE TRANSPORT COMMITTEE, SESSION 1983-84, TOGETHER WITH PROCEEDINGS OF THE COMMITTEE, MINUTES OF EVIDENCE AND APPENDIX
This report presents the comments of the Transport Committee on a number of issues contained in the public expenditure white paper relating, in particular, to the road construction programme, as follows: motorways and trunk roads (capital expenditure, flexibility in the annual cash provision, maintenance expenditure); local authority transport expenditure (road construction, road maintenance, public transport, transport supplementary grant); nationalised transport industries (National Bus Company, British Rail, British Airports Authority, British Airways) ports; shipping. Evidence submitted by the Department of Transport and a memorandum submitted by the British Road Federation are included.

Her Majesty's Stationery Office Monograph No. 328, 1984, 39p, 1 Fig., 13 Tab., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 277129)
ORDER FROM: Her Majesty's Stationery Office, 49 High Holborn, London WC1V 6HB, England

44 389339
TAXI REGULATION IN A FREE ENTRY MARKET: A CASE STUDY OF WASHINGTON, D.C.—EXECUTIVE SUMMARY
This study examines taxi regulation in a free entry market, regulatory trends and regulators willingness to encourage increased private sector participation in public transportation. The specific objectives of this research project were to: (1) Analyze in detail the current state of taxi regulations in a free entry market; (2) Identify and analyze any regulatory trends in the free entry market; (3) Ascertain and delineate the local public body's point of view on taxi regulation in the area; (4) Determine the willingness of local government to encourage greater private sector participation in public transportation.
See also PB84-189208.

Lyons, DL Ahn, MC
District of Columbia University, Urban Mass Transportation Administration Final Rpt. UMTA-DC-11-0015-84-1, Oct. 1983, 8p Contract DOT-UMTA-DC-11-0015
ORDER FROM: NTIS PB84-189190

44 389359
ALTERNATIVES FOR RED ARROW DIVISION OPERATION: FEASIBILITY STUDY
The Red Arrow Division (RAD) of the Southeastern Pennsylvania Transportation Authority (SEPTA) currently provides transit service in Delaware County. Fare increases, cutbacks in commuter service and federal operating subsidies along with the reliance placed upon local tax revenues generated this Delaware County feasibility study of alternative management plans for operating its public transportation system. Study objectives were: develop 3 alternative management options providing transit service in Delaware County, one of which includes a complete separation of RAD from SEPTA; determine impacts and assess feasibility of each alternative vis-a-vis current RAD-SEPTA arrangement; identify implementation process; and summarize study findings in a single document useful to County decision makers. Three alternatives selected for analysis were: 1) County Perform Marketing, Operations, Planning, and Monitoring—little change in status quo; 2) County Operate Intra-County Bus Service—step away from status quo and offered potential cost savings and service improvements in low density areas; and 3) County Operate all RAD—complete separation of RAD from SEPTA; vastly complex; potential long term savings are great, but so are risks. The study concludes that current analysis does not justify a RAD separation from SEPTA at present time; however, it does not rule out future separation, especially if trend of escalating County operating subsidy requirements continues. This trend reflects the County's operating subsidy increase from $460 thousand in FY 79 to $1.23 million in Fy 82, and a projected $1.99 million in FY 83.

Delaware County Planning Department, Urban Mass Transportation Administration Final Rpt. UMTA-PA-09-0080, Sept. 1983, 101p Contract UMTA-PA-09-0080
ORDER FROM: UMTA

44 389363
DEREGULATION AND COMPETITION IN PUBLIC TRANSPORT: A CASE STUDY
The law on permits for passenger transport operations has been similar in South Africa and the United Kingdom for 50 years. In 1980 the United Kingdom government made radical changes to allow greater ease of entry, more competition, less administrative control of services, and greater freedom in pricing. The effects on urban services have been limited, but the pace of change is increasing. There has been a great increase in inter-city operations, giving more services, lower fares, and improved productivity. Even allowing for differences in social and economic conditions, the results in the United Kingdom suggest that cautious experimentation on local services in South Africa could give greater freedom of choice for passengers. Busy routes from black townships might support a second operator. White services could be opened to tender. Relaxing fare control could reduce criticism of increases. The National Transport Commission and Local Road Transportation Boards should encourage careful experimentation. Freedom of customer choice can be considered a desirable aim, but in urban transport caution is necessary. There seems little need for caution on inter-city services.

Browning, P
National Institute for Transport & Rd Res, S Af RT/38/82, Dec. 1982, 39p, 2 App.

ORDER FROM: National Institute for Transport & Rd Res, S Af, P.O. Box 395, Pretoria 0001, Transvaal, South Africa

44 389365
THE TENNESSEE LOCAL TRANSPORTATION FUNDING ACT OF 1982
This Tennessee legislature enacted the Local Transportation funding Act of 1982 with backing of the state's transit operating agencies to add, at local option, a cent to the fuel tax by any county, metropolitan government or incorporated municipality for maintaining or extending transit service. Neither of two attempts—in Nashville and Chattanooga—to gain voter approval was successful. The local referendum has inexorably linked successful implementation of the legislation to the local political process. Until local labor issues are resolved there, Memphis City Council will prevent the issue from going to ballot. Transit managers in other communities have been discouraged from attempting local referendum. Learning to operate effectively in the political environment is a prelude to any successful effort by transit to secure a stable, dedicated source of funding. The Act is evidence that transit interests had become effective political players at the state level, but the agencies have yet to become effective at the local level. The legislation does respond to a recognized problem but, as written, is not sufficient to meet transit's needs and can be regarded only as a start. An appendix analyzes transit funding and institutional arrangements in Wisconsin where a long history of support for public transit highlights some elements missing from the Tennessee environment.
This report is included in: Center for Transit Research and Management Development at Indiana University, Final Report, May 1984, DOT-IN-06-0013.

Robbins, JC Wyatt, EM
Indiana University, Bloomington, Urban Mass Transportation Administration Final Rpt. DOT-IN-06-0013, Dec. 1983, 50p, 13 Ref., 1 App.

44 389813
A FUTURE FOR THE DB BUT NONE FOR ITS LOCAL TRAFFIC? [ZUKUNFT FUER DIE DB-KEINE ZUFUNFT FUER IHREN NAHVERKEHR?]
Discussions following on from the Federal Government's policy statement of 23 November 1983 have taken a particularly critical view of local traffic. On the basis of the railway's strategy, this article argues that the DB must adapt to real market needs if it is to have a future. [German]

Paellmann, W **Die Bundesbahn** Vol. 60 No. 3, Mar. 1984, pp 151-152

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Hestra-Verlag, Holzhofallee 33, Postfach 4244, 6100 Darmstadt 1, West Germany

44 389851
RAIL POLICY IN BRITAIN—WHAT NEXT?
The 1974 Railways Act set British Rail (BR) the rather vague objective of providing a passenger service broadly comparable with that then existing within a given level of support. For the first few years under the Act, BR succeeded in operating within the financial constraints imposed, but only be considerable increases in charges and by negotiating wage settlements which implied declining real wages. From 1978 on, rising labour costs and reduction in traffic led to a rapidly developing crisis in BR's financial position. The position of each section of BR's financial position. It is shown that the designation of some sectors as being purely commercial is inappropriate, since this means that benefits to users and to the community at large are ignored in decision-making. Similarly, the direction to maintain "social" passenger services at a given level means that finance and investment are concerned unduly on preservation of the existing pattern of service, rather than on providing value for money. In both sectors, the likelihood is that in general fares areetoo high and services too frequent. At an operational level, the criterion of maximising the (weighted) volume of traffic carried is advocated as a practical way of choosing between alternative fare and service-level packages. More broadly based strategic studies would be needed to decide on the weights to be adopted, the level of finance to be made available, and the overall strategy.

Nash, CA **Transportation** Vol. 12 No. 3, May 1984, pp 243-259

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

44 389854
CAVEAT EMPTOR, CAVEAT VENDOR
Social policy imposed on the transit marketplace has affected the volume and types of buses which have been purchased over the past 20 years. Varying UMTA policies have significantly affected transit equipment sales. Now restrictive specifications that thwart competitive bidding must be justified, requiring that the transit agency be ready to defend its procedures. Restricting sources to state or local suppliers is now prohibited and requirements for utilization of local labor are still being examined. Minority business enterprise (MBE) has changed since it was first used in legislation covering transit equipment procurement. The new definition is disadvantaged business enterprise (DBE) and is somewhat more restrictive than MBE. Certification is the responsibility of the agency doing procurement. UMTA does report that 14.3% of its FY1983 assistance to agencies went to certified socially and economically disadvantaged enterprises. Bid negotiation is also undergoing transformation as steps are taken to assure low bid purchasing while minimizing subsequent change orders. There are those who claim that federal financial assistance is not the proper forum to deal with such geopolitical issues as trade imbalance and such socioeconomic issues as equality of economic opportunity. Proponents of such goals have so far won, making both vendors and buyers wary of purchasing decisions.

Metro Vol. 80 No. 5, Sept. 1984, 5p

ORDER FROM: Bobit Publishing Company, 2500 Artesia Boulevard, Redondo Beach, California, 90278

44 389892
A STUDY TO IDENTIFY EFFECTIVE, EFFICIENT AND TRANSFERABLE MINORITY BUSINESS ENTERPRISE (MBE) STRATEGIES WITHIN A MULTI-MODAL TRANSIT SYSTEM. FINAL REPORT. RESULTS, FINDINGS AND RECOMMENDATIONS
This study provides guidance on the most effective methods for promoting full participation by minority business enterprises (MBEs) in transit-related opportunities. While historically the development, construction and operation of a rapid transit system offers business opportunities, MBEs have ben unable to secure any significant amount of such business. The study identifies effective and transferable MBE strategies; identifies operation, maintenance and land-development phases of a new rapid transit system; identifies key decisions in transit system development which have substantial impact on MBEs to compete for business; and identifies the entry mechanisms (policies, procedures and programs) which should be put in place and issues which must be raised at each critical entry point to facilitate participation by MBEs.

Resources, Incorporated, Urban Mass Transportation Administration Aug. 1982, v.p., 1 Tab., 1 App. Contract DTUM60-82-C-71117
ORDER FROM: UMTA

44 390108
INTERGOVERNMENTAL GOALS FOR PUBLIC TRANSIT
An attempt has been made to catalogue goal statements at each level of government in the U. S. At the federal level, comprehensive transit goals are lacking. The survey of local transit operators and state agencies clearly revealed the tensions existing between service and social objectives on the one hand, and the desire to operate transit in a cost-efficient manner on the other. The lack of a unified set of well-articulated, priority-ranked goals at each level of government has hampered efforts to develop a rational nationwide policy of support for public transit.

Cervero, R (California University, Berkeley); Brunk, J **Journal of Advanced Transportation** Vol. 17 No. 1, 1983, pp 29-47

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

44 390135
URBAN TRANSPORTATION DEREGULATION IN ARIZONA
This research reports on the first year impacts of urban transportation deregulation in Arizona. It examines the impacts of deregulation on the taxi, airport limousine, private buses, and demand-responsive transportation industries in Phoenix and Tucson, Arizona and certain small cities, and as many new modes that might be initiated after deregulation, such as jitneys. The Phoenix Airport, Sky Harbor International, was also a major focus of the analysis. The report considers the advantages, disadvatages, and policy implications of complete deregulation of private urban common carriage transportation, as well as explaining the observed pattern of impacts.
See also PB84-218551.

Teal, RF Berglund, M Nemer, T
California University, Irvine UMTA-CA-11-0027-84-2, Apr. 1984, 108p

ORDER FROM: NTIS PB84-218569

44 390164
REDEFINITION OF ROLES AND RESPONSIBILITIES IN U.S. TRANSPORTATION
Major shifts in U.S. Federal transportation policy are occurring which are realigning the roles and responsibilities of the Federal, state and local governments, and the private sector. These shifts include a decentralization of control to state and local governments, a larger role for the private sector, and reduced emphasis on construction of new facilities and more on rehabilitation and utilization of existing facilities. Although some reaction to these changes is already apparent, it is unclear at this time what the effect will be on improving the efficiency and effectiveness of transportation systems. (Author/TRRL)

Weiner, E (Department of Transportation) **Transportation (Netherlands)** Vol. 12 No. 3, Apr. 1984, pp 211-224, 6 Tab., 21 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 277286)

ORDER FROM: Elsevier Scientific Publishing Company, P.O. Box 211, Journal Division, 1000 AE Amsterdam, Netherlands

44 390168
WHEELS WITHIN CITIES: NEW ALTERNATIVES FOR PASSENGER TRANSPORT
This publication challenges the conventional wisdom that public transport in cities cannot be provided at a profit; that it has to be supplied by publicly owned or franchised monopolies; and that services have to be slow and costly. A number of transport systems abroad are described (largely but not exclusively in developing countries) that operate at profit. Indications are given as to what could be done to enable the United Kingdom to develop networks of fast, reliable urban public transport services that are responsive to user's needs, and provided at prices that most can afford. (TRRL)

Roth, G Shephard, A
Adam Smith Institute Monograph 1984, 89p, 2 Fig., 5 Tab., 10 Phot., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 278208)
ORDER FROM: Adam Smith Institute, London, England

44 390178
"BOTTOM LINE" BUSINESS STANDARDS VERSUS PUBLIC SERVICE OBLIGATIONS: THE CASE OF THE GERMAN FEDERAL RAILWAY
The publicly-owned German Federal Railway Corporation (DB) is technically very proficient but economically very inefficient. The financial burden that its revenue shortfall has imposed on the state has become nearly intolerable. There are external and internal reasons for the DB's financial problems. External factors include: competition from other modes, changes in demand for bulk goods, and a shift in national traffic flows from east-west to north-south. Internal causes are: low productivity growth, confused regulations about reimbursing costs for public service burdens and lack of freedom for management to pursue cost-lowering measures. The article describes four different periods of policy aimed at consolidating and modernizing the German rail system. The latest set of proposals for a financial cure involve a transfer of the track and infrastructure to direct government responsibility and putting transport operations into a for-profit corporation. The debate still continues over precise details of a proposed remedy but the political interests involved will likely prevent a novel or clear-cut solution. (Author/TRRL)

Gand, H (Federal Ministry of Transport, West Germany)
Transportation Research. Part A: General Vol. 18A No. 2, Mar. 1984, pp 151-161, 1 Fig., 5 Tab., 15 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 277269)
ORDER FROM: ESL

45 381440
PEACETIME USE OF SUBSURFACE AIR-RAID SHELTERS IN FINLAND
The purpose of this paper is to give an overall view of the varied peacetime application of underground air-raid shelters in Finland. The practical and economic advantages which can be attained by making double use of subsurface space are especially examined. The additional costs which stem from providing for peacetime use are normally only 10 to 50 percent of the costs for the corresponding above-ground alternative. Also other significant advantages can be achieved. The best way to obtain these advantages is to design shelters primarily for peacetime use provided that their conditioning for crises use is possible within 24 hours. Some examples are given regarding car parking, metro stations, storage, sport and leisure activities. For the covering abstract of the conference see IRRD 271697.

Subsurface Space. Environment Protection, Low Cost Storage, Energy Savings. Proceedings.

Vuorela, M Tervilae, K (Lemminkaeinen Oy, Helsinki, Finland) Pergamon Press Limited 1980, pp 237-242, 1 Fig., 2 Tab., 9 Phot., 4 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 271694), National Swedish Road & Traffic Research Institute
ORDER FROM: Pergamon Press Limited, Headington Hill Hall, Oxford OX3 0BW, England

45 386158
LAND-USE PATTERNS AND TRAVEL
The LUTE model of travel by car, bus and on foot has been used to predict travel in a set of hypothetical towns with a wide range of sizes, shapes and population densities, subject to the average time spent travelling per day and the number of trips being held constant, the fares revenue covering a specified proportion of the operating cost, and allowing for the finite seating capacity of the buses. The results are intended to be of interest to bus operators concerned about future levels of service, fares, patronage and profitability as car ownership increases and residential densities decline, to transport planners interested in the behaviour of the transport system as a whole, and to planners who wish to assess the travel and accessibility consequences of alternative development patterns. The predictions are in good agreement with what is observed: bus competes with walking, but if a car is available when a trip is made bus is rarely used. Above the critical population density at which fares revenue first becomes sufficient to cover operating costs, the operator has a wide choice of fares and frequencies, and if these are chosen so as to maximise patronage then the elasticity of demand with respect to service headway should be equal to or smaller than that with respect to fares. Use per car varies little with land-use pattern or bus service levels, although car ownership is lower where incomes are lower, or where congestion and parking difficulties or good access by public transport or on foot make car ownership less worthwhile. Walking remains an important mode in all areas, both in its own right and as an indispensible component of bus and car travel. Neither public transport subsidies nor higher densities seem to be effective ways of reducing car ownership or use. The suggestion that travel can be reduced by moving homes and jobs closer together is not supported by the modelling. (Author/TRRL)

Bland, BH **TRRL Laboratory Report** No. 1092, 1983, 48p, 14 Fig., 3 Tab., 28 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275227)
ORDER FROM: NTIS PB84-163138

45 386187
MAN AND HIS TRANSPORT BEHAVIOUR. PART 2B. NON-MOTORIZED TRAVEL AND THE REGIONAL STRUCTURE OF LAND USE
The development of land use for housing and employment away from town centres to the outskirts of towns has resulted in additional trip generation, either by walking or public and private transport. To minimise the use of private transport, good conditions for travelling by foot, cycling or public transport must be offered. Mobility (number of daily changes of location) will increase if many destinations are nearby and can be reached with little time and expense. The aim therefore of regional planning in this context, and discussed in the article, is based on the hypothesis that the inhabitants of favourable locations have shorter trips to reach most destinations and make less use of cars using, where possible, non-motorized modes such as walking or cycling. The author uses the hanover region in the study of a typical mono-central region. (TRRL)

Menke, R **Transport Reviews** Vol. 4 No. 2, Apr. 1984, pp 189-200, 2 Fig., 8 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 275744)
ORDER FROM: Taylor and Francis Limited, Rankine Road, Basingstoke, Hantshire RG24 0PR, England

45 386200
PHYSICAL PLANNING AND PUBLIC TRANSPORT [RUIMTELIJKE ORDENING EN OPENBAAR VERVOER]
Study on a residential area to be developed in Amsterdam. What will be the consequences of diagonal walk-and cycleways and increased density of housing along a central public transport axis? Priority is given to non motor car traffic. Walk-and cycleways are planned on a 250 meter grid. Public transport uses its own right of way and motor car traffic is separated from other traffic. The use of diagonal path patterns leads to an increase of 19% in public transport patronage while higher housing densities can add another 7%. (Author/TRRL) [Dutch]

Mouwen, A **Verkeerskunde** Vol. 35 No. 1, Jan. 1984, pp 32-37, 5 Fig., 5 Tab., 1 Phot., 9 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275501), Institute for Road Safety Research SWOV
ORDER FROM: Royal Dutch Touring Club ANWB, Wassenaarseweg 220, P.O. Box 93200, The Hague, Netherlands

45 386286
LEEDS INTEGRATED LAND-USE TRANSPORT MODEL (LILT)
One way to estimate the wider impacts of transport policies is to use a computer model which incorporates the both-way interactions between land use and transport. The Leeds Integrated Land-Use Transport (LILT) model, which represents the relationships between transport costs and the spatial distribution of population, housing, jobs, employment and shopping is one such model and is described in this report. Transport supply is represented by the generalized cost of travel by private and public transport, and walking. Housing and jobs are located by the model; the population and workers occupying these and making trips between them are calculated in such a way that only those who are choosing new homes or jobs are relocated over time. A distinction is made between physical infrastructure and activities so that mismatches between demand and supply, such as vacant houses, are included. Land availability is also taken into account. After the solution of the equation system a wide range of output indicators is obtained. The use of the model is illustrated by examining the effects of changes in the monetary costs of travel on travel patterns and the location of jobs, housing and population and seeing to what extent the travel patterns themselves are influenced by the relocation of homes and jobs and the people choosing them. The report concludes with an assessment of the validity of the model.

Mackett, RL **TRRL Supplementary Report** No. 805, 1983, 27p

ORDER FROM: NTIS PB84-164318

45 386341
THE RAILWAY STATION AS A PLACE OF SETTLEMENT FOR THE OFFICE SECTOR [HET STATION ALS VESTIGINGSPLAATS VOOR KANTOREN]
Near railway stations there is a concentration of employment for office workers. This article deals with a study of the factors on which this concentration is based and with a survey of the modal split of office-employees in two railway-station areas. [Dutch]

Sprangh, J Tongeren, HI van **Stedebouw en Volkshuisvesting** Vol. 64 No. 12, Dec. 1983, pp 562-566, 4 Tab.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Samsom Uitgeverij BV, Postbus 4, AM Alphen a den Rijn, Netherlands 2400

45 386354
METRORAIL AREA PLANNING
Metropolitan Washington's rapid rail transit system—METRORAIL—was planned during a period of high growth. Rapid transit and land use planning were seen a tools for shaping growth. This report describes

planning and development around 18 of the 86 planned stations, as well as the development program for Metrorail stations conducted by the Washington Metropolitan Area Transit Authority.

Metropolitan Washington Council of Governments Aug. 1983, 169p, 37 Fig., Phots., 2 App.

ORDER FROM: Metropolitan Washington Council of Governments, Metropolitan Information Center, 1875 Eye Street, NW, Washington, D.C., 20006

45 386357
METROPOLITAN TORONTO: THE TRANSIT/DEVELOPMENT CONNECTION
This illustrated booklet provides an insight into the development of the Toronto rapid transit system, its beneficial impact on real estate values and the future relationship between efficient transit and urban development in Metropolitan Toronto. There are before and after photographs of the impact of the subway at various stations since it first opened in 1954 and quotes from major developers involved in the development projects. It is estimated that the subway has had an important role in determining the location of $30 billion in new buildings and will produce a further $20 billion in construction by the end of the century. Toronto is cited as a prime example of the positive benefits to be gained when transit and land use are jointly planned.

Toronto Transit Commission No Date, 18p

ACKNOWLEDGMENT: Transit Topics
ORDER FROM: Canadian Urban Transit Association Library, 140 Bay Street, Suite 220, Union Station, Toronto, Ontario M5J 2L5, Canada

45 386359
JOINT DEVELOPMENT. A HANDBOOK FOR LOCAL GOVERNMENT OFFICIALS
The purpose of this handbook is to promote joint development by providing local officials and transit managers with guidance on how the process works, including what steps need to be taken by the public sector and what types of issues and problems may emerge during the process. Because there is great variety in the types and scale of possible joint development projects, the handbook cannot identify any one best system but can point to the techniques that are available and note those procedures and approaches that many local officials involved in joint development agree are important to a successful project. The handbook is based on information drawn from five sources.

Public Technology, Incorporated, Urban Mass Transportation Administration, Office of the Secretary of Transportation Final Rpt. DOT-I-83-48, Sept. 1983, 111p, Figs., Tabs., 5 App.

ORDER FROM: OST

45 386388
LIGHT RAIL TRANSIT AND URBAN DEVELOPMENT
Recent construction of light rail transit systems in a number of North American cities raises crucial questions about their possible effects on land use and urban development. Although serving passengers and keeping construction costs down have been the primary aims of new rail investments, the possibilities for joint development and land use are numerous. This paper explores light rail transit's potential influence on urban growth and revitalizing central city areas. Some cities are integrating light rail transit with pedestrian malls as part of downtown redevelopment. A significant number of others, however, are downplaying the development potential of light rail transit by aligning their systems principally along abandoned railroad rights-of-way and industrial belts in order to cut costs. For most cities in the preconstruction stages of their projects, policymakers need to recognize the trade-offs involved when the lowest-cost corridor and alignment are chosen. On the whole, the land use potential of light rail is moderately high, where there are pro-development policy environments and other complementary forces.

Cervero, R (California University, Berkeley) **Journal of the American Planning Association** Vol. 50 No. 2, 1984, pp 133-147, 8 Tab., 4 Phot., Refs.

ORDER FROM: ESL

45 387581
IS THE CRISIS OF URBAN TRANSPORT ALSO A CRISIS OF TRANSPORT PLANNING?
In the present article an assumption is made according to which the expanding of road networks not only improves, but also reduces the individual possibilities of acting in time and space, above all for pedestrians and cyclists. As a consequence, they are often "forced" to use a motorized vehicle. Thus major road projects may have traffic producing effects, which sometimes reinforce instead of solving urban transport problems. In showing these negative effects and the measures to avoid them, the Hagerstrand's time-space model is employed. In the time-space diagram the spatial distribution of land uses and facilities, and the time controls of activities in a planning area are shown. In this diagram the daily routines of the individuals living in this area, and the time-space coordination requirements to realize these routines can be examined as well as the question of how they are affected by major road projects. Finally, the possible use of the time-space model in transport planning is demonstrated by a case study. (Author/TRRL)

Rusch, G (Technical University of Vienna, Austria) **International Journal of Transport Economics** Vol. 11 No. 1, Apr. 1984, pp 7-21, 3 Fig., 25 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275962)
ORDER FROM: International Journal of Transport Economics, 8 Via GA Guattani, 00161 Rome, Italy

45 387584
PLANNING OF FUTURE TRAFFIC SYSTEMS-STATUS AND CONSEQUENCES. STUDIES IN THREE SWEDISH CITIES [PLANERING AV FRAMTIDA TRAFIKSYSTEM-FOERUTSAETTNINGAR OCH KONSEKVENSER. EXEMPEL I TRE SVENSKA TAETORTSKOMMUNER.]
The report describes the results of a series of scenario studies for the year 2000 in three Swedish cities with 40-80 thousand inhabitants. The aim is to illustrate the effects of urban land use and transport policies on future travel patterns, energy consumption and the standard of travel. The effects of petrol prices are discussed. Different methods of analysis are shown to yield consistently different results, but it is concluded that the price elasticity and private car travel ought to be in order of size 0.5-0.6 in the short range and 0.2-0.3 in the long range. This and other variables, such as the economic development, urban density and the standard of public transport, were used as input to the studies. Assumptions regarding the economic development were shown to affect the amount of vehicle km by car with as much as 50%. However, the supposition of economic depression did not produce more public transport trips than the assumption of a moderate growth. The higher urban densities produced about the same number of car trips, but the energy consumption and time spent on travel was reduced by 5-10%. Finally some results are discussed in detail, with particular reference to their applications in urban land use and transportation planning. (TRRL) [Swedish]

Hansson, A Lippoy, R
Lund University of Technology, Sweden Bulletin 49, 1983, 168p, Figs., Tabs., 35 Ref., Apps.

ACKNOWLEDGMENT: TRRL (IRRD 275929), National Swedish Road & Traffic Research Institute
ORDER FROM: Lund University of Technology, Sweden, Institutionen foer Trafikteknik, P.O. Box 725, S-220 07 Lund 7, Sweden

45 387610
A FUTURE PERSPECTIVE FOR URBAN AND SUBURBAN TRAFFIC [EEN TOEKOMSTPERSPECTIEF VOOR STEDELIJK EN AGGLOMERATIEVERKEER]
Future perspectives of urban and suburban traffic are presented. Related to the development of traffic and transport, the causes and consequences of sub-urbanization, increased commuter traffic and the use of space in urban areas and suburbs are presented. Main aims for the future are more attention to parked cars and parking facilities, and better management of the transport system together with the origin and development of modern electronic, communication and energetic techniques. In an analysis of the expected technological and organizational modifications the influences on physical planning, infrastructural planning, urban development and the

developments in traffic covering
abstract of the symposi
Op weg naar 2000. I nd.

Nije, K (Dhv Raadg
Delft University of T 12 Fig.,
10 Phot.

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for Transportation Engineering, P.O. Box
Netherlands PB22956

45 387644
LAND USE-TRANSPORTATION ANALYSIS SYSTEM FOR A METROPOLITAN AREA

Results are reported of a study conducted to develop a land use-transportation analysis system that will be useful for assessing impacts of transportation improvements. The study consists of two major parts. The purpose of the first part is to develop models that adequately describe the locational behavior of land uses and consequently forecast future land use patterns. The purpose of the second part is to develop a computer-aided analysis system that makes it possible to manage vast amounts of spatial data and to create an easy-to-use system to manage a complex array of integrated programs by man-machine interactive methods. The land use-transportation model has a hierarchic structure that first allocates land use demand into city-sized zones and then into 1-km2 grids. The allocation model for the zone level has a Lowry-type structure, but each submodel for industrial, business, and residential use is based on its own locational behavior. The allocation model for the grid level describes competition among land uses under constraints of zoning regulations according to the principle of maximization of locational surplus. Transportation conditions are determined by estimating trips generated from new locations. The location of land uses and transportation conditions interact in the model. The computer-aided system contains a data base system for data processing of land use-transportation analysis as well as an interactive operation system that uses computer graphics and a hierarchic menu for program execution. To illustrate this system, future changes of land use and transportation in the Tokyo metropolitan area due to the proposed Tokyo Bay Bridge are forecast.

This paper appeared in Transportation Research Record No. 931, Transportation and Land Use Planning.

Nakamura, H (Tokyo University, Japan); Hayashi, Y (Nagoya University, Japan); Miyamoto, K (Tokyo University, Japan)
Transportation Research Record No. 931, 1983, pp 11-20, 8 Fig., 2 Tab., 1 Ref.

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45 387645
USE OF TOPAZ FOR TRANSPORTATION-LAND USE PLANNING IN A SUBURBAN COUNTY

Techniques used to create and assess a variety of year 2000 joint land use and highway network patterns for Prince William county, Virginia, are described. The assessment has been done mainly in terms of travel and related impacts. The related impacts include the overall cost of travel, congestion levels, fuel consumption, and air pollution emissions. Volume capacity ratios on each highway link in the county were also estimated. A sketch-planning procedure called Technique for the Optimum Placement of Activities in Zones (TOPAZ) was used to allocate expected future land use activities to 11 districts in the county so as to minimize overall travel cost. Travel impacts were then analyzed in more depth through separate and more detailed models included in a model called Transportation Integrated Modeling Systems (TRIMS) used by the Metropolitan Washington Council of Governments. The results of these efforts led to several preliminary conclusions concerning not only the techniques themselves but also their place in the comprehensive planning process: (a) residents of the county will be faced with an increase in overall travel costs and congestion no matter which reasonable alternatives are implemented; (b) the most ambitious highway improvement program will reduce costs by about 9 percent, and the proper organization of land use will reduce this by an additional 6 percent; (c) future changes in external factors, such as population and fuel price levels, can have impacts on travel as substantial as those created through new highway construction and proper land use organization in the county; and (d) although TOPAZ supported the Prince William County comprehensive planning effort, it had relatively little direct impact on county decision makers, probably because it was not used at a time when citizens and local elected and appointed officials began to examine the draft comprehensive plan.

This paper appeared in Transportation Research Record No. 931, Transportation and Land Use Planning.

Dickey, JW (Virginia Polytechnic Institute & State University); Leiner, C (Prince William County Planning Office) **Transportation Research Record** No. 931, 1983, pp 20-26, 3 Fig., 2 Tab.

ORDER FROM: TRB Publications Off

45 387683
CATALOG OF TRANSIT STATION IMPACT CASE STUDIES

This research considered the design of a public transportation terminal from the perspective of its effect on neighborhoods, urban revitalization, traffic congestion and parking. The effects of terminal facilities on the surrounding environment and the changes that take place when a new or renovated facility is constructed in an area were examined. The results reported are presented as the Catalog of Transit Station Impact Case Studies. This listing is an information cource of reference, as well as a state-of-the-art review of the impact of public transportation terminals on land use and community development. No formal methodology has been documented that provides the passenger terminal planner, the policy maker or the public with a conceptual overview of the elements involved in assessment of transportation terminal impacts. There should be an increased understanding of the complex terminal/land-use interface issues. The catalog should aid in development of organized transit station impact assessment procedures.

Page, JA Mandell, MA Demetsky, MJ Hoel, LA
Virginia University, Office of the Secretary of Transportation Final Rpt. DOT-I-83-53, Aug. 1983, 158p, Refs., 1 App.

ORDER FROM: OST

45 387867
A MULTIPLE-OBJECTIVE APPROACH TO THE OPTIMIZATION OF URBAN LAND USE/ TRANSPORT SYSTEMS

A value critical framework and methods for analysing the decision problems involved in urban land use and transport planning which is defined as an "optimizing process" involving multiple objectives is provided. Planning is defined as a sequence of decision-making processes involving multiple objectives. Conceptual analyses of goals and values are offered, and the plan-designing process is examined from this perspective. The recent development of multiple-objective programming techniques is reviewed, and the value implication of the methods in comparison with the traditional (single objective) programming approach is examined. An interactive multiple-objective programming framework is adopted to develop a plan design model and this is applied to strategic land use/ transport planning in Canberra, Australia. Finally, two analytical procedures are put forward for analysing decision problems involving more than one factor. The methods are based on a utility function method and the concept of "dominance" which is used in many decision theories. Both methods are illustrated by using a realistic planning problem taken from a local area redevelopment situation. The importance of the interactive process is emphasized and this is substantiated by using computer programs specially developed for this research. An explicit consideration of multiple and conflicting goals and objectives is an essential requirement for successful planning. The thesis was submitted for the degree of Doctor of Philosophy, Department of Transport Engineering, School of Civil Engineering, University of New South Wales, June 1983.

Kuranami, C
New South Wales University, Australia Thesis June 1983, N p.

ACKNOWLEDGMENT: TRRL (IRRD 272082), Australian Road Research Board
ORDER FROM: New South Wales University, Australia, Anzac Parade, Kensington, New South Wales, Australia

45 387942
INTEGRATION OF LAND USE, TRANSPORTATION, AND ENERGY PLANNING IN MIDSIZED CITIES
Broad-based concerns about long-term efficiency in using energy resources cannot be addressed primarily by the modification of the travel behavior of individuals. Alternatives that depend on redirecting travel patterns must be explored. The current study focuses on the use of such land use planning policies as the encouragement of infill and the development of neighborhood service centers as means of affecting modifications of travel patterns. After an analysis of the experiences of a national sample of 10 midsized cities, it was concluded that 10 years after the 1974 Arab oil crisis the potential for redirecting development patterns in midsized cities has only begun to be recognized. Whether such changes can significantly affect transportation patterns remains to be seen.

This paper appeared in Transportation Research Record No. 940, Transportation Management, Finance, and Pricing Issues.

Kihl, M Flathers, T (Iowa State University, Ames) **Transportation Research Record** No. 940, 1983, pp 28-33, 1 Tab., 31 Ref.

ORDER FROM: TRB Publications Off

45 387943
TRANSPORTATION EVALUATION IN COMMUNITY DESIGN: AN EXTENSION WITH EQUILIBRIUM ROUTE ASSIGNMENT
An integrated model of transportation and land use is developed for the purpose of evaluating alternative community master plans. Equilibrium route assignment is combined with the conventional four-stage transportation model to calculate the overall economic benefits of alternative urban planning decisions. Problems of measuring benefits associated with elastic trip demand and demand shifts are also examined. The model is used to evaluate planning alternatives for a 7,500-acre suburban community. It is especially adapted to the problem of evaluating a subcommunity within the context of a larger metropolitan area. Equilibrium route assignment provides as efficient low-cost method of determining route flows and the cost implications of various road networks and land use decisions.

This paper appeared in Transportation Research Record No. 940, Transportation Management, Finance, and Pricing Issues.

Peiser, R (Southern Methodist University) **Transportation Research Record** No. 940, 1983, pp 33-43, 9 Fig., 6 Tab., 18 Ref.

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45 387954
LAND USE TRENDS AND TRANSIT OPERATIONS
This paper brings together two related topics: land use development trends and how these trends can be addressed by the transit operator. The first section deals with development trends in general as well as in specific areas such as housing, retail, office, and industrial users. External forces such as financing and adequate infrastructure, which can fundamentally alter trends in these areas, are also expolored. The ways in which the financial markets allocate money toward certain uses, for example, may be altering future housing patterns significantly, resulting in a more costly residential unit. At the same time, office development with its greater financial resources are made available. The decentralization trend in many metropolitan areas is well advanced, but new trends favoring clustering of office, some retail, and residential uses appear to be emerging. If this continues, the result will be multicentered metropolitan areas that can be advantageously served by transit operators. The second portion of the paper deals with how transit operators can respond to the multicentered trend through new operational forms. Portland, Edmonton, Houston, Seattle, and New Jersey are used as examples of where the identified trends are being addressed through new operations and closer links between service levels and land use types and density to serve new travel demands in cost-effective ways.

This paper appeared in Transportation Research Board Special Report No. 199, Future Directions of Urban Public Transportation. Papers presented at a Conference on the Future Directions of Urban Public Transportation September 26-29, 1982, Woods Hole, Massachusetts.

Priest, DE Walsh-Russo, JL **Transportation Research Board Special Report** No. 199, 1983, pp 37-46, 2 Fig., 14 Ref.

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45 387964
ENERGY COSTS OF HIERARCHICAL URBAN FORM: TRANSPORTATION AND FACILITY OPERATIONS
This study examines the hypothesis that there can be an urban form for a region which is more cost effective than the existing urban form with respect to energy consumption in transportation and facility operations. An urban form devined in this study is a composite of four hierarchical levels of urban places. A hypothetical form for a region is constructed by specifying the size and location of such urban places. The research focused on the types of employment more likely to move within the metropolitan area in response to increasing energy prices or transportation costs. They are retail trade, services, and finance/insurance/real estate. The data base used was the west quarter of the Delaware Valley Region which contains center-city Philadelphia. Decentralized alternative forms in general and a highly centralized alternative form were found to decrease the existing energy consumption in transportation and facility operations within the Delaware Valley Region. It was also found that altering an urban form would produce greater savings in transportation costs and lesser savings in facility operations. This suggests that increasing the number of facility units reduces energy costs more than increasing the size of facility units, given a fixed demand for the total floor area within a region.

Ochiai, T
Pennsylvania University, Philadelphia Thesis 1982, 270p

ACKNOWLEDGMENT: Energy Abstracts for Policy Analysis
ORDER FROM: University Microfilms International, 300 North Zeeb Road, Ann Arbor, Michigan, 48106 83-07,347

45 387980
INCREASING DESIGN AND ART IN LOCAL TRANSPORTATION
While New England communities have unique characteristics with special transportation needs, there is potential for incorporating aesthetic design and art into transportation facilities. Because of large rural areas, transportation improvements tend to focus on main street pedestrian improvements, highway improvements and, to a lesser extent, basic bus system improvements such as stations, vehicles and shelters. Facility design, initiated early in the planning stage of a project, should be integrated into the surrounding environment. A second possibility is addition of original works of art or graphic design to existing structures, spaces or vehicles. One conclusion is that even when adapted to local situations that involve smaller-scale art works, such aesthetic activities can have a as significant impact as achieved by much larger projects in metropolitan areas. A series of case studies include railroad and bus stations, bus stop shelters, transit centers and pedestrian malls.

New England Municipal Center, Office of the Secretary of Transportation DOT-OST-P-20-31, Oct. 1980, 44p, 9 Phot., 3 App.

ORDER FROM: GPO

45 389270
THE RELATION BETWEEN POPULATION STRUCTURE AND DWELLING LOCATION AND CAR OWNERSHIP AND CAR USE. (BASED ON SOME EXAMPLES IN AMSTERDAM)
Car ownership and car use are usually explained by means of a number of personal and household characteristics. Situational characteristics are also of importance. In most studies situational characteristics are dealt with on a rather high level of aggregation. In this paper an analysis on a disaggregate level will be proposed as another possibility of explaining car ownership and car use. Some studies and data on the Amsterdam situation are the basis for investigating the relation between population structure and dwelling location (within the city), and the relation between population structure and car ownership and car use. The relation between these three entities is very complicated. This paper does not aim to give a definite answer, but to encourage discussion on these relations. The outcome of such a discussion will affect the types of environment to be created in new residential areas in or adjacent to the existing city. The discussion may also influence the development of parking standards and thoughts about modal split in new residential areas. For the covering abstract of the conference see IRRD 276520. (Author/TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume I.

Jong, MA de (Traffic And Transportation Group-Tno); Bovy, PHL

Institute for Road Safety Research SWOV 1984, pp 349-358, 5 Fig., 6 Tab., 8 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276544), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

45 389283
ECONOMIC CYCLES, SPATIAL CYCLES AND TRANSPORTATION STRUCTURES IN URBAN AREAS

In traditional transport planning the changes in the spatial structures of urban areas are often assumed to be exogenous. Research into the urban development of Europe has shown they are so only in the short run. In the development of towns different stages can be distinguished, succeeding one another as economic circumstances evolve, each stage showing its own spatial structure and transportation patterns. In the long run, both the spatial structure of towns and transportation structures become part of an interdependent system, that is, they become endogenous. Urban policies and income are among the factors that govern urban dynamics, the latter factor being by far the most important. In periods of income growth, urban structures tend towards spatial deconcentration; in periods of economic decline they tend towards spatial concentration. Through urban dynamics, changes occur in the average travel distance and in the spatial and temporal structure of traffic. Should the present economic recession continue, then the future urban development is likely to be marked by progressive spatial concentration, probably attended by decreasing travel distances. Average travel time may not decrease in proportion, however, for spatial concentration may well entail increasing congestion. For the covering abstract of the conference see IRRD 276520. (Author/TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume II.

Berg, L van den Klaassen, LH (Erasmus University, Rotterdam); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 151-164, 5 Fig., 5 Tab., 3 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276557), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

45 389284
TOWARDS REURBANIZATION AND DECONCENTRATION: THE DUALITY IN EUROPEAN URBAN DEVELOPMENT TRENDS IN THE DECADE TO 1981

The analysis of urban change in Europe has revealed a consistent empirical "life-cycle" of urban development starting from a strong growth in the urban cores followed by successive phases of suburbanization and desurbanization leading recently to some form of incipient reurbanization. It is also clear that a discernable pattern of population change is now occurring in smaller settlements located outside the traditional commuting hinterlands of the major urban concentrations. As a result, the inter-dependence of urban systems and urban change is probably more evident now than at any time in Europe's long urban history. For the covering abstract of the conference see IRRD 276520. (Author/TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume II.

Drewett, R (London School of Economics); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 165-180, 11 Fig., 9 Tab., 13 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276558), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

45 389285
TRANSPORTATION AND URBAN FORM

In the Structural Outline Sketch (SOS) for urban areas 1983 the national government of the Netherlands has outlined its policy on the physical planning of urban areas for the period 1985-2000. The SOS was published in September 1983 as a policy resolution, open for public discussion. In 1984 the government will publish its final decision ready for debate in Parliament. In the SOS criteria the location of important new urban developments are given. For the four larger urban areas in the western part of the country it proposes alternative directions in which urban development should be concentrated, regional and local authorities are invited to prepare more detailed plans in accordance with these criteria and alternatives. The paper presents a view of how considerations of transport and traffic have played a role in policy formulation, alongside other (demographic, socio-economic, environmental, etc) considerations and objectives. At the regional level (i.e. The western part of the country as a whole) as well as at the urban level there is a strong interrelationship between urban form and the use of traffic and transport infrastructure. Policy is directed toward reinforcing this interrelationship. The paper demonstrates that a policy concentrated development which in the SOS has been proposed for various reasons, can contribute to a better use of existing or projected infrastructure, even if some bottle-necks in road and rail infrastructure have to be removed. After elaborating the general characteristics of and the preference for urban concentration, the paper concludes with a global preview of developments beyond the planning period of the SOS (i.e. the 21st century). An urban development along interurban transportation axes seems a highly relevant possibility. For the covering abstract of the conference see IRRD 276520. (Author/TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume II.

Goedman, J Hoef, G van de Timmerman, F (Ministry of Housing, Physical Planning and Environ); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 181-207, 10 Fig., 31 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276559), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

45 389286
IS THE FUNCTIONALLY DIVIDED AUTOMATIVE SOCIETY STILL THE ULTIMO RATIO IN PLANNING?

Functionalism started with primary land use planning; the resulting needs for vehicular traffic were initially satisfied by mass transport systems. Then the increase in car traffic transforms transport into an autonomous partial area of society which influences settlement development and has numerous consequences. A high degree of specialisation dominates the partial area "transport" today but the meticulous research into subsystems is carried out purely reactively and measures remain rather ineffectual as far as the overall system is concerned. The required settlement concepts for the post-industrial society do not exist and the political atmosphere during stagnation period is hostile to planning. But only more planning could contribute to a solution to the problem. The required components of such planning are discussed. For the covering abstract of the conference see IRRD 276520. (TRRL)

Kutter, E (Technical University of Berlin, West Germany); Bovy, PHL
Colloquium Vervoersplanologisch Speurwerk 1984, pp 209-224, 26 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276560), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

45 389291
POLICY SIMULATIONS WITH THE CHICAGO AREA TRANSPORT/LAND USE ANALYSIS SYSTEM (CATLAS)

The Chicago Area Transportation/Land Use Analysis System (CATLAS) is a large urban simulation model which synthesizes "location rent analysis" from urban economics with "travel demand analysis" from transportation planning. This paper describes the theoretical formulation, empirical estimation and policy application of CATLAS to the evaluation of cbd-oriented rapid transit projects in Chicago. For the covering abstract of the conference see IRRD 276520. (Author/TRRL)

Transportation Planning Research Colloquium 1983 held in Zandvoort on December 14-16, 1983. Volume II.

Anas, A (Northwestern University, Evanston); Bovy, PHL

Colloquium Vervoersplanologisch Speurwerk 1984, pp 295-314, 3 Fig., 4 Tab., 33 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276565), Institute for Road Safety Research SWOV
ORDER FROM: Colloquium Vervoersplanologisch Speurwerk, P.O. Box 45, Delft, Netherlands

45 389333
JOINT DEVELOPMENT AND VALUE CAPTURE IN LOS ANGELES: LOCAL POLICY FORMULATION
This report describes the process used by the Southern California Rapid Transit District (SCRTD) to promote developer interest in joint development and value capture along the routes of the planned Los Angeles rail line. The document includes the policies which were formulated, how they were identified, and who the various participants involved in setting forth the policies were. The report explores the "centers" concept, which is the basis of the city's general plan, and shows how station-area development is being planned to support these broader development objectives. Specific alternatives for implementation of joint development or value capture are described in some detail in two chapters at the conclusion of the document. The report should be especially valuable for staffs of elected officials in larger cities, or for people with city planning or transportation financing responsibilities.

Office of the Secretary of Transportation DOT-I-83-23, Jan. 1983, 116p

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45 389372
GUIDE FOR INCLUDING PUBLIC TRANSIT IN LAND USE PLANNING. ALAMEDA-CONTRA COSTS TRANSIT DISTRICT
In California local city and county governments have been mandated responsibility for land use planning by the state. AC Transit, a special transit district created by the state legislature, has no legal authority for land use planning except for a requirement that local governments coordinate their land use planning with other government agencies. Although there is no mandate to include transportation as an element of general public plans, public transit should be included. This document is to acquaint local government agencies with transit's concerns about land use planning, to indicate to local government the benefits to be derived from including public transit in planning processes, to act as a reminder to local jurisdictions of public transit's needs; to state the policies of AC Transit regarding land use planning; and to provide the rationale for each policy statement. The specific policies of AC Transit are enumerated.

AC Transit No Date, 30p, 8 Fig., 1 Tab., Phots., Refs.

ORDER FROM: AC Transit, Research and Planning Department, 508 16th Street, Oakland, California, 94612

45 389373
TRANSIT FACILITIES STANDARDS MANUAL. ALAMEDA-CONTRA COSTA TRANSIT DISTRICT
These guidelines were developed for application in areas where new transit services are proposed or where modifications or improvements to existing service are necessary. It is anticipated that these standards will encourage inclusion of transit-related facilities with other street improvement projects undertaken by state, counties, cities and private developers. With transit service needs incorporated in roadway and development plans, the transportation value of roads as well as access to developments will be greatly enhanced. This manual provides technical and numerical information supported by specifications of the typical transit buses operated by AC Transit. It also lists various standards for the design of state-related improvements, including criteria, dimensions, requirements, typical layouts and designs. There are four sections: (1) Transit vehicle standards; (2) Geometric standards; (3) Operational standards; (4) Structural standards. This manual establishes no legal standards for the facilities involved. If transit is given more attention in land use decisions and urban design, AC Transit will be able to serve communities more effectively.

AC Transit 1983, v.p., Figs., Tabs., Refs., 2 App.

ORDER FROM: AC Transit, Research and Planning Department, 508 16th Street, Oakland, California, 94612

45 389403
SERRAMONTE TRANSIT CENTER STUDY. FINAL REPORT
Serramonte Center is a very active regional shopping center just south of San Francisco. Several bus routes of San Mateo County Transit stop at a bus shelter in the Center's parking lot and a significant number of shoppers and Center employees use the bus service. Center owners began planning a major expansion with added stores, new parking structures and a new bus station closer to the center of retail activity. The Center and SamTrans cooperated in studying design requirements of a terminal and the feasibility of joint improvements for public-owned buses on a privately owned site. Bus service brings added shoppers who would not normally come by auto and reduces parking requirements allowing for added shoppping center development. While the transit center location should be at the center of shopping activity, this would be impractical without a busway to reach the center. This report has 6 parts: (1) Summary of principal conclusions; (2) Data on existing site and transit services with likely options for future expansion; (3) Discussion of results of initial survey of problems, issues and ideas; (4) Results of transit user surveys and projections; (5) Alternative station locations; (6) Results of the study and lessons learned for possible use in designing centers and services for other shopping centers.

Liskamm, WH Conradt, R
Gruen Gruen and Associates, San Mateo County Transit District, Urban Mass Transportation Administration Final Rpt. DOT-I-83-45, June 1983, v.p., Figs., Tabs., Apps.

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45 389768
METRORAIL STATION AREA PLANNING: A METRORAIL BEFORE-AND-AFTER STUDY REPORT
This report, completed as part of the Washington Metrorail before-and-after study, describes the planning undertaken around the system's stations, with particular emphasis on measures taken to promote development in station areas. The report explores in some detail the varying planning responsibilities of Federal, state and local governments. Also included are a set of 18 detailed case studies of current and planned stations, describing their location, area characteristics, zoning and other regulations, and issues associated with development at the station. The study finds that there has been considerable planning of station areas in advance of METRO, but that relatively few development projects have yet been initiated. Written in non-technical language, the report should be especially valuable to transportation or development planners.

Metropolitan Washington Council of Governments DOT-I-83-50, Aug. 1983, 166p

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45 389786
DELPHI FORECASTS OF LAND USE: TRANSPORTATION INTERACTIONS
The Delphi method is used to predict the impacts of three alternative transportation programs in San Jose, California. Variables projected concern both land use (e.g., number of single-family housing units) and choice of transit mode. Forecasts are made for 1990 and 2000 for four spatial zones within San Jose. Delphi panelists are individuals familiar with land use and transportation issues in the San Jose area. A preliminary questionnaire survey is used to set general economic conditions and land use policies that serve as a context for specific forecasts of land use-transportation interactions. Strengths and weaknesses of the Delphi method in forecasting land use are assessed.

Cavalli-Sforza, V (Stanford University); Ortolano, L **Journal of Transportation Engineering** Vol. 110 No. 3, May 1984, pp 324-339, 10 Ref.

ACKNOWLEDGMENT: EI
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45 389791
EMERGING SUBURBAN ACTIVITRY CENTERS IN METROPOLITAN TORONTO
Metropolitan oronto has deliberately integrated transportation and land use planning for more than three decades. The first subway link was iopened in 1954, running 4.6 miles northerly from downtown, and was expanded incrementally to its present overall length of 33.8 miles. Land-use

policy, through the Official Plans and zoning controls, encouraged development oriented toward the subway, and the downtown area became a high-density focus for the region. Since 1975, a policy of encouraging transit-oriented sub-centers has been pursued with some success, and a multi-centered region is developing.

Pill, J (Toronto Transit Commission) **Journal of Advanced Transportation** Vol. 17 No. 3, 1983, pp 301-315, 4 Ref.

ACKNOWLEDGMENT: EI
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45 389865
BUILD HERE: TRANSIT'S RALLYING CRY

Public-private joint development projects on land owned by transit agencies are influencing development patterns in an increasing number of cities. This article looks at what is happening in six of them. Transit agencies often acquire more property than is necessary for their new rail lines or stations. Public agencies are subject to political pressures and often ill equipped to negotiate real estate deals so that it may be in an agency's best interest to enter into an agreement with a developer experienced in generating profitable use of property. Station area development is frequently confused with the term joint development. Joint development is often used interchangeably with value capture, a concept by which a community share in economic benefits of publicly funded improvements. Examples of the various practices are given for Toronto; Washington, D.C.; Atlanta; Miami; Baltimore and Los Angeles. Supplemental articles discuss the uneven impacts of Washington Metro and of joint development in Cedar Rapids, Ia., where a transportation center is shown to work for a smaller city with bus transit.

Padron, M **Planning** Vol. 50 No. 6, June 1984, pp 6-10, 7 Phot.

ORDER FROM: American Planning Association, 1313 East 60th Street, Chicago, Illinois, 60637

45 390113
REDUCTION OF TRANSPORTATION REQUIREMENTS THROUGH HOME MORTGAGE SUBSIDIES

This paper presents the second phase of research at Princeton University examining the potential of mortgage subsidies to encourage people to live closer to work, thus reducing work trip vehicle-miles-traveled (VMT) and automobile-related energy consumption, pollution, and congestion. This paper presents analysis of the effect of a mortgage subsidy program at Princeton University, which currently (1982) offers a 10 one-half % home mortgage to eligible University employees who buy a home within an eight-mile radius of the campus. The primary research tool was an in-depth survey of housing and transportation information administered to employees of Princeton University and to three nearby employers. The results of this survey offer firm evidence that the mortgage subsidy has resulted in shorter work trips, less work trip VMT, and less work trip gasoline consumption, compared to similar employees at other nearby firms.

Ash, T (Princeton University); Kornhauser, AL **Journal of Advanced Transportation** Vol. 17 No. 2, 1983, pp 119-158, 3 Ref.

ACKNOWLEDGMENT: EI
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45 390159
TRANUS-J: PUTTING LARGE MODELS INTO SMALL COMPUTERS

Traditionally, large integrated land-use and transport models require considerable amounts of computer resources, restricting their use to a small number of metropolitan or regional planning authorities and to an elite of consultancy firms. The increasing availability of microcomputers should be able to extend the use of models to a much larger community of planners. However, even the most efficient packages existing today cannot be fitted into the standard desk-top machines. The purpose of this paper is to describe a package for land-use and transport simulation for microcomputers, showing that this is not only possible, but also that there is no need to sacrifice detail or accuracy. Furthermore, the need to produce highly compact and efficient models has forced the research team to look for completely new algorithms and even new theoretical developments. In designing the models, economy of resources was also extended to data requirements, calibration, and evaluation, and considerable attention was devoted to making the models easy to handle and the results easy to interpret. The authors begin by describing the theoretical base of the models, briefly covering random utility, decision chains, and hierarchies. Next, a summary of the mathematical formulation is presented, finishing with a description of the operative characteristics of the computer programs and complementary features. (Author/TRRL)

Barra, T de la Perez, B Vera, N (Central University of Venezuela) **Environment and Planning B** Vol. 11 No. 1, Mar. 1984, pp 87-101, 3 Fig., 21 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 277280)
ORDER FROM: Pion Limited, 207 Brondesbury Park, London NW2 5JN, England

46 386147
ECONOMIC EFFECTS ON SOCIETY FROM REDUCED PRIVATE CAR TRANSPORT [SAMHAELLSEKONOMISKA EFFEKTER AV EN REDUCERING AV PERSONBILSTRAFIKEN]
This report was presented at a symposium in Stockholm in October 1980. Economic effects on society from various traffic policy measures on private transport are analysed. It is concluded that a transfer of 10% of private car transport would necessitate more than 50% increase in public transport capacity, causing a cost of 4 to 12 billion krona. Car pooling should be stimulated by means of economic incentives and traffic regulations, resulting in economic savings to society. (TRRL) [Swedish]

Bjoerkman, B
Royal Institute of Technology, Sweden, (0349-4373) Monograph No. 50, 1982, 23p, 7 Fig., 8 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 275018), National Swedish Road & Traffic Research Institute
ORDER FROM: Royal Institute of Technology, Sweden, Institutionen foer Trafikplanering, Fack S-10044, Stockholm 70, Sweden

46 386150
THE EFFECTS OF REDUCTION IN CAR TRAFFIC [EFFEKTER AV REDUKTION AV BILTRAFIKEN]
The effect of car ownership can be expressed in many ways. One of these are the changes brought about in society by changes in transport mode. These effects have been estimated on the private individual, company and regional levels, using the variables: car operating costs, public transport fares, time costs, public transport operating costs, redistribution effects (through taxes), and marginal costs to society. The marginal effects due to reduction in car travel by a certain percentage are calculated, first by assuming that existing public transport fleet can accommodate all the new passengers, and secondly that new vehicles must be purchased. Other factors considered are the effects of higher petrol taxes imposed on private cars only, and lowering of public transport fares. Case studies have been carried out for 5 towns of different sizes and travel patterns. A 10% drop in car travel may double public transport travel, resulting in large increases in load and demands for new lines, etc. However, on the regional level, bus companies would gain from a 10% change from car to bus travel. Society would lose since drop in petrol tax income is greater than reduction in marginal costs due to accidents, road wear, etc. (TRRL) [Swedish]

Krafft, O Lindstroem, J
Gothenburg University, Sweden FE Rapport 208, 1983, 34p, 3 Fig., 10 Tab., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 275009), National Swedish Road & Traffic Research Institute
ORDER FROM: Gothenburg University, Sweden, Foeretagsekonomiska Institutionen, Vasagatan 3, S-400 10 Gothenburg, Sweden

46 386307
DULUTH DOWNTOWN SUPERIOR STREET TRANSIT STUDY. FINAL REPORT
Study analyzes the impacts that alternative improvements and changes in Downtown Duluth will have on Superior Street and the transit system. Six alternative system concepts for improving transit, traffic, pedestrian, and related activities were developed, analyzed, and evaluated. These included maintaining current transit operations, a bus priority alternative, exclusive bus lanes, reverse flow bus lanes, a transit mall, and a pedestrian mall. The study presents a set of recommendations and design guidelines which will have a positive effect on the transit system and which will enhance passenger convenience, travel time and vehicle movement.

Metropolitan Interstate Committee, Urban Mass Transportation Administration Final Rpt. July 1983, 84p Contract MN-09-9001
ORDER FROM: Metropolitan Interstate Committee, Arrowhead Regional Development Commission, 200 Arrowhead Pl, Duluth, Minnesota, 55802

46 386316
URBAN RAILWAYS WITH REFERENCE TO DELHI
Traffic in towns, particularly the metropolitan cities of India, is growing at a very fast rate. The existing capacity of the road system of most of the cities is unable to cope with the future demands of the growing traffic. Then how many problems would have to be faced is difficult to predict, as problems of traffic and transportation increase in geometric progression while provisions of facilities only in arithmetic progression. Here is needed the cooperation of the Planners, Administrators, Highway Engineers, Sociologists and all others who would like Indian cities and towns to be made worth living.

Gupta, RG (Delhi Development Authority) **Indian Highways** Vol. 11 No. 4, Apr. 1983, pp 38-51

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

46 386955
PARKING RESTRAINTS AND THE EFFECTS UPON MODAL CHOICE. CASE STUDY [PARKEERBEPERKINGEN EN DE EFFECTEN OP DE VERVOERMIDDELKEUZE. CASE-STUDIE]
This case study deals with the primary and secondary effects of the closure of a parking lot in the centre of the Hague. Regular users of this park on their way to work have been interviewed before and after the closure. The effect of the closure has been a reduction of trips by car of a little less than 20%; among these over 15% changed to public transport. The results of the study suffest that public transport is in general only a second choice for the respondents. The quality of public transport in itself seems hardly a tempting factor. With regard to the attitudes no relationship was found with change over to another mode of transport. [Dutch]

Gantvoort, JT
Delft University of Technology, Netherlands June 1982, 99p

ORDER FROM: NTIS PB84-171800

46 387589
CAN WE CHOOSE THE FUTURE OF CITY CENTRES? THE INFLUENCE OF STRUCTURAL PROCESSES AND RESTRICTIVE PLANNING ON THE FUTURE FUNCTIONAL DEVELOPMENT OF CITY CENTRES [KAN VI VAELJA CITYFRAMTID? VILKEN BETYDELSE HAR STRUKTURELLA PROCESSER OCH RESTRIKTIVA PLANERINGSAATGAERDER FOER CITYS FRAMTIDA FUNKTIONELLA UTVECKLING]
The aims of this investigation were to study the functions of a city centre from various points of view and to study the measurements which have been taken in various cities to strengthen the position of the city centre. The essential care of a city centre is its retail business and its entertainment industries. If the decrease in retail business in a city centre accelerates, one of the cornerstones of the city centre is threatened. In the cities in which the retail trade has managed to survive, a new retail shopping pattern seems to be developing, where shopping areas are concentrated around streets on which no cars are allowed. The places of work dominating the city centres in number today are offices. But it is difficult to draw conclusions regarding the future scope of offices as places of work. Both current goals and measures already taken give priority to the solution of environmental problems. In combination with the establishment of traffic sector systems to eliminate through traffic, shopping streets which are closed to traffic appear to grow or be extended. However, planning and practical programmes have developed in different ways in different cities: some have satisfied themselves with the fulfilment of their original aim of eliminating through traffic, while others have gone on to try to replace some of the passenger car traffic entering the city centre with mass urban transportation. (TRRL) [Swedish]

Persson, K (Gothenburg University, Sweden)
National Swedish Road & Traffic Research Institute, (0347-6049) VTI MEDD 379, 1983, 93p, 12 Fig., 29 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 275931), National Swedish Road & Traffic Research Institute
ORDER FROM: National Swedish Road & Traffic Research Institute, Fack, S-581 01 Linkoeping, Sweden

46 387604
PARKING AND CONCEPTS OF TRAFFIC RESTRAINT
This paper, which ranges over existing UK legislation, policies and practice seeks to pose questions to traffic engineers based on experience with a local authority. The author also examines some restraint measures that have been and are being introduced such as residents' parking schemes and

periods of restricted parking and discusses where these have been a success and where they have not. (TRRL)

This paper was presented at the national conference of the Institution of Highways and Transportation on "Transportation in Conurbations" held in London on 1st and 2nd December 1983.

Payne, VS (Nottinghamshire County Council, England) **Highways and Transportation** Vol. 31 No. 4, Apr. 1984, pp 18-21

ACKNOWLEDGMENT: TRRL (IRRD 275897)
ORDER FROM: Institution of Highways and Transportation, 3 Lygon Place, Ebury Street, London SW1, England

46 387642
EVALUATION OF PORTLAND TRANSIT MALL

A transit mall combines transit preferential treatment with pedestrian oriented approaches. Pedestrian and transit uses are believed to complement each other. By combining the two, a special focus can be created in the downtown area that helps business, brings people together, improves bus services, creates an attraction that stimulates bus ridership by increasing the efficiency and capacity of moving buses through downtown, and possibly contributes to stimulating downtown development in a transit-supportive pattern, The Portland, Oregon, experience with a transit mall is described, user and provider impacts are assessed, and interactions between transportation and land use that can be achieved through investment in transit are examined. The results of the evaluation are summarized in a cost-benefit framework, and the benefit/cost ratio is found to be 2.29. The largest benefits with the mall, as compared with the anticipated stiuation had the mall not been built, accrue from savings in bus operating costs and modal shifts.

This paper appeared in Transportation Research Record No. 931, Transportation and Land Use Planning.

Dueker, KJ Pendleton, JH (Pacific Power and Light Company); Rao, RL **Transportation Research Record** No. 931, 1983, pp 1-6, 2 Tab., 7 Ref.

ORDER FROM: TRB Publications Off

46 387643
DOWNTOWN RETAIL IN BOSTON: SOCIAL TRENDS AND IMPACT OF A PEDESTRIAN MALL

After decades of rapid decline, Boston's downtown retail area, know as the Downtown Crossing, has nearly stabilized. Growth in downtown Boston employment and in downtown Boston neighborhoods is beginning to offset the population loss of the city of Boston as a whole. The 1978 implementation of an automobile-restricted zone in the retail area appears to have had an additional positive effect. Preliminary empirical results indicate that the automobile-restricted zone may have been responsible for a 6 percent increase in trips to the area by workers and an 11 percent increase in trips by others. On the average, workers and downtown Boston residents say they are coming more to the Downtown Crossing now than 2 or 3 years ago whereas residents of other Boston neighborhoods and the suburbs say that on the average they are coming less. The automobile-restricted zone in the Downtown Crossing was able to attract more visits from the otherwise declining residential market further strengthening the potential for improvement in the area. Currently the Boston Redevelopment Authority is evaluating improvements for the Downtown Crossing in areas such as maintenance, security, promotion, retail mix, and parking.

This paper appeared in Transportation Research Record No. 931, Transportation and Land Use Planning.

Karash, K (Massachusetts Institute of Technology) **Transportation Research Record** No. 931, 1983, pp 7-11, 8 Fig., 10 Ref.

ORDER FROM: TRB Publications Off

46 387653
CAMPUS DEVELOPMENT, PARKING, AND TRANSIT TRADE-OFFS

A campus transportation plan is becoming more important as compuses continue to expand. The planning process provides for an orderly method of analyzing various alternatives for solving the parking and transportation problem. One of the steps in the planning process is to develop transportation alternatives. One alternative to be considered is an increase in the number of parking spaces on the campus. This can be accomplished in a number of ways. Determining the best solution to this alternative requires a detailed revenue and cost analysis that includes capital as well as operating expenses for each possible solution. In addition, revenue forecasts must be made and compared with costs in order to determine the solution that is most feasible financially.

This paper appeared in Transportation Research Record No. 931, Transportation and Land Use Planning.

Salter, SA Miller, DR (Barton-Aschman Associates, Incorporated) **Transportation Research Record** No. 931, 1983, pp 78-80, Tabs.

ORDER FROM: TRB Publications Off

46 387654
CAMPUS TRAFFIC AND PARKING PROBLEMS AND SOME SOLUTIONS

Traffic congestion and parking needs continue to present pressing problems for many college and university campuses in the United States. Questions must often be resolved in a traffic and parking analysis even though the solutions studied involve issues embodied in an overall master plan, which may be out of date. There are also concerns about the changing role of higher education and the possible demise of some institutions over the next several years. Each campus has its unique policies, problems, and planning parameters. In the analysis of traffic and parking questions, attention must often be given to such matters as financing limitations, planning the campus as part of the larger community, recognizing that campus travel demand is different from that of other areas, and protecting the campus core from vehicle-pedestrian conflicts. Procedures for setting overall parking demand should respond to the needs of the different population categories (faculty and staff, commuters, resident students, and visitors) as well as policies on how to meet transportation service demand.

This paper appeared in Transportation Research Record No. 931, Transportation and Land Use Planning.

Guyton, JW (Harland Bartholomew and Associates, Incorporated) **Transportation Research Record** No. 931, 1983, pp 80-82, 3 Tab.

ORDER FROM: TRB Publications Off

46 388801
METROPOLITAN TRANSPORTATION IN ISRAEL

Tel Aviv is an example of a medium-sized metropolis, whose road network lags far behind its motorization. The pressure of neighboring cities on the core is such that the daily life of central city inhabitants has been disrupted severely. Efforts to solve these problems have so far concentrated on: a) Limitations on private vehicle movement. b) Exclusive bus lanes and contra-flow lanes for transit. c) Massive development of arterial roads and by-passes around the center. It is imperative to allow the activity of commuters in Tel Aviv, but only to the extent that their transportation characteristics are not detrimental to the city life. A much improved public transportation service for commuters is an example in this direction.

Shifron, MG (Ministry of Transport, Israel) **ITE Journal** Vol. 53 No. 10, Oct. 1983, pp 10-13

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

46 389307
STRATEGIC APPROACH TO TRANSPORTATION PROJECT IMPLEMENTATION: THE BOSTON AUTO-RESTRICTED ZONE

In designing and advocating government policies, an important consideration often overlooked by policy advocates is the strategy or strategies that can be used to overcome obstacles to implementation. In a recent book on the implementation of social programs, for example, Walter Williams concluded that "the lack of concern for implementation is currently the crucial policy analysis, and experimentation in social policy areas". As well, several recent studies have explored the politics of implementation and have demonstrated the high degree of diversity and complexity in terms of actors, bureaucratic imperatives, and compliance mechanisms often found in this process. Very few of these studies, however, have looked at how strategies can be used to overcome different levels of opposition to project or program implementation. In this paper, the implementation of an auto restricted zone in downtown Boston is examined in light of the sources of opposition to the proposed project and the strategies used by project advocates to overcome this opposition. (Author/TRRL)

Lloyd, E Meyer, MD (Massachusetts Institute of Technology)
Transport Policy and Decision Making Vol. 2 No. 3, 1984, pp 335-349, 1 Tab., 26 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276512), Institute for Road Safety Research SWOV
ORDER FROM: Martinus Nijhoff Publishers, P.O. Box 566, The Hague, Netherlands

46 389334
FLEXIBLE PARKING REQUIREMENTS: AN URBAN CONSORTIUM INFORMATION BULLETIN
This report examines the issues associated with relaxing zoning requirements for off-street parking in return for developer support of public parking, mass transit, or ridesharing programs. Such policy changes can support new public parking, encourage proximity or connection of new development projects to transit facilities, support new bicycle parking, encourage carpooling or vanpooling, or promote provision of transit passes by employers. The report describes the results of these strategies (mixed, to date), and explores mechanisms to assure developer compliance with the parking agreements. The report also includes a list of local contacts and an annotated bibliography on the topic. The bulletin is introductory in tone, written in non-technical language, and should be of special use of staffs of elected officials with transportation or development-related responsibilities.

Office of the Secretary of Transportation DOT-I-83-57, June 1982, 27p

ORDER FROM: OST

46 389364
MADISON PEAK-PERIOD PARKING PRICING DEMONSTRATION PROJECT
This report describes the impacts of instituting a peak-period parking surcharge along with introducing a park-ride shuttle bus system in Madison, Wisconsin. the objective of the demonstration, which was funded through the UMTA Service & Methods Demonstration Program, was to improve the utilization of parking spaces in the downtown area by discouraging individuals from making commuter trips to the CBD by automobiles, thereby increasing the availability of parking spaces for midday shopping and personal business trips. A complementary shuttle bus system serving three fringe-area parking lots was also introduced in order to make transit use more attractive to commuters. The institution of the $1.00 parking surcharge resulted in a significant (40 percent) decrease in the number of spaces occupied at the four surcharge facilities during the morning peak period. Of the commuters faced with paying the surcharge, about 22 percent switched to a nonsurcharge parking location while 6 percent entered the facility after 9:30 a.m. when the surcharge period ended. Between 5 and 8 percent of the commuters who previously parked in a surcharge facility changed modes, but predominantly to the regular bus system rather than the park-ride buses. While some individuals did form carpools, auto occupancies for all users of the surcharge parking facilities increased by only 3 percent. It is estimated that the peak-period surcharge program increased parking revenues by between $6,000 and $10,000 per month.

Charles River Associates, Incorporated, Urban Mass Transportation Administration, (DTS-64) Final Rpt. UMTA-WI-06-0006-84-1, DOT-TSC-UMTA-84-17, May 1984, 162p, 16 Fig., 20 Tab., 4 App. Contract DOT-TSC-1757
ORDER FROM: UMTA

46 389371
INTERCEPTING DOWNTOWN-BOUND TRAFFIC
The three main elements of an intercept strategy are the location and design of intercept facilities, the downtown circulation system, and the management of the automobile. Traffic intercept is a new term for the techniques aimed at reducing the volume of traffic trying to reach downtown by consolidating regional travelers by destinations at points outside downtown and providing transit services accordingly. It permits auto users to park their cars conveniently outside downtown and board services that take them where they want to go, allows transit users with destinations outside the downtown to avoid coming to the center city to transfer, and lets transit agencies provide services which are not downtown-oriented with smaller, more energy-efficient vehicles better suited to the level of demand. Cities also enjoy the benefits of less congestion. Strategy must be planned and designed within a context of well-defined and widely-supported set of long-term urban goals. Techniques include parking management, transit and pedestrian malls, transit centers, park-and-ride, CBD shuttles, traffic restrictions, bus lanes, schedule and route restructuring for transit, and highway bypasses.
An Urban Consortium Information Bulletin.

Public Technology, Incorporated, Department of Transportation DOT-I-82-34, June 1982, 66p, 7 Fig., Tabs., 3 App.

ORDER FROM: Public Technology, Incorporated, 1301 Pennsylvania Avenue, NW, Washington, D.C., 20004

46 389380
THE IMPLEMENTATION OF DOWNTOWN AUTO-RESTRICTED PROJECTS. FINAL REPORT
In 1975 UMTA's Office of Service and Methods Demonstration launched a demonstration program of Auto Restricted Zones (ARZs) which went beyond the traditional scope of linear pedestrian malls. ARZs involve auto restriction in a large geographic area with integration of a transit component. This study's goal is to evaluate the implementation process of the ARZ demonstration program. Other Central Business District (CBD) revitalization alternatives to ARZs were examined. A mail survey was conducted to solicit information from city planning department directors in the 112 central cities of the U.S. Survey items were directed to the period since 1975 and addressed several issues: CBD problems, CBD revitalization projects, and implementation problems and lessons associated with these projects. From the responses, CBD projects were grouped into three categories: Public, private, and joint public/private projects. ARZs accounted for 10 percent of all 166 reported projects. One-fifth of all projects were private developments, the remainder represented public and private collaboration. Further study was made of specific projects. The study confirmed two views about planning and the planner's role: Policy is not just drawn up and implemented but must be continually adapted during negotiations, and planners are quite successful in combatting planning problems but have problems confronting support problems. Support problems consist primarily of instigating support and coordinating participants. The skills of negotiation and coordination are essential in dealing with the private sector, indicating that a redefinition of the role of public planning is in order. The planner can play an important role as a mediator in maintaining consensus and in resolving disagreements that threaten implementation.

Loukissas, PJ Mann, SH
Pennsylvania State University, University Park, Urban Mass Transportation Administration DOT-I-84-33, June 1984, 223p, Figs., Tabs., 10 App.

ORDER FROM: OST

46 389401
HOW TO LIMIT TRAFFIC CONGESTION IN YOUR COMMUNITY
The purpose of this document is to place into the hands of local commission members practical administrative tools that can help to match the inevitable growth of traffic volumes with the capacity of existing and planned roadways. These techniques are an important supplement to publicly financed increases in roadway capacity and cannot simply be substituted for such investments. Since this topic deals with the intensity of development, care has been taken to balance the interests of the public and private sectors. Section 1 reviews the legal basis for traffic planning. A simplified history of the relationships between traffic, planning and zoning in Connecticut is given. The goal of this section is to identify the ample authority that exists for municipal use of the practical techniques offered in Sections 2 and 3. Section 2 is designed to increase the planning or zoning commission members' understanding of site specific traffic impact analysis techniques in order to make full and proper use of the authority outlined in Section 1. Whether a community decides to make use of the model administrative techniques offered in Section 3, the submission of traffic impact data by developers in support of permit applications will undoubtedly continue. Thus, use of this Section will help to upgrade the local commission members' ability to take informed positions on the traffic impact statements prepared for proposed developments. Section 3 offers model administrative techniques, based upon the authority defined in Section 1, for addressing land use-transportation-congestion relationships and how longer range goals for congestion avoidance can be reinforced

within local planning and zoning. Relationships of the local traffic planning process to the state's authority to regulate traffic is reviewed, along with a discussion of driveway permits.

Prepared in cooperation with R.S. Bryan and Associates.

Smith (Wilbur) and Associates, Housatonic Valley Council of Elected Officials DOT-I-84-25, Feb. 1984, 44p, Phots., 5 App.

ORDER FROM: OST

46 389886
MODEL PARKING CODE PROVISIONS TO ENCOURAGE RIDESHARING AND TRANSIT USE

Most local zoning ordinances contain a set of off-street parking requirements which are intended to control that part of the parking supply created in the process of private land development. The parking requirements, or parking code, are potentially a valuable tool in enabling the public sector to influence private sector decisions in the area of Transportation System Management (TMS), with benefits potentially occuring to both public and private interests. This document describes and presents model local parking code provisions designed to reduce parking requirements and promote the use of public transit and ridesharing. This model code is suitable for inclusion into the zoning ordinances of most urban jurisdictions in the United States. The provisions are designed to allow reductions in parking requirements for new or expanding office and industrial developments (and certain employment-oriented institutional uses as determined by the jurisdiction) when landowners or developers agree to provide incentives for commuter travel in modes other than single occupant vehicles. A brief background on this approach is given, followed by the model parking code itself. A companion report containing nine case studies is available under the title of "Model Parking Code Provisions to Encourage Ridesharing and Transit Use (Including a Review of Experience)."

Ten Hoor, SJ Smith, SA
JHK and Associates, Federal Highway Administration Final Rpt. Sept. 1983, 30p, 1 Fig., 3 App. Contract DTFH61-82-C-00102
ORDER FROM: Federal Highway Administration, 400 7th Street, SW, Washington, D.C., 20590

46 389890
MADISON AVENUE DUAL EXCLUSIVE BUS LANE DEMONSTRATION—NEW YORK CITY

In May 1981, the New York City Department of Transportation implemented a dual exclusive bus lane facility on Madison Avenue in midtown Manhattan, between 42nd and 59th Streets. The project was sponsored for one year as a demonstration by the Urban Mass Transportation Administration under the Service and Methods Demonstration Program, and has since been maintained locally as a permanent facility. The bus lane was implemented as a traffic management action to improve bus operations and reliability on this busy artery. During the evening peak period, the five northbound lanes of Madison Avenue accommodate over 1,400 vehicles per hour; during the 5-6 p.m. peak hour, over 200 of these vehicles are buses, which are forced to mix with other traffic resulting in major conflicts and inefficiency. The dual bus lane facility was implemented in conjunction with a set of traffic management measures, including a stringent parking ban and right turn restrictions. Together, these measures produced a 42 percent decline in peak hour travel time for express bus travel on Madison, andd a 34 percent decline in local bus travel time. Major impacts on non-bus traffic were not detected. The Madison Avenue bus lane does not entail permanent physical barriers. It operates between 2 and 7 p.m. on weekdays, and is available for general use at all other times. Enforcement of the lane is accomplished through pavement striping; pavement, overhead, and "roll-out" signs; and patrol by a special squad of enforcement agents. This report discusses the bus lane project in terms of its planning and development, including the public involvement and numerous alterations necessary to make the project viable. Impact analysis covers level of service effects, bus ridership, and costs.

Kuzmyak, JR
Comsis Corporation, Urban Mass Transportation Administration, (DTS-64) Final Rpt. UMTA-MA-06-0049-84-4, DOT-TSC-UMTA-84-18, May 1984, 150p, 27 Fig., 22 Tab., 1 App. Contract DOT-TSC-1753
ORDER FROM: UMTA

46 390149
TRAFFIC REDUCTION IN CITIES AND TOWNS

The conclusions of the author are: no one measure suggested in this paper will by itself free the city from the domination of traffic but the systematic redeployment of roads along the lines proposed will create a growing accessibility and freedom of movement for all types of traveller; an enhanced environment with less pollution in all areas; and a reduction in the number of collisions and road casualties. Motor traffic will benefit at least as much as pedestrians, cyclists and those who travel on public passenger transport, but the cost will remain at the level of the comparatively low figures associated with extensions to the footpath. Nevertheless, the capacity of all main roads will increase sufficiently for the average peak hour speeds to rise from 8-10 mph, as at present, to the optimum of 18-20 mph. The attraction to walk, to cycle or to use passenger transport will improve health and encourage some motorists to change their mode and leave the car at home and will, therefore, not only ease the movement of traffic but will reduce the quantity of traffic especially at peak hours. For the covering abstract see IRRD 276750. (TRRL)

Claxton, EC **Voice of the Pedestrian** No. 17, 1982, pp 68-86, Figs.

ACKNOWLEDGMENT: TRRL (IRRD 276752), Institute for Road Safety Research SWOV
ORDER FROM: International Federation of Pedestrians, Van Monfoortlaan 11, 2596 SN The Hague, Netherlands

46 390153
A COMPARISON BETWEEN THE EFFECTS OF PARKING MEASURES IN LEEUWARDEN AND TILBURG [VERGELIJKING EFFECTEN PARKEERMAATREGELEN LEEUWARDEN EN TILBURG]

A comparison is made between the effects of parking measures taken in the town centres of Leeuwarden and of Tilburg. In Leeuwarden the measures were mainly: (1) an increase of the pay parking possibilities; (2) an increase of the average parking tariff per hour; (3) the introduction of a special tariff for specified people (shopkeepers, etc.); (4) increased availability of parking possibilities for such persons and (5) the opening of a multi storey parking garage. In Tilburg only the measures metioned in (1), (2) ad (4) were introduced. The main results of the study are discussed. It is shown that there are many factors influencing parking behaviour. (TRRL) [Dutch]

Ministerie van Verkeer en Waterstaat Monograph Feb. 1983, 40p, Figs., Tabs., 15 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276725), Institute for Road Safety Research SWOV
ORDER FROM: Ministerie van Verkeer en Waterstaat, Projectbureau, Koninginnegracht 16-21, The Hague, Netherlands

46 390154
PARKING STUDY LEEUWARDEN. A STUDY INTO THE EFFECTS OF PARKING MEASURES IN THE TOWN CENTRE OF LEEUWARDEN [PARKEERSTUDIE LEEUWARDEN. ONDERZOEK NAAR DE EFFEKTEN VAN PARKEERMAATREGELEN IN HET CENTRUM VAN LEEUWARDEN]

Initiatives are being taken to increase relevant knowledge from and insight into parking problems in town centres. In this report the expected effects of the parking measures in the town centre of Leeuwarden are discussed. Policy questions were on three levels. Level I: is parking convenience increased for visitors, workers or other interested persons? Does illegal parking increase? Does the income and the cost of the parking system change? Level II: the influence of parking measures on transport mode, journey time, walking distance. Level III: the influence of parking measures on shopping behaviour and on the location of the shops. (TRRL) [Dutch]

Ministerie van Verkeer en Waterstaat Monograph Feb. 1983, 89p, Figs., Tabs., 8 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276724), Institute for Road Safety Research SWOV
ORDER FROM: Ministerie van Verkeer en Waterstaat, PIVVS, Koninginnegracht 16-21, The Hague, Netherlands

46 390170

HOW TO IMPROVE TRAFFIC SPEEDS IN THE CENTRES OF CONURBATIONS

Wardrop's principle and Thomson's contention imply that the quality of car travel in central conurbations is in equilibrium with the quality of its competitors-in the case of London, the rail system. Moreover, since the quality of the rail system in central London has hardly been touched for many years (except for the Victoria and Jubilee lines), and since rail speed is almost independent of rail demand, whereas road speed is highly sensitive to road demand, then it can be inferred that any increase in road capacity will not and cannot affect road speeds whilst there is suppressed demand which uses the rail system instead. The aim of this note is to demonstrate the currently available evidence for these propositions, drawn not only from London data but also to some extent from Paris. The defects and drawbacks in the evidence are highlighted and a research programme outlined which will provide a more thorough test of the propositions. A modelling approach is also described which enable some of the methods of varying the respective service qualities on road and rail in central conurbations to be tested. Extensions to conurbations where the main competitor is bus, or the suppressed demand does not exist throughout the day, are also noted. (TRRL)

Mogridge, MJH
University College, London Monograph Feb. 1984, 23p, 4 Fig., Tabs., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 278185)
ORDER FROM: University College, London, Transport Studies Group, Gower Street, London WC1E 6BT, England

47 390132
ORGANIZING THE LOCAL DRAYAGE MARKET FOR PIGGYBACK SERVICES

This study of the Philadelphia drayage market—delivery of intermodal trailers which were handled by railroad piggyback for the intercity portion of their trips—was made to investigate the local handling charges in the wake of deregulation. It was found that this local market should have many of the characteristics of a perfectly competitive market—many participants, free entry, limited capital and low skill requirements—was not performing competitively. The ingredient missing from the perfect competition theory was full knowledge. Railroads and shippers did not understand the market, feeling that all rates would be relatively uniform. Local haulers were unaware of their competitors' charges and too busy driving to determine such rates. A drayage guide was published to enable carriers to compare local rates and share as a benchmark for negotiation with railroads. The relationship between intermodal participants had actually tended to keep drayage charges well in excess of costs. The reception to the drayage guide has been positive for all participants.

Allen, WB (Wharton School, Pennsylvania University) **TRNews** No. 113, July 1984, pp 26-29

ORDER FROM: TRB Publications Off

47 390157
TRANSPORT PROBLEMS AS PERCEIVED BY INNER CITY FIRMS

The role of transport policy in assisting inner city firms is still unclear. This paper raises several important policy questions and reviews the findings of past research, which suggest that transport problems are a major irritant to inner city firms but are unlikely to cause them to leave the area, and that the ability of transport improvements to attract new firms is uncertain. It describes and presents the results of a recent study designed to determine the effect of transport problems on manufacturing and service industries, whether such problems are more serious in the inner city, and which solutions would be most appropriate. The study involved a series of detailed case studies of inner and outer city firms in Leeds and London. It identified as the most serious problems, congestion, public-transport problems, parking shortages and on-site delays for commercial vehicles. Similar problems arose in all areas, but were more severe in inner than in outer areas, and in London than in Leeds. The most common effect was lost time, but reduced efficiency, lost business, staff dissatisfaction and recruitment problems also occurred. Management had difficulty costing the effects of such problems, and often overlooked those incurred by others. The problems were, for the most part, local or site-specific, and are likely to be amenable to low-cost solutions. However, congestion and parking problems in inner London appear to merit area-wide treatment. A series of recommendations is provided for policy-makers. (Author/TRRL)

May, AD Patterson, NS (Leeds University, England) **Transportation (Netherlands)** Vol. 12 No. 3, Apr. 1984, pp 225-241, 8 Tab., 29 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 277285)
ORDER FROM: Elsevier Scientific Publishing Company, P.O. Box 211, Journal Division, 1000 AE Amsterdam, Netherlands

48 384852
MEASURING ENERGY USE IN URBAN TRAVEL USING A SKETCH PLANNING MODEL
An innovative approach to modeling transportation energy demand in metropolitan areas was developed at Argonne National Laboratory for US DOE. A sketch planning travel-demand model (called SRGP) was joined with an auto-ownership model, a fitting technique for demographic forecasts, and an algorithm to assign origin/destination travel to the intervening districts called the Urban Transportation Policy Analysis Process (UTPAP). The central component of UTPAP is XRGP, an extended version of the computer program for the Short Range Generalized Transportation Policy Analysis (SRGP), which is a sequence of disaggregate travel-demand models that estimate aggregate travel demand through a random-sample enumeration process. The CRGP has the extended ability to input different vehicle-ownership profiles for different household types and account for travel by as many as ten vehicle types, fueled by up to seven types of fuel. Results from this analysis process are sensitive to technology characteristics, as well as to fuel price and metropolitan development patterns. Forecasts for three typical cities indicate a large potential for saving energy relying on automotive fuel-economy improvements and rising fuel prices, without detrimental effects or urban mobility. Fuel-saving potential varies by type of city, with rapidly growing metropolitan areas unlikely to stay below 1980 fuel use unless population growth occurs in more-established, transit oriented cities. Diesel-fuel use may continue to rise after 1990, depending directly on the strength of the economy and inversely on the success of competing, spark-ignition/gasoline-fueled automobiles. (ERA citation 08:055907)

Kaplan, M LaBelle, S Saricks, C
Argonne National Laboratory CONF-831160-2, 1983, 25p

ORDER FROM: NTIS DE83015375

48 386179
URBAN FORM AND ENERGY FOR TRANSPORTATION
The study considers the relationship between the form of human settlement and the function of transportation from the point of view of transportation costs, including energy consumption. The study commences with a brief reference to various frameworks for integrating interdisciplinary research and an explanation of the choice and role of a conceptual model. Secondly, the study presents a survey of information which might be contributed to such a model. Thirdly, the study develops a narrative and graphic model by examining, on the one hand the relationship between energy and transportation and, on the other hand, the relationship between energy and urban form. Fourthly, the study contributes the information gained from the literature survey to the model, resulting in an output which is unique, in that it expresses values and establishes priorities which are characteristic for the Netherlands. The study concludes with a number of appendices, setting out perspectives to potential areas for further study. (TRRL)

Bolt, D
Planologisch Studiecentrum TNO Monograph May 1983, 225p, Figs., Tabs., 22 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 274550), Institute for Road Safety Research SWOV
ORDER FROM: Planologisch Studiecentrum TNO, Schoemakerstraat 97, Delft, Netherlands

48 386202
NEW ROLE OF PUBLIC PASSENGER TRANSPORT IN CITIES [NOVA ULOGA JAVNOG GRADSKOG PUTNICKOG PREVOZA]
The role of public transport in cities has been continually changing from the beginning of the 19th century to the present day. Its significance particularly increased in the second half of 19th century with the introduction of electric trams. Public transport has eliminated constraints in urban development planning and introduced a new dimension -time-in town planning. In Europe, during the first half of the 20th century, the role of public transport was further reinforced until the rapid growth in private car ownership brought about radical changes in transportation structures and caused a decline in the importance of passenger transport. As oil will continue to be expensive necessitating the rapid development of unconventional energy sources with sufficient supplies of electric energy, the forecast is that public transport will be the only mode fully capable of operating electrically-powered vehicles. (TRRL) [Serbian]

Bankovic, R (Saobracajni Fakultet, Belgrade) **Zbornik III Jugo Savetovanje Tehn Regul Saobracaja** Apr. 1983, pp 29-40

ACKNOWLEDGMENT: TRRL (IRRD 273837)
ORDER FROM: Savez Inzenjera I Tehn Saobracaja I Veza Jugo, Drustvo Inzenjera I Tehnicara Saobracaja I Veza Novi Sad, Novi Sad, Vojvodina, Yugoslavia

48 386227
PREDETERMINING NOISE LEVELS IN A RAILWAY ENVIRONMENT: METHODS OF CALCULATION
This article describes two computerized methods for calculating the noise level produced by a train under given conditions. One is two-dimensional and plots noise in a plane perpendicular to the track. The other, originally applied to motorway noise, is three-dimensional and takes account of the length of trains, irregular terrain and echoes from natural or artificial obstacles. These two methods are complementary and give fairly accurate results determining the best railway layout through built-up areas or open ground. [French]

Curzon, EP de **French Railway Review** Vol. 2 No. 1, Feb. 1984, pp 15-28

ACKNOWLEDGMENT: British Railways
ORDER FROM: North Oxford Academic Publishing Limited, 242 Banbury Road, Oxford OX2 7DR, England

48 386247
STRUCTURE-BORNE NOISE EMISSION ON UNDERGROUND RAILWAYS: TEST-RIG MEASUREMENTS AND PRACTICAL RECOMMENDATIONS
The reduction of noise and vibration emission from tunnels in mass-transit systems has assumed greater importance in recent years because of the many new lines and the associated increase in the nuisance caused by structure-borne noise in nearby buildings. Choice of effective damping measures is made possible by the measurement of damping elements or whole systems in test rigs in which real-life conditions are simulated. On the basis of the test results a recommendation has been worked out for assessing the nature and extent of the necessary measures at the planning stage. [German]

Eisenmann, J **Eisenbahntechnische Rundschau** Vol. 32 No. 12, Dec. 1983, 5p

ACKNOWLEDGMENT: British Railways
ORDER FROM: Hestra-Verlag, Holzhofallee 33, Postfach 4244, 6100 Darmstadt 1, West Germany

48 386266
TRANSPORTATION ENERGY CONTINGENCY PLANNING: FINANCING EMERGENCY TRANSIT SERVICES WITH TEMPORARY FARE SURCHARGES
This report in UMTA's energy contingency planning series is designed to address the issue of providing the funds needed to pay for the increase in the cost of fuel in an emergency. This report examines the feasibility of using a temporary fare surcharge as a source of additional operating revenue for transit agencies during an energy crisis. The characteristics of a temporary surcharge proposal, including the general advantages and disadvantages of the surcharge, are discussed. Scenarios covering both the large increases in fuel price likely in an emergency in the absence of price controls and the need for additional fuel to support expanded service are described.
See also PB84-152644.

Municipality of Metropolitan Seattle-METRO DOT-I-83-09, Dec. 1982, 46p

ORDER FROM: NTIS PB84-152636

48 386272
FUTURE FUELS AND ENGINES FOR RAILROAD LOCOMOTIVES. VOLUME I: SUMMARY
A study was made of the potential for reducing the dependence of railroads on petroleum fuel, particularly diesel No. 2. The study takes two approaches: (1) to determine how the use of diesel No. 2 can be reduced through increased efficiency and conservation, and (2) to use fuels other than diesel No. 2 both in diesel and other types of engines. The study

consists of two volumes; volume 1 is a summary and volume 2 is the technical document. The study indicates that the possible reduction in fuel usage by increasing the efficiency of the present engine is limited; it is already highly energy efficient. The use of non-petroleum fuels, particularly the oil shale distillates, offers a greater potential. A coal-fired locomotive using any one of a number of engines appears to be the best alternative to the diesel-electric locomotive with regard to life-cycle cost, fuel availability, and development risk. The adiabatic diesel is the second-rated alternative with high thermal efficiency (up to 64%) as its greatest advantage. The risks associated with the development of the adiabatic diesel, however, are higher than those for the coal-fired locomotive. The advantage of the third alternative, the fuel cell, is that it produces electricity directly from the fuel. At present, the only feasible fuel for a fuel cell locomotive is methanol. Synthetic hydrocarbon fuels, probably derived from oil shale, will be needed if present diesel-electric locomotives are used beyond 1995. Because synthetic hydrocarbon fuels are particularly suited to medium-speed diesel engines, the first commercial application of these fuels may be by the railroad industry.

Portions of document are illegible.

Liddle, SG Bonzo, BB Purohit, GP Stallkamp, JA
Jet Propulsion Laboratory, Department of Energy JPL-PUB-81-101-VISUM, Nov. 1981, 41p

ORDER FROM: NTIS DE82011451

48 386279
DESIGN CONSIDERATIONS FOR VEHICULAR FUEL CELL POWER PLANTS

Fuel cells show great promise as an efficient, nonpolluting vehicular power source that can operate on nonpetroleum fuel. As with other power sources, design tradeoffs can be made that either improve vehicle performance or reduce the size and cost of the fuel cell power system. To evaluate some of these tradeoffs, a number of phosphoric acid fuel cell power plant designs have been studied to determine the performance level they would provide, both for a compact passenger vehicle and a 40-ft. city bus. The fuel is steam reformed methanol. The analyses indicate that 1978 fuel cell technology can provide a 22 to 50% improvement in fuel economy over the 1980 EPA estimate for the conventionally powered General Motors X car. With this technology the city bus can meet the DOT acceleration, gradability, and top speed requirements. A reasonable advance in fuel cell technology improves performance and fuel consumption of both vehicles substantially.

IECEC Conference, Atlanta, Georgia, 9 August 1981.

Lynn, DK McCormick, JB Bobbett, RE Srinivasan, S Huff, JR
Los Alamos National Laboratory CONF-810812-7, Mar. 1981, 14p Contract W-7405-ENG-36
ORDER FROM: NTIS LA-UR-81-1054

48 386283
FUEL CELLS FOR TRANSPORTATION APPLICATIONS. PROGRESS REPORT, JANUARY 1-DECEMBER 31, 1982

The long-term program goal is to explore and improve the potential of fuel cell systems for use in transportation applications through basic research. A concurrent applied research effort is directed toward bringing fuel cell technology to an established proof-of-concept level. In CY 1982, research investigations included (1) electrode kinetic studies to determine the effects of electrolytes on oxygen reduction at platinum, (2) electrode characterization using ion beam techniques, and (3) determinations of the structure, transport, and stability characteristics of solid polymer electrolytes. In addition, evaluations of electrode and fuel cell performance under simulated vehicle operating conditions were initiated, and fuel cell system simulations to determine vehicle and testing requirements were carried out.

Huff, JR
Los Alamos National Laboratory LA-9787-PR, Sept. 1983, 52p

ORDER FROM: NTIS DE84003969

48 386284
TRANSPORTATION ENERGY CONTINGENCY PLANNING: EMERGENCY FUEL STORAGE

This report is designed to provide information on means of assessing the feasibility of and planning for improved fuel storage as a contingency strategy. It also highlights a number of benefits of enhanced storage which can be achieved in normal day-to-day transit operations. Regardless of the circumstances underlying a fuel emergency, managers need to know they can provide suitable transit services quickly, confidently and effectively. A specially-designated transit fuel set-aside, or some combination of permanent reserve storage and assured emergency supply arrangements will go far in providing bus properties with the emergency response capability they so urgently require.

See also PB84-152636.

Municipality of Metropolitan Seattle-METRO DOT-I-83-19, Jan. 1983, 84p

ORDER FROM: NTIS PB84-152636

48 386300
STATE-OF-THE-ART REVIEW: PREDICTION AND CONTROL OF GROUNDBORNE NOISE AND VIBRATION FROM RAIL TRANSIT TRAINS

This report provides a comprehensive review of the state-of-the-art in the prediction and control of groundborne noise and vibration. Various types of impact criteria are reviewed for groundborne noise and vibration, building damage, and soil settlement. Vibration measurement and evaluation techniques are reviewed and and techniques which have been used by rail transit systems to control groundborne noise and vibration are discussed. These techniques include wheel and rail maintenance, track support system design, floating slabs, resilient wheels, tunnel wall thickness, trenches, and building isolation. Several procedures that have been used to predict groundborne noise and vibration are outlined. Finally, resiliently supported ties, floating slabs, tracks, subway/soil interaction, and radiation from the subway structure, vibration propagation, attenuation in the soil, and building response to groundborne vibration. The first step in the review of the state-of-the-art in groundborne noise and vibration prediction and control was to read and evaluate the references. A bibliography of these references has been published as a separate document entitled: State-of-the-Art Review-Prediction and Control of Groundborne Noise and Vibration from Rail Transit Trains: Annotated Bibliography, May 1982, NTIS order number PB 83-100420, A10. The references included in the annotated Bibliography are listed at the end of this current report. This report uses the same reference numbers as the Annotated however, the references in this document are not annotated.

Nelson, JT Saurenman, HJ
Wilson, Ihrig and Associates, Incorporated, Urban Mass Transportation Administration, (DTS-77) Intrm Rpt. UMTA-MA-06-0049-83-4, DOT-TSC-UMTA-83-3, Dec. 1983, 222p Contract DOT-TSC-1796
ORDER FROM: NTIS PB84-158781

48 386347
VIBRATION AND NOISE OF MODEL WHEEL DUE TO TREAD ROUGHNESS

As railway vehicles travel on the rail, the following kinds of wheel/rail interaction noise are generated. (1) Squeal noise when a wheel rolls on a curve, (2) impact noise by flats of the wheel tread, (3) rolling noise by the roughness on the contact surfaces of the wheel and the rail when the wheel rolls on the rail. Of these the noise of (3) is the most significant. Hitherto, many studies on the characteristics of wheel vibration, squeal noise, impact noise of flats have been carried out. But studies on the rolling noise generated by the surface roughness of the tread of the wheel and those of the rail-head were few. Therefore, the authors paid attention to the relationship between the roughness and the rolling noise, and aimed to investigate how the roughness contributes to the rolling noise. For that purpose, experiments using an experimental apparatus were carried out and the vibration characteristics of a model wheel were studied theoretically.

Kobayashi, M Naito, T **Railway Technical Research Inst, Quarterly Reports** Vol. 24 No. 3, Sept. 1983, pp 131-132, 6 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: ESL

48 386366
AN ASSESSMENT OF FUEL CELL PROPULSION SYSTEMS

Major objectives of this study were to determine the feasibility of fuel cells in vehicle propulsion systems and to recommend research and development in support of such applications. Technical and economic status of six major

types of cells was summarized: Phosphoric acid, superacid, alkaline, solid polymer, molten carbonate, and solid oxide. Energy consumption of the various modes and their fuels were identified. Representative vehicles for each mode were selected and duty cycles identified. Assessments indicate an excellent application for fuel cells in fork-lift trucks. Other applications are not so easily justified. A decrease in air pollution could make use of fuel cells in urban delivery vans and city buses attractive. Automobiles, light trucks and intercity buses are only promising over the long term. Because of economic uncertainties, further studies are needed to assess application of fuel cell systems in freight locomotives and large marine craft. Small marine craft cannot be justified.

Los Alamos National Laboratory LA-9954-MS, Nov. 1983, 184p, Figs., Tabs., 29 Ref., 2 App.

48 386404
TRANSPORTATION ENERGY AND RELATED DATA COLLECTION AT STATE AND SUBSTATE LEVEL
The collection and timely monitoring of transportation energy consumption and related data for use at the state and substate level have many problems. Much of the relevant data are available at the national level and must be disaggregated to the state or substate level to be meaningful. A comprehensive data directory has been prepared with funding from UMTA. The directory lists sources, level of detail, frequency of reporting, lag time, and quality of data. It describes data series and information systems in 10 broad categories. The frequency of reporting, as well as time lags, pose significant difficulties for the timely monitoring of transportation energy use and travel behavior. Deregulation of certain industries by the federal government (e.g., airlines) and the subsequent loss of reporting requirements are also a factor. In addition, proprietary and private data sources may limite data availability for monitoring activities. At the substate level sources of data for two urban areas in New York State are identified. Rochester is a large metropolitan area, the core city of a four-county standard metropolitan statistical area (SMSA) that has a population of more than 100,000. Oneonta is in a rural county and has a population of 50,000. One of the more important measures of transportation energy use (automotive fuel) at the substate level has no direct data source. Synthesis methods are used to obtain an indication of fuel use. Six methods are used to estimate the fuel use for Rochester, New York. Some of the resons for the different results obtained by using each method are discussed.

This paper appeared in Transportation Research Record No. 928, Improving the Quality and Efficiency of Transportation Data.

Yelich, BJ Erlbaum, NS Koeppel, KWP (New York State Department of Transportation) **Transportation Research Record** No. 928, 1983, pp 20-26, 4 Tab., 8 Ref.

ORDER FROM: TRB Publications Off DOTL JC

48 386691
EVALUATION OF ALTERNATIVE FUELS FOR URBAN MASS TRANSIT BUSES. FINAL REPORT DECEMBER 80-AUGUST 83
The objective of this study was to identify a fuel that can be used as an alternative to diesel fuel in transit buses. From a thorough examination of all available fuels, six were selected for detailed study. The fuels were: ammonia, ethanol, hydrogen, methanol, natural gas, and propane. The detailed analysis included economic, operational and technical feasibility evaluations. Methanol was selected as the best alternative fuel to diesel. Included in the report is a demonstration plan to test and evaluate the operation of methanol-fueled buses in northern (cold climate) cities.

Port Authority of Allegheny County, Booz-Allen and Hamilton, Incorporated Sept. 1983, 111p

ACKNOWLEDGMENT: Energy Research Abstracts
ORDER FROM: NTIS PB-84-105113

48 386796
ENERGY SHORTFALLS AND PEAK-HOUR TRANSIT CAPACITY PROBLEMS: THE 1979 EXPERIENCE
Effects of the 1979 energy shortfall on peak-hour transit capacity are analyzed. A short survey was sent to 102 transit operators in 100 urbanized areas throughout the United States; of these, 45 responses were received from 44 urbanized areas. The extent to which peak-hour capacity problems were created or heightened in the spring and summer of 1979, actions selected for 1979, the effectiveness and cost of those actions, implementation problems, and transit operators' recommendations for future crises of this nature are documented. Results indicate that systems in the Northeast and in urbanized areas with a population of more than 250,000 were most affected in terms of peak-hour capacity problems. The actions most often taken were relaxing using a reserve fleet of buses, changing maintenance practices, and encouraging programs for variable work hours. Changing operating standards is an excellent first move to make while other actions are being considered. Problems most often concerned finance, maintenance, personnel, and time requirements. The most effective actions tended to be the most costly.

This paper was published in Transportation Research Record 935, Analysis of Issues in Energy Planning and Energy Modeling.

Boyle, DK Cantine, JR (New York State Department of Transportation) **Transportation Research Record** No. 935, 1983, pp 1-5, 9 Tab., 4 Ref.

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48 386799
ANALYSIS OF TOTAL ENERGY USE OF URBAN TRANSPORTATION ENERGY CONSERVATION STRATEGIES
As part of a technology assessment project sponsored by the U.S. Department of Energy, an evaluation was made of total energy consumption by fuel type resulting from local travel (by urban households) for 1980, 1990, and 2000 in two scenarios and under three alternative policies. Energy consumed in vehicle operation, fuel production, vehicle production, and infrastructure construction was projected, and the relative impact of each policy was also evaluated. A substantial decline in total energy use in national urban passenger travel from 1980 to 2000 was projected for both scenarios and all three policies. However, the analysis also indicated that indirect energy use required to support the policies can offset some of their direct energy savings. Further, the scenario that resulted in the greatest total energy savings did not save the greatest amount of petroleum.

This paper was published in Transportation Research Record 935, Analysis of Issues in Energy Planning and Energy Modeling.

Singh, MK LaBelle, SJ (Argonne National Laboratory) **Transportation Research Record** No. 935, 1983, pp 19-26, 7 Fig., 4 Tab., 7 Ref.

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48 386929
ORE QUESTION D 151—VIBRATIONS PRODUCED IN BUILDINGS BY TRAIN OPERATIONS—EVALUATION OF TEST REPORTS OF VARIOUS RAILWAYS
The present report analyses reports on measures taken by various railways and limits the comparison of results obtained to the recommendations contained in the standards DIN 4150 and ISO 2631/DAD1. A revision of these standards to take into account the experiences of the railway world is envisaged.

International Union of Railways ORE D 151/RP 5, Sept. 1983, 16p, 4 Tab., 12 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: UIC

48 386952
NEWTON-NEEDHAM RACMS PROJECT: FINAL REPORT
This study reports on traffic and air quality effects of having implemented a multi-employer ridesharing program in a suburban office/industrial park. In March 1981, traffic and air quality data were collected in the New England Industrial Park, located in Needham, beside Route 128. During November 1981, an aggressive ridesharing program was promoted among fifteen employers in the industrial area. Follow-up traffic and air quality data were collected during March 1982. In this particular case, the ridesharing program little influenced either local street traffic or local air quality. However, this outcome is much related to the circumstances of this particular setting and this moment in time. Under different circumstances, ridesharing may have the potential to reduce local traffic congestion and improve air quality.

Reyes, B Lawton, D O'Brien, H
Central Transportation Planning Staff Tech Rpt. CTPS 296, UMTA-MA-09-0013, Feb. 1984, n.p.

ORDER FROM: Central Transportation Planning Staff, 27 School Street, Boston, Massachusetts, 02108

48 387575
INDIRECT TRANSPORTATION ENERGY
Construction, maintenance, and operation of transportation infra-structure and vehicles represent a substantial energy investment. This indirect energy consumption per vehicle kilometer was estimated for auto, bus, and rail transit through an energy investment analysis. Initially, total construction and manufacturing energy were converted to annual energy by assuming a service life. The annual operations and maintenance energy were added to this amount to obtain the total annual facility energy consumed. The total energy per vehicle kilometer was then derived based on observed levels of traffic on each type of road and transit facility. Finally, the vehicle manufacturing energy was added to obtain a grand total estimate of the megajoules per vehicle kilometer. The indirect energy associated with rail transit facilities is sizable both in absolute terms, and as a proportion of the total energy consumed.

Levinson, HS (Connecticut University, Storrs); Strate, HE Edwards, SR Dickson, W **Journal of Transportation Engineering** Vol. 110 No. 2, Mar. 1984, pp 159-174

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

48 387579
MINIMUM ENERGY TRANSPORTATION FUTURE. HARRISBURG REGION. FINAL REPORT
The study reported covers passenger and freight transport, and was carried out to evaluate the potential for conserving transport energy by the use of existing modes and technologies. Untested technology, alternative power sources, and major shifts in land use are ignored. Five sections deal with: 1, introduction; 2, the national energy problem; 3, screening criteria for energy conservation measures; 4, case study: Harrisburg; and 5, conclusions and recommendations. (TRRL)

Miller, JH Landes, RD
Pennsylvania Transportation Institute PTI 8109, Nov. 1981, 44p, 5 Fig., 11 Tab., 17 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 276172)
ORDER FROM: Pennsylvania Transportation Institute, Pennsylvania State University, University Park, Pennsylvania, 16802

48 387617
URBAN TRANSPORT MANAGEMENT (UTM) AND ENERGY CONSUMPTION-A REVIEW OF EVIDENCE
This paper reports on the potential energy savings that are likely to result from UTM measures. Throughout the paper the term transport is used in preference to traffic (eg, urban traffic management) to reflect a broader range of measures than are usually associated with traffic management (eg, those measures which have a direct impact on modal choice decisions such as public transport fares policy). The main objectives of UTM and the range of measures, either adopted or proposed, to achieve those objectives are reviewed and the problems associated with the quantification of energy impacts of UTM measures are highlighted. This is followed by the quantification of the energy impacts of traffic engineering and demand management measures such as traffic signal coordination, speed limits, bus priority measures, cordon restraint, parking controls, car pooling and public transport incentives. It is concluded that most management measures, which are practically and politically feasible at present, have very limited fuel saving potential at the national level. However, computer controlled traffic coordination offers a very cost effective means of savings in urban fuel consumption. (Author/TRRL)

Ferreira, LJ
Adelaide University, Australia Report 60, 34p, 1 Fig., 7 Tab., 59 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 271982), Australian Road Research Board
ORDER FROM: Adelaide University, Australia, Department of Civil Engineering, North Terrace, Adelaide, South Australia 5001, Australia

48 387620
NOISE IMPACT ANALYSIS FOR A PROPOSED BUS OPERATING BASE
An evaluation was conducted of the potential noise impact for a proposed bus operating base in northern Seattle. In the analysis the impact of two alternative sites for the proposed base was examined. Both sites are located in residential areas. Thus, there was concern about the noise impact from bus traffic arriving and departing the base as well as daily operations at the base. Because of the need for buses to depart the base during early morning hours to travel to their assigned routes, of great concern was the potential impact of bus traffic on sleep disruption in neighborhoods near the base. A field noise-measurement program was undertaken to document the existing noise environment and to define typical bus passby noise levels. Based on these measurements, projections of the noise impact of buses relative to other noise sources were made. On the base noise-generating operations of particular interest include maintenance and repair activities and bus start-up and pull-out. Estimates of community noise levels for each operation were compared with noise-level limits in local ordinances to determine the extent of the potential impact of noise. For both off-base-and on-base-generated noise, mitigation measures were recommended, and estimates were made of the resulting noise-level reductions.

This paper appeared in Transportation Research Record No. 937, Transportation Noise: Prediction and Analysis.

Simpson, MA (Bolt, Beranek and Newman, Incorporated) **Transportation Research Record** No. 937, 1983, pp 6-14, 7 Fig., 4 Tab., 3 Ref.

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48 387624
PROCEDURE TO EVALUATE TRANSIT NOISE ABATEMENT AND COST-EFFECTIVENESS: THE PEACE PROGRAM SYSTEM
The procedure to evaluate transit noise abatement and cost-effectiveness (PEACE) program system was developed as a tool that rail transit operators and others could use to evaluate the noise performance of their system and to explore the cost and effectiveness of candidate noise-treatment plans. The system uses three input data bases: (a) system description, (b) noise profile, and (c) treatments and costs. It is designed so that the latest state of the art in noise descriptions and in treatment technology can be incorporated, and that future developments can be added. It is also designed for use on large properties. The PEACE system is implemented as a set of three computer programs: a preprocessor, a main program, and a postprocessor or report generator. The system can be used to evaluate proposed treatment sets, to investigate the potential of hypothetical treatments or of new car designs, and to check a number of what-if questions. The development work was done with close interaction with a major rail transit property (New York City Transit Authority), which plans to use the PEACE system in its work.

This paper appeared in Transportation Research Record No. 937, Transportation Noise: Prediction and Analysis.

McShane, WR Ulerio, JM Slutsky, S (Polytechnic Institute of New York) **Transportation Research Record** No. 937, 1983, pp 35-45, 13 Fig., 2 Tab., 5 Ref.

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48 387680
RAILWAYS AND ENERGY
A railway vehicle requires substantially less propulsive energy than a road vehicle of the same weight moving at the same speed. However, as explained in Part I, other factors favor road transport. As a result, the ratio of energy consumption by the two modes varies widely depending on service conditions including vehicle characteristics. Thus, railways have a substantial energy advantage for large volumes of bulk commodities, but for passenger transport they are generally no more energy-efficient than buses. Part I also contains a review of measures for increasing the railways' energy efficiency, and it is shown that significant gains may be achieved through operational improvements. Railway electrification is discussed in Part II. Its economic viability depends on the opportunity cost of capital, the costs of diesel fuel and of electric power, the traffic mix and the nature of the terrain, as well as on the capital and maintenance costs of railway works and equipment needed with electric and with diesel traction. The return on electrification increases with traffic but there can be wide

variations in the traffic needed for a given rate of return, depending on project conditions. An analysis, suitable for pre-feasibility studies, is presented for estimating the traffic at which electrification becomes economically viable.

Alston, LL
International Bank for Reconstruction & Developmnt No. 634, 1984, 84p, 3 Fig., 9 Tab., 24 Ref., 2 App.

ORDER FROM: International Bank for Reconstruction & Developmnt, Publications Sales Unit, 1818 H Street, NW, Washington, D.C., 20433

48 387890
REDUCTION OF NOISE AND VIBRATIONS IN UNDERGROUND RAILWAYS [KIERUNKI ZMNIEJSZENIA KALASU I WIBRACJI W METRE]
On the basis of experience gained during underground railway building in various cities in the world, the author determines the factors affecting noise and vibration level and indicates how to reduce this influence.

Sancewicz, S **Drogi Kolejowe** Vol. 31 No. 1, 1984, pp 9-11, 1 Fig., 4 Tab., 4 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Drogi Kolejowe, Warsaw, Poland

48 387915
PRODUCER GAS: ANOTHER FUEL FOR MOTOR TRANSPORT
If petroleum prices were to continue high, developing countries will be most affected. Producer gas represents a proven alternative to petroleum for fueling motor transport, although neither its practicability nor the extent of its former usage is now generally appreciated. This report introduces producer gas to researchers, agencies and institutions engaged in assisting developing countries, aiming to stimulate increased interest in testing and use of this fuel. Producer gas is generated from solid fuels such as wood, charcoal, coal, peat and agricultural residues. Prior to World War II many internal combustion engines were fueled from gas producers and during the war the use expanded rapidly. Producer gas generators are simple to make and can be used with existing engines without major modification. Gas producers can use renewable fuels. There are disadvantages: (1) In any engine producer gas generates less power than petroleum; (2) Maintenance, training and driver discipline are required to keep gasifiers operating; (3) Vehicles fueled by producer gas are cumbersome; (4) Fuel is bulky and difficult to store and handle; (5) Producer gas can be hazardous; (6) Wood use may increase deforestation; (7) In developing countries firewood shortages could develop for the poor.

National Research Council 1983, 101p, Tabs., Phots., 2 App.

ORDER FROM: National Research Council, 2101 Constitution Avenue, NW, Office of Intl Affrairs JH-217, Washington, D.C., 20418

48 387971
TRANSPORTATION ENERGY CONTINGENCY: USE OF SCHOOL BUSES IN BERKSHIRE COUNTY
An energy contingency plan intends to demonstrate how an area would meet essential transportation needs during an energy shortage while maintaining to the greatest degree possible mobility and normal economic functions. This report was prepared by the Berkshire County Regional Planning Commission staff to provide the Berkshire Regional Transit Authority, local communities, school department, and regional school districts in Berkshire County, Massachusetts, with technical guidance regarding the possible use of school buses to meet increased demands for commuter service during a future energy emergency. Discussed in this report is the school bus use strategy in times of an energy emergency as well as some of the accompanying issues—management issues/strategies and operational strategies. Recommendations for actions to be taken by affected agencies are included. Appendix 4 contains an analysis for each town. Overall, this analysis indicates that during such an emergency, some 70 school buses of the total 251 bus fleet might be used to provide commuting services for 2900 workers each day in 17 of the 32 Berkshire communities. This would save 1360 gallons of fuel each day (2.7 percent of commuting fuel). The report states that: 1) the $3,150 per day cost for this service can be offset by fares, resulting in minimal net cost to the region; and 2) additional energy conservation measures such as vanpooling and deferred trip making must also be implemented in all towns to effectively maintain essential transportation needs.

Russo, GA Cook, CW
Berkshire County Regional Planning Commission, Urban Mass Transportation Administration UMTA-MA-09-0081, Oct. 1982, 130p, Figs., Tabs., 6 Ref., 7 App. Grant UMTA-MA-09-0081
ORDER FROM: UMTA

48 387984
NOISE AND URBAN PEDESTRIAN AREAS
This study consists of three reports which treat the subject of noise within the context of urban pedestrian areas. The main concern of the study is noise mitigation, although its contents cover a wide range of topics related to noise in the urban environment. The first report, "Noise Mitigation Techniques for Pedestrian Areas: State-of-the Art," is intended to serve local governments as a planning guide to noise mitigation techniques appropriate to pedestrian improvements. Although extensive research has been done on noise mitigation and on pedestrian areas, little analysis has been done treating the two subjects together. The noise mitigation techniques which have potential for application in pedestrian areas have had to be drawn from a variety of other applications. The second report, "The Application of Noise Mitigation Techniques in Pedestrian Areas," goes beyond the conceptual treatment of noise a presented in the first report to an understanding of the environment of the pedestrian area. The concern of this report is to determine how noise has actually been treated in the planning, design and/or operation of pedestrian areas which have been or are being constructed in the United States. A questionnaire was sent to eighteen malls throughout the country. The analysis showed that nearby surface transportation vehicles are the major contributors to the noise levels in and around pedestrian areas. Another major source of noise is construction equipment. Efforts to mitigate the noise from these sources include routing vehicles away from the pedestrian area, the use of masking noise to prevent unwanted sound intrusion, retrofitting buses and construction equipment, the use of temporary enclosures around construction equipment, limiting the hours during which construction is permitted and purchasing quieter construction equipment. The main focus of the third report, "An Evaluation of Noise and Urban Spaces," was to determine if certain design elements commonly found in public spaces have any effect on the reduction of noise. Several public plazas in New York City were monitored. Several factors appear to have some effect on the reduction of noise levels—changes in site elevation, distance from the noise source and walls positioned between the source and recipient of noise. The intent of the entire study is twofold—to serve as an introduction to the subject of noise in urban pedestrian areas and to an impetus for continued exploration.

Environmental Protection Agency, Urban Mass Transportation Administration EPA 550/9-80-321, Nov. 1980, v.p., 31 Fig., 9 Tab., 8 Ref., 3 App.

ORDER FROM: Environmental Protection Agency, Office of Noise Abatement and Control, 1921 Jeff Davis Hwy, Arlington, Virginia, 20460

48 389348
AVAILABILITY OF NO. 6 FUEL OIL AND POTENTIAL FOR BLENDING WITH NO. 2 DIESEL FUEL TO SERVE MEDIUM-SPEED DIESEL MARINE/RAIL MARKETS
This report assesses the potential availability of No. 6 fuel oil for use as a blending component with diesel fuel to serve potential rail and marine medium-speed diesel markets. The potential demand for the fuel was estimated by assuming three penetration rates of the diesel fuel rail and marine markets. Results show that although the demand for No. 6 fuel oil as a blending component will not be significant, its new total demand will be higher than the estimated future supply of the fuel. Since the production of No. 6 fuel oil is expected to decrease between 1985 and 1990, any differences between demand and production must be met by imports. Any increases in fuel demand therefore, will require increased imports making the United States less self-reliant.

Mueller Associates, Incorporated, Department of Energy
DOE/CS/56051-9, Dec. 1983, 31p Contract AC05-79CS56051
ORDER FROM: NTIS DE84005872

48 389350
SCENARIO PLANNING: ENERGY CONSIDERATIONS IN THE LONG RANGE URBAN TRANSPORTATION PLANNING PROCESS
This report documents an 18-month study funded by the Department of Energy and the Department of Transportation which aimed at incorporating energy conservation in regional planning framework. The study was a prototype application of scenario analysis in the public planning context. The scenario technique is a comprehensive approach which allows consideration of the interaction of energy issues with transportation as well as other planning concerns such as land use, technological change, and economic development. The project created several hypothetical futures typified by varying levels of oil availability, and constructed sets of policy responses designed to deal with the problems typifying those future conditions.

Mordecai, JM
Regional Planning Council, Federal Highway Administration, Urban Mass Transportation Administration, Office of the Secretary of Transportation, Department of Energy DOT-I-83-20, Jan. 1983, 253p Contract DTFH61-81-C-0085
ORDER FROM: NTIS PB84-152602

48 389351
ESTIMATING TRANSPORTATION ENERGY CONSUMPTION OF RESIDENTIAL LAND TYPES
This report is the result of a demonstration project in Dane County, Wisconsin, which examined the relationships between residential land use development and transportation related energy consumption. To face the dilemma between encouraging development to improve the local tax base and the need to maintain efficient travel without overloading limited community resources, a simple set of factors describing transportation energy consumption per dwelling unit, for a range of differing residential densities and locations, were developed. The technique is presented in such a manner that other regions can replicate the process to produce factors specific to their areas. It also provides a means to report energy consumption factors and impacts to State and local officials concerned with the planning process for transportation.

Dane County Regional Planning Commission, Office of the Secretary of Transportation, Federal Highway Administration, Urban Mass Transportation Administration Final Rpt. DOT-I-83-26, Feb. 1983, 122p

ORDER FROM: NTIS PB84-152610

48 389353
TRANSPORTATION ENERGY MANAGEMENT: FUEL FUTURES
The report is designed to provide guidance on the use of fuel futures trading to lock in the price of fuel against volatile changes. While this is a new and different measure to represent a rational and potentially beneficial action for transit operators concerned with rapid changes in fuel price. These measures have applicability in contingency planning to reduce price problems or provide for obtaining necessary fuel supplies in an energy emergency. The report describes the futures market operation in detail and addresses the feasibility of futures market trading in a straight-forward question and answer format. A glossary of market trading terminology is also included.

Cabot Consulting Group, Urban Mass Transportation Administration, Office of the Secretary of Transportation DOT-I-83-39, Feb. 1983, 74p

ORDER FROM: NTIS PB84-163880

48 389379
INCORPORATING ENERGY ANALYSIS IN THE TRANSPORTATION IMPROVEMENT PROCESS PROGRAM
The New York State Department of Transportation, in cooperation with the Genesee Transportation Council (GTC), the MPO in Rochester, N.Y., evaluated the energy impact of proposed transportation projects, described these findings to local officials, and examined the impact of this information on project selection. The results of the energy analysis of 92 projects proposed for the 1983-84 Transportation Improvement Program showed that their implementation will result in an annual user saving of 5.9 million gallons by 1990; the annualized construction energy required for these projects is 2.1 million gallons and the annual net saving is 3.8 million gallons (1.3% of 1980 gasoline consumption). The assessment of the long term changes in transportation energy use showed that improvements in vehicle efficiency will result in an annual saving of 85.7 million gallons by 1990 (29.2% of 1980 gasoline consumption) increase in consumption resulting from increases in traffic due to expect growth in the number of households. Review of the process to create GTC's 1983-1988 TIP showed that while no decisions were changed solely because of the energy impact information provided, this information enhanced the projects' acceptance. Once presented on a regular basis in the TIP process, the energy impact data may be more useful. Two additional places in the project development process where energy impact information could be useful are systems planning and design. The issue of the transferability of the findings was investigated and it was found that the results, methodologies and ideas could be employed by other places, constrained by those factors which make other cities unique or different from Rochester.

Erlbaum, NS Gross, JM Hartgen, DT Nidetz, J Holthoff, WC Jaschik, NL
New York State Department of Transportation, Genesee Transportation Council, Federal Highway Administration, Urban Mass Transportation Administration Res Rpt DOT-I-84-28, July 1984, 158p, Figs., Tabs., 29 Ref., 6 App. Contract DTFH-61-81-C-00108
ORDER FROM: OST

48 389745
FEDERAL, STATE AND LOCAL RESPONSES TO 1979 FUEL SHORTAGES
There are many lessons that can be learned from examining federal, state and local responses to the 1979 fuel shortages which can be applied to present and future energy contingency planning efforts to enhance their effectiveness. Case studies were made of emergency transportation energy conservation actions implemented, or attempted, in Los Angeles, Dallas-Fort Worth, Minneapolis-St. Paul, Seattle, Rhode Island, and New York State. Information on responses to the fuel shortages for each case study area was obtained through on-site meetings with representatives of organizations having a strong interest in emergency transportation actions such as transit operations, metropolitan planning organizations, service station dealers, state highway and energy departments, ridesharing agencies, and others. Types of emergency transportation actions most commonly implemented or attempted by the case study areas were: (1) expanded public information and marketing distribution systems; (2) emergency expansion of ridesharing (carpool and vanpool services); (3) rehabilitation and placing in service of standby reserve or mothball fleet buses; (4) implementation of odd-even and/or minimum (maximum) fuel purchase restrictions; and (5) monitoring of transit ridership and shifting buses to the most heavily used routes. These case studies discuss, and partially assess, the major transportation energy contingency actions implemented, key implementation problems encountered, and actions planned but not implemented. Preliminary conclusions, recommendations, and implications for developing future transportation energy contingency plans are presented in a separate volume.

Schueftan, O Ellis, RH
Peat, Marwick, Mitchell and Company DOT-P-30-81-06, Feb. 1981, 103p

ACKNOWLEDGMENT: Energy Research Abstracts
ORDER FROM: GPO TI84901219

48 389747
ELECTRIC RAILROADS AND TROLLEY SYSTEMS: PAST PRESENT, AND FUTURE
Because of its unique attributes, electricity has played and will continue to play and important role in the development of certain modes of transportation. Although dominated by fossil fuels as a direct source of energy for motive power, transportation has relied upon electricity for particular situations. This report discusses the role of electricity in transportation, including the history of electrified transportation, its current status, and prospects for the future. The historical coverage includes early city transit development, the evolution of the electric streetcar, and the progression of railroad electrification in the United States. Railroads are now the dominant mode of transportation that uses electricity; as such, most of the attention given to the current status of electrified transportation concerns this mode. Railroad electrifications

throughout the world are compared, and the current situation regarding railroad electrification in the United States is noted. Future development of electrified transportation may include new rail rapid transit systems and reemployment of electric trolley buses.

Portions are illegible in microfiche products. Original copy available until stock is exhausted.

Treat, NL
Oak Ridge Associated Universities, Incorporated, Department of Energy ORAU/IEA-83-12 (M), Mar. 1984, 52p, 7 Tab., 43 Ref. Contract AC05-760R00033
ORDER FROM: NTIS DE84010307

48 389765
DEMONSTRATION OF THE COAST-DOWN TECHNIQUE FOR DETERMINING TRAIN RESISTANCES
Full-scale measurement or validation of the various factors of train running resistance is an essential step in decreasing train energy consumption. Such a measurement capability would enable railroads to evaluate the cost benefits of operational and train consist configuration changes, and new vehicles and truck designs for decreasing aerodynamic drag and rolling resistance. A decrease in the rolling resistance affects more than just a decrease in energy consumption; it also will result in decreased mechanical wear, hence less wheel and rail maintenance and replacement costs. A demonstration of a simple coast-down technique (based on computer-reduction of distance history) was accomplished using specially configured trains on main line rail provided by the Atchison, Topeka and Sante Fe Railway Co. This demonstration test shows that this distance-history coast-down technique for trains is easy to execute in the field. The total running resistance history was accurately determined and subsequently separated into rolling resistance (mechanical friction) and aerodynamic drag.

Dayman, B
Jet Propulsion Laboratory NAS 1.26:173468, JPL-PUB-83-85, Oct. 1983, 67p

ORDER FROM: NTIS N84-21515/1

48 389769
COMPARATIVE EVALUATION OF ENERGY MANAGEMENT MODELS FOR TRANSIT SYSTEMS
Recent advances in solid state control technology have led to chopper-controlled propulsion systems in urban rail transit applications. Such systems offer the potential for superior train performance through increased train propulsion efficiency and reduced train operating costs. The present program sponsored by the Urban Mass Transportation Administration studies the energy consumption characteristics of an urban rail system equipped with transit cars having solid-state chopper-controlled propulsion systems. The program objectives include the measurement of the transit system energy consumption during revenue and nonrevenue service operation and the study of the relative accuracy of current energy management models for predicting energy consumption in urban rail systems. This report summarizes the program accomplishments in the Bay Area Rapid Transit (BART) energy consumption tests and the validation of energy management models developed by private industry. The energy consumption of BART transit cars was measured with and without regeneration during the period of August 25, 1981 through September 2, 1981. The test data was then compared with the predictions of different energy management models currently in use for transit system studies. This report presents the results of the comparative evaluation of these models.

Nene, VD
Transtech International, Incorporated UMTAMA-06-0025-83-12, DOT-TSC-UMTA-83-52, Feb. 1984, 419p

ORDER FROM: NTIS PB84-182070

48 389774
SUMMARY OF RAILWAY FUEL-SAVING OPTIONS DEVELOPED WITH INDUSTRY PARTICIPATION
While government, industry, and individual rail carriers have sponsored extensive research on fuel wastage, potential alternative fuels, and energy-conserving operating techniques for the railroad industry, much of the information generated from these efforts has not been assembled into a ready-reference format covering both operational strategies and capital investment opportunities. Representatives of the railroad industry have identified a need for such a concise summary of information relating to fuel conservation in railroad freight operations. To meet this need, a matrix was developed by Argonne National Laboratory to summarize a wide variety of fuel-saving measures and their associated costs and benefits. Information was derived primarily from technical sources and manufacturers literature. This matrix was reviewed by a panel of experts from the rail industry at an industry coordination meeting in 1982 and was revised in response to their critique. In its final form, the matrix lists 38 fuel-saving measures under seven principal headings. Special emphasis is placed on well-conceived education and training programs, empty freight car miles, and elimination of unnecessary engine idling. These measures were cited by participants in the industry coordination meeting as crucial to any railroad energy-cost reduction program. The matrix has been distributed free of charge to more than 120 rail carriers in the United States.

Saricks, CL Bertram, KM Smith, JW
Argonne National Laboratory ANL/CNSV-TM132, Jan. 1984, 30p

ORDER FROM: NTIS DE84009083

48 389775
INCORPORATING ENERGY CONSERVATION INTO THE TRANSPORTATION PLANNING PROCESS: MID-SIZED AREAS
This report describes the methods by which mid-size Metropolitan Planning Organizations (MPOs), between 200,000 and 750,000 in population are incorporating energy conservation concerns into their urban transportation planning process. Nine MPOs were selected for case study analysis. General conclusions were extrapolated from these case studies.

Alberts, BS
Northern Middlesex Area Commission DOT-I-83-32, Mar. 1983, 171p

ORDER FROM: NTIS PB84-195189

48 389801
CUTTING SNCF ENERGY COSTS: TECHNOLOGY UPDATE
Electric traction accounts for some 90% of the energy consumed by French Railways (SNCF). A saving of only 1% would reduce consumption by about 5 million kilowatt hours (kWh). The Mareco computer program has led to the introduction of Train Checklist 81. This is a special version of the driver's working timetable which he has before him on his desk.

Cooper, B **Modern Railways** Vol. 41 No. 426, Mar. 1984, pp 140-141, 4 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Allan (Ian) Limited. Terminal House, Shepperton TW17 8AS, Middlesex, England

48 389803
PROTECTION AGAINST NOISE IN UNDERGROUND GUIDED TRANSPORT INSTALLATIONS. DESCRIPTION OF THE PROBLEM AND ONGOING RESEARCH INTO TRACK NOISE ABATEMENT [EMISSIONSSCHUTZ BEI SPURGEFEHRTEN UNTERIRDISCHEN VERKEHRSANLAGEN. PROBLEMSTELLUNG UND STAND DER FORSCHUNG UEBER MASSNAHMEN AM OBERBAU]
Wheel/rail contract during train running produces vibration which, along with air-borne noise, cause discomfort to people living in the vicinity of the railway line. There is as yet no legislation laying down limiting values. Research into "Railway noise" has however been commissioned. The cheapest and most effective method is to sound-proof the track infrastructure, by maintenance of the running surface of the rails, incorporating highly flexible rail supports, varying the thinckness of the ballast, including sub-ballast layers and adopting the spring mass system. [German]

Deischl, F **Verkehr und Technik** Vol. 37 No. 2, Feb. 1984, pp 54-60, 4 Phot., 10 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Schmidt (Erich) Verlag, Herforder Strasse 10, 4800 Bielefeld, West Germany

48 389819
FOR INSTANCE: RAILWAY NOISE: THE POLICY STATEMENT ON RAILWAY NOISE ASSESSED ON AN URBAN DESIGN IN THE PROXIMITY OR RAILWAY STATIONS [BIJVOORBELD: SPOORWEGLAWAAI: DE BELEIDSNOTA SPOORWEGLAWAAI GETOETST IN DE STEDEBOUWKUNDIGE PRAKTIJK IN DE NABIJHEID VAN STATIONS]
The study is concentrated on measures of noise abatement near railway stations and on measures in the field of urban design and architecture. The main conclusion is that regulations as formulated in the Dutch Policy Statement on Railway Noise, such as desirable noise level, exemption and zoning affecting housing alongside railways, are applicable.

Weebers, JEM Heemrood, JC Schaareman, ACW
Ministerie van Volkshuisvesting Jan. 1984, 50p, 1 Fig., 6 Tab., 11 Phot., 5 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Ministerie van Volkshuisvesting, The Hague, Netherlands

48 389849
IMPROVED FUEL ECONOMY THROUGH LUBRICANT TECHNOLOGY IN MEDIUM-SPEED RAILROAD DIESEL ENGINES
Reducing fuel consumption will substantially reduce railroad operating costs. Several means of reducing fuel consumption by reducing engine friction were evaluated in a full-scale 2240 kW (3000 hp) two-stroke locomotive engine operating under steady-state conditions. These included reduced lubricant viscosity and the use of friction-modifier crankcase lubricant additives. The steady-state data were combined using known duty cycles to give predicted savings in service. A 2.5 percent reduction in fuel consumption was predicted by increasing the coolant temperature by 13.9 deg C (25 deg F), for a typical railroad medium-duty cycle. Over this duty cycle, a multigrade SAE 20W-40 lubricant used 1 percent less fuel than an SAE 40. No fuel savings were measured for an SAE 40 lubricant formulated from high-instead of medium-viscosity-index base stocks. Neither lubricant soluble nor insoluble (dispersed solid) friction-modifier additives gave significant fuel savings.

Logan, MR **Lubrication Engineering** Vol. 40 No. 4, Apr. 1984, pp 225-233

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

48 390107
TRANSIT INPUT DEMAND ELASTICITIES
This paper tests the hypothesis that transit input demand is inelastic. A homogeneous translog cost model is developed from which the elasticities of input demand are calculated. It is found that the hypothesis is true for labor demand, partly true for diesel fuel demand and not true for electricity demand in the relevant range. That is, the hypothesis does not hold for electricity's share of operating cost smaller than 26.42%. It is suggested that costs of those inputs with inelastic demand should be controlled and that public policy should be directed at investing in electricity-efficient vehicles. It is also suggested that further research should be conducted to provide more empirical evidence on the above hypothesis.

Kofi, O (North Carolina Agricultural and Technical State U) **Journal of Advanced Transportation** Vol. 17 No. 1, 1983, pp 73-88, 24 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

48 390134
TRANSPORTATION DURING THE NEXT ENERGY CRISIS: THE SPECIAL PROBLEMS OF SMALL URBAN AREAS. FINAL REPORT
The purpose of this study was to provide local government officials and other interested parties in small urban areas (less than 50,000 pop.) with special assistance in the planning and implementation of transportation energy contingency plans. The nature of such contingencies and their impact on the transportation sector are reviewed, along with the special transportation characteristics of small urban areas (modal split, trip purpose distribution, transit structure, etc.). After establishing the nature of Federal and State contingency responsibilities, the basic local contingency plan needs are assessed, and a wide array of potential strategies are analyzed according to a consistent set of criteria (financing, timeframe, institutional problems, targeted mobility needs, special strategy-specific problems). The final chapter reviews the results of these assessments and makes a number of conclusions and recommendations. A special 13-page guidebook on contingency planning, following a question-and answer format, was also developed and is included in the appendix.
Portions are illegible in microfiche products.

Crowell, W Shapiro, A McShane, W
Polytechnic Institute of New York DOT-I-82-37, June 1981, 83p

ORDER FROM: NTIS DE84901218

48 390137
SCENARIO PLANNING: ENERGY CONSIDERATIONS IN THE LONG RANGE URBAN TRANSPORTATION PLANNING PROCESS
This report documents an 18-month study funded by the Department of Energy and the Department of Transportation which aimed at incorporating energy conservation in regional planning framework. The study was a prototype application of scenario analysis in the public planning context. The scenario technique is a comprehensive approach which allows consideration of the interaction of energy issues with transportation as well as other planning concerns such as land use, technological change, and economic development. The project created several hypopthetical futures typified by varying levels of oil availability, and constructed sets of policy responses designed to deal with the problems typifying those future conditions. It is concluded that unique insights were gained which would not have emerged in the course of more conventional planning activity; still, because so many new issues were raised, follow-up efforts to fully incorporate the findings and methodology into the continuing planning process are crucial to the ultimate success of the project.
Portions are illegible in microfiche products.

Regional Planning Council May 1983, 253p Contract AI01-81CS90103
ACKNOWLEDGMENT: Energy Research Abstracts
ORDER FROM: NTIS DE84013590

48 390144
REDUCING POLLUTION FROM VEHICLES IN URBAN AREAS; A REPORT ON SUPPLEMENTARY STRATEGIES TO CONTROL AT SOURCE
This publication is in two parts. The first, entitled "Reducing pollution from vehicles in urban areas," was prepared by the Supplementary Strategies Working Group. It reports on an investigation of measures to reduce vehicle pollution, other than by direct controls on engines. The second, entitled "Review of techniques," was prepared by R Travers Morgan Pty Ltd and MSJ Keys Young Planners Pty Ltd and contains a series of working papers that were used as source material. The report investigates various measures supplementary to direct control of emissions, and after examining their feasibility and interrelationships, develops packages of measures which could reduce emission levels in spatially defined problem areas. The focus is on passenger vehicles within urban areas. The SSWG identified fifty eight measures which have been grouped under various strategies, and in turn under six strategy groups: public transport (modification and upgrading); road supply (measures directed at improving the general flow of traffic); road traffic demand (measures directed at reducing demand); fiscal (measures influencing the ownership and operation of vehicles); town planning (measures influencing the generation and distribution of traffic); and social and other. The strategies have been considered in relation to identifiable problem areas: residential streets; urban arterial roads; suburban activity centres; city centres; and the metropolis. The main mechanism for reducing pollution from motor vehicles must remain direct control at source. The strategies outlined in this report, although affecting pollution levels, can only be supplementary to direct controls rather than alternatives. (TRRL)

Australian Environment Council Report Monograph Council Report 11, 1983, 130p, 6 Fig., 9 Tab., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 272060), Australian Road Research Board

ORDER FROM: Australian Government Publishing Service, 109 Canberra Avenue, Griffith, A.C.T., Australia

48 390145
ENERGY USE-TRANSPORT
Emphasis is placed on the more effective use of motor cars, and energy efficient transport. Discussion also relates to electric powered transport. There appears to be considerable scope remaining to achieve more effective use of the motor car. A brief discussion refers to the potential of car and van pooling, in which further policy initiatives can be taken by governments. A particular policy issue raised in the context of changing transport fuel demand patterns is whether diesel cars should be given encouragement. Discussion relevant to energy efficient transport shows that in bulk freight transport, emphasis is generally given to fuel efficient modes. The customer's needs for a particular package of service-quality and price generally leads to a choice of mode not necessarily influenced by issues of fuel efficiency. Rough calculations also show that practical prospects for changes in transport mode cannot be expected to lead to large fuel savings. This suggests that energy policy would achieve greater returns by concentrating on achieving intra-modal fuel savings. This then raises the question of how much emphasis should be given to the role of public transport. This paper is Position paper C3. (TRRL)

From Energy 83: Towards an Energy Policy in Australia, Canberra, 11-13 May 1983, Position Papers, National Conference Publication.

Gentle, NF
Institution of Engineers, Australia Conf Paper Energy 83/2, 1983, pp 298-315, 6 Fig., 14 Tab., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 272059), Australian Road Research Board
ORDER FROM: Australian Road Research Board, P.O. Box 156, Bag 4, Nunawading, Victoria 3131, Australia

11 349150
SMALL TRANSIT BUSES: A MANUAL FOR IMPROVED PURCHASING, USE, AND MAINTENANCE
The general objective of this research is to develop a workbook-style manual for local transit operators and to identify key recommendations that might be taken by transit operators, local governments, states and UMTA to substantially improve the procurement, appropriate use, and maintenance processes for small transit buses. Available small buses are highly diverse in both capital costs and technology, and their uses are also highly diverse. The complexity of both needs and possible solutions has led to many poor choices of buses for specific duties. In addition, uncertainties with respect to the small bus market have led to a lack of continuity in design and development; perceived problems in bus operation, maintenance, and reliability; a lack of clear definition of bus demand; and little standardization within realistic price ranges. This manual is intended to provide guidelines to help both experienced and inexperienced transit providers make objective decisions regarding cost-effective procurement, maintenance and operation of buses in wide range of local, institutional, service, and operating environments.
NCTRP Report 11 in Preparation.

PERFORMING AGENCY: Little (Arthur D), Incorporated
INVESTIGATOR: Nayak, PR Tel (617) 864-5770
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Kingham, RI Tel (202) 334-3224 NCTRP 30-1
STATUS: Active NOTICE DATE: Nov. 1984
START DATE: Nov. 1982
TOTAL FUNDS: $299,378
ACKNOWLEDGMENT: National Cooperative Transit Res and Dev Program

11 362086
IMPROVED SERVICE LIFE OF URBAN TRANSIT COACH BRAKES
Existing and future urban transit coach brake life is to be improved. This will involve quantification of in-service brake operating temperatures and identification of methods for reduction of such temperatures along with possible alternative friction materials. Phase I will attempt to confirm that temperature is the cause of reduced brake life by collection and evaluation of brake operating temperatures, a process made possible by intrumentation that can be applied to brake drums and brake shoes. This was confirmed by tests on a bus of the Central Ohio Transit Authority in Columbus, Ohio. Task I was continued by instrumentation of three types of buses of the Southern California Rapid Transit District in Los Angeles. Task II will involve development of methods for reducing operating temperature or identifying friction materials that are compatible with service temperatures. Task III will involve a cost-benefit analysis of the methods developed for increasing brake life. Task IV will be the preparation of an interim report for implementation of an interim report for implementation of the recommendations in Phase II which will include actual tests by a major metropolitan bus operator.

PERFORMING AGENCY: Battelle Memorial Institute
INVESTIGATOR: Hopper, AT Tel (614) 424-6424
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Smith, HA Tel (202) 334-3224 NCTRP 47-1
STATUS: Active NOTICE DATE: Nov. 1984
START DATE: Dec. 1981 COMPLETION DATE: Dec. 1984
TOTAL FUNDS: $300,000
ACKNOWLEDGMENT: National Cooperative Transit Res & Dev Program

11 369377
EFFECTS OF FUEL ADDITIVES AND ALTERNATIVE FUEL GRADES FOR TRANSIT BUSES
The synthesis will compile data on the effects, costs and benefits of available fuel additives and related products based on actual in-service experience and research, and should examine the effects on long-term engine maintenance, pollution and odor emissions, fuel economy, fuel storage and engine performance. Specifically the synthesis will include various classes of additives such as dispersants, stabilizers, corrosion inhibitors, heavy metal scavengers, pour point/cloud point depressants, emulsifiers, emulsion breakers, biocides, slime dispersants, atomizers, combustion catalysts, cetane improvers, deposit cleaners, and smoke and odor suppressants; and information from literature, operators, engine and additive manufacturers, trade groups and research organizations.
NCTRP Synthesis 3 Published.

PERFORMING AGENCY: Southwest Research Institute
INVESTIGATOR: Sefer, N Tel (512) 684-5111 Moulton, S Tel (512) 684-5111
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Copas, TL Tel (202) 334-3242 NCTRP 60-1, TS-3
STATUS: Completed NOTICE DATE: Nov. 1984
START DATE: Oct. 1982
TOTAL FUNDS: $30,000
ACKNOWLEDGMENT: National Cooperative Transit Res & Dev Program

11 384949
BRAKES AND HOURMETER VS MILEAGE FOR PREVENTIVE MAINTENANCE
Establish data base on GMC third-generation brakes on RTS buses. Evaluate brake maintenance procedures utilizing brakes with asbestos and non-asbestos linings. Evaluate aluminum wheel hubs which reduce wheel temperature and increase brake and tire life. Evaluate engine-hour against mileage as a basis for scheduling preventive maintenance. Information from these tests will assist transit agencies and bus manufacturers.

PERFORMING AGENCY: New York City Transit Authority, NY-06-0112
INVESTIGATOR: Cameron, D Tel (212) 498-8149
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Izumi, G (URT-22) Tel (202) 426-8483

STATUS: Active NOTICE DATE: Apr. 1984
START DATE: 1984
ACKNOWLEDGMENT: UMTA

11 384950
AUTOMATIC BUS LUBRICATION
Assess the feasibility of an automatic grease lubrication system to be installed on 47 buses and operated for one year to determine reliability, costs and benefits. Up to 30 points will be greased automatically. In cold weather grease becomes frozen as do the grease fittings, interferring with adequate lubrication.

PERFORMING AGENCY: Niagara Frontier Transportation Authority, NY-06-0091
INVESTIGATOR: Casciotti, D Tel (716) 855-7300
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Izumi, G (URT-22) Tel (202) 426-8483

STATUS: Active NOTICE DATE: Apr. 1984
START DATE: 1983
ACKNOWLEDGMENT: UMTA

11 384951
REAR TOW HOIST FOR ADBS
Develop and test a special tow-hoist for ADB transit buses to permit moving units with frozen differentials without having to pull axles in high-density traffic and perform a study of a modified vacuum system to remove fare revenue with increased security and greater speed.

PERFORMING AGENCY: Metropolitan Suburban Bus Authority, NY-06-0093
INVESTIGATOR: Dunn, G Tel (516) 542-0720
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Izumi, G (URT-22) Tel (202) 426-8483

STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

11 384952
STANDARD LOW FLOOR BUSES
This project involves test and evaluation of bus design features including low floors and wide doors to assess cost, performance and passenger accessibility. Test results will be disseminated to the transit industry after appraisal of 20 buses is completed.

PERFORMING AGENCY: Metropolitan Transit Commission, UMTA-MN-06-0017
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Ridgley, JE (URT-21) Tel (202) 426-8483 Contract UMTA-MN-06-0017
STATUS: Active NOTICE DATE: Apr 1984
START DATE: 1984 COMPLETION DATE: Oct. 1986
ACKNOWLEDGMENT: UMTA

11 384955
BUS TRANSMISSION AND BRAKE RETARDER DEMONSTRATION
This project will test and evaluate various electronic and non-electric controls for transmissions to determine relative performance, reliability maintainability and life cycle costs. Life cycle costs will be collected on a fleet of Neoplan buses with and without Telma electric brake retarders. The electronically controlled in-line transmission with hydraulic retarder has the potential to increase fuel economy and lower maintenance costs. Transmissions are right-hand rotation to allow overall powertrain to be less expensive than left hand drive bus equipment.

PERFORMING AGENCY: Southeastern Pennsylvania Transportation Authority, UMTA-PA-06-0082
INVESTIGATOR: DePallo, M Tel (215) 456-4659
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Izumi, G (URT-22) Tel (202) 426-8483 Contract UMTA-PA-06-0082
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: 1983
ACKNOWLEDGMENT: UMTA

11 384956
SMALL BUSES WITH TURBOCHARGED ENGINES
This project involves test, demonstration and evaluation of small bus design features including turbocharged diesels and computerized fuel mixture systems to assess cost, performance, fuel efficiency, reliability and costs. Evaluation to be performed on 10 buses with results to be disseminated to the transit industry for future purchasing decisions.

PERFORMING AGENCY: District of Columbia Department of Transportation, UMTA-DC-06-0464
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Ridgley, JE (URT-21) Tel (202) 426-8483

STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

11 384957
SMALL BUSES, LOW FLOOR, DISC BRAKES
This project involves test, demonstration and evaluation of 5 small buses with low floors and disc brakes to assess cost, performance, passenger accessibility, fuel efficiency and maintenance costs. The results will be disseminated to other potential purchasers.

PERFORMING AGENCY: Central New York Regional Transportation Authority, UMTA-NY-06-0113
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Ridgley, JE (URT-21) Tel (202) 426-8483 Contract UMTA-NY-06-0113
STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

11 384959
ROOF-MOUNTED AIR CONDITIONING
Thermo King air conditioning units on 35 AMG buses will be replaced with Suetrak units that are mounted on top of the bus. In-line placement of condenser and engine radiator has resulted in engine overheating; lower maintenance costs can also be achieved. Rehabilitated buses worked well; and air damper will also be provided to evaluate its ability to reduce costs.

PERFORMING AGENCY: Central New York Regional Transportation Authority, UMTA-NY-06-0094
INVESTIGATOR: Gambaccini, M Tel (315) 471-2100
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Izumi, G (URT-22) Tel (202) 426-8483 Contract UMTA-NY-06-0094
STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

11 384960
BRAKE RETARDER FOR SMALL BUS
This activity is to reduce high maintenance costs for brakes on small transit buses. It will involve installation, test and evaluation of electric brake retarders on six 22-foot Thomas buses. Brake retarders are expected to increase brake lining life 4 to 5 times, reducing the frequent maintenance and adjustment now needed. This will increase bus availability. Life cycle costs will be collected.

PERFORMING AGENCY: Central New York Regional Transportation Authority, UMTA-NY-06-0118
INVESTIGATOR: Gambaccini, M Tel (315) 471-2100
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Izumi, G (URT-22) Tel (202) 426-8483 Contract UMTA-NY-06-0118
STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

11 384961
ARTICULATED BUSES, TRANSVERSE ENGINES
This project involves test and evaluation of articulated buses with transverse rear engine and air conditioning with engine-driven compressor to assess cost, performance, fuel efficiency, reliability and costs. Tests to be conducted on 15 buses with results disseminated to the transit industry.

PERFORMING AGENCY: Metropolitan Transportation Authority, UMTA-NY-06-0115
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Ridgley, JE (URT-21) Tel (202) 426-8483 Contract UMTA-NY-06-0115
STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

11 384962
ARTICULATED BUSES, HIGH STRENGTH CHASSIS
This project involves test and evaluation of articulated buses with high-strength chassis and electronically controlled transmission to assess cost, performance, fuel efficiency, reliability and costs. Tests will be made with 10 buses and results disseminated to the transit industry.

PERFORMING AGENCY: Metropolitan Transportation Authority, UMTA-NY-06-0014
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Ridgley, JE (URT-21) Tel (202) 426-8483

STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

11 384963
TANDEM ARTICULATED BUSES—NBEI
This project involves two articulated buses with features including wheelchair capability to assess cost, performance and passenger accessibility. Results will be disseminated to the transit industry.

PERFORMING AGENCY: Florida Department of Transportation, UMTA-FL-06-0039
INVESTIGATOR: Duffy Tel (904) 488-7390
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Ridgley, JE (URT-21) Tel (202) 426-8483 Contract UMTA-FL-06-0039
STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

11 384974
TECHNICAL ASSISTANCE IN TROLLEY BUSES
This project is to provide technical assistance in areas of trolley bus and electric propulsion technology. The input will aid in development of a research program. The tasks: (1) Literature review; (2) Report on state of development of European trolley buses; (3) Report on U.S. trolley bus operations; (4) Recommendation for research and technical assistance in trolley bus operations and maintenance; (5) Update report. Justification includes estimate that by 2000 diesel fuel cost will be 65 cents per vehicle miles, electricity 21 cents per mile.

A performing agency is yet to be determined.

SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Sullivan, PJ (URT-21) Tel (202) 426-8483 Contract UMTA-IT-06-0314
STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

11 384975
870 AIR CONDITIONING RETROFIT
This project will test and evaluate 20 Model 05GE Carrier air conditioning systems as replacement units for the original units supplied with Grumman Flxible 870 Advanced Design buses. As compared with the dual units originally installed, the new systems will offer increased capacity, lower operating and maintenance costs and simplified operation.

PERFORMING AGENCY: Metropolitan Atlanta Rapid Transit Authority
INVESTIGATOR: Huggins, J Tel (404) 586-5000
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Izumi, G (URT-22) Tel (202) 426-8483 Contract UMTA-GA-06-0016
STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

11 384976
FUEL ECONOMY AND PERFORMANCE SIMULATION
The activity will provide technical information to public transit agencies on fuel economy and performance impacts that result from changes in bus configuration, fuels or operating procedures. Simulation analyses using the HEVSIM program, will be conducted to assess the impact of various bus design or operational changes. Since fuel represents a large cost over the life of a transit vehicle, information on trade-offs of fuel economy, performance and bus design will be useful in investment decisions.

PERFORMING AGENCY: Transportation Systems Center, UMTA-MA-06-0120(I)
INVESTIGATOR: Gundersen, R Tel (617) 494-2654
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Lopez, RA (URT-21) Contract UMTA-MA-06-0120(I)
STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

11 384978
ENGINE MODIFICATION
Establish operational and cost benefits of new and improved engines that replace existing power plants; disseminate information to transit agencies. One New Look bus will be fitted with Cummins L-10 engine with Voith T-drive transmission. Five buses will get DDA electronic injection controlled engines. All engines have potential for improved fuel economy, lowered lubricating oil consumption and emissions, and better maintainability.

PERFORMING AGENCY: Michigan Department of Transportation, MI-06-0037
INVESTIGATOR: Boctor, K Tel (517) 322-1090
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Izumi, G (URT-22) Tel (202) 426-8483

STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

11 384979
EVALUATION OF RETROFITTED BONDED BRAKES
Collect data and determine cost effectiveness of retrofitting bonded brake linings on buses previously fitted with bolted linings. Benefits of bonded linings estimated at $7 million annually. Tests on 8 buses indicate increased life of about 11 percent.

PERFORMING AGENCY: Southeastern Michigan Transportation Authority, MI-06-0031
INVESTIGATOR: Kirshan, K Tel (313) 256-8629
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Izumi, G (URT-22) Tel (202) 426-8483

STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

11 384980
TREADLE SENSORS
Evaluate improved passenger counter treadle sensor mats and beam sensor counters and evaluate their accuracy and reliability. Improved counters have promise for better counting. Test results are useful nationwide.

PERFORMING AGENCY: Southern California Rapid Transit District, UMTA-CA-06-0119
INVESTIGATOR: Styffe, A Tel (213) 972-6613
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Izumi, G (URT-22) Tel (202) 426-8483 Contract UMTA-CA-06-0119
STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

11 384999
VALIDATION OF ARTICULATED BUS LIFE CYCLE COSTING
The objective of the articulated bus project is to develop life cycle costing (LCC) data prior to revenue service tests; compile extensive operations and maintenance data during tests; measure data against performance; and incorporate LCC into procedures for procurements. Data collection has started on 30 articulated buses (15 M.A.N. and 15 Crown Ikarus). Information gained from SCTD's LCC procurement experience helps operators in bus procurements and results in more cost effective vehicle procurements.

PERFORMING AGENCY. Santa Clara County Transit District, UMTA-CA-06-0146
INVESTIGATOR: Bachman, D Tel (408) 299-2362
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Asatoorian, SD (URT-21) Tel (202) 426-8483 Contract UMTA-CA-06-0146
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1983 COMPLETION DATE: Oct. 1985
TOTAL FUNDS: $300,000
ACKNOWLEDGMENT: UMTA

11 385012
NEW BUS EQUIPMENT INTRODUCTION PROGRAM
Test and evaluate 5 articlated buses with rear axle drive, wide door and low floor.

PERFORMING AGENCY: Rhode Island Public Transit Authority, RI-06-0013
INVESTIGATOR: Ruble, B Tel (401) 781-9450
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Ridgley, JE (URT-21) Tel (202) 426-8483

STATUS: Active NOTICE DATE: Apr. 1984
START DATE: June 1982 COMPLETION DATE: June 1984
TOTAL FUNDS: $100,000
ACKNOWLEDGMENT: UMTA

11 385013
NEW BUS EQUIPMENT INTRODUCTION PROGRAM
Test and evaluate 10 small heavy duty buses in transit service.

PERFORMING AGENCY: Michigan Department of Transportation, MI-06-0032
INVESTIGATOR: Boctor, K Tel (412) 343-5533
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Ridgley, JE (URT-21) Tel (202) 426-8483 Contract MI-06-0032
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: June 1982 COMPLETION DATE: June 1984
TOTAL FUNDS: $106,000
ACKNOWLEDGMENT: UMTA

11 385014
PARATRANSIT VEHICLE TECHNICAL SUPPORT
Collect and evaluate data from existing taxicab operation in Pittsburgh and Miami and compare with data generated by the innovative paratransit vehicle being purchased under separate grants.

PERFORMING AGENCY: Dynatrend, Incorporated, UMTA-IT-06-0272
INVESTIGATOR: Connors, J Tel (703) 841-9800

SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Ridgley, JE (URT-21) Tel (202) 426-8483 Contract UMTA-IT-06-0272
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Dec. 1981 COMPLETION DATE: July 1984
TOTAL FUNDS: $170,000
ACKNOWLEDGMENT: UMTA

11 385053
NEW BUS EQUIPMENT INTRODUCTION PROGRAM
Test and evaluate 10 heavy duty small buses.

PERFORMING AGENCY: Central Ohio Transit Authority, OH-06-0040
INVESTIGATOR: Fraser, S Tel (614) 275-5888
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Ridgley, JE (URT-21) Tel (202) 426-8483 Contract OH-06-0040
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: June 1982 COMPLETION DATE: June 1984
TOTAL FUNDS: $100,000
ACKNOWLEDGMENT: UMTA

11 385058
CONVERSION OF BUS TO OPERATE ON METHANOL FUEL
This project will evaluate three 6V71 engines converted to the use of methanol. These engines will be installed in reconditioned GMC "New Look" coaches and operated for 6 months in revenue service in Jacksonville, Florida.

PERFORMING AGENCY: Florida Department of Transportation, FL-06-0022
INVESTIGATOR: Simmons, S Tel (904) 488-1587
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Sullivan, PJ (URT-22) Tel (202) 426-4035 Contract FL-06-0022
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1981 COMPLETION DATE: Dec. 1985
TOTAL FUNDS: $3,000,000
ACKNOWLEDGMENT: UMTA

11 385059
EMERGENCY OFF WIRE TROLLEY BUS EVALUATION
One year revenue service evaluation of 6 to 12 auxiliary power systems that will allow trolley bus to operate off wire. Paratransit Systems include battery, diesel/generation and gasoline/generator.

PERFORMING AGENCY: Miami Valley Regional Transit Authority, OH-06-0042
INVESTIGATOR: Broyles, M Tel (513) 226-1333
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Sullivan, PJ (URT-22) Tel (202) 426-4035 Contract OH-06-0042
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Jan. 1984
TOTAL FUNDS: $144,000
ACKNOWLEDGMENT: UMTA

11 385062
FLYWHEEL ENERGY STORAGE SYSTEM
The objective of this project is to develop a bus flywheel system that will provide all the benefits of an electric trolley bus and require only 15 percent of the overhead wires. The flywheel system will reduce operating and maintenance costs. The project includes the development and testing of flywheel energy storage systems, acquisition of test vehicle, installation of flywheel propulsion system, and field testing and evaluation at San Francisco MUNI. Reduction in overhead wiring by 85 percent will be a substantial capital savings for transit systems.

PERFORMING AGENCY: AiResearch Manufacturing Company, UMTA-CA-06-0168
INVESTIGATOR: Olmsted, D Tel (213) 512-4124
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Asatoorian, SD (URT-21) Tel (202) 426-8483 Contract UMTA-CA-06-0168
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: June 1984 COMPLETION DATE: Sept. 1985
TOTAL FUNDS: $1,060,000
ACKNOWLEDGMENT: UMTA

11 385063
PARATRANSIT VEHICLE DEPLOYMENT EVALUATION
Test and evaluate in taxicab service, sixteen innovative paratransit vehicles.

PERFORMING AGENCY: Port Authority of Allegheny County, PA-06-0064
INVESTIGATOR: Menniti, P Tel (412) 237-7335
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Ridgley, JE (URT-21) Tel (202) 426-8483 Contract PA-06-0064
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1981 COMPLETION DATE: June 1984
TOTAL FUNDS: $682,000
ACKNOWLEDGMENT: UMTA

11 385064
SANTA BARBARA ELECTRIC VEHICLE PROJECT
Design and track test of a prototype inductive coupling powered transit bus. This program will design the inground power transfer system, the vehicle propulsion system and the supporting ground facilities. A German "Vetters" bus will be used. One year tests at a non-public track are planned. This project will establish the feasibility of inductive coupling as a transit propulsion system.

PERFORMING AGENCY: Santa Barbara Metropolitan Transit District, CA-06-0177
INVESTIGATOR: Gleason, G Tel (805) 963-3364
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Sullivan, PJ (URT-22) Tel (202) 426-4035 Contract CA-06-0177
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Aug. 1982
TOTAL FUNDS: $3,000,000
ACKNOWLEDGMENT: UMTA

11 385065
AIR CONDITIONING ACTIVITY
This activity provides technical support to UMTA in the area of bus air conditioning system reliability improvement. It is to (1) document the AMG bus air conditioning system modifications designed and implemented by the transit agencies in Los Angeles and Miami; (2) provide contract monitoring for development and revenue of a rotary screw air conditioning compressor. These projects show the potential for solving a number of bus air conditioning reliability problems being experienced nationwide.

PERFORMING AGENCY: Transportation Systems Center, UMTA-MA-06-0120(A)
INVESTIGATOR: Perez, D Tel (617) 494-2490
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: DeMarco, VR (UFM-10) Contract UMTA-MA-06-0120(A)
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Jan. 1983 COMPLETION DATE: Mar. 1984
ACKNOWLEDGMENT: UMTA

11 385066
BRAKE/RETARDER ACTIVITY
This activity provides technical support to UMTA in improving brake and retarder subsystems on public transit buses. Industry contacts (operating, engineering and manufacturing) are maintained, problems identified, and modifications proposed for bus braking subsystems reviewed and evaluated. Involved are retarders, automatic adjusters, bonded linings, disc brakes, improved friction materials, and innovative modifications to GMC/Rockwell 3rd Generation Brake. All have potential for improving performance and reliability, and reducing costs.

PERFORMING AGENCY: Transportation Systems Center, UMTA-MA-06-0120(B)
INVESTIGATOR: Harrington, N Tel (617) 837-2654
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: DeMarco, VR (UFM-10) Contract UMTA-MA-06-0120(B)
STATUS: Active NOTICE DATE: Apr. 1984

START DATE: Jan. 1983 COMPLETION DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

11 385067
PROPULSION ACTIVITY
This activity provides technical assistance to transit agencies in resolving problems with existing transit bus transmissions and to evaluate improved products in revenue service. There will be an update of initial reliability evaluation of the GM V730 transmission to monitor the reliability and performance improvements associated with the UEC version of the V730. An objective assessment of propulsion technology will balance opinions of the supplier and customer.

PERFORMING AGENCY: Transportation Systems Center, UMTA-MA-06-0120(C)
INVESTIGATOR: Seekell, F Tel (617) 494-2024
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: DeMarco, VR (UFM-10) Contract UMTA-MA-06-0120(C)
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Nov. 1982 COMPLETION DATE: Sept. 1984
ACKNOWLEDGMENT: UMTA

11 385071
ADVANCED PROPULSION ALTERNATIVE ANALYSIS
This activity is to establish technology development and demonstration plans in transit bus propulsion for the next 15 years. Participants will be identified. The technology and transit bus services likely to be available in the future are identified. Market and cost studies will be performed to match the best technologies and types of service. Recommendations will be made for appropriate activities for propulsion systems in the near future.

PERFORMING AGENCY: Transportation Systems Center, UMTA-MA-06-0120(K)
INVESTIGATOR: Gunderson, D Tel (617) 494-2654
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Sullivan, PJ (URT-21) Tel (202) 426-8483 Contract UMTA-Ma-06-0120(K)
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: May 1984 COMPLETION DATE: Mar. 1985
TOTAL FUNDS: $406,000
ACKNOWLEDGMENT: UMTA

11 385072
TECHNICAL SUPPORT FOR INDUSTRY ANALYSIS
Projects and approaches for development and demonstration in equipment subsystems will be identified. Studies and analyses will identify transit bus industry problems and potential solutions.

PERFORMING AGENCY: Transportation Systems Center, UMTA-MA-06-0120(L)
INVESTIGATOR: Comparato, T Tel (617) 837-2196
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Lopez, RA (URT-21) Contract UMTA-MA-06-0120(L)
STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

11 385073
TECNICAL SUPPORT FOR EQUIPMENT APPLICATIONS
This project provides technical support to UMTA URT-20 in the area of equipment applications. Critical engineering analysis is made on demonstration projects involving air conditioning, transmissions, engines and braking systems.

PERFORMING AGENCY: Transportation Systems Center, UMTA-MA-06-0120(P)
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: DeMarco, VR (UFM-10) Contract UMTA-MA-06-0120(P)
STATUS: Active NOTICE DATE: Apr. 1984
TOTAL FUNDS: $300,000
ACKNOWLEDGMENT: UMTA

11 385074
TECHNICAL SUPPORT
This activity provides technical support to UMTA bus and paratransit vehicle systems projects. Involved are tests on rotary screw air conditioning compressors, techniques for increasing brake lining life, evaluation of UEC-730 transmission with electronic control, electronic fare boxes and passenger counter mats, fuel economy data for life cycle costs, and value engineering for bus maintenance facilities. Technical experts in a number of critical engineering disciplines support UMTA efforts to provide assistance to transit operating agencies in solving operating problems or reducing operating costs.

PERFORMING AGENCY: Transportation Systems Center, UMTA-MA-06-0120(T)
INVESTIGATOR: Comparato, T Tel (617) 837-2196
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: DeMarco, VR (UFM-10) Contract UMTA-MA-06-0120(T)
STATUS: Active NOTICE DATE: Apr. 1984
TOTAL FUNDS: $4,494,000
ACKNOWLEDGMENT: UMTA

11 385075
DUAL MODE BUS
Operational data will be obtained on the performance of dual propulsion bus in transit service. This will involve test and evaluation of a battery bus with a diesel engine installed which will extend the operation range and allow for some route deviation in transit service. Bus will be used primarily in the Transitway Mall.

PERFORMING AGENCY: Regional Transportation District, UMTA-CO-03-3002
INVESTIGATOR:
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Ridgley, JE (URT-22) Tel (202) 426-4035 Contract UMTA-CO-03-3002
STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

11 385076
TROLLEY BUS CONTROLLER EVALUATION
Comparative performance and potential cost benefits will be established for new AC induction and DC chopper trolley bus controllers compared to existing cam controllers. One month non-revenue service evaluation will be made for each of the three different types of controllers (4 makes to be tested) over typical MUNI routes. Preparation of receptivity study and final report. Little data is available on DC & AC controllers. They are expected to reduce operation and maintenance costs, and to improve electricity consumption by 20%.

PERFORMING AGENCY: San Francisco Public Utilities Commission, UMTA-CA-06-0147
INVESTIGATOR: Johnson, J Tel (415) 558-5660
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Sullivan, PJ (URT-21) Tel (202) 426-8483 Contract UMTA-CA-06-0147
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Nov. 1983 COMPLETION DATE: Sept. 1984
TOTAL FUNDS: $662,000
ACKNOWLEDGMENT: UMTA

11 385077
TECHNICAL SUPPORT
Adequate liaison will be achieved with the transit operating industry to ensure that the UMTA Bus and Paratransit Technology projects will serve the needs of the transit industry. The APTA Bus Technology Liaison board will review UMTA's projects and provide technical guidance and coordination between UMTA and the transit industry. APTA will provide assistance in implementing new and improved technology into the industry.

PERFORMING AGENCY: American Public Transit Association, UMTA-DC-06-0410
INVESTIGATOR: Cihak, F Tel (202) 828-2888
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: DeMarco, VR (UFM-10) Contract UMTA-DC-06-0410

STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

11 385079
PARATRANSIT VEHICLE OPERATOR SUPPORT AND EVALUATION
The objective is to stimulate manufacturers to build vehicles which meet the special requirements of low capacity paratransit service at an affordable price without federal capital assistance. Data from the in service tests in Pittsburgh and Miami will be evaluated for innovative paratransit vehicles.

PERFORMING AGENCY: Dynatrend, Incorporated, UMTA-IT-06-0272
INVESTIGATOR: Connors, J Tel (703) 841-9800
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Ridgley, JE (URT-22) Tel (202) 426-4035 Contract UMTA-IT-06-0272
STATUS: Active NOTICE DATE: Apr. 1984
TOTAL FUNDS: $170,000
ACKNOWLEDGMENT: UMTA

11 385080
STANDARD BUSES, INLINE ENGINE/TRANSMISSION
Ten standard transit buses featuring in-line drivetrain and roof-top air conditioning units will be tested and evaluated to assess cost, performance and passenger accessibility characteristics, determining the effect of the features on fuel efficiency, reliability and costs. The information will be disseminated to the transit industry for future purchasing decisions.

PERFORMING AGENCY: Maryland Department of Transportation, UMTA-MD-06-0105
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Ridgley, JE (URT-22) Tel (202) 426-8483 Contract UMTA-MD-06-0105
STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

11 385081
DATA COLLECTION/ANALYSIS ON V730 TRANSMISSION
Investigate and evaluate techniques to improve reliability of V730 bus transmission with electronic control which improves fuel economy and lowers maintenance costs. Develop and implement life cycle cost and bus component reliability data. Three transit properties with Detroit Diesel Allison transmissions are involved in this program (San Diego, Indianapolis, and Worcester, MA.). Electronic controlled transmission may increase fuel economy by 7-9% and lower maintenance costs. Results from tests by operators will establish performance and cost benefits of electronic transmission. Microcomputers have been installed in three transit agencies, fuel and transmission maintenance data is now being collected.

PERFORMING AGENCY: San Diego Transit Corporation, UMTA-CA-06-0179
INVESTIGATOR: Holley, J Tel (619) 238-0100
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: DeMarco, VR (UFM-10) Contract UMTA-CA-06-0179
STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

11 385082
MIDSIZE BUSES
Thirty midsize buses to be tested feature engine-compartment cooling system, constant-speed-drive air-conditioning compressor, and engine compartment fire extinguisher. The cost, performance and passenger accessibility will be assessed, and the effect of these features on fuel efficiency and reliability will be determined. Information will be disseminated to the transit industry for future purchasing decisions.

PERFORMING AGENCY: Metropolitan Transit Authority of Harris County, UMTA-TX-06-0044
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Ridgley, JE (URT-22) Tel (202) 426-8483 Contract UMTA-TX-06-0044
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: May 1984
ACKNOWLEDGMENT: UMTA

11 385083
ARTICULATED BUSES, 2 AXLE DRIVE
Test and evaluate bus design features including low flat floor, wide doors, 2-axle drive and gearbox retarder on 10 articulated buses to assess cost, performance and passenger accessibility. The tests are to determine effect of features on fuel efficiency, reliability and costs. Data collected will be disseminated to transit industry for future purchasing decisions.

PERFORMING AGENCY: New Orleans Public Service, Incorporated, UMTA-LA-06-0005
INVESTIGATOR: Barns Tel (504) 569-2600
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Ridgley, JE (URT-22) Tel (202) 426-4035 Contract UMTA-LA-06-0005
STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

11 385084
STORED HYDRAULIC ENERGY PROPULSION SYSTEM
Determination of the operational, performance and cost benefits of a prototype hydraulic accumulator energy propulsion system. There will be non-revenue service evaluation of a Danish Stored Hydraulic Energy Propulsion System (SHEPS) in Portland and at two other sites. It is expected that stored hydraulic energy propulsion systems will improve fuel economy by 35% and reduce brake wear. System is to pay for itself in 3 years.

PERFORMING AGENCY: Tri-Met Transportation District of Oregon, UMTA-OR-06-0007
INVESTIGATOR: Newhouse, T
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Sullivan, PJ (URT-21) Tel (202) 426-8483 Contract UMTA-OR-06-0007
STATUS: Active NOTICE DATE: Apr. 1984
TOTAL FUNDS: $300,000
ACKNOWLEDGMENT: UMTA

11 385086
METHANOL CONVERSION—COLD WEATHER SUPPORT
This test will ensure that the engine modification developed by Florida DOT for combustion of methanol in bus engines has application to cold weather sites. Technical assistance will be provided to UMTA through attendance at design review meetings and preparation of technical reports. A significant amount of funding is committed to the Florida project. This effort will ensure that the modification work has application to all buses nationwide.

PERFORMING AGENCY: Lowell Regional Transit Authority, UMTA-MA-06-0136
INVESTIGATOR: Potzka, J Tel (617) 459-0164
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Sullivan, PJ (URT-21) Tel (202) 426-8483 Contract UMTA-MA-06-0136
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Feb. 1983 COMPLETION DATE: May 1985
TOTAL FUNDS: $15,000
ACKNOWLEDGMENT: UMTA

11 385087
INDUCTIVE COUPLING ALTERNATIVE ANALYSIS
Inductive coupling will be considered in determining the most operationally acceptable and cost effective means of providing electric bus service on existing MBTA trolley bus lines. A detailed alternatives analysis will be made of inductively coupled electric propulsion systems as a means of replacing trolley bus service in Cambridge. Analysis may consider battery buses, fuel cells, inductive coupling, flywheels and hybrid vehicles.

PERFORMING AGENCY: Massachusetts Bay Transportation Authority, UMTA-MA-06-0000
INVESTIGATOR: Nasick, M Tel (617) 722-5919
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Sullivan, PJ (URT-21) Tel (202) 426-8483 Contract UMTA-MA-06-0000
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

11 385090
DUAL MODE TROLLEY BUS
To obtain operational data on the performance of dual-propulsion trolley buses in transit service, test and evaluate 20 trolley buses with gasoline engines will be tested. This will permit vehicles to travel off-wire and provide transit service to extended areas.

PERFORMING AGENCY: San Francisco Public Utilities Commission, UMTA-CA-03
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Ridgley, JE (URT-22) Tel (202) 426-4035 Contract UMTA-CA-03
STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

11 385091
DUAL PROPULSION TROLLEY COACH
Establish the operational and cost benefits of utilizing a trolley/diesel bus capable of performing beyond the limits of the overhead wires. Disseminate information to transit agencies for their use in future procurements. This will involve evaluation of an articulated-trolley/diesel bus in revenue service. The diesel engine provides off-wire capability for route extensions. Renault ER-100 will be tested at Seattle.

PERFORMING AGENCY: Municipality of Metropolitan Seattle-METRO, UMTA-WA-06-0020
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Ridgley, JE (URT-22) Tel (202) 426-4035 Contract UMTA-WA-06-0020
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Jan. 1983 COMPLETION DATE: Apr. 1984
TOTAL FUNDS: $228,000
ACKNOWLEDGMENT: UMTA

11 385092
SMALL ACCESSIBLE BUSES
This study is to assist in the evaluation of small buses with innovative features and to disseminate this information to the transit industry. There will be a test and evaluation of bus wheelchair accessibility features to assess cost and performance, and to determine effect of features on fuel efficiency, reliability, and costs. Vehicle must also negotiate 10% grade at 35 miles per hour. 2 small buses to be tested. NBEI project will provide collection of unbiased performance data to be used to determine cost/benefits of equipment. Results obtained can be used by operator to determine extent for new equipment to benefit operation.

PERFORMING AGENCY: South Coast Area Transit, UMTA-CA-06-0190
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Ridgley, JE (URT-22) Tel (202) 426-4035 Contract UMTA-CA-06-0190
STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

11 385094
SMALL BUSES, LOW FLOOR
This activity will involve test, demonstration and evaluation of six small diesel buses with low floors and manually operated wheelchair ramps to determine effect of these features on fuel efficiency, reliability, costs, performance and passenger accessibility. The results will assist grantee in evaluation of buses and information will be disseminated to the transit industry for future purchasing decisions.

PERFORMING AGENCY: Lincoln Transportation System
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Ridgley, JE (URT-22) Tel (202) 426-8483 Contract UMTA-NB-06-0005
STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

11 385095
TECHNICAL SUPPORT
To provide continuing technical support on an as-needed basis to the Office of Bus and Paratransit Systems in implementing its programs by examining, evaluating, analyzing and reporting upon issues identified by the Office.

PERFORMING AGENCY: Battelle Columbus Laboratories, UMTA-IT-06-0219(B)
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Lopez, RA (URT-21) Contract UMTA-IT-06-0219(B)
STATUS: Active NOTICE DATE: Apr. 1984
TOTAL FUNDS: $143,000
ACKNOWLEDGMENT: UMTA

11 385096
TECHNICAL SUPPORT NBEI PROGRAM
To supply technical assistance to assure that new bus equipment is tested and evaluated in a technically competent manner, providing input to transit properties on procurements of New Bus Equipment.

PERFORMING AGENCY: Battelle Columbus Laboratories
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Ridgley, JE (URT-22) Tel (202) 426-4035 Contract UMTA-IT-06-0219(C)
STATUS: Active NOTICE DATE: Apr. 1984
TOTAL FUNDS: $228,000
ACKNOWLEDGMENT: UMTA

11 385097
APTA—O & M DATA COLLECTION
This activity is to identify problem areas for investigation by monitoring transit operating agencies' experiences with transit buses to identify trouble-prone subsystems and components requiring additional study. Components which require excessive or costly maintenance and repair should be targeted for URT-20 research efforts.

PERFORMING AGENCY: American Public Transit Association, UMTA-DC-06-0364
INVESTIGATOR: Jones, P Tel (202) 828-2880
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Lopez, RA (URT-21) Contract UMTA-DC-06-0364
STATUS: Active NOTICE DATE: Apr. 1984
TOTAL FUNDS: $50,000
ACKNOWLEDGMENT: UMTA

11 385098
TECHNICAL SUPPORT FOR BUS & PARATRANSIT SYSTEMS
This activity will provide technical support for the Office of Bus & Paratransit Systems by conducting studies and analyses of bus technology, including test and evaluation of components, subsystems and vehicles. The contractor will also store and safeguard equipment and vehicles, develop test plans and procedures, document and disseminate test results, and conduct studies as required.
Performing agency to be selected.

SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Lopez, RA (URT-21) Contract UMTA-IT-06-0322(T)
STATUS: Active NOTICE DATE: Apr. 1984
TOTAL FUNDS: $1,255,000
ACKNOWLEDGMENT: UMTA

11 385100
TECHNOLOGY BRIEFS
To provide the transit industry with information on URT-20 technical assistance activities, technical briefs will be issued to a broad audience to disseminate technical information.

PERFORMING AGENCY: Public Technology, Incorporated, UMTA-DC-06-0444
INVESTIGATOR: Page, E Tel (202) 626-2467
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Lopez, RA (URT-21) Contract UMTA-DC-06-0444
STATUS: Active NOTICE DATE: Apr. 1984
TOTAL FUNDS: $274,500
ACKNOWLEDGMENT: UMTA

11 385101
SEATTLE GUIDED BUS
Establish the effectiveness of fixed guideway technology in reducing busways as operationally acceptable means of providing high density transit services. Evaluate competitive fixed guideway technologies. Make a preliminary design of a test guideway system. Select site and prepare an environmental assessment for revenue service evaluation. Busways that are constructed with means for vehicle lateral guidance built into them are narrower than those that do not. Studies performed in Germany indicate that up to 30% can be saved in the construction costs of tunnels.

PERFORMING AGENCY: Municipality of Metropolitan Seattle-METRO, UMTA-WA-06-0023
INVESTIGATOR: Montgelas, R Tel (206) 447-6714
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: DeMarco, Vr (UFM-10) Contract UMTA-WA-06-0023
STATUS: Active NOTICE DATE: Apr. 1984
TOTAL FUNDS: $130,000

11 385102
PARATRANSIT VEHICLE TEST AND EVALUATION
To obtain operational data and other information on use of innovative vehicles operated in paratransit service, 10 such units will be purchased, tested and evaluated by private operators with the results disseminated to operators and equipment manufacturers. This funding will reduce the initial cost for transportation providers in testing innovative, improved paratransit vehicles.

PERFORMING AGENCY: Port Authority of Allegheny County, UMTA-PA-06-0064
INVESTIGATOR: Menniti Tel (412) 237-7335
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Ridgley, JE (URT-22) Tel (202) 426-4035 Contract UMTA-PA-06-0064
STATUS: Active NOTICE DATE: Apr. 1984
TOTAL FUNDS: $682,000
ACKNOWLEDGMENT: UMTA

11 385103
PARATRANSIT VEHICLE TEST AND EVALUATION
To obtain operational data and other information on use of innovative vehicles operated in paratransit service, 10 such units will be purchased, tested and evaluated by private operators with the results disseminated to operators and equipment manufacturers. This funding will reduce the initial cost for transportation providers in testing innovative, improved paratransit vehicles.

PERFORMING AGENCY: Florida Department of Transportation, UMTA-FL-06-0029
INVESTIGATOR: Duffy Tel (904) 488-7390
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Ridgley, JE (URT-22) Tel (202) 426-4035 Contract UMTA-FL-06-0029
STATUS: Active NOTICE DATE: Apr. 1984
TOTAL FUNDS: $500,000
ACKNOWLEDGMENT: UMTA

11 385107
FUEL CELL FEASIBILITY STUDY—TECHNICAL STUDY
This activity is to establish the technical, operational and cost feasibility of fuel cells for transit bus propulsion. There will be a market study and preparation of a plan for demonstration of fuel-cell powered buses. Fuel cells are accepted environmentally. The study will establish their feasibility in comparison with other technologies.

PERFORMING AGENCY: Department of Energy, UMTA-NM-06-0004
INVESTIGATOR: Maestas, G Tel (505) 667-1372
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Sullivan, PJ (URT-21) Tel (202) 426-8483 Contract UMTA-NM-06-0004
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Apr. 1984 COMPLETION DATE: Apr. 1985
TOTAL FUNDS: $290,000
ACKNOWLEDGMENT: UMTA

11 385108
DOUBLE DECKER BUS EVALUATION—3(A)(1)(C)
This activity will test and evaluate a 4-axle double decker bus to obtain operational data on its performance in transit service. Information can be used by transit properties for future vehicle purchasing decisions.

PERFORMING AGENCY: Denver Regional Transportation District, UMTA-CO-03-3001
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Ridgley, JE (URT-22) Tel (202) 426-8483 Contract UMTA-CO-03-3001
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Apr. 1984 COMPLETION DATE: June 1985
ACKNOWLEDGMENT: UMTA

11 385109
ROTARY SCREW COMPRESSOR
This activity will test and evaluate rotary screw air conditioning compressors as replacements for the original reciprocating units. Air conditioning on WMATA buses has proven chronically unreliable and costly to maintain. The rotary units offer a promise of lower costs, easier maintenance, increased efficiency and greater reliability.

PERFORMING AGENCY: Washington Metropolitan Area Transit Authority, UMTA-DC-06-0469
INVESTIGATOR: Codding, R Tel (202) 637-1209
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Izumi, G (URT-22) Tel (202) 426-8483 Contract UMTA-DC-06-0469
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1983 COMPLETION DATE: Sept. 1984
TOTAL FUNDS: $40,000
ACKNOWLEDGMENT: UMTA

11 385110
ROTARY SCREW COMPRESSOR
This activity will test and evaluate rotary screw air conditioning compressors as replacements for the original reciprocating units. Air conditioning on SEPTA buses has proven chronically unreliable and costly to maintain. The rotary unit offers a promise of lower costs, easier maintenance, increased efficiency and greater reliability.

PERFORMING AGENCY: Southeastern Pennsylvania Transportation Authority, UMTA-PA-06-0086
INVESTIGATOR: Verneyc Tel (215) 456-4659
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Izumi, G (URT-22) Tel (202) 426-8483 Contract UMTA-PA-06-0086
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Apr. 1984 COMPLETION DATE: Nov. 1984
TOTAL FUNDS: $60,000
ACKNOWLEDGMENT: UMTA

11 390263
TECHNICAL ASSISTANCE IN ELECTRIC PROPULSION SYSTEMS
The objective of this four year project is to examine technical, operating, maintenance and cost issues related to electric vehicles. Technologies to be considered include: inductive coupling, battery buses, and methanol-powered to the transit industry by identifying hardware, maintenance techniques, operational schemes, and infrastructure improvements.

PERFORMING AGENCY: Lea, Elliott and McGean Company, Incorporated, UMTA-IT-06-0314
INVESTIGATOR: Dunoye, D Tel (703) 471-4007
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Sullivan, P (URT-20) Tel (202) 426-8483 Contract UMTA-IT-06-0314
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: Oct. 1984 COMPLETION DATE: Oct. 1988
TOTAL FUNDS: $123,000
ACKNOWLEDGMENT: UMTA

11 390264

DETERMINATION OF ROAD STRESS FACTORS FOR BUSES

Local officials are concerned that overweight transit buses may be doing severe damage to highway and street pavements. The objective of this project is to investigate the possible effect that various transit buses have on standard pavements. Dynamic characteristics of conventional buses and physical properties of standard highway pavements will be modeled. Performance of conventional buses over pavements and calculation of road stress factors for various suspension systems, axle systems, tire types and pressures and axle configurations will be simulated. The verification

PERFORMING AGENCY: Massachusetts Institute of Technology, UMTA-DC-06-0504
INVESTIGATOR: Hedrick, K Tel (617) 253-6257
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Sullivan, P (URT-20) Tel (202) 426-8483 Contract UMTA-DC-06-0504
STATUS: Active NOTICE DATE: Oct. 1984
TOTAL FUNDS: $45,800
ACKNOWLEDGMENT: UMTA

12 372975
BUS COMMUNICATIONS SYSTEMS
Prior syntheses covered motorist aid systems, telecommunications systems for highway administration, and the radio spectrum frequency. The proposed synthesis would include related updated portions of all of the above, plus the only available area of the frequency spectrum (800-900 Mhz) where large number of channels are available on a private channel basis for mass transit communications. The synthesis would cover a survey of at least ten transit properties for detailed information on their voice data communication system-the equipment, personnel training, design, cost, source of funds, installation, maintenance, problems, effectiveness, benefits, and unique features or applications. Additionally, the manufacturers would be surveyed to determine what systems are presently available and their cost. Reports exist on other aspects of transit management and communication system peripherals. There are no reports on what communication systems have been installed on transit properties and what communication systems and their alternative features are presently available.

PERFORMING AGENCY: Mitre Corporation
INVESTIGATOR: Klopfenstein, RC Tel (703) 883-6824
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Copas, T Tel (202) 334-3242 NCTRP 60-1, TS-7
STATUS: Active NOTICE DATE: May 1984
START DATE: Nov. 1983 COMPLETION DATE: 1985
TOTAL FUNDS: $45,000
ACKNOWLEDGMENT: National Cooperative Transit Res & Devel Program

12 384953
AUTOMATIC PASSENGER COUNTERS AND BUS LOCATION
To increase reliability and reduce operating and maintenance costs of obtaining automated passenger counter (APC) data, this activity will install a digital data link between APC system and bus radio so that daily patronage data may be transmitted to the bus depot. A portable data storage device will be tested. Also to be investigated are sign posts and odometer readings as a basis for bus location. The patronage data is needed for UMTA Section 15 reporting and for proper scheduling.

PERFORMING AGENCY: METRO/Seattle, UMTA-WA-06-0025
INVESTIGATOR: Friedman, T Tel (206) 447-6399
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Izumi, G (URT-22) Tel (202) 426-8483

STATUS: Active NOTICE DATE: Apr. 1984
START DATE: 1983 COMPLETION DATE: Oct. 1985
ACKNOWLEDGMENT: UMTA

12 385032
PHILADELPHIA SIGNAL PREEMPTION
This demonstration will apply traffic signal preemption and programming technology to a surface electric trolleybus route, Route 66, operating along Frankford Avenue in northeastern Philadelphia. The techniques will be applied to both local and express service. Also included in this demonstration are 1) extension of the express zone and installation of additional power wires to permit simultaneous bi-directional express operation; and 2) circulation improvements at the southern terminus of the route. The project began October 1979 and was originally scheduled to end in October 1983. Due to delays in start-up of service, the demonstration period has been extended.

PERFORMING AGENCY: Multisystems, Incorporated, UMTA-MA-06-0049 UMTA-PA-06-0053; Southeastern Pennsylvania Transportation Authority
INVESTIGATOR: Englisher, L Tel (617) 864-5810
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Goodman, JM (URT-31) Tel (202) 426-4984 Contract UMTA-PA-06-0053
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1979 COMPLETION DATE: July 1984
TOTAL FUNDS: $1,028,080
ACKNOWLEDGMENT: UMTA

13 349145
DETECTION OF LOW-LEVEL FAULT CURRENTS ON RAIL TRANSIT SYSTEMS
The objective of this research is to identify and evaluate methods and equipment for detection of low-level electrical faults on direct-current rail transit systems. Although devices currently in use can adequately detect and respond to overload fault currents, detection of less than overload fault currents is difficult because the fault current characteristics tend to resemble those normally associated with train or power switching operations. Surveys will be conducted world-wide of rail transit systems and electrical industry organizations and suppliers to identify methods and equipment currently in use and potential solutions. The final report will include a detailed evaluation of the performance and economics of available methods and equipment.

Report in preparation.

PERFORMING AGENCY: Main (Charles T), Incorporated
INVESTIGATOR: Sagar, NS Tel (617) 262-3200
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Smith, HA Tel (202) 334-3224
NCTRP 43-1
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Jan. 1983 COMPLETION DATE: Sept. 1984
TOTAL FUNDS: $99,953
ACKNOWLEDGMENT: National Cooperative Transit Res and Dev Program

13 362089
AC PROPULSION SYSTEM DEVELOPMENT PROJECT, PHASE I
An alternating-current propulsion system for on-board installation on heavy rail transit cars is to be developed and laboratory tested. The project is supported by New York City Transit Authority which serves as the host property.

Westinghouse Electric Company is the co-manufacturer working with Garrett.

PERFORMING AGENCY: Garrett Corporation
SPONSORING AGENCY: Urban Mass Transportation Administration

STATUS: Active NOTICE DATE: Dec. 1982
START DATE: 1982 COMPLETION DATE: 1983

13 385024
MAINTENANCE/DIAGNOSTIC TRAINLINE MULTIPLEXING SYSTEM
Objectives: Multiplex trainline signals, record data on out-of-tolerance equipment in solid-state, microcontrolled memory, and reduce electrical connections on vehicles couplers. Scope: Project results will improve diagnostics and maintenance planning. Will develop criteria to design prototype systems for revenue test and evaluation. Potentially can benefit many other transit systems.

PERFORMING AGENCY: Washington Metropolitan Area Transit Authority, DC-06-0443
INVESTIGATOR: Vogel, E Tel (202) 637-1107 Scarbrough, R Tel (202) 637-1105
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Sing, FL (URT-12) Tel (202) 426-9264 Contract UMTA-DC-06-0443
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: June 1983 COMPLETION DATE: Aug. 1984
TOTAL FUNDS: $190,000
ACKNOWLEDGMENT: UMTA

13 385039
AC PROPULSION PROJECT
Life cycle cost studies of AC propulsion compared to conventional DC propulsion systems.
REFERENCES:
NYCTA R44 Car, Cam Controlled Propusion System, Cost and Reliability Data Base, Berger, KW, Dec. 1983

PERFORMING AGENCY: Lea (ND) and Associates, Incorporated, IT-06-0253
INVESTIGATOR: Berger, K Tel (703) 471-4007
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Hoyler, RC (URT-12) Tel (202) 426-0090 Contract 60-82-C-72143
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Mar. 1982 COMPLETION DATE: Jan. 1986
TOTAL FUNDS: $291,000
ACKNOWLEDGMENT: UMTA

13 385051
AC PROPULSION PROJECT
Design, build and test ac propulsion for urban rail transit vehicle. Install on two NYCTA R-44 vehicles and test at Pueblo Test Track and on NYCTA. Complete reliability, maintainability, safety, life cycle cost and signal system compatibility studies. Submit reports at completion of program. Objective is to demonstrate features of ac propulsion to US transit industry.

PERFORMING AGENCY: Garrett Airesearch Corporation
INVESTIGATOR: Kalman, G Tel (213) 512-4087
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Kangas, RD (URT-12) Tel (202) 426-2896 Contract DTUM60-82-C-71144
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Mar. 1982 COMPLETION DATE: Sept. 1986
TOTAL FUNDS: $4,534
ACKNOWLEDGMENT: UMTA

13 385056
AC PROPULSION PROJECT
Design, build and test ac propulsion system for urban rail transit vehicle. Complete laboratory system tests, reliability, maintainability and sagety studies, and life cycle cost studies. Conduct investigation of compatibility with signal and control systems. Submit design and study reports to UMTA at completion of program.

PERFORMING AGENCY: Westinghouse Electric Corporation
INVESTIGATOR: Luley, RP Tel (412) 464-4836
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Kangas, RD (URT-12) Tel (202) 426-2896 Contract DTUM60-82-C-71145
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Mar. 1983 COMPLETION DATE: Sept. 1984
ACKNOWLEDGMENT: UMTA

13 389724
TEST AND EVALUATION OF A MODULAR AIR CONDITIONING SYSTEM IN RAIL TRANSIT CARS
The objective of this project is to test and evaluate a laboratory prototype, alternating current, modular air conditioning system for eventual retrofit on two New York City Transit Authority (NYCTA) rapid transit cars. The project is the first phase of a two-phase project to test and evaluate a new air conditioning system utilizing commercially available equipment designed to be removed from or installed into a railcar in less than one hour. The first phase involves testing and evaluating a laboratory prototype. If the first phase is successful, the second phase will consist of retrofit and revenue service testing on two cars. A Phase 1 report will be published, including documentation needed for the equipment retrofit and test under Phase 2.

PERFORMING AGENCY: New York City Transit Authority, UMTA-NY-06-0119
INVESTIGATOR: Cohen, I Tel (212) 330-3426
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Mora, J (URT-10) Tel (202) 426-0090 Contract UMTA-NY-06-0119
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: Sept. 1984 COMPLETION DATE: Sept. 1985
TOTAL FUNDS: $300,690
ACKNOWLEDGMENT: UMTA

13 390093
RAIL TRANSIT DESIGN DIGEST
To assist the transit industry in the planning, design, and construction of urban rail transit systems, UMTA has initiated the development of the Rail Transit Design Digest (RTDD). The objective of the project is to compile from existing documentation, methods, and techniques a document which presents the "best practices" for the cost-effective design and construction

of an urban rail transit system. The basic outline for the RTDD has been developed by APTA through the establishment of a steering committee and six task forces which represent the six basic elements of urban rail systems: railcar equipment; operations; power, signals and communications; construction; safety; and ways and structures. This project will result in a single document titled Rail Transit Design Digest for Urban Rail Transit Systems.

PERFORMING AGENCY: GY Enterprises, Incorporated, UMTA-PA-06-0088-01
INVESTIGATOR: Yimesghen, G Tel (215) 545-2602
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Evoy, H (URT-10) Tel (202) 426-9264 Contract UMTA-PA-06-0088-01
STATUS: Active NOTICE DATE: Oct. 1984
TOTAL FUNDS: $320,000
ACKNOWLEDGMENT: UMTA

14 372979
SINGLE CABLE COMMUNICATIONS TECHNOLOGY FOR RAIL-TRANSIT SYSTEMS

The typical rapid transit system, especially one which has significant underground right-of-way, uses a large number of cables for the transmission of voice, data, and video information. The objective of this research is to develop recommended system-design parameters which permit utilization of a single, multi-purpose wideband coaxial cable to support all rapid transit communications requirements including: voice, data, and video, as well as VHF or UHF-FM two-way radio signals. To accomplish the objective of this research, the following tasks are proposed: Task 1-Perform an indepth survey of US rapid-transit systems under the auspices of APTA to determine how the problem is handled on each system. Concurrently, survey the electronic industry for developments which are potential solutions. Review the work of other industries which may be relevant to the problem and its solution. Task 2-Using information obtained in Task 1, identify the electrical-system parameters of the proposed research program. Generate a range of electrical characteristics that will define the scope of the single cable system and several distinct network configurations. Task 3-establish functional criteria for a single-cable system. Task 4-Distribute the criteria derived in Task 3 to appropriate organizations to request their response for participation in the development of technical or operational solutions to the problem. Select one or two for further physical development. Task 5-Evaluate the work underway by the chosen developers. Monitor the direction of research and development against the specific functional goals of the program as developed in Task 3. At suitable times, field test prototype systems or equipment on existing transit properties to assure adherence to program objectives. Task 6-Prepare a final report describing the research and its results. Describe the single cable system in sufficient detail so that further refinement, enhancements, and packaging of components could be done by others.

Contract not yet awarded.

PERFORMING AGENCY: Polytechnic Institute of New York
INVESTIGATOR: Cassara, FA Tel (516) 454-5075
SPONSORING AGENCY: Urban Mass Transportation Administration NCTRP 46-1
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: May 1984 COMPLETION DATE: July 1985
TOTAL FUNDS: $150,000
ACKNOWLEDGMENT: National Cooperative Transit Res & Devel Program

14 385008
ELECTOMAGNETIC INTERFERENCE (EMI) MEASURING EQUIPMENT FOR AGRT PROGRAM

The objective of this program is to provide specialized EMI test instrumentation in a mobile van for use in EMI testing at different geographical locations. Purchase and modify a van so it is capable of safely transporting the sensitive test instrumentation to various locations; purchase specified EMI test equipment and install in the van; install a power distribution system in the van for the test equipment and provide and install other auxiliary equipment in the van; and test the finish van to ensure the integrity of the vehicle and the instrumentation.

PERFORMING AGENCY: Mobility Systems and Equipment Company, UMTA-CA-06-0186
INVESTIGATOR: Adams, G Tel (213) 641-3606
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Sing, FL (URT-12) Tel (202) 426-0090 Contract DTUM60-83-C-71220
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Oct. 1983
ACKNOWLEDGMENT: UMTA

15 138532
CONSTRUCTION TECHNOLOGY
The results of the Urban Rail Construction Technology program will assist policy makers and the transit industry in evaluating construction alternatives which show areas of cost savings, safety enhancement and increased performance and reliability. The primary goal of the program is to bring about significant reduction in construction cost of urban rail transit system facilities by implementing new technologies and by improving design, construction and contracting practices in the urban rail transit construction industry. The four major thrusts of the program are underground, at-grade track and wayside, elevated structures and contracting and management.

PERFORMING AGENCY: Urban Mass Transportation Administration; Transportation Systems Center
SPONSORING AGENCY: Urban Mass Transportation Administration

STATUS: Active NOTICE DATE: Aug. 1980
START DATE: 1973 COMPLETION DATE: 1985
TOTAL FUNDS: $30,000,000
ACKNOWLEDGMENT: UMTA

15 362087
MAINTENANCE & REHABILITATION NEEDS OF URBAN TRANSIT ELEVATED STRUCTURES
The 175 miles of elevated transit structures in the U.S. are the object of a research effort addressing maintenance and rehabilitation needs. The project will also look at inspection procedures for elevated structures, stations and bridges. Current technologies, and procedures, costs and problem areas involved will also be considered.

PERFORMING AGENCY: Transportation Systems Center
SPONSORING AGENCY: Urban Mass Transportation Administration

STATUS: Active NOTICE DATE: Dec. 1982
START DATE: 1982

15 362088
EVALUATION OF THE COLOGNE EGG
A resilient rail fastener known as the Cologne Egg will be evaluated. The fastener, first tested on the Cologne subway system, features an elliptical elastomer collar bonded between two steel members and is reported to reduce groundborne vibrations effectively and economically. Fasteners are installed on a section of track on the Orange Line subway. Vibration damping and maintainability characteristics will be compared with those of conventional fasteners under in-service conditions for an extended period.

MBTA will be assisted in planning the project by Kaiser Engineers, Fay Spofford and Thorndike, Inc., a joint venture group in Boston responsible for the Southwest Corridor Project. Acoustical design of the tests will be performed by Bolt Beranek and Newman, Inc., of Cambridge, Ma.

PERFORMING AGENCY: Massachusetts Bay Transportation Authority
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Dining, M Transportation Systems Center Tel (617) 494-2119

STATUS: Active NOTICE DATE: Dec. 1982
START DATE: 1982 COMPLETION DATE: 1983
TOTAL FUNDS: $250,000

15 385027
NONDESTRUCTIVE TESTING
The project objective is to develop a nondestructive testing device to be used in the early identification of potential tunnel liner cracks or defects. Several older transit authorities experience water intrusion problems in their tunnels as liner cracks with no warning. This technique or device will permit the forecasting of such problem areas, consequently allowing maintenance crews and rehabilitation plans to be scheduled in an orderly and cost-effective manner.

PERFORMING AGENCY: New York City Transit Authority, UMTA-NY-06-0078; Port Authority Trans-Hudson Corporation
INVESTIGATOR: Haid, W Tel (212) 466-7672
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Evoy, HD (URT-11) Tel (202) 426-9264 Contract UMTA-NY-06-0078
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1979 COMPLETION DATE: Jan. 1986
TOTAL FUNDS: $800,000
ACKNOWLEDGMENT: UMTA

15 385038
ENERGY CONSERVATION POTENTIAL OF SUBWAY STRUCTURES
Objective: Study feasibility and economics of using unique thermal characteristics of subway tunnel air to reduce operating costs of air-assisted heat pumps located in buildings adjacent to tunnels. Scope: Perform modelling, data acquisition/reduction/evaluation to build prototype test system, fabricate system, and test and evaluate. Document findings.

Investigators were from Levinson Zapravskis Associates.

PERFORMING AGENCY: Philadelphia, City of, Pennsylvania, PA-06-0069
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Sing, FL (URT-12) Tel (202) 426-9264 Contract PA-06-0069
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Mar. 1984 COMPLETION DATE: Mar. 1986
TOTAL FUNDS: $231,000
ACKNOWLEDGMENT: UMTA

15 389726
UMTA CONSTRUCTION MANAGEMENT GUIDELINES AND TRANING
The objective of this project is to develop and prepare UMTA guidelines on recommended construction management practices. These guidelines will enable UMTA grantees to conduct construction related activities in a more effective and responsible manner. The project will also provide for a training program of workshops and seminars to be conducted for UMTA and grantee personnel. Guidelines will be based on a review of current state-of-the-art industry practices in the management of construction activities. The documents published will be widely disseminated for direct use. Emphasis will be placed on qualaity assurance and quality control activities, and on a uniform approach to construction related project activities. Guidelines will also serve as a basis for a series of construction management tranining workshops.

PERFORMING AGENCY: Madison-Madison, UMTA-IT-06-0325
INVESTIGATOR: Madison, B Tel (216) 861-8195
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Evoy, H (URT-10) Tel (202) 426-9264 Contract UMTA-IT-06-0325
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: 1984 COMPLETION DATE: 1986
TOTAL FUNDS: $550,000
ACKNOWLEDGMENT: UMTA

15 389733
ESTIMATING THE CONSTRUCTION PHASE IMPACTS OF UMTA FINANCED MASS TRANSIT PROJECTS
Econometric modeling and sampling survey techniques will estimate the impacts of construction of 4 rapid transit systems at a local level. The four systems are Metropolitan Atlanta Rapid Transit Authority, Bay Area Rapid Transit, Washington Metro and Massachusetts Bay Transportation Authority Orange Line Relocation. Procedures include: (1) Review of literature pertaining to metropolitan area econometric models and transportation assignment models; (2) Collect data on selected economic and physical impact variables; (3) Interview state and local officials and contractors involved with the Boston Orange Line Relocation (4) Specification and estimation for an econometric model; (5) Estimate time and money costs of construction-related traffic delays; and (6) Outline a general methodology for simulating economic and physical impacts of future UMTA-financed rapid transit construction projects.

PERFORMING AGENCY: Benedict College
INVESTIGATOR: Mahdi, SI Tel (404) 752-6422
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Enty, FE (URT-32) Tel (202) 426-9274 Contract SC-11-0004
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: 1984
ACKNOWLEDGMENT: UMTA

16 385009
SURVEY BUS FACILITY PROBLEMS
The objective of this project is to improve fixed bus facility design, operation, and maintenance through the examination and resolution of selected problems. A survey of 8 transit systems will be conducted to determine existing problems in bus facility design, operation, or maintenance. Resulting information can provide transit systems with information that can be used in the design of new facilities and modifications of facilities to improve maintenance and reduce costs.

PERFORMING AGENCY: Comprehensive Technologies International, Inc, UMTA-VA-06-0108
INVESTIGATOR: Theobald, P Tel (703) 352-4191
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Asatoorian, SD (URT-21) Tel (202) 426-8483 Contract UMTA-VA-06-0108
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1983 COMPLETION DATE: May 1984
TOTAL FUNDS: $80,000
ACKNOWLEDGMENT: UMTA

16 385010
BUS MAINTENANCE FACILITY COST DATA BASE AND FUNCTIONAL LAYOUT
This project has two specific objectives: 1) develop and implement a bus maintenance facility cost database from information obtained from facilities constructed under the UMTA program; cost information can be used by transit authorities in the planning and costing of new facilities and by UMTA personnel in reviewing applications for capital grants; and 2) conduct a study to develop guidelines for bus maintenance facility functional layout which will define optimum equipment arrangements for improving maintenance efficiency and reducing costs. Results, in form of a report will be widely disseminated to transit industry as well as to architectural and engineering societies to assure that future bus facilities are designed from a functional standpoint.

PERFORMING AGENCY: Comprehensive Technologies International, Inc, UMTA-VA-06-0116
INVESTIGATOR: Theobald, P Tel (703) 352-4191
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Asatoorian, SD (URT-21) Tel (202) 426-8483 Contract UMTA-VA-06-0116
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: June 1984 COMPLETION DATE: Dec. 1985
TOTAL FUNDS: $200,000
ACKNOWLEDGMENT: UMTA

16 385011
VALUE ENGINEERING
The objective of this project is to establish and demonstrate Value Engineering as a valuable tool in the design of functional and cost effective bus facilities. Value Engineering is a technique used in facility designs in industries not yet applied to the transit industry. Application of this established technique to bus maintenance facilities promises to cut millions of dollars in life cycle costing.

PERFORMING AGENCY: Washington Metropolitan Area Transit Authority, UMTA-DC-06-0461
INVESTIGATOR: Monoukian, P Tel (202) 637-1340
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Asatoorian, SD (URT-21) Tel (202) 426-8483 Contract UMTA-DC-06-0461
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: May 1984 COMPLETION DATE: Jan. 1985
TOTAL FUNDS: $45,000
ACKNOWLEDGMENT: UMTA

16 385015
PEER REVIEW APPLICATIONS STUDY
The objective of this project is to establish peer review as an accepted procedure in the design review of bus maintenance facilities. The study will assess the expected benefits and cost of the peer review process and propose an implementation plan for its application in the planning and design of bus maintenance facilities. Application of the peer review process in rail projects has saved millions of dollars; application of this technique to bus facilities can save substantial amounts of money.

PERFORMING AGENCY: ARAWAK Consulting Corporation, UMTA-VA-06-0110
INVESTIGATOR: Reynol, L Tel (703) 243-0300
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Asatoorian, SD (URT-21) Tel (202) 426-8483 Contract UMTA-VA-06-0110
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Oct. 1983 COMPLETION DATE: May 1984
TOTAL FUNDS: $59,000
ACKNOWLEDGMENT: UMTA

16 385016
INNOVATIVE BUS LIFT EQUIPMENT
The objective of this project is to evaluate the performance and cost benefits of an innovative bus lift system. The study will test and evaluate two innovative bus lifts capable of accommodating various size buses, and collect performance and life cycle cost data to determine cost benefits of the lifts over conventional bus lifts. the rationale is that innovative lifts can accept vehicles varying in length up to 60 feet and width from 48 to 102 inches without special adaptors. The lifts will reduce maintenance time and improve safety.

PERFORMING AGENCY: Central Ohio Transit Authority, UMTA-OH-06-0045
INVESTIGATOR: Fraser, S Tel (614) 275-5888
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Izumi, G (URT-20) Tel (202) 426-8483 Contract UMTA-OH-06-0045
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Oct. 1983 COMPLETION DATE: Mar. 1985
TOTAL FUNDS: $80,000
ACKNOWLEDGMENT: UMTA

17 372987
HOMOPOLAR LINEAR SYNCHRONOUS MOTORS (HLSM) INVESTIGATION
Objective: to carry out an assessment of the HLSM as a potential alternative drive to the linear induction motor (LIM) for an intermediate capacity transit system (ICTS) scope: 1) conduct comprehensive review of the state-of-knowledge of HLSM's and assess analytic approaches; 2) define a design specification for the HLSM based on ICTS LIM propulsion requirements; 3) develop analytical techniques to assess motor design performance; 4) conduct design study and evaluate performance achievements of proposed design; Project Summary: 5) evaluate control schemes to optimize performance; 6) make preliminary design of test motor; 7) investigate manufacturing capabilities and estimate cost of motor; and 8) conduct an HLSM system evaluation as a replacement to the LIM system in the ICTS application.

PERFORMING AGENCY: Canadian Institute of Guided Ground Transport, PRO-096
INVESTIGATOR: Eastham, AR Tel (613) 547-5777 Dawson, DG Atherton, D Slemon, G
SPONSORING AGENCY: Transportation Development Center Contract OSD82-00047
STATUS: Active NOTICE DATE: May 1983
START DATE: June 1982 COMPLETION DATE: Sept. 1983
TOTAL FUNDS: $106,355
ACKNOWLEDGMENT: CIGGT

17 384966
RESEARCH AND TRAINING
To determine the visual aesthetic impacts of AGT guideways; to analyze electric power and energy requirements and real time power measurements for AGT systems; to investigate the potential for the integration of AGT systems with other transportation modes; to study the optimization of AGT route alignment in determining modal split; to conduct a feasibility study of the transfer of total energy requirements for AGT vehicles at each station; and to identify and evaluate the methods and impacts of designing and implementing an integrated fare collection and pricing system for transportation agencies. In addition to the 6 research projects designed to meet program objectives, a series of seminars will be initiated and held four times a year. It is intended that recognized leaders from industry, government, city, state and federal agencies will be invited to speak on the activities which constitute the research portion of the program.

PERFORMING AGENCY: West Virginia University
INVESTIGATOR: Elias, S Tel (304) 293-4550
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Meade, JZ (URT-32) Tel (202) 426-0082 Grant WV-11-0003-01
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1980
TOTAL FUNDS: $350,000
ACKNOWLEDGMENT: UMTA

17 385035
INTERATED MAGNETIC SUSPENSION AND PROPULSION DEVELOPMENT
Development and testing of critical technology to provide both magnetic suspensions and linear induction motor propulsion in a single integrated system. Hardware includes solid state power conditioning unit, linear induction motor primary and secondary gap sensors, and laboratory test stand. Repeatable levitation results have been achieved during 1983, and combined levitation and linear motion are expected in 1984.

PERFORMING AGENCY: Boeing Aerospace Company, WA-06-0014
INVESTIGATOR: Gilliland, R Tel (206) 251-4613
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Hoyler, RC (URT-12) Tel (202) 426-0090 Contract 60-80-C-71009
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1979 COMPLETION DATE: Sept. 1985
TOTAL FUNDS: $3,939,000
ACKNOWLEDGMENT: UMTA

17 385036
PHASE IIB AGRT DEVELOPMENT
Development and testing of high performance command and control system to achieve safe operation of small vehicles at 3 second headways. Includes redundant microprocessor-based moving block control system, and inductive two-way vehicle-wayside voice and data communications system. Test track under construction to demonstrate control system on small air-cushion vehicles.

PERFORMING AGENCY: Otis Elevator Company, CO-06-0011
INVESTIGATOR: Haines, G Tel (303) 343-8780
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Hoyler, RC (URT-12) Tel (202) 426-0090 Contract UT-80042
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1979 COMPLETION DATE: Sept. 1985
TOTAL FUNDS: $25,248,000
ACKNOWLEDGMENT: UMTA

17 385037
PHASE 11B AGRT DEVELOPMENT
Development and testing of high performance command and control system to achieve safe operation of small vehicles at 3 second headways. Includes redundant microprocessor-based moving block control and safety system, inductive two-way vehicle-wayside data communications system, and fiber optic noise-immune interfaces. Testing to be carried out on rail vehicles at DOT Pueblo Test Facility.

PERFORMING AGENCY: Boeing Aerospace Company, WA-06-0011
INVESTIGATOR: Christenson, D Tel (206) 251-4619
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Hoyler, RC (URT-12) Tel (202) 426-0090 Contract UT-80041
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1979 COMPLETION DATE: Sept. 1985
TOTAL FUNDS: $28,082,000
ACKNOWLEDGMENT: UMTA

17 389727
ADVANCED GROUP RAPID TRANSIT (AGRT) ON-SITE PROGRAM MONITORING
The objective of this project is to provide onsite support and expertise in the areas of program management and cost control to the Government regarding the monitoring of progress of the two primary Advanced Group Rapid Transit (AGRT) contractors: Otis Elevator Company (Denver, CO) and Boeing Aerospace Company (Seattle, WA). The project also includes a task order provision for independent studies on automated guideway transit. This project will ensure proper documentation of technical progress to funds expended, as well as assistance in reviewing deliverables.

PERFORMING AGENCY: Advent (Jordan) and Associates, UMTA-WA-0670024-01
INVESTIGATOR: Antris, W Tel (206) 682-8794
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Kangas, RD (URT-12) Tel (202) 426-0090 Contract UMTA-WA-06-0024-01
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: Sept. 1984 COMPLETION DATE: Sept. 1985
TOTAL FUNDS: $190,000
ACKNOWLEDGMENT: UMTA

21 372974
EXTRABOARD MANAGEMENT: PROCEDURES AND TOOLS
When a open run is created, either through operator illness, special assignment, or leave, the dispatcher has several choices. He can leave the run open, fill it with an extraboard or part-time person, or fill is with an operator working overtime on a regular day off. The above choices have financial and service impacts. To accomplish the objective of this research, the following tasks are proposed: Task 1-Perform a detailed survey of transit systems worldwide to determine how the problem being researched is handled in each system. Review the work of the computer industry and others which may be relevant to the problem and its solution. Examine existing computerized payroll systems, particularly interactive systems for possible solutions. Task 2- Analyze existing manual and automated dispatching systems to define requirements for any comprehensive system. Task 3-Prepare conceptual design and program development of software. Task 4-Produce manuals, software documentation for operators, uses, and programmers. (The above tasks should be performed in conjunction with a review by transit systems with field tests included. The intent is to develop a generalized package capable of application at many properties once refinement for individual labor contract requirements is made.) Task 5-Prepare a final report describing the research and its results. Include an assessment of the future potential of the package, as well as a cost/benefit analysis of such automation (Because there are concerns as to the feasibility of developing such a system, the subject will be addressed first through a TRB synthesis of how existing systems function and perform and to document any problems attendant to their development).

PERFORMING AGENCY: MacDorman (LC) and Associates
INVESTIGATOR: MacDorman, LC Tel (703) 237-8500
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Copas, T Tel (202) 344-3242 NCTRP 60-1, TS-5
STATUS: Active NOTICE DATE: May 1984
START DATE: Nov. 1983 COMPLETION DATE: 1985
TOTAL FUNDS: $40,000
ACKNOWLEDGMENT: National Cooperative Transit Res & Devel Program

21 372978
CONVERSION TO ONE-PERSON OPERATION OF HEAVY-RAIL RAPID-TRANSIT TRAINS
Each of the new rapid transit systems is designed to allow the motorman at the head of the train to monitor passenger loading, unloading, and the operation of the doors. Older rapid transit systems in Boston, New York, Philadelphia, Cleveland, Chicago, and Toronto were not designed for one-man operation. Because both island and side platforms exist, and most of their existing rolling stock is equipped with either left-or right-hand cabs, the older properties continue to require a conductor on each train. At the present, the physical conversion of these older systems to accommodate one-man operation requires full-width cabs, a very capital-cost-intensive retrofit. Given the average life of a car, it would take many years to implement the changeover with new equipment only. The objective of this research is to determine whether present technology can allow for adequate inspection of door operation on both sides of a train by a motorman located in a right-or a left-hand cab (i.e., closed-circuit television, etc.). If such a system can be found to be safe and reliable, the potential operating-cost savings would be staggering. This research proposes the following work program: Task 1-Perform a survey of the operation of each of the older two-man rapid transit properties in North America. The goal of this survey will be to determine the operational and safety requirements of each property related to the implementation of one-man train operation. Task 2-Perform a survey of one-man conversions implemented by rapid transit systems worldwide. Task 3-Evaluate the state-of-the-art with regard to electronic visual aids to determine whether it can be applied to older rapid transit systems in such a way as to satisfy the operational and safety requirements determined in Task 1. This will include the performance of a small-scale test on one route of one property to determine the operational and safety impacts of such a system. Task 4-Prepare a final report describing the research and analyzing the results. It would then draw a conclusion as to the technical feasibility of implementing one-man operation on older rapid transit systems without major capital expenditures.

PERFORMING AGENCY: Battelle Memorial Institute
INVESTIGATOR: Hoess, JA Tel (614) 424-6424
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Kingham, RI Tel (202) 334-3224 NCTRP 55-1
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: May 1984 COMPLETION DATE: July 1985
TOTAL FUNDS: $150,000
ACKNOWLEDGMENT: National Cooperative Transit & Devel Program

21 372981
ESTIMATING INCREMENTAL COSTS OF BUS-ROUTE-SERVICE CHANGES
The objective of this research is to develop formulas to estimate the marginal cost to provide transit service on a given route. In particular, the research will attempt to determine the difference in cost of peak versus base service. A representative sample of transit systems with varying characteristics should be analyzed. The following characteristics should be considered: transit system/fleet size (large, medium, small); service area (urban/rural). The study will analyze the scheduling and run-cutting procedures of each system and the effect of high levels of peak service on total cost. Cost items which show a high correlation with the number of peak vehicles will be identified. To accomplish this research the following tasks are proposed: Task 1- Identify systems to be studied. Preference should be given to a system which has RUCUS, as this will simplify the analysis of run-cutting procedures. Task 2-Identify and analyze previous work in this area. Document the strengths and weaknesses of each cost-estimation formula. Task 3-Develop transferable costing models which differentiate between the cost of peak and base service and which allow marginal cost analysis of peak and/or base service additions. Task 4-Document the findings of the study and the cost models developed. The documentation should include programs developed for implementation on a mini-computer.

PERFORMING AGENCY: System Design Concepts, Incorporated, Washington D.C. 20006
INVESTIGATOR: Cohen, HS Tel (202) 393-5910
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Kingham, RI Tel (202) 334-3224 NCTRP 40-2
STATUS: Active NOTICE DATE: May 1984
START DATE: Nov. 1983 COMPLETION DATE: Aug. 1985
TOTAL FUNDS: $150,000
ACKNOWLEDGMENT: National Coopertive Transit Res & Devel Program

21 384931
DEVELOPMENT OF A TIME-SERIES BASED TRANSIT PATRONAGE MODEL TO ASSIST DECISION-MAKERS IN THE EVALUATION OF ALTERNATIVE SERVICE LEVEL AND FARE STRATEGIES
To develop a time-series based transit demand model for application in small and medium sized urban areas. Two statistical techniques will be utilized in the model development process: multiple regression techniques modified for time series use and the Box-Jenkins technique using auto-regression moving (ARIMA) class models for time series analysis. The products of this research will focus on both information and techniques usable in the transit operation environment.

PERFORMING AGENCY: Iowa University, UMTA-IA-11-0005
INVESTIGATOR: Stoner, JW Tel (319) 353-6064
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Hillegass, TJ (URT-33) Tel (202) 426-4271 Grant UMTA-IA-11-0005
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1983 COMPLETION DATE: Aug. 1984
ACKNOWLEDGMENT: UMTA

21 384941
A STUDY OF THE USE OF MICROCOMPUTER TECHNOLOGY IN PLANNING AND OPERATION OF SMALL CITY TRANSPORTATION SYSTEMS
To identify and categorize a list of existing and potential planning and administrative applications of microcomputers for small city transportation systems. Hardware and software capabilities of popular microcomputers currently on the market will be studied in order to determine their

usefulness for small city transportation systems. The study will also use a planning and transportation operations scenario for a small city to demonstrate the use of microcomputers. A comparison of 8-bit and 16-bit microcomputers will also be undertaken to explore what additional tasks may be solved with 16-bit microcomputers.

PERFORMING AGENCY: Tuskegee Institute, UMTA-AL-06-0011
INVESTIGATOR: Sara, T Tel (205) 727-8116
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Neigut, E (URT-33) Tel (202) 426-9271 Grant UMTA-AL-06-0011
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1983 COMPLETION DATE: July 1984
ACKNOWLEDGMENT: UMTA

21 384945
BI-LEVEL OPTIMIZATION MODEL FOR INVESTIGATING FARE AND SERVICE FUNCTIONS TO MINIMIZE URBAN TRANSIT OPERATING DEFICITS
To develop an optimization model that can be used to minimize the operating deficits of transit operators by integrating the fare and service structures of the systems. Relevant system characteristics of supply and demand will be modeled as constraints. The analysis will be carried out at both the system and route levels. Solutions resulting from the model are expected to provide the operating deficits at systems levels while maximizing revenue at the route levels. Transit productivity and efficiency will be incorporated directly in the model. After models have been developed, it is expected that real world applications will become readily usable tools to aid transit operators in financial planning.

PERFORMING AGENCY: Utah University
INVESTIGATOR: Yu, J Tel (804) 581-9701
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Fisher, RJ (URT-33) Tel (202) 426-9271 Grant UMTA-UT-11-0003
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1983 COMPLETION DATE: Aug. 1984
ACKNOWLEDGMENT: UMTA

21 384973
BUS ROUTE DEMAND ANALYSIS
This research will develop and operationally prototype a computer-based route transit patronage analysis system for applications by transit agencies where route coverage is being expanded or contracted, or where routes are being modified. This would be in response to customer requests, political considerations, and financial demands. The models would fundamentally be based on applications which make use of the "Transportation Network Evaluation System" (TRANES) program developed in San Diego and a GBF/DIME file with 1980 census block data. The transit system of the Central Oklahoma Transportation and Parking Authority (COTPA) would be used as the case study application. Potential models would be drawn from literature review with emphasis on those which are practical in an operating transit environment and have "quick-response" attributes. A prototype route analysis package will be designed which might include financial impacts of route modifications. The project takes advantage of close ties with COTPA and the present availability of the necessary computer software.

PERFORMING AGENCY: Oklahoma University
INVESTIGATOR: Cook, AR Tel (404) 325-5911
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Hillegass, TJ (URT-41) Tel (202) 426-9271 Grant OK-11-0003
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1982
TOTAL FUNDS: $60,328
ACKNOWLEDGMENT: UMTA

21 385017
RELIABILITY AND PRODUCTIVITY IMPROVEMENTS
An UMTA developed automated data collection system is now operational at the Southern California Rapid Transit District system in Los Angeles, California. This project will develop a battery of computer programs to summarize and analyze the collected data for improved planning and scheduling.

PERFORMING AGENCY: Multisystems, Incorporated, UMTA-MA-06-0049; Southern California Rapid Transit District, UMTA-CA-06-0171
INVESTIGATOR: Menhard, HR Tel (617) 864-5810
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Goodman, JM (URT-31) Tel (202) 426-4984 Contract UMTA-MA-06-0049
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Jan. 1982 COMPLETION DATE: Jan. 1985
TOTAL FUNDS: $332,500
ACKNOWLEDGMENT: UMTA

21 385040
DEVELOPMENT OF ENERGY MANAGEMENT GUIDELINES FOR RAIL SYSTEMS
Objective: Develop guidelines for transit operators to develop energy conservation strategies. Scope: Refine Energy Management Model; develop guidelines for (1) conserving energy during design/construction/operations, (2) regeneration and energy storage; performance modification; development of optimum power rate structures. Train transit industry in the practical applications of guidelines.

PERFORMING AGENCY: Carnegie-Mellon University, PA-06-0083
INVESTIGATOR: Uher, RA Tel (412) 578-2960
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Sing, FL (URT-12) Tel (202) 426-9264 Contract PA-06-0083
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1983 COMPLETION DATE: Apr. 1985
TOTAL FUNDS: $225,000
ACKNOWLEDGMENT: UMTA

21 385089
TRANES DEVELOPMENT PROJECT
The Transportation Network Evaluation System (TRANES) is a computer program for route analysis. It uses CENSUS GBF/DIME file data to accumulate demographic data for blocks within walking distance of specified transit stops. This project intends to thoroughly document and convert the program to operate on the IBM 4300 series under VM/CMS operating system.

PERFORMING AGENCY: Puget Sound Council of Governments, UMTA-WA-06-0022
INVESTIGATOR: Frysetacki, W Tel (202) 464-6174
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Hillegass, TJ (URT-41) Tel (202) 426-9271 Contract UMTA-WA-06-0022
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1982 COMPLETION DATE: May 1984
TOTAL FUNDS: $149,820
ACKNOWLEDGMENT: UMTA

22 372977
PUBLIC TRANSIT BUS MAINTENANCE MANPOWER PLANNING
Proper manpower planning in maintenance and transportation is crucial to the efficient and economical operation of a transit authority. However, manpower planning is often accomplished in a very inexact manner based heavily on past experience and guesswork which may not be appropriate for transit systems experiencing either major service expansion or severe service attacks. Transit systems need guidance on using the most innovative and effective manpower planning techniques. The research will be accomplished by completing the following tasks: Task 1-Survey a representative sample of U.S. transit systems to identify manpower planning techniques by examining fleet size and age, operating miles and hours, contractual obligations, and other factors that affect manpower requirements. Task 2-Evaluate the manpower planning techniques identified in the survey and rate them according to established measures of productivity. Task 3-Document, in a handbook for industry use, the most innovative and effective transportation and maintenance manpower planning techniques.

PERFORMING AGENCY: Fleet Maintenance Consultants, Inc.
INVESTIGATOR: Drake, RW Tel (713) 496-7717 Mundle, SR Tel (215) 627-5450
SPONSORING AGENCY: Urban Mass Transportation Administration NCTRP 33-3
STATUS: Active NOTICE DATE: May 1984
START DATE: Nov. 1983 COMPLETION DATE: Oct. 1984
TOTAL FUNDS: $100,000
ACKNOWLEDGMENT: National Cooperative Transit Res & Devel Program

22 384929
ANALYSIS OF BUS MAINTENANCE OPERATIONS
To develop a guide for transit maintenance management, and a case study of maintenance operations of the Tidewater Transportation District Commission. The results of the dual studies are synthesized to permit a balance between theory and practice. The guide will assist in understanding, evaluating and reviewing a transit property's maintenance program and needs. It will also demonstrate a useful strategy for documenting the bus maintenance program for a transit property and identify the characteristics of a successful maintenance operation. The results of this study will be used to formulate recommendations for bus maintenance management.

PERFORMING AGENCY: Virginia University, UMTA-VA-11-0012
INVESTIGATOR: Demetsky, M Tel (804) 924-7464
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Hughes, PG (URT-33) Tel (202) 426-9274 Grant UMTA-VA-11-0012
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1983 COMPLETION DATE: Aug. 1984
TOTAL FUNDS: $81,262
ACKNOWLEDGMENT: UMTA

22 384932
DEVELOPMENT OF A MANAGEMENT TECHNIQUES GUIDE FOR BUS FLEET MANAGERS
To develop a pocket calculator-based guide to bus fleet management. The potential user of the guide will not be required to have extensive mathematical skills or access to a computer. Instead, the user of described techniques will require only paper, pencil and a basic understanding of algebra. All numerical information required will be prepared and presented in tables, charts or nomographs. A key part of the project will be the organization of a steering committee made up of transit industry maintenance managers, UMTA staff and related professionals. Topics to be covered in the guide will include, maintenance data collection, sampling failure forecasting, life-cycle costing, preventive unit replacement, inventory management, break-even analysis, available maintenance information systems and future directions in computer based-bus maintenance planning.

PERFORMING AGENCY: Oklahoma University, UMTA-OK-11-0004
INVESTIGATOR: Maze, T Tel (405) 325-5911
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Hughes, PG (URT-33) Tel (202) 426-9274 Grant UMTA-OK-11-0004
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1983 COMPLETION DATE: July 1984
ACKNOWLEDGMENT: UMTA

22 384958
COMPUTERIZED BUS RECORDS ANALYSIS
Data collected by various transit agencies using computerized data collection systems will be analyzed to determine major bus hardware failure patterns and establish need for specific UMTA research and development. Also to be developed are requirements for implementing a maintenance data reporting system for identifying equipment problems. If automated data systems can identify problems and their causes, then a faster procedure can be implemented to address operational problems and to reduce operating and maintenance costs of local transit agencies.

PERFORMING AGENCY: Technology Research and Analysis Corporation, UMTA-VA-06-0093
INVESTIGATOR: Yen, T Tel (703) 522-2440
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Izumi, G (URT-22) Tel (202) 426-8483 Contract UMTA-VA-06-0093
STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

22 384968
DEVELOPMENT OF CASE STUDY MATERIAL DOCUMENTING BUS MAINTENANCE PLANNING AND PRACTICE AT SELECTED TRANSIT PROPERTIES
Maintenance has long been a low visibility function at many transit properties. As long as schedules were met, and budgets were adequate, most public attention was focused on the transportation and scheduling departments' operation. Now, however, properties are facing a gradual phasing-out of UMTA operating subsidies and local revenues are being demanded for a number of purposes, only one of which is transit funding. This project includes five tasks aimed at the development of a descriptive body of information about bus maintenance planning methods and practices. The major focus of the research is the development of six case studies for use in evaluating the feasibility of using the prescriptive models found in the existing literature, and for evaluating the cost and benefits of federal policy options. Analysis of the case studies will be presented in synthesis chapters outlining the diversity of practices at the local level, and enumerating the effects which uniform procedures or planning requirements would have if implemented. The research will be of interest to policy planners, technical staff, and transportation researchers and educators.

PERFORMING AGENCY: Illinois University, Chicago
INVESTIGATOR: Foerster, JF Tel (312) 996-2161
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Hallman, AB (UPM-43) Tel (202) 426-9257 Grant IL-11-0030
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1982
TOTAL FUNDS: $82,277
ACKNOWLEDGMENT: UMTA

22 385005
MAIN PRODUCTIVITY INDEXES (LCC SUPPORT FROM UNIVERSITIES)
The purpose of this project is to conduct a study to develop a maintenance management data base system for collection of life cycle costing (LCC) data. The study shall be conducted for a small to medium-sized transit system that has no computerized maintenance management information system. Information gained from this study will be disseminated to transit systems so that they could apply the techniques developed and use the information to make management decisions and compare it with other transit systems.

PERFORMING AGENCY: Oklahoma University, UMTA-OK-06-0004
INVESTIGATOR: Maze, T Tel (405) 325-5911
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Asatoorian, SD (URT-21) Tel (202) 426-8483 Contract UMTA-OK-06-0004
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: June 1984 COMPLETION DATE: June 1985
TOTAL FUNDS: $150,000
ACKNOWLEDGMENT: UMTA

22 385006
VALUE ENGINEERING
The objective of this study is to establish Value Engineering as a valuable tool in the design of functional and cost effective bus facilities. Value Engineering is a technique used in facility design in industries but not applied to the transit industry. Application of this established technique to main facilities promises to cut millions of dollars for the LCC.

PERFORMING AGENCY: Greater Bridgeport Transit District, UMTA-CT-06-0015
INVESTIGATOR: Mitchell, S Tel (203) 366-7070
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Asatoorian, SD (URT-21) Tel (202) 426-8483 Contract UMTA-CT-06-0015
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Jan. 1984 COMPLETION DATE: Oct. 1984
TOTAL FUNDS: $44,700
ACKNOWLEDGMENT: UMTA

22 385022
AUTOMATE AND UPGRADE MAINTENANCE MANAGEMENT INFORMATION
The objective of this project is to assist the Port Authority of Allegheny County in upgrading and automating its Maintenance Management Information System (MMIS) for the light rail transit system. A requirements analysis will be conducted to establish system parameters and performance. The MMIS will then be designed, specified and procurred. After debugging, the system will be placed in service and evaluated in comparison with project objectives.

PERFORMING AGENCY: Port Authority of Allegheny County, UMTA-PA-06-0085
INVESTIGATOR: Sedlock, R Tel (412) 237-7000 Mundo, J
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Mora, JG (URT-10) Tel (202) 426-9264 Contract UMTA-PA-06-0085
STATUS: Active NOTICE DATE: Apr. 1984
TOTAL FUNDS: $250,000
ACKNOWLEDGMENT: UMTA

22 385026
UPGRADE PORT AUTHORITY TRANSIT CORPORATION'S MAINTENANCE MANAGEMENT INFORMATION SYSTEM
PATCO will conduct a short system requirements study to define precise needs for its upgraded Maintanance Management Information System (MMIS). It will then translate user requirements into design and contractual specifications. Computer hardware and software will be purchased; the system will be set up and employees trained, and the upgraded MMIS will be tested and debugged for a short time period.

PERFORMING AGENCY: Port Authority Transit Corporation, UMTA-NJ-06-0018
INVESTIGATOR: Krant, B Tel (609) 772-6900
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Mora, JG (URT-10) Tel (202) 426-9264 Contract UMTA-NJ-06-0018
STATUS: Active NOTICE DATE: Mar. 1984
TOTAL FUNDS: $179,000
ACKNOWLEDGMENT: UMTA

22 385099
BUS MAINTENANCE WORKSHOP
To develop input for future program development, bus maintenance workshops will be held with transit operating agencies, manufacturers, suppliers and local governments. Workshop will provide a forum to improve service quality and reduce maintenance expenditures, providing UMTA with information for formulating its programs and providing the transit bus industry with an understanding of the technical assistance role.
Final report in preparation.

PERFORMING AGENCY: Transportation Research Board, UMTA-DC-06-0441
INVESTIGATOR: Clary, A Tel (202) 334-3220
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Lopez, RA (URT-21) Contract UMTA-DC-06-0441
STATUS: Active NOTICE DATE: Apr. 1984
TOTAL FUNDS: $50,000
ACKNOWLEDGMENT: UMTA

22 389735
DEVELOPMENT AND TESTING OF A SYSTEMS APPROACH TO THE EVALUATION OF MAINTENANCE SYSTSMS AND OF VEHICLE LIFE COSTS
This project is to demonstrate how commonly kept maintenance records may be used to develop a maintenance management data base. For transit agencies without computerized information systems, bus histories are kept either through closed work-order forms or on sheets which summarize accumulated work orders. This information resource is often not utilized fully. This study will cover the effectiveness of a bus transit maintenance information system based completely on paper records. It will rate the ability to collect, manipulate and report the life-cycle costs of buses. Some methods researched will be work measurement systems, work load indicators, cost allocation procedures, use of cost allocations in life cycle costing, planning and scheduling indicators, inventory control and others. A study of the Metropolitan Transit Authority of Wichita, KS, will be made.

PERFORMING AGENCY: Oklahoma University
INVESTIGATOR: Maze, T Tel (405) 325-5911
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Enty, FE (URT-33) Tel (202) 426-9274 Contract OK-11-0005
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: 1984
ACKNOWLEDGMENT: UMTA

23 193262
UNION-MANAGEMENT PROGRAMS IN URBAN TRANSIT
To provide a forum for union and management representatives in the municipal transit industry, to identify those labor relations problems on which union and management are willing to work co-operatively, and to develop options for UMTA which will help labor and management resolve these problems.
REFERENCES:
Labor-Management Conference on Issues in Urban Transit Summary Report, Aug. 1978

PERFORMING AGENCY: Wisconsin University, Madison
INVESTIGATOR: Stern, JL Tel (608) 262-8789
SPONSORING AGENCY: Urban Mass Transportation Administration Contract DOT-WI-11-0006
STATUS: Active NOTICE DATE: Jan. 1984
START DATE: June 1978
TOTAL FUNDS: $78,525
ACKNOWLEDGMENT: Wisconsin University, Madison

23 384921
TRANSPORTATION PROGRAM DEVELOPMENT FOR FUTURE MANPOWER NEEDS
To develop programs and curricula which will efficiently and effectively address public transportation's manpower needs over the next 20 years.

PERFORMING AGENCY: Florida A & M University, UMTA-FL-06-0040
INVESTIGATOR: Taylor, AC Tel (904) 599-3597
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Bromall, IH (UCR-10) Tel (202) 426-6371 Grant UMTA-FL-06-0040
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Oct. 1983 COMPLETION DATE: Sept. 1984
TOTAL FUNDS: $45,000
ACKNOWLEDGMENT: UMTA

23 384922
MANAGEMENT TRAINING AND HANDICAPPED STUDY
To undertake management training and development for employees; to study handicapped needs; to facilitate hiring of handicapped employees.

PERFORMING AGENCY: Utah Transit Authority
INVESTIGATOR: Pingree, JC Tel (801) 262-5626
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Bromall, IH (UCR-10) Tel (202) 426-6371 Contract UT-03-2001
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1983
TOTAL FUNDS: $250,000
ACKNOWLEDGMENT: UMTA

23 384923
INTERNAL EEO PROGRAM DEVELOPMENT
To develop internal EEO program to facilitate advancement of minorities and females.

PERFORMING AGENCY: Southeastern Pennsylvania Transportation Authority
INVESTIGATOR: Gunn, DL
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Bromall, IH (UCR-10) Tel (202) 426-6371 Grant UMTA-PA-03-2003
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1983
TOTAL FUNDS: $320,000
ACKNOWLEDGMENT: UMTA

23 384924
TEXAS STATE TRANSIT STUDY
To identify Texas transit positions and training needs; to identify institutions to provide training; to develop training plan.

PERFORMING AGENCY: Texas Southern University, UMTA-TX-06-2001
INVESTIGATOR: Lede, N Tel (713) 527-7011
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Bromall, IH (UCR-10) Tel (202) 426-6371 Contract UMTA-TX-06-2001
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1983
TOTAL FUNDS: $100,000
ACKNOWLEDGMENT: UMTA

23 384935
THE INFLUENCE OF FINANCIAL INCENTIVE PROGRAMS ON EMPLOYEE PERFORMANCE AND ORGANIZATION PRODUCTIVITY WITHIN MASS TRANSIT
To examine the influence that Financial Incentive Programs (FIP) have on employee performance and organizational productivity. The project effort will seek to determine the extent to which FIPs are used within the transit industry, how effective FIPs are judged to be by transit property management, and what characterized those transit properties which successfully utilized FIPs. The experience with FIPs which have been documented in the academic and professional literature will be systematically examined. The information will indicate how the different types of FIPs operated and what effect they had on organizations in which such programs have been empirically tested. All transit properties (1000-10000) will be surveyed to identify how extensively FIPs are used and how effective these programs have been. Follow-up phone interviews will be conducted with those properties that have had the most extensive experience with FIPs.

PERFORMING AGENCY: Virginia Polytechnic Institute & State University, UMTA-VA-11-0013
INVESTIGATOR: Scott, KD Tel (703) 961-5021
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Hughes, PG (URT-33) Tel (202) 426-9274

STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1983 COMPLETION DATE: Aug. 1984
TOTAL FUNDS: $45,556
ACKNOWLEDGMENT: National Highway Traffic Safety Administration

23 384938
TRANSIT OPERATIONS INSTITUTE: A MANAGEMENT DEVELOPMENT SEMINAR FOR WOMEN IN THE TRANSIT INDUSTRY
To develop and conduct a one-week Institute which will provide professional growth and enhancement for women currently employed in submiddle-management levels and a few women students nearing completion of a transit related field of study. Both the scope and thrust of the Institute are designed in part, to help fill recently expressed women's needs in the transit industry, especially for new managerial personnel and to improve utilization of women throughout all levels of transit management. Issues to be addressed include major rail and bus operations, real and perceived problems regarding women in the transit field, skills and experience requirements and improved self-image for women regarding their own professional viability and their interaction with their peers, supervisors and subordinates.

PERFORMING AGENCY: Georgia Institute of Technology, UMTA-GA-11-0015
INVESTIGATOR: Ross, C Tel (404) 894-2350
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Meade, JZ (URT-33) Tel (202) 426-0080 Grant UMTA-GA-11-0015
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1983 COMPLETION DATE: July 1984
ACKNOWLEDGMENT: UMTA

23 384942
FUNCTIONAL TRAINING COURSES
To develop academic training modules designed to promote and complement the skills of present in-service Dade County transportation personnel and Florida Memorial College students. The effort includes faculty and consultants with expertise in transportation management and behavioral and social scientists who are capable of expressing an interdisciplinary expertise which will be basic to constructing an innovative academic module: (1) to create a "research bank" on transportation management; (2) to produce a modified development plan for the Florida Memorial College

Program in Transportation; (3) to effect an initial trial testing week of coursework for students; and (4) to issue detailed, specific, informative and verifiable reports on the total data, information experience and success of enrollees associated with the program.

PERFORMING AGENCY: Florida Memorial College, UMTA-FL-11-0011
INVESTIGATOR: DeShields, O Tel (305) 625-4141
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Enty, FE (URT-33) Tel (202) 426-9274 Grant UMTA-FL-11-0011
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1983 COMPLETION DATE: Aug. 1984
ACKNOWLEDGMENT: UMTA

23 384943
A PROFILE AND ANALYSIS OF TRANSIT GENERAL MANAGERS, ASSISTANTS INCLUDING RELATIONSHIPS WITH THEIR GOVERNING BOARDS
The objective of this project is to examine and analyze the position of general manager in public transit systems. The researchers will develop a profile of transit managers and their immediate assistants as it relates to such issues as qualifications/backgrounds, career advancement patterns, length of tenure (resignation or termination), age, perceptions of roles and performance, board-general manager relations, span of control and degree of responsibility, limitations/constraints on general manager, organizational structure and "management style". The study will develop a national profile on transit GMs and their Assistants with a broad range of characteristics.

PERFORMING AGENCY: Atlanta University, GA-11-0014
INVESTIGATOR: Brown, I Tel (404) 681-0251 x165 Davis, E
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Royal, AJ (URT-32) Tel (202) 426-0080 Contract GA-11-0014
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1983 COMPLETION DATE: Aug. 1984
TOTAL FUNDS: $84,341
ACKNOWLEDGMENT: UMTA

23 384947
COOPERATIVE INITIATIVES IN TRANSIT LABOR: MANAGEMENT RELATIONSHIPS
To analyze various aspects of cooperative processes in transit at seven representative local systems, to describe the structure and program elements of cooperative interventions; to examine public and industry policy as it affects cooperative arrangements; to analyze examples and parameters of cooperation as reflected in labor contract agreements; to conduct an intensive on-site survey of all parties participating in cooperative programs; and include with recommendations how cooperative arrangements may be structured to be successful.

PERFORMING AGENCY: North Florida University, UMTA-FL-11-0009
INVESTIGATOR: Smith, JA Tel (904) 646-2860
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Meade, J (URT-33) Tel (202) 426-0080 Grant UMTA-FL-11-0009
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1983 COMPLETION DATE: Aug. 1984
ACKNOWLEDGMENT: UMTA

23 384964
RESEARCH AND TRAINING
The objective of this project is to focus on selected real world transportation problems as faced by responsible transportation officials and to solve these problems with practical approaches in the design of a transportation program. The research and training program for the current period consists of three research projects and one training activity: Pricing options for urban transportation modes; Study of the functions and responsibilities of areawide agencies in the planning and design of pedestrian access/distribution services for fully accessible transit; Potential use of alternative fuels in urban bus operations and; A training activity to implement and conduct pilot testing of the management training program for transit

PERFORMING AGENCY: Polytechnic Institute of New York
INVESTIGATOR: Pignataro, L Tel (212) 643-5272
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Jasper, N (UPP-30) Tel (202) 426-0081 Grant NY-11-0023
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1979
TOTAL FUNDS: $450,000
ACKNOWLEDGMENT: UMTA

23 384982
IMPROVE TRANSIT RELIABILITY AND PRODUCTIVITY
The transit industry has identified improved reliability as a way to provide better service and decrease operating costs. The San Francisco Municipal Railway (MUNI) has implemented a series of on and off street supervision improvement programs. This project will capitalize on MUNI's investment by developing, implementing, and evaluating more specific on-street transit line management, off-street operator supervision, operator performance evaluation, and absenteeism reduction programs.

PERFORMING AGENCY: Multisystems, Incorporated, UMTA-CA-06-0190
INVESTIGATOR: Englisher, L Tel (617) 869-5810
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Goodman, JM (URT-31) Tel (202) 426-4984

STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Oct. 1983 COMPLETION DATE: Oct. 1985
TOTAL FUNDS: $169,000
ACKNOWLEDGMENT: UMTA

23 384983
AN EMPIRICAL ASSESSMENT OF THE FISCAL AND ORGANIZATIONAL IMPACTS OF PART-TIME LABOR IN PUBLIC TRANSIT
The use of part-time labor is a controversial subject in urban transit. Conflicts over this issue have catalyzed strikes at transit districts nationwide. The object of this project is to evaluate the experience of several transit systems with part-time labor. The project is designed to develop information that will assist transit agencies in more effective personnel management.

PERFORMING AGENCY: California University, Irvine, UMTA-CA-06-0187
INVESTIGATOR: Lave, C Tel (714) 865-6789
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Goodman, JM (URT-31) Tel (202) 426-4984

STATUS: Active NOTICE DATE: Apr. 1984
START DATE: 1983 COMPLETION DATE: 1984
TOTAL FUNDS: $91,345
ACKNOWLEDGMENT: UMTA

23 384985
MANAGEMENT TRAINING AND DEVELOPMENT PROGRAM FOR THE PUBLIC TRANSPORTATION INDUSTRY
Because increasing costs, declining federal funding, and scarce local dollars for urban transit have increased the need for professional management, talented managers are essential to meet today's new challenges and to plan for the future. Shortages of trained replacements will occur due to the relatively high average age of the present generation of upper level transit managers and the certainty of their retirement in the near future. A management development program consists of three elements: 1) symposium on professional certification: to consider and discuss the desirability and means for certifying transit professionals; 2) continuing education program: to develop and present courses to improve the skills of people working in public transportation; and 3) internship program: to give students practical and meaningful training that helps prepare them for a career in transportation, and to provide transit systems with talented students. Participants for the symposium are expected to be from across the nation. Participants for the continuing education program will be from the transit industry. In the internship program most participants will be regularly enrolled, degree-seeking students of accredited institutions of higher learning. External support and participation will come from transit officials who will be acting in the advisory capacity during the project. By

the end of this project, the research will have developed, tested, and refined procedures and instructional materials for continuing education programs and internship programs.

PERFORMING AGENCY: Indiana University, Bloomington
INVESTIGATOR: Smerk, GM Tel (802) 335-8143
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Meade, JZ (URT-33) Tel (202) 426-0080 Grant IN-11-0008
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1982
TOTAL FUNDS: $90,000
ACKNOWLEDGMENT: UMTA

23 384986
LABOR RELATIONS TRAINING FOR URBAN MASS TRANSIT MANAGERS
Good labor relations in the urban mass transit industry are vitally important to the efficiency of transit operations and to the provision of uninterrupted transportation service to an entire region. In spite of the labor relations problems which transit managers face, many have little training in this area. Transit operators contacted by the Center for Labor and Industrial Relations (CLIR), New York Institute of Technology, indicated a strong interest in upgrading their managers' labor relations skills. This project will develop a 36 hour labor relations course for bus transit managers. The program will include training in the legal framework of labor relations, rights and prerogatives of management, contract interpretation, handling disputes, and bargaining by objectives. Case studies and exercises, based on actual bus transit problems, will be an integral part of the program. CLIR will deliver the courses, as a pilot workshop, to a group of transit managers. The results of the workshop will be evaluated, and a complete set of training materials submitted to the Urban Mass Transportation Administration.

PERFORMING AGENCY: New York Institute of Technology
INVESTIGATOR: Dibble, RE Tel (516) 686-7722
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Cudahy, B (UGM-10) Tel (202) 472-2440 Grant NY-11-0028
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1982
TOTAL FUNDS: $45,503
ACKNOWLEDGMENT: UMTA

23 384990
FEASIBILITY OF ADOPTING QUALITY CONTROL CIRCLES FOR IMPROVING PRODUCTIVITY AND SERVICES QUALITY
The expected end products of this project are two: 1) a be feasible to implement Quality Control (QC) Circles in Circles at WMATA in the near future; and 2) a manual of as an integral part of its management system for the mass transportation systems in general. quality of its services to users. The concept of QC Circles is based on the basic premise that productivity increase and quality improvement of products and services can be achieved through motivating shop-floor operators and supervisors at the first-line level of management, by means of training workers (training themselves through cooperating with their supervisors) to identify, analyze and solve problems through QC Circles. This approach started two decades ago in Japan and has been introduced to many organizations, private and public, in this country during the last several years. The basic approach and methodology to be used in this project are three-fold: 1)a thorough survey of the literature on cases involving the public transportation sector and other public enterprises; 2) in-depth analysis of two to three cases which have been successful in implementing QC Circles; and 3) analyzing conditions existing at WMATA, with special emphasis on its operations and maintenance activities, with a view to judging the feasibility of adopting QC Circles in WMATA.

PERFORMING AGENCY: Howard University
INVESTIGATOR: Vaziri, MT Tel (202) 636-7433
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Futrell, M (UGM-11) Tel (202) 426-2055 Grant DC-11-0014
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1982
TOTAL FUNDS: $57,356
ACKNOWLEDGMENT: UMTA

23 384994
IMPROVE URBAN MANAGEMENT SKILLS OF PUBLIC TRANSIT EMPLOYEES
To provide a foundation of managerial skills to the training project participants upon which they can build toward enhancing both personal career development and organizational effectiveness. This training project is designed to strengthen the capability of course participants to handle difficult management problems that are not typically considered in most management education. Examples of such problems including dealing effectively with constant media scrutiny, conducting meaningful labor negotiations with the possibility of a "blue-flu" strike, and understanding how to communicate effectively with a demanding public clientele. Working within several basic management areas, the project will seek to provide an education in the theory and state-of-the-art knowledge. The management areas are: strategic planning in the public sector, personal and organizational effectiveness, customer relations and public accountability, employee supervision and motivation, development of leadership skills, and public sector labor relations. The training project is intended to provide an intensive one-week training session and two follow-up review and evaluation sessions several weeks later.

PERFORMING AGENCY: Cleveland State University
INVESTIGATOR: Garrison, DF Tel (216) 687-2134 Reimann, BC Tel (216) 687-4754
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Morrison, CT, Jr (URT-32) Tel (202) 426-9274 Grant OH-11-0005
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1981
TOTAL FUNDS: $68,978
ACKNOWLEDGMENT: UMTA

23 384996
BASIC SKILLS DEVELOPMENT TRAINING PROGRAM FOR TRANSIT PERSONNEL
The Basic Skills Development Program offers individualized instruction in reading comprehension and math computations as an effort to upgrade basic skill needs of transit personnel. The training program is tailored to meet each participant's aptitude range, skill development needs, learning pace, and personal goals. The instructional approach uses audio-visual learning systems. The program is being conducted at Urban League Training Centers in Cleveland, Ohio; Los Angeles, Calif.; New York, N.Y., and Washington, D.C. in cooperation with the respective local transit agencies. The program was implemented as a short-term demo effort to assist the UL in carrying out its upward mobility initiatives and to ascertain the need for such training programs for transit industry personnel.

PERFORMING AGENCY: National Urban League, Incorporated, NY-06-2001
INVESTIGATOR: Johnson, NB, II Tel (212) 310-9087
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Royal, AJ (URT-32) Tel (202) 426-0080 Contract UMTA-NY-06-2001
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1983 COMPLETION DATE: Aug. 1984
TOTAL FUNDS: $250,000
ACKNOWLEDGMENT: UMTA

23 384997
ABSENTEEISM REDUCTION DEMONSTRATION PROGRAM
A multi-phased project that is designed to demonstrate and evaluate selected attendance improvement programs that may help to improve morale and productivity of transit personnel. The project establishes attendance improvement committees involving both labor and management representation to monitor absence trends, design and implement positive reinforcement or incentive programs at the various participating transit agencies. It also will test and implement a prototype attendance information system to track and analyze absence data. The demonstration effort combines under one project structure a consortium of transit labor and management committees and a core research group to document the effectiveness of the demonstrated programs and other activities deployed to combat absenteeism.

Investigation performed in cooperation with Templar Associates.
REFERENCES:

Review of Attendance Programs MacDorman Associates and Templar Associates, Oct. 1983

PERFORMING AGENCY: Port Authority of Allegheny County, UMTA-PA-06-0067; MacDorman (LC) and Associates
INVESTIGATOR: Holzer, H Tel (412) 237-7293 MacDorman, LC Tel (703) 237-8500
SPONSORING AGENCY: Urban Mass Transportation Administration; Port Authority of Allegheny County; Central Ohio Transit Authority; Metropolitan Dade County; Tri-County Metropolitan Transp District Oregon
RESPONSIBLE INDIVIDUAL: Royal, AJ (URT-32) Tel (202) 426-0080 Grant UMTA-PA-06-0067
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1982 COMPLETION DATE: Dec. 1985
TOTAL FUNDS: $1,200,000
ACKNOWLEDGMENT: UMTA

23 384998
EMPLOYMENT OF THE HANDICAPPED TRAINING PROGRAM
The training program was developed to address the employment-related problems and issues faced by disabled/handicapped persons. It is suitable for presentation to personnel professionals, supervisors, and/or anyone within a transit agency who may have decision-making authority for hiring or accommodating handicapped workers. The program seeks to influence attitudinal change, to stimulate interest, and to promote progress on efforts to improve employment practices and policies affecting handicapped persons. The current contract expands a demonstration effort that started in 1982.
REFERENCES:
Guide to Employing Handicapped Persons in the Transit Industry, Harold Russell Associates, Incorporated, UMTA-MA-06-0105-81-1, Dec. 1981
Joint Transit Industry Training Project for Employment of the Handicapped-Case Studies and Trainers' Guide, 1982
Slide Tape: Working It Out Harold Russell Associates, Inc; Urban Mass Transp Admin, 1982

PERFORMING AGENCY: Russell (Harold) Associates, Incorporated, MA-06-0105 MA-06-0149
INVESTIGATOR: Ballantyne, DS Tel (617) 890-2698
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Royal, AJ (URT-32) Tel (202) 426-0080 Contract 83-C-71228
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1983 COMPLETION DATE: Dec. 1984
TOTAL FUNDS: $77,000
ACKNOWLEDGMENT: UMTA

23 385000
MAINTENANCE TRAINING DEMONSTRATION
This project is designed to assist SEPTA in retraining bus maintenance workpower to provide general mechanical skills in place of a broad number of specialist categories. Training consists of a combination of classroom and on-the-job practice with evaluations geared towards pre- and post-classroom training.

PERFORMING AGENCY: Southeastern Pennsylvania Transportation Authority, UMTA-PA-06-0072
INVESTIGATOR: Depello, M Tel (215) 456-4659
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Morrison, CT, Jr (URT-32) Tel (202) 426-9274 Contract UMTA-PA-06-0072
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1982 COMPLETION DATE: June 1984
TOTAL FUNDS: $600,000
ACKNOWLEDGMENT: UMTA

23 385001
HUMAN RESOURCES MANAGEMENT DEMONSTRATION
The objective of this demonstration is to develop and demonstrate various human resources activities in cooperation with organized labor. Programs include stress management, quality circles, urban sensitivity, and labor education (capacity training). The labor education training will be tested and expanded to include first line supervisors and foremen. The model will be explored with other transit agencies for implementation industry-wide.

PERFORMING AGENCY: Miami-Dade County Transportation, UMTA-FL-06-0031
INVESTIGATOR: Hamm-Davis, C Tel (305) 638-6197
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Morrison, CT, Jr (URT-32) Tel (202) 426-9274 Contract UMTA-FL-06-0031
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: May 1982 COMPLETION DATE: May 1984
TOTAL FUNDS: $362,159
ACKNOWLEDGMENT: UMTA

23 385088
INTEGRATED APPLICATIONS PACKAGE DEMONSTRATIONS
The objective of this project is to demonstrate the use of selected, integrated microcomputer software for small transit operations. Applications selected for the demonstrations include: 1) driver safety records keeping, and 2) maintenance manpower staff planning. The final report will document these two demonstrations.

PERFORMING AGENCY: Barker (William G) Associates, UMTA-MA-06-0039
INVESTIGATOR: Barker, W Tel (817) 265-0794
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Hillegass, TJ (URT-41) Tel (202) 426-9271 Contract UMTA-MA-06-0039
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Feb. 1984 COMPLETION DATE: Sept. 1984
TOTAL FUNDS: $50,000
ACKNOWLEDGMENT: UMTA

23 389737
A STUDY OF THE IMPACT OF A MANDATED TRAINING PROGRAM ON NEW TAXICAB DRIVERS IN NEW YORK CITY
Regulation in New York City now requires that taxi driver license applicants complete a 20-hr certification course given at the New York Taxi Drivers Institute, based on guidelines established by industry, labor and city government. The impact of the educational program no on-the-road driver behavior will be studies. A questionnaire will be designed to collect basic demographic and background information about all students that start the training program. Test scores will then be recorded on 8 instruction modules: Overview of the taxi industry; driver/passenger relations; geography; language and signs; traffic regulations; defensive driving; driver and passenger safety; and vehicle care and maintenance. Impact of the program will be measured by comparing the infractions, accidents, complaints and turnover-rate of certified drivers against records of previous new, but untrained, drivers. This will indicate possible modifications in the ciriculum and can provide guidelines for the taxi industry elsewhere that might establish a similar training program.

PERFORMING AGENCY: City University of New York
INVESTIGATOR: Kornblum, W Tel (212) 790-4522
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Enty, FE (URT-33) Tel (202) 426-9274 Contract NY-11-0034
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: 1984
ACKNOWLEDGMENT: UMTA

24 369383
PERFORMANCE INDICATORS AND PEER GROUPS FOR COMPARISON OF TRANSIT PROPERTIES
This study is a replication and extension of earlier analysis of the UMTA Section 15 Uniform System of Accounts and Records (UMTRIS

PERFORMING AGENCY: California University, Irvine
INVESTIGATOR: Fielding, GJ Tel (714) 833-5448 Brenner, M Tel (714) 833-5448
SPONSORING AGENCY: Urban Mass Transportation Administration Contract UMTA-CA-11-0026
STATUS: Active NOTICE DATE: May 1984
START DATE: Oct. 1982
TOTAL FUNDS: $84,999
ACKNOWLEDGMENT: California University, Irvine

24 384917
INFORMATION DISSEMINATION
One of the most cost-effective uses of Federal resources is to develop and provide information and technical assistance to stimulate and improve efficiency of local transit systems. This three year project will develop and provide technical assistance to local communities interested in adopting proven, innovative techniques, and will impact on the improvement of local transportation efficiency and effectiveness.

PERFORMING AGENCY: Crain and Associates, Incorporated
INVESTIGATOR: Winkler, A Tel (415) 949-1250
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Bautz, JA (URT-31) Tel (202) 426-4984 Contract UMTA-IT-06-0284
TOTAL FUNDS: $1,200,000
ACKNOWLEDGMENT: UMTA

24 384919
MBE DATA VERIFICATION STUDY
To develop a methodology to assure that the MBE data and documentation provided by UMTA grantees in a quarterly report format is accurate, discernible, verifiable and in a format which lends itself to the reporting and recording of computerized data.

PERFORMING AGENCY: Tillman (Mason) Associates, UMTA-CA-09-9005
INVESTIGATOR: Ramsey, EM Tel (415) 549-0582
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Bromall, IH (UCR-10) Tel (202) 426-6371 Contract 83-C-72206
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1983 COMPLETION DATE: July 1984
TOTAL FUNDS: $98,186
ACKNOWLEDGMENT: UMTA

24 384944
TRANSIT INDUSTRY MICROCOMPUTER EXCHANGE (TIME) SUPPORT CENTER
To establish a center which disseminates information about microcomputer hardware and software which can be used by transit agencies; to maintain a mailing list of those interested in micro-computer information centers; to distribute a newsletter which will provide descriptions of software of use to transit agencies and reviews of existing software which might have application to transit planning or management functions; to test and distribute public domain software, and to document the impact of the project's accomplishments.
See 24A 389725.

PERFORMING AGENCY: Rensselaer Polytechnic Institute, UMTA-NY-06-0109
INVESTIGATOR: Abkowitz, M Tel (518) 270-6300
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Fisher, RJ (URT-33) Tel (202) 426-9271 Grant UMTA-NY-06-0109
STATUS: Completed NOTICE DATE: Nov. 1984
START DATE: July 1983
ACKNOWLEDGMENT: UMTA

24 384969
DEVELOPMENT OF TRANSIT SYSTEM PRODUCTIVITY MEASURES BASED UPON SECTION 15 AND URBAN AREA ENVIRONMENTAL DATA
The research is focused on the need for meaningful measures of transit system cost and productivity. Such measures do not appear to be presently obtainable from UMTA Section 15 transit system reporting data due to a lack of information on causal factors associated with the operating environment of each transit system. A transit operating environment is considered to include such factors as climate, economic activity, urban form, population size, etc., which exert an influence upon reported levels of transit costs and productivity. Assembly of operating environment data would be besed upon published statistics pertaining to all places having transit systems contributing to the Section 15 reporting system. The potential for acquiring additional data, possibly better suited for transit system comparisons, will be tested by extracting information from trnasit development plans and UMTA grant applications prepared for transit systems in UMTA Region IV. Both types of transit environment data will be used to construct comparable group ot transit systems. Section 15 data then will be used to develop cost and productivity norms for each peer group. Relationships of how transit cost and productivity change with increasing coverage area, fleet size, etc., also will be examined to determine rates of change, thresholds, and most efficient points or intervals. Expected outputs of the research are the transit productivity norms and relationships, trends of change that can be detected from the three years's accumulation of Section 15 data, identification of the operating environment data set, and data collection recommendations.

PERFORMING AGENCY: Florida State University, Tallahassee
INVESTIGATOR: Dzurik, AA Tel (904) 644-4510
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Ensrud, N (UPM-32) Tel (202) 426-9274 Grant FL-11-0007
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1982
TOTAL FUNDS: $82,770
ACKNOWLEDGMENT: UMTA

24 384991
EFFICIENCY AND PRODUCTIVITY STUDIES IN URBAN MASS TRANSPORTATION
The study concentrates on the use of the Section 15 National Urban Mass Transportation Statistics (November 1981) to advance the level of knowledge in the field concerning the factors and relationships that effect the efficiency and productivity of urban mass transit systems. The emphasis of the research effort will be on those factors that require national statistics to be investigated. This project starts a third generation research effort on efficiency and productivity and focuses on 18 sets of relationships, most of them only marginally explored hitherto. This includes size of property, physical inputs, support services, maintenance expenditures, other support expenditures, employee fringe benefits, insurance expenditures, public assistance sources, system malfunctions, energy costs, accident costs, revenue analysis, employee composition, employee vs. equipment, payroll and fringe expenditures, peak and off peak relationships, revenue miles, trip lengths, and route lengths. Supplementary APTA data also will be used.

PERFORMING AGENCY: Pennsylvania University, Philadelphia
INVESTIGATOR: Tomazinis, AR Tel (215) 898-8481
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Ensrud, N (UPM-32) Tel (202) 426-9274 Grant PA-11-0029
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1982
TOTAL FUNDS: $84,711
ACKNOWLEDGMENT: UMTA

24 385004
LIFE CYCLE COSTING (LCC) INFORMATION AND EVALUATION SURVEY
The objective of this study is to assist transit operators in the use of LCC procurement methods for the procurement of buses. The study includes a review and documentation of LCC methodologies, development of cost estimates and cost factors indicated by transit property problems which have arisen during the LCC procurement process. To date 75 letters have been forwarded to transit properties to receive LCC information.

PERFORMING AGENCY: Technology Applications, Incorporated, UMTA-VA-06-0112
INVESTIGATOR: Graves, M Tel (703) 931-2000
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Asatoorian, SD (URT-21) Tel (202) 426-8483 Contract UMTA-VA-06-0112
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Mar. 1983 COMPLETION DATE: Jan. 1985
TOTAL FUNDS: $194,000
ACKNOWLEDGMENT: UMTA

24 385046
PROVIDE TECHNICAL SUPPORT FOR ADMINISTRATION OF SECTION 15 REPORTING SYSTEM
This project provides technical support to the Urban Mass Transportation Administration in administration of the Section 15 reporting system. Project activities include: (1) assistance in planning and conducting meetings of the Section 15 Reporting System Advisory Committee; (2) assistance in validating Section 15 data for the FY 1980, FY 1981, and FY 1982 reporting years; (3) assistance in planning and conducting seminars to provide an understanding of the Section 15 reporting system and uses of the data, including the series of Productivity Seminars for Senior Policy Officials and Managers held July-August 1982; (4) production of two videotapes, one for large and one for small/medium transit operators, on improving transit productivity through use of the Section 15 reporting system; (5) preparation of a Section 15 microcomputer data base and of special data summary reports, analyses, and reviews; and (6) research and documentation of the utility and application of Section 15 data and of special problems confronting the collecting and reporting of the data.

PERFORMING AGENCY: Washington Consulting Group, DC-06-0383
INVESTIGATOR: Budin, D Tel (202) 457-6717
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Shorter, R (URT-7) Tel (202) 426-9157 Contract DTUM60-82-C-71116
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Oct. 1981 COMPLETION DATE: Oct. 1984
TOTAL FUNDS: $1,439,000
ACKNOWLEDGMENT: UMTA

24 385050
TRANSIT RESOURCE PRODUCTIVITY DEMONSTRATION
The objective of this project is to develop analytical tools and inexpensive data collection techniques to enable efficient allocation of transit resources. Computer modeling is used to determine impact of fares and service changes on costs, revenues, and ridership.

PERFORMING AGENCY: Central Ohio Transit Authority, OH-06-0027
INVESTIGATOR: Bowles, B Tel (614) 275-5800
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: McKeown, SN (URT-31) Tel (202) 426-4984 Contract OH-06-0027
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Oct. 1978 COMPLETION DATE: May 1985
TOTAL FUNDS: $940,000
ACKNOWLEDGMENT: UMTA

24 385052
EVALUATION OF SECTION 15 DATA BASE AND GENERATE OUTPUT RECORDS
This project provides technical support services to the Urban Mass Transportation Administration in administering the Section 15 reporting system. Activities include: preparation of the Section 15 data and annual reports; preparation of special data sets for the Section 9 apportionments; design and implementation of Section 15 Software system improvements; training activities for transitioning data base and report production activities to the private sector; preparation of proposed revisions to Section 15 reporting requirements, definitions, forms and manuals; special Section 15-related analyses; and distribution of annual reports and other hard-copy and machine-readable Section 15 data.
REFERENCES:
National Urban Mass Transportation Statistics, First Annual Report, Section 15 Reporting System, Morin, SJ, May 1981
National Urban Mass Transportation Statistics, Second Annual Report, Section 15 Reporting System, Morin, SJ, June 1982
National Urban Mass Transportation Statistics, 1981 Section 15 Report, Jacobs, M, Nov. 1982
Supplement to National Urban Mass Transportation Statistics, 1981 Section 15 Report, Jacobs, M; O'Connor, R; Chen, S, July 1983
National Urban Mass Transportation Statistics, 1982 Section 15 Annual Report, Jacobs, M; O'Connor, R; Shen, S, Nov. 1983

PERFORMING AGENCY: Transportation Systems Center, MA-06-0107
INVESTIGATOR: Jacobs, M Tel (617) 494-2660 Lyons, W
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Shorter, R (URT-7) Tel (202) 426-9157 Contract MA-06-0107
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1979
TOTAL FUNDS: $4,370,800
ACKNOWLEDGMENT: UMTA

24 385069
TECHNICAL SUPPORT
The Life Cycle Cost program is being conducted to develop a data base for transit operators to use in LCC procurement and assist them in the process.

PERFORMING AGENCY: Transportation Systems Center, UMTA-MA-06-0120(G)
INVESTIGATOR: Comparato, T Tel (617) 837-2196
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Lopez, RA (URT-21) Contract UMTA-MA-06-0120(G)
STATUS: Active NOTICE DATE: Apr. 1984
TOTAL FUNDS: $250,000
ACKNOWLEDGMENT: UMTA

24 385070
TECHNICAL SUPPORT FOR LCC
The Life Cycle Cost program is being conducted to develop data bases and models to be used as an aid to transit operators in calculation and analysis of the total cost of bus "ownership" at the subsystem level. Information on total costs (capital plus operating plus maintenance) associated with various subsystems will provide transit operators with important input in procurement process, resulting in more cost effective purchases. The objective will be to assist transit operators in the use and analysis of LCC.

PERFORMING AGENCY: Transportation Systems Center, UMTA-MA-06-0120(H)
INVESTIGATOR: Aronis, P Tel (617) 484-2024
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Lopez, RA (URT-21) Contract UMTA-MA-06-0120(H)
STATUS: Active NOTICE DATE: Apr. 1984
TOTAL FUNDS: $400,000
ACKNOWLEDGMENT: UMTA

24 385105
REVIEW OF MICROCOMPUTER ACCOUNTING SYSTEMS
This project will produce a software selection and evaluation guide that will assist small transit agencies in purchasing microcomputer accounting software. Transit agency needs and the characteristics of appropriate software will be listed. The project will conclude with a demonstration of a selected package using data from a small transit agency.

PERFORMING AGENCY: Peat, Marwick, Mitchell and Company, UMTA-MA-06-0039
INVESTIGATOR: Goldman, M Tel (202) 223-9525
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Fisher, RJ (URT-41) Tel (202) 426-9271 Contract UMTA-MA-06-0039
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Dec. 1983 COMPLETION DATE: June 1984
TOTAL FUNDS: $54,000
ACKNOWLEDGMENT: UMTA

24 385106
TRANSIT PERFORMANCE AND PRODUCTIVITY WORKSHOP (SMALL AND MEDIUM-SIZED TRANSIT OPERATIONS)
The Transit Performance and Productivity Workshop is designed to offer training in performance monitoring and problem-solving techniques to

managerial, operational support staff and policy board members of small to medium-sized transit agencies. The instructional material presents methods to assess the overall efficiency and effectiveness of an operation; discusses suggested strategies for improving efforts to maximize on financial and human resources. The workshop series will be conducted as a train-the-trainer program for small groups on a regional basis via transit association meetings or invitation from a transit agency.

REFERENCES:
Instructor's Guide and Course Syllabus Dec. 1983
Participant's Workbook Dec. 1983

PERFORMING AGENCY: Urban Resources Consultants, Incorporated, DC-06-0418
INVESTIGATOR: Fountain, BR Tel (202) 223-4670
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Royal, AJ (URT-32) Tel (202) 426-0080 Contract C-72055
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1983 COMPLETION DATE: Aug. 1985
TOTAL FUNDS: $150,000
ACKNOWLEDGMENT: UMTA

24 389725
TRANSIT MICROCOMPUTER USER GROUP
The purpose of this project is to operate a center that will provide microcomputer information to transit operations as well as distribute selected software submitted by operators. The Center will act as a clearinghouse for and technical advisor on existing and new microcomputer software which is specifically designed for use by the transit industry. The software is developed by or for individual transit operators to assist them in scheduling, routing, financial planning, and other managerial/technical matters. This project allows the transit operators to gain access to the programs developed by all other transit operators who participate in The National Microcomputer User Group.

PERFORMING AGENCY: Rensselaer Polytechnic Institute, UMTA-NY-06-0104
INVESTIGATOR: Abkowitz, MK Tel (518) 266-6932
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Fisher, RJ (URT-41) Tel (202) 426-9271 Contract UMTA-NY-06-0104
STATUS: Active NOTICE DATE: Oct. 1984 COMPLETION DATE: Aug. 1985
TOTAL FUNDS: $158,000
ACKNOWLEDGMENT: UMTA

24 389731
DOCUMENTATION AND DISSEMINATION OF COST EFFECTIVE MANAGEMENT OPERATIONS IMPROVEMENTS
The objective of this project is to analyze and summarize results of UMTA demonstration projects and locally sponsored innovation and produce a series of executive summaries for the use of transit operators and local officals who wish to adopt the innovations. The accomplishment of this objective would enhance the UMTA information dissemination program with respect to a number of service improvement areas—transit reliability and timed transfer, pricing, parking management, ridesharing, rural transportation, services for special user groups, transit management improvements, alternatives to fixed-route service, funding alternatives, and public/private venture cooperation. Executive Summary reports will be published and disseminated.

PERFORMING AGENCY: Organization for Environmental Growth, Inc, UMTA-DC-06-0421
INVESTIGATOR: Walker, B Tel (202) 832-0720
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Tate, R (URT-31) Tel (202) 426-4984 Contract
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: 1983 COMPLETION DATE: 1985
TOTAL FUNDS: $259,999
ACKNOWLEDGMENT: National Highway Traffic Safety Administration

25 349146
A MODULAR APPROACH TO ON-BOARD, AUTOMATIC DATA COLLECTION SYSTEM
The general objective of this research is to develop requirements and implementation guidelines for the use of automated on-board passenger/fare information collection systems. The system hardware should be constructed on a modular basis. Depending on the complexity of information desired, the modules should include, but not be limited to: (1) basic passenger counters (e.g.,) treadle, infarared), (2) location detection devices (e.g., odometer, signposts), (3) fare category counter (e.g., electronic fare-box), and (4) data storage/retrieval equipment (e.g., radio, cassette, solid state). Functional specifications for each of these systems are to be developed so that one module or component is compatible with another regardless of manufacturer. Requirements for modules or components will depend on the decisions a transit property must make, which, in turn, determine the level of detail the data collection system must make, which, in turn, determines the level of detail the data collection system must provide. The levels of detail range from systemwide information to detailed stop-by-stop information. The system should be designed so that a transit property can choose, in modular fashion, the level and type of hardware needed for the data desired.
NCTRP Rpt 9 published.

PERFORMING AGENCY: Mitre Corporation
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Jencks, CF Tel (202) 334-3224
NCTRP 39-1
STATUS: Completed NOTICE DATE: Nov. 1984
START DATE: Nov. 1982 COMPLETION DATE: Aug. 1985
TOTAL FUNDS: $150,000
ACKNOWLEDGMENT: National Cooperative Transit Res and Dev Program

25 369397
FARE COLLECTION RESEARCH AND DEVELOPMENT
This program has two components: (1) Studies in fare collection, and (2) fare collection hardware. Immediate needs which are addressed include equipment development (e.g., bill verifier, ticket vendor) to increase the reliability of existing equipment. The market for fare collection equipment is relatively small, failing to justify manufacturer investment in R&D, and participation in UMTA programs by manufacturers may lead to possible loss of proprietary information about hardware they have developed. UMTA has turned to operators as performing agencies for its programs. It is not clear that transit properties have technical capabilities to develop an improved product and any improvements can have only marginal benefits. The goal is fare collection systems which have high reliability, lower operating and maintenance costs, and incorporate flexibility to implement alternative fare policies. New technologies based on Electronics Funds Transfer, Security-Identification, and microprocessors look promising. Solid state equipment relying less on electro-mechanical components such as in BART and WMATA fare collection systems is desirable.
Participants in current program include Illinois Central Gulf Railroad ($200,000), Port Authority Transit Corp. ($100,000), Chicago Transit Authority ($250,000), and Transportation Systems Center ($469,000).

PERFORMING AGENCY: Urban Mass Transportation Administration
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Spenser, P Tel (202) 426-0090

STATUS: Active NOTICE DATE: May 1984
TOTAL FUNDS: $1,019,000
ACKNOWLEDGMENT: UMTA

25 372973
FARE COLLECTION PROBLEMS AND SOLUTIONS
The transit industry needs solutions to the problems of handling and securing paper currency because these problems will increase as fares continue to rise. This research will be accomplished by completing the following tasks: Task 1-Identify U.S. transit systems that collect large quantities of paper currency in on-board fare collection equipment. Task 2-Examine the strategies used by these transit systems to collect, handle, count, and secure dollar fares. Identify problems and solutions including measures used to discourage or prohibit passengers from paying fares with paper currency. Task 3-Examine state-of-the-art farebox technology for handling paper currency including documentation of transit system experience. Task 4-Examine the European experience of handling fare collection off buses by encouraging the use of tokens, tickets, passes, and other strategies. Task 5-Develop recommendations and solutions to the problems associated with collecting fares of one dollar or more on buses in the United States.
Currently being conducted by the UMTA Office of Bus technology is a comprehensive study of dollar-bill fare collection problems in bus operations. The foregong study description will, therefore, be limited to special problems in rail systems, building on the current UMTA work as appropriate.

PERFORMING AGENCY: Mitre Corporation
INVESTIGATOR: Deibel, L Tel (703) 883-6824
SPONSORING AGENCY: Urban Mass Transportation Administration NCTRP 60-1
STATUS: Active NOTICE DATE: Nov. 1984
START DATE: Dec. 1983 COMPLETION DATE: 1985
ACKNOWLEDGMENT: National Cooperative Transit Res & Devel Program

25 372988
LOS ANGELES FARE REDUCTION STUDY
This study is examining the distributional consequences (tax and benefit incidience) associated with the 1982 fare reduction of the Southern California Rapid Transit District (SCRTD). In 1980, Los Angeles County voters approved a 1/4 of 1% sales and use tax for pubic transit improvements. Part of these tax revenues are being used to hold SCRTD's base fare at 50 cent, a reduction from the previous 85 cent fare.

PERFORMING AGENCY: Charles River Associates, Incorporated, 495.39
INVESTIGATOR: Lovely, ME Tel (617) 266-0500
SPONSORING AGENCY: Transportation Systems Center Contract 1757-39
STATUS: Active NOTICE DATE: May 1983
START DATE: Dec. 1982 COMPLETION DATE: Feb. 1984
TOTAL FUNDS: $60,000
ACKNOWLEDGMENT: Charles River Associates, Incorporated

25 384925
SUPPORT FOR TRANSIT PRICING AND FINANCING
This project will develop two microcomputer software packages based on innovative transit pricing or management techniques previously tested through the Service and Management demonstration (SMD) program. In addition, a series of seminars/workshops in transit financial planning will be developed for presentation to transit operators and planners. This project supports disseminating up-to-date methods in transit management and pricing through courses designed to give operators and planners access to current SMD findings and computer software to allow direct application of these techniques at the individual transit system level.

PERFORMING AGENCY: Technology Research and Analysis Corporation, UMTA-VA-06-0102
INVESTIGATOR: Yen, T Tel (703) 522-2440
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: McKeown, SN (URT-31) Tel (202) 426-4984

STATUS: Active NOTICE DATE: Apr. 1984
START DATE: June 1983 COMPLETION DATE: Dec. 1984
TOTAL FUNDS: $180,000
ACKNOWLEDGMENT: UMTA

25 384926
SELF-SERVICE FARE COLLECTION AND AUTOMATIC FARE BILLING DEMONSTRATION DESIGN
This project will continue the demonstrations implemented under the Flexible Fares Program (FFP) in the areas of self-service fare collection (SSFC) and automated transit fare billing. In addition, exemplary demonstrations in these areas will be developed and technical assistance provided to transit systems needing information or special support in pursuing similar programs.
REFERENCES:
Self-Service Fare Collection, Volumes 1-4
Self-Service Fare Collection: Canadian Experience and U.S. Implications, Mitre Corporation, Apr. 1982

Self-Service Fare Collection and Automated Transit Fare Billing Demonstration Design, Mitre Corporation, Sept. 1982

PERFORMING AGENCY: Mitre Corporation, UMTA-VA-06-0099
INVESTIGATOR: Deira, L Tel (703) 883-6910
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: McKeown, SN (URT-31) Tel (202) 426-4984

STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1979 COMPLETION DATE: June 1985
TOTAL FUNDS: $906,377
ACKNOWLEDGMENT: UMTA

25 384954
AUTOMATIC PASSENGER COUNTER/FAREBOX INTEGRATION
This activity will involve development, test and evaluation of automatic passenger counters and registering fareboxes on 50 buses. Installations will include necessary equipment and software to collect, transmit and produce an integrated passenger/revenue report. The goal is more ridership and fare information than can be produced by individual counters and fareboxes. To be used as an analytical tool for evaluating proposed service changes and as a marketing tool in determining costs.

PERFORMING AGENCY: Metropolitan Atlanta Rapid Transit Authority, UMTA-GA-06-0019
INVESTIGATOR: Johnson, A Tel (404) 586-5341
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Izumi, G (URT-22) Tel (202) 426-8483 Contract UMTA-GA-06-0019
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: 1983
ACKNOWLEDGMENT: UMTA

25 384977
PASSENGER COUNTER EQUIPMENT TEST
Develop, install and evaluate equipment needed to interface passenger counter system with registering farebox. Evaluate ultrasonic passenger counting sensors with infrared sensors. The combined data will be stored in the passenger counter memory. It will be useful in determining bus route structure and in reporting Section 15 data. The Automatic Passenger Counter (APC) system will be tested by Kalamazoo Metro.

PERFORMING AGENCY: Michigan Department of Transportation, UMTA-MI-06-0042
INVESTIGATOR: Richard, C Tel (517) 322-1090
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Izumi, G (URT-22) Tel (202) 426-8483

STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

25 385047
FARE AND SERVICE DEMONSTRATION DESIGN AND RESOURCE CENTER
The purpose of this program is to design and develop management plans for demonstrations—testing differential time-of-day and distance-based fares—and to establish a Transit Pricing Resource Center officering telephone and onsite technical assistance on pricing issues.

PERFORMING AGENCY: Ecosometrics, Incorporated, MD-06-0093
INVESTIGATOR: Knapp, S Tel (301) 652-2414
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: McKeown, SN (URT-31) Tel (202) 426-4984 Contract MD-06-0093
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1982 COMPLETION DATE: Sept. 1985
TOTAL FUNDS: $300,078
ACKNOWLEDGMENT: UMTA

25 385048
AUTOMATED TRANSIT FARE BILLING SYSTEM
This demonstration is to test the viability and public acceptance of an automated fare billing system adapted for general use in a mass transit system. Individual transit users may apply for and be issued a transit "credit card" which is inserted into an onboard reader. Monthly billings are sent to users.

PERFORMING AGENCY: Merrimack Valley Regional Transit Authority, MA-06-0147
INVESTIGATOR: Wong, X Tel (617) 374-0195
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: McKeown, SN (URT-31) Tel (202) 426-4984 Contract MA-06-0147
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1982 COMPLETION DATE: Sept. 1984
TOTAL FUNDS: $416,557
ACKNOWLEDGMENT: UMTA

25 385054
IMPOVED TURNSTILE
Develop, test and evaluate improved turnstile with standard component specifications including magnetic reader/flashpass. Rail transit operators that utilize turnstiles as the primary means for fare collection have limited flexibility for changing fare levels or struture. Passengers are inconvenienced with basically a single fare media. A number of these operators are attempting to extend the capabilities of their turnstiles with component retrofits. This work will determine a concensus amongst operators, develop and apply standard component specifications.

PERFORMING AGENCY: Southeastern Pennsylvania Transportation Authority
INVESTIGATOR: Lawrence, W Tel (215) 456-4269
SPONSORING AGENCY: Urban Mass Transportation Administration Contract PA-06-0080
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1982 COMPLETION DATE: May 1984
TOTAL FUNDS: $225,000
ACKNOWLEDGMENT: UMTA

25 385055
CTA PASS READER
Develop, test and evaluate an improved slide-thru, magnetic-card pass reader system. The slide-thru magentic-card system introduced by the MBTA has not performed as well as expected. This activity will take advantage of recent advances in electronics and utilize off-the-shelf programmable equipment to develop an improved version of the MBTA system. Internal design will enhance the security of the system. The system will be developed in three stages: stand-alone units; interconnected system; and centrally controlled system.

PERFORMING AGENCY: Chicago Transit Authority
INVESTIGATOR: O'Connor, J Tel (312) 664-7200 x4030
SPONSORING AGENCY: Urban Mass Transportation Administration Contract IL-06-0049
STATUS: Active NOTICE DATE: Apr. 1984
TOTAL FUNDS: $250,000
ACKNOWLEDGMENT: UMTA

25 385057
FARE COLLECTION MONITORING AND AUDITING SYSTEM
This project is to develop and implement an automated, centralized data collection system for use with fare collection equipment. The MTA-Baltimore, Maryland will perform the following tasks: (1) Design the system, including hardware, software and interface requirements. (2) Procure standard computer equipment and communications hardware, and manufacture custom interface equipment to interconnect the system. (3) Install equipment, including central computer at the Operations Control Center and individual station equipment at none passenger stations, and interconnect to MTA's existing communications equipment. (4) Perform field tests and evaluation to verify and document that equipment operated properly and in accordance with specification. The proposed monitoring and auditing system will provide detailed maintenance reporting to aid in maintenance problem identification and in establishing trends. The system will continuously monitor each piece of equipment on the fare collection system. Any failure of equipment or change in status will be automatically relayed to Central Control where a message will be printed out.

PERFORMING AGENCY: Maryland Department of Transportation, MD-06-0091
INVESTIGATOR: Kirkpatrick, BK Tel (301) 383-6038

SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Kulyk, W (URT-10) Tel (202) 426-0090 Contract MD-06-0091
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Jan. 1982 COMPLETION DATE: July 1984
TOTAL FUNDS: $300,000
ACKNOWLEDGMENT: UMTA

25 385061
ICG BILL VALIDATOR
Develop more reliable and efficient one and five dollar bill validator for automated ticket vending equipment. The experience that rail transit operators have had with bill validators has been substantially less than optimum. An earlier study at ICG showed the bill validator reliability to be 1000 transactions between failures. This work will aim to increase that figure by at least a factor of two.

PERFORMING AGENCY: Illinois Central Gulf Railroad
INVESTIGATOR: Keeling, RR Tel (312) 565-1600 x3452
SPONSORING AGENCY: Urban Mass Transportation Administration Contract IL-06-0052
STATUS: Active NOTICE DATE: Apr. 1984
TOTAL FUNDS: $262,207
ACKNOWLEDGMENT: UMTA

25 385068
FARE COLLECTION ACTIVITY
The national increase in dollar bill usage is impacting fare collection systems. Added costs associated with bill handling and lost revenue may be several hundred million of dollars. This project is a multi-faceted approach consisting of (a) industry coordination through the bus technology board; (b) systemwide assessment to identify and quantify major problems; (c) subsystem evaluation to determine baseline data; and (d) assistance in monitoring fare collection demonstration projects and studies.

PERFORMING AGENCY: Transportation Systems Center, UMTA-MA-06-0120(D)
INVESTIGATOR: Koziol, T Tel (617) 494-2546
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: DeMarco, VR (UFM-10) Contract UMTA-MA-06-0120(D)
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Jan. 1983
ACKNOWLEDGMENT: UMTA

25 385078
DOLLAR BILL HANDLING
The objective is to reduce dollar bill handling costs for fare collection and processing in Detroit by improving farebox equipment reliability and reducing fare revenue processing cost. This will involve purchase, test and evaluation of fare equipment capable of $1 bill handling to reduce jamming and stack $1 bills separately from coins. Improved revenue processing, security and accountability will be achieved. Bus fares nationally are at or approaching $1. Fareboxes in use are designed for coins only. Present dollar handling fareboxes are experiencing poor equipment reliability and low bill capacities.

PERFORMING AGENCY: Michigan Department of Transportation, UMTA-MI-06-0041
INVESTIGATOR: Boctor, K Tel (517) 322-1601
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: DeMarco, VR (UFM-10) Contract UMTA-MI-06-0041
STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

25 385104
FARE COLLECTION DATA RETRIEVAL
Increase farebox security and accountability by reducing farebox data processing time. Reduce cost and increase accuracy of collecting and processing fare collection data. This will involve installation test and evaluation in bus revenue service of two alternative revenue data collection systems. Two groups of 15 buses will be equipped with data collection systems which connect directly with the bus farebox; the equipment maintains total of money, tokens and transfer data electronically for a microcomputer. A major deterrent to theft is farebox accountability. Also, increased passenger data reporting requirements have been placed on grantees under Section 15.

PERFORMING AGENCY: Massachusetts Bay Transportation Authority, UMTA-MA-06-0160
INVESTIGATOR: DeAngelis, M Tel (617) 722-3351
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: DeMarco, VR (UFM-10) Contract UMTA-MA-06-0160
STATUS: Active NOTICE DATE: Apr. 1984
TOTAL FUNDS: $38,400
ACKNOWLEDGMENT: UMTA

26 372972
TRAFFIC CONTROL AND REGULATION AT TRANSIT STOPS
The objective of this study is, through surveys and interviews, to develop a consensus of recommended practices for signing at bus stops. The practices would also address the use of curb and pavement markings. Signing practices would be developed for different conditions such as: (1) Coordination of bus stop signs with traffic control signs, (2) Far and near side stop in urban areas, (3) Minimum signing for residential streets, (4) Signing in rural and suburban areas without curbs or shoulders, (5) Coordination with bike paths on streets, (6) Use of curb painting, (7) Part-time bus stops-restricted parking only part of the day, and (8) Coordination with exclusive bus lanes. This synthesis should be derived through a joint effort by traffic engineer and transit management. It should not necessarily address the need for a uniform bus stop sign as most transit systems have their own unique sign, which provides for system recognition.

PERFORMING AGENCY: Rankin (WW), 6307 E. Halbort Road
INVESTIGATOR: Rankin, WW Tel (301) 229-3673
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Copas, T Tel (202) 334-3242 NCTRP 60-1, TS-6
STATUS: Active NOTICE DATE: May 1984
START DATE: Jan. 1984 COMPLETION DATE: 1985
TOTAL FUNDS: $45,000
ACKNOWLEDGMENT: National Cooperative Transit Res & Devel Program

26 385002
DOOR PANEL SENSOR IMPROVEMENT PROGRAM
The objective of this program is to improve the reliability of existing New York railcar door sensors through development and testing of new door sensor designs. The scope of the program includes investigating previous work in door sensor improvements and develop a door sensor specification; develop a list of promising potential improved door sensors that may be available from suppliers; test and evaluate potential improved sensors; retrofit several New York railcars and conduct limited field tests on the sensors to collect and analyze performance data on the door sensors; and use this information as a basis to improve reliability and maintenance of door sensors.

PERFORMING AGENCY: Metropolitan Transportation Authority, UMTA-NY-06-0101
INVESTIGATOR: Rossmy, M Tel (212) 878-7256
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Sing, FL (URT-12) Tel (202) 426-0090

STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Mar. 1984 COMPLETION DATE: Nov. 1985
TOTAL FUNDS: $375,000
ACKNOWLEDGMENT: UMTA

26 389741
ANALYSIS OF BUS TRANSIT ACCIDENTS: EMPIRICAL, METHODOLOGICAL AND POLICY ISSUES
A large set of bus accident data will be studied to list hypotheses concerning causes of bus accidents. After hypotheses are studied, local and federal policies will be identified to reduce accident risk. It is proposed that new and innovative analyses of detailed accident reports be made, including reports not generally available. Through close cooperation with a local transit agency, significant insights should be gained concerning the causes of bus transit accidents and policies for their reduction.

PERFORMING AGENCY: Northwestern University, Evanston
INVESTIGATOR: Jovanis, PP Tel (312) 492-5015
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Enty, FE (URT-33) Tel (202) 426-9274 Contract IL-11-0031
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: 1984
ACKNOWLEDGMENT: UMTA

27 384933
FACTORS AFFECTING THE INCIDENCE AND PERCEPTION OF BUS CRIME IN LOS ANGELES

To document public exposure to crime in bus transit modes and elaborate on three factors affecting both actual exposure to incidents and the perception of danger in selecting bus transit. The factors are the defensibility of space, identification with bus travel, and experience with bus travel. A random telephone survey of one thousand households in west central Los Angeles will be conducted using the method of stratification random digit dialing, in order to document the actual incidence of crime on buses and on route to and from bus stops, as well as to examine public perception of safety during bus travel. An analysis will be conducted both on general characteristics of the sample and sub-population who have been exposed to bus crimes.

PERFORMING AGENCY: California University, Los Angeles, UMTA-CA-06-0195
INVESTIGATOR: Levine, N Tel (213) 825-8561 Wachs, M
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Meade, JZ (URT-33) Tel (202) 426-0080 Grant UMTA-CA-06-0195
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1983 COMPLETION DATE: Nov. 1984
TOTAL FUNDS: $84,187
ACKNOWLEDGMENT: UMTA

27 385019
METROPOLITAN DADE COUNTY TRANSIT ANTI-CRIME DEMONSTATION

The purpose of this project is to reduce crime on and around the bus system by utilizing undercover police officers as decoys equipped with electronic surveillance equipment; increase rider perception of security by establishment of a 24-hour crime hotline, combined with public awareness programs through the media; and, to develop procedures for policing the Dade County transportation system.

PERFORMING AGENCY: Metropolitan Dade County, UMTA-FL-06-0025
INVESTIGATOR: Deluca, A Tel (305) 638-5751
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Cooper, GR (URT-6) Tel (202) 426-2896 Contract UMTA-FL-06-0025
STATUS: Inactive NOTICE DATE: Apr. 1984
START DATE: June 1982
TOTAL FUNDS: $730,000
ACKNOWLEDGMENT: UMTA

28 372985
TRANSIT MARKET SEGMENTATION STUDY
By means of an opinion survey, the objective of the study is to determine the size and characteristics of the consumer groups representing current riders and those people offering the greatest potential for becoming transit users. The study also will identify the factors which inhibit increased use of public transportation by these groups, and identify the motivating appeals that would overcome these inhibiting factors within each market segment.

PERFORMING AGENCY: Washington Metropolitan Area Transit Authority, X-92010
INVESTIGATOR: Fowler, PL Tel (202) 637-1327 Contract
STATUS: Programmed NOTICE DATE: May 1983
START DATE: Apr. 1983 COMPLETION DATE: July 1983
TOTAL FUNDS: $70,000
ACKNOWLEDGMENT: Washington Metropolitan Area Transit Authority

28 384940
EQUITY AND SENSITIVITY: ELEMENTS TO IMPROVE RIDERSHIP AND MARKETING FOR LOW INCOME CITIZENS
To design, field test and implement an instrument that will generate data relative to the attitudes and self-perception of inner city ridership. A comprehensive review will be conducted of the regular and special services and practices which are offered to inner city low income riders. The project effort will also investigate the impact of increased suburbia routing and its relationship to quality of services for urban dwellers and develop simple instructional modules which will increase bus driver's ability to deal sensitively with and/or assist elderly, handicapped and intoxicated riders. Information tools and techniques will be designed and developed to aid riders in becoming more cooperative and tolerant with Tidewater Regional Transit (TRT) and its drivers. Finally the research effort will develop a set of recommendations and assist TRT in creating mini-services which will allow elderly and handicapped persons to meet more of their needs.

PERFORMING AGENCY: Norfolk State University, UMTA-VA-11-0014
INVESTIGATOR: Smith, M Tel (804) 623-8248
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Takai, H (URT-33) Tel (202) 426-4018 Grant UMTA-VA-11-0014
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1983 COMPLETION DATE: Sept. 1984
ACKNOWLEDGMENT: UMTA

28 384948
ASSESSMENT OF TRANSIT USER MARKETING TOOLS AND TECHNIQUES
To help address a lack of information by identifying and gathering all available transit information tools and aids, both public and private; determining the availability and locations of all available transit tools and aids; determining travel behavior of transit users in the public and private sector by using travel diaries and random sample techniques; analyzing how the elderly, handicapped, and general public view existing transit aids and tools in the public and private sector; utilizing a training and marketing campaign to educate the elderly, handicaped, and general public on how to better access the public and private transportation systems via training workshops, pamphlets, and media campaign; measuring the effects of training and promotional campaign on the elderly and handicapped's use of specialized services; identifying some variables which affect the elderly and handicapped and general public use and non-use of public and specialized transportation; and collecting data which can be used to develop appropriate and usable information aids and tools.

PERFORMING AGENCY: Morgan State University, UMTA-MD-11-0006
INVESTIGATOR: Abrams, W Tel (301) 444-3362
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Arrillaga, B (URT-33) Tel (202) 426-4948 Grant UMTA-MD-11-0006
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1983 COMPLETION DATE: Aug. 1984
ACKNOWLEDGMENT: UMTA

28 384992
A PROJECT DESIGNED TO INCREASE LEVEL OF PUBLIC TRANSIT PATRONAGE AMONG SPECIALIZED GROUPS
The emergence of public transportation and its decline can be attributed to a number of interdependent causes. The urban population continues to increase outside central cities in which public transportation systems are located. Suburban living in the United States is largely automobile oriented because housing and population densities are low. Because of low population density and wide dispersion of origins and destinations, transit systems normally cannot operate profitably. Added to these causes has been the absence of innovative management and marketing strategies to induce greater patronage. The people most affected by these problems are special users—the poor, the young, the old, and the handicapped. There is need to assess current users and potential users of public transit among specialized groups and to develop management and marketing techniques for increasing the level of ridership among the mobility disadvantaged. This project focuses on transit management as it relates to marketing (promotion, etc.). It is designed to stimulate ridership and to improve the image of public transit generally through a marketing program tailored to the needs of special users. The objectives of the project are: (1) to examine existing marketing techniques in urban areas which are potentially applicable to increasing public transit ridership and revenues; (2) to analyze, through market research, the mobility wants, needs, and preferences of disadvantaged groups and potential users; (3) to develop techniques for increasing the measurable ridership and public awareness among special users, namely the transportation disadvantaged; and (4) to assess the impact of these marketing techniques and to develop data that will provide specific guidance to transit professionals for effectively incorporating marketing into planning and decision-making. There is a strong demand for effective marketing management of public transit to encourage patronage, thereby increasing ridership at the local level and conserving energy. The proposed project addresses this need.

PERFORMING AGENCY: Texas Southern University
INVESTIGATOR: Lede, NW Tel (713) 527-7282
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Adams, RW (URT-42) Tel (202) 426-4267 Grant TX-11-0014
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1982
TOTAL FUNDS: $122,662
ACKNOWLEDGMENT: UMTA

28 385049
RATIONALIZING SERVICE AND FARE POLICIES
This project evaluates the potential of increasing transit ridership as a means of rationalizing fare and service policies in the U.S. by performing and in-depth disaggregate case study analysis of the New Jersey Transit Corporation transit system.

PERFORMING AGENCY: Rutgers University, New Brunswick, NJ-06-0017
INVESTIGATOR: Pucher, JR Tel (201) 932-3812
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: McKeown, SN (URT-31) Tel (202) 426-4984 Contract NJ-06-0017
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Dec. 1982
TOTAL FUNDS: $84,771
ACKNOWLEDGMENT: UMTA

28 389722
TRANSIT MARKETING INFORMATION EXCHANGE PROJECT
The main objective of the Transit Marketing Information Exchange Project is to assist in motivating and improving the interchange of existing marketing materials within the transit community. More effective consumer services and information exchange by transit systems would be in place.

PERFORMING AGENCY: Expand Associates, Incorporated, UMTA-IT-06-0238
INVESTIGATOR: Saunders, R Tel (301) 585-7400
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Tate, R (URT-31) Tel (202) 426-4984 Contract
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: 1983

ACKNOWLEDGMENT: UMTA

28 389744
MARKETING FOR RURAL AND SMALL CITY TRANSPORTATION OPERATIONS
This cooperative marketing project will demonstrate how to develop and implement small-system initiatives in rural areas and small cities. Providers in Twin Falls, Idaho Falls and Pocatello will be the focus of the activity. Current and potential user groups will be identified, marketing strategies will be developed to assure maximum utilization of the systems; alternative transportation schemes will be devised; and the strategies will be appraised. The State Uninversity at Boise will provide data collection methodology.

PERFORMING AGENCY: Idaho Department of Transportation, UMTA-ID-06-0002
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Tate, R (URT-31) Tel (202) 426-4984 Grant UMTA-ID-06-0002
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: 1984 COMPLETION DATE: Dec. 1985
TOTAL FUNDS: $85,000
ACKNOWLEDGMENT: UMTA

29 369388
ERIE COMPUTERIZED RIDER INFORMATION SYSTEM DEMONSTRATION
This demonstration involves the installation of an automatic voice response system, and later an automatic vehicle monitoring system, that will provide individuals with the expected arrival times of the next two buses at a given bus stop. The main objectives of the system are to increase transit ridership and net revenue by automatically providing Erie Metropolitan Transit Authority (EMTA) users with bus schedule and status information using regular telephones. The first phase of the project is scheduled to begin in early 1983 when the automatic voice respone (AVR) system starts operating to provide callers with regular transit schedule information. The second phase will begin about one year later and involves using an automatic vehicle (AVM) system to provide the computer, and thus the transit user, with real time information on the location and arrival times of all buses in operation.
REFERENCES:
Erie Computerized Rider Information System Demonstration: Data Collection Plan, Parody, TE, Dec. 1981

PERFORMING AGENCY: Charles River Associates, Incorporated, 495.36
INVESTIGATOR: Parody, TE Tel (617) 266-0500
SPONSORING AGENCY: Transportation Systems Center; Urban Mass Transportation Administration Contract DOT-TSC-1757-36
STATUS: Active NOTICE DATE: Nov. 1982
START DATE: Sept. 1981 COMPLETION DATE: June 1984
TOTAL FUNDS: $100,000
ACKNOWLEDGMENT: Charles River Associates, Incorporated

29 372976
PASSENGER INFORMATION SYSTEMS FOR TRANSIT TRANSFER FACILITIES
Currently, no single standard set of policies, guidelines, or principles are available to provide terminal architects/designers with guidance for signing and information systems for intermodal transfer facilities. A uniform set of passenger information systems and policies can yield significant benefits to virtually millions of terminal systems users and significantly reduce the cost associated with designing these systems. Research should be conducted to identify and categorize the various types of passenger information systems currently deployed in intermodal transfer facilities in the United States. A comparative evaluation of the effectiveness of the systems should be conducted. Standards for guidance systems, real time data systems, and general information systems should be inventoried, unified, and enhanced to aid the terminal user and eliminate the anxiety assoicated with decisionmaking in an unfamiliar environment. Specific questions that should be addressed include: (1) What alternative communication systems are available to identify loading areas for various routes? (2) What alternative effective communication systems are available for identifying loading areas for multiple routes using the same loading areas? (3) Can communication systems effectively manage pedestrian traffic in loading areas? (4) What alternative techniques are available to display timetables and routes structures? Which of these appear to be the most effective communication device? (5) What are the trade-offs between automated communications systems vs. person-to-person communications in terms of cost-effectiveness and communications effectiveness?

PERFORMING AGENCY: Transportation Research Board
INVESTIGATOR:
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Copas, T Tel (202) 334-3242 NCTRP 60-1, TS-8
STATUS: Active NOTICE DATE: Nov. 1984
START DATE: Nov. 1983 COMPLETION DATE: 1985
TOTAL FUNDS: $45,000
ACKNOWLEDGMENT: National Cooperative Transit Res & Devel Program

31 369378
APPROPRIATE TRANSIT TECHNOLOGY FOR URBAN AREAS IN DEVELOPING NATIONS (PART OF "TRANSPORTATION ENGINEERING RESEARCH PROBLEMS IN COSTA RICA")
Analysis of urban transit technologies and operating strategies (including paratransit) available and appropriate for developing nations which have few or no petroleum resources, plentiful electricity, and the type of urban and institutional structures often found in such nations. Includes study of travel patterns, traffic facilities available, costs of changing to different technologies or strategies, benefits received, and recommendation for implementation.

PERFORMING AGENCY: California University, Berkeley; Universidad de Costa Rica
INVESTIGATOR: Homburger, WS Tel (415) 642-3558
SPONSORING AGENCY: Ministry of Public Works, Costa Rica Contract 611731-59721
STATUS: Active NOTICE DATE: Oct. 1982
START DATE: Apr. 1982 COMPLETION DATE: Dec. 1983
ACKNOWLEDGMENT: California University, Berkeley

31 369380
FEASIBILITY OF UTILIZING EXISTING RAILROAD RIGHT-OF-WAY FOR TRANSIT CORRIDORS IN URBAN AREAS
The research will identify and investigate U.S. transit projects which utilize railroad rights-of-way for public transportation purposes. The investigation will assess and summarize the institutional, jurisdicational and legal considerations associated with the joint use of rail facilities. Construction and operational problems will be considered and outlined in a final report. Both the practical and technical feasibility of utilizing existing rail right-of-way for transit projects will be addressed and presented in the final research document.

PERFORMING AGENCY: Texas Transportation Institute, 2074
INVESTIGATOR: Peterson, RL Tel (713) 845-1535 Porterfield, CJ
SPONSORING AGENCY: Texas State Department of Highways & Public Transp

STATUS: Programmed NOTICE DATE: Nov. 1982
START DATE: Oct. 1982 COMPLETION DATE: Aug. 1983
TOTAL FUNDS: $48,000
ACKNOWLEDGMENT: Texas Transportation Institute

31 369384
SMALL CITY TRANSIT STRATEGIES UNDER THE NEW FEDERALISM
Transit operators in small cities, where the tax base is not large and auto congestion is not a major factor in travel mode choice, face a set of problems and opportunities under reduced federal subsidies that are different from large city operators. This project has three main tasks. (1) Identify sources of additional revenue. (2) Examine the potential for improved productivity and its relation to subsidy formulas. (3) Develop relationships between management's supply-of-service

PERFORMING AGENCY: Purdue University, 6275
INVESTIGATOR: Fricker, JD Tel (317) 494-2205 Sinha, KC Shanteau, RM
SPONSORING AGENCY: Urban Mass Transportation Administration Grant IN-11-0007
STATUS: Active NOTICE DATE: Nov. 1982
START DATE: Sept. 1982 COMPLETION DATE: Aug. 1983
TOTAL FUNDS: $84,981
ACKNOWLEDGMENT: Purdue University

31 384981
PORT AUTHORITY OF ALLEGHENY COUNTY'S EAST BUSWAY OPERATION
Because of the Busway's moderate construction cost relative to other transit systems, it is important to measure the impact of the busway in order to compare the busway benefits with benefits achieved by other more expensive transit facilities. This project is an evaluation of the Port Authority of Allegheny County's (PAT) new 6.8 mile East Busway serving Pittsburgh and Allegheny County. The project is different from previous exclusive bus lane projects because the higher quality facility comes closer than other busways to a rapid transit system.

PERFORMING AGENCY: Transportation Systems Center, UMTA-PA-06-0081
INVESTIGATOR: Koffman, D Tel (415) 949-1472
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Goodman, JM (URT-31) Tel (202) 426-4984

STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Mar. 1983 COMPLETION DATE: 1985
TOTAL FUNDS: $120,000
ACKNOWLEDGMENT: UMTA

31 384989
AN EVALUATION OF THE IMPACT OF A "PUBLICO" TERMINAL FACILITY ON URBAN TRANSPORTATION
The "Publico" service operated by private groups of drivers constitutes the major element of the public transportation system in the Commonwealth of Puerto Rico. Most "Publicos" operate from street terminals located at the heart of the central business district of each town. In order to alleviate the traffic problems and to contribute to a better coordinated public transportation system, Urban areas have built and have plans to build centralized "Publico" terminal facilities. The principal purpose of this study is to quantify the impact of constructing a "Publico" terminal facility by evaluating the level of service rendered by the "Publico" system. The point of reference will be the Municipality of Mayaguez, since a "Publico" terminal is presently under construction, and it is scheduled for completion in early 1983. The study will determine if the construction of the terminal facility will have an effect on passengers per route, service frequency, passenger volumes, waiting times, and travel times. A route ridership model, that could be utilized to evaluate the impact on "Publico" ridership of route level changes, also will be developed. The amount of reduction or increase in congestion will be quantified by performing an intersection delay study at several key intersections. Public opinion surveys will be used to make recommendations as to the design, operation, and improvements of "Publico" terminals. The result of the study will be the development of models, patterns, and guidelines through which transportation agencies can base decisions on the establishment of future "Publico" terminals.

PERFORMING AGENCY: Puerto Rico University, Mayaguez
INVESTIGATOR: Luyanda, F Tel (809) 832-4040
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Meade, JZ (URT-32) Tel (202) 426-0080 Grant PR-11-0003
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1982
TOTAL FUNDS: $80,865
ACKNOWLEDGMENT: UMTA

31 385018
I-66 EVALUATION
The objectives of this project are to evaluate the impact of I-66 high occupancy vehicle (HOV) rules on mode split generation and use of HOVs in I-66 corridor; collect data on the changes in mode choice; and develop a modal split model.

PERFORMING AGENCY: Transportation Systems Center, UMTA-MA-06-0049; Metropolitan Washington Council of Governments
INVESTIGATOR: Casey, R Tel (617) 494-2213
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Goodman, JM (URT-7) Tel (202) 426-4984 Contract UMTA-DC-06-0402
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: May 1982 COMPLETION DATE: Oct. 1984
TOTAL FUNDS: $50,000
ACKNOWLEDGMENT: UMTA

31 390089
WORKSHOP ON TRANSPORTATION IN MAJOR PRIVATE SUBURBAN DEVELOPMENTS
New suburban growth centers have emerged on the periphery of major urban areas and are beset with major transportation problems of congestion as well as dependency on the auto for both internal circulation and access. Local governments are strapped for resources and are usually unable to provide transportation services. This project will develop public/private strategies for resolving such issues. The purpose of this cooperative agreement is to plan and conduct a workshop on transportation in major

private suburban developments. A report based on the workshop and containing recommendations of strategies for resolving transportation issues of major private developments will be prepared and disseminated to the transit community.

PERFORMING AGENCY: California University, Irvine, UMTA-CA-06-0196
INVESTIGATOR: Lave, C Tel (714) 856-6789
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Goodman, J (URT-31) Tel (202) 426-4984 Contract UMTA-CA-06-0196
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: June 1984 COMPLETION DATE: Feb. 1985
TOTAL FUNDS: $66,000
ACKNOWLEDGMENT: UMTA

31 390090
SUBURBAN TRANSPORTATION MANAGEMENT ORGANIZATION
The objective of this project is to demonstrate how to plan and organize a transportation management organization (TMO) in which public and private agencies are models of programs and actions to be undertaken by private and public bodies. A project is being planned in Towson, Maryland under the sponsorship of the Baltimore Regional Planning Commission.

PERFORMING AGENCY: Baltimore Regional Planning Commission, UMTA-MD-06-0113
INVESTIGATOR: Pezzota, P Tel (301) 383-5822
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Goodman, J (URT-31) Tel (202) 426-4984 Contract UMTA-MD-06-0113
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: Aug. 1984 COMPLETION DATE: Aug. 1986
TOTAL FUNDS: $60,000
ACKNOWLEDGMENT: UMTA

32 369381
PARK-AND-POOL LOTS IN RURAL, NON URBANIZED AREAS
Through a commuter survey, the personal and travel characteristics of individuals engaged in ridesharing will be determined. The demand for Park-and-Pool facilities in rural areas will be assessed along with the benefits and costs associated with the provision of the staging or parking areas. Guidelines for planning and implementing these types of High Occuapncy Vehicle (HOV) treatments will be developed and presented in a final report. In addition, the relative effectiveness of rural Park-and-Pool lots, compared to urban lots will be investigated in terms of annual VMT reduction and fuel conservation.

PERFORMING AGENCY: Texas Transportation Institute, 2072
INVESTIGATOR: Peterson, RL Tel (713) 845-1535
SPONSORING AGENCY: Texas State Department of Highways & Public Transp Contract 2-10-83-1072
STATUS: Programmed NOTICE DATE: Nov. 1982
START DATE: Sept. 1982 COMPLETION DATE: Aug. 1983
TOTAL FUNDS: $52,000
ACKNOWLEDGMENT: Texas Transportation Institute

32 369382
COMMUTER RIDESHARING: AN ANALYSIS OF SURVEY DATA AND PARK-AND-GO FACILITIES
A survey of ridesharing commuters will identify personal and travel characteristics of individuals parking their vehicles at a Park-and-Go or Park-and-Pool Facility and traveling to their final destination by bus, carpool or vanpool. This research will include both urban and rural staging areas for rideshare activity and is an extension of previous work completed in the Fort Worth/Dallas metropolitan region during 1981-82. The results of the survey and data analysis will be documented in a final report.

PERFORMING AGENCY: Texas Transportation Institute, 205
INVESTIGATOR: Peterson, RL Tel (713) 845-1535 Christiansen, DL
SPONSORING AGENCY: Texas State Department of Highways & Public Transp Contract 2-10-74-205
STATUS: Active NOTICE DATE: Nov. 1982
START DATE: Sept. 1982 COMPLETION DATE: Aug. 1983
TOTAL FUNDS: $40,000
ACKNOWLEDGMENT: Texas Transportation Institute

32 369385
DISSEMINATION AND TECHNICAL ASSISTANCE FOR RSS (RIDE SHARING SYSTEM)
In March 1982, development of the UMTA-sponsored microcomputer ridersharing matching system known as RSS was completed. Knoxville Commuter Pool is now disseminating information about RSS to ridesharing organizations throughout the country. In addition, Knoxville commuter pool will provide technical assistance to organizations wishing to use RSS as their matching system.

PERFORMING AGENCY: Knoxville Commuter Pool
INVESTIGATOR: Beeson, J Tel (615) 637-7433
SPONSORING AGENCY: Urban Mass Transportation Administration Contract TN-06-0010
STATUS: Active NOTICE DATE: Oct. 1982
START DATE: Sept. 1982 COMPLETION DATE: Sept. 1983
TOTAL FUNDS: $61,000
ACKNOWLEDGMENT: Tennessee University, Knoxville

32 369386
COMMUTER CLUB: AN INNOVATIVE RIDESHARING MANAGEMENT PROGRAM
This two-year project is attempting to demonstrate that, over a relatively short time, part of the operating costs of a ridesharing program can be generated by the services it sells. To reach the demonstration goals, Knoxville Commuter Pool has established a Commuter Club that operates much like its Knox Area Vanpoolers Association operation. Members pay to join the club and, in return, receive special benefits and services. Other methods of generating revenue are also being explored.

PERFORMING AGENCY: Knoxville Commuter Pool; Department of Transportation
INVESTIGATOR: Beeson, J Tel (615) 637-7433
SPONSORING AGENCY: Tennessee Department of Transportation Contract 47-900-9600
STATUS: Active NOTICE DATE: Oct. 1982
START DATE: Oct. 1981 COMPLETION DATE: Sept. 1983
TOTAL FUNDS: $228,000
ACKNOWLEDGMENT: Tennessee University, Knoxville

32 384916
MIAMI DADE COUNTY BROKERAGE PROJECT
This transportation brokerage demonstration is in the second year of operations. It will implement several key components of the project including participation of private carriers in the taxi-transit integration element of the demonstration. The demonstration will provide models for other large urban areas interested in improving public transportation services. Metropolitan Dade County has begun implementing several project elements and is planning to implement the remaining elements including transit/paratransit integration and the computer-assisted routing, scheduling, and dispatching system.

PERFORMING AGENCY: Metropolitan Dade County
INVESTIGATOR: Marsella, C Tel (305) 579-2594
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Bautz, JA (URT-31) Tel (202) 426-4984 Contract UMTA-FL-06-0023
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Apr. 1984 COMPLETION DATE: Dec. 1985
TOTAL FUNDS: $1,000,000
ACKNOWLEDGMENT: UMTA

32 384936
THE POTENTIAL OF PRIVATE SECTOR COMMUTER CLUBS TO INCREASE PUBLIC SECTOR EFFICIENCY
To investigate the potential of private commuter clubs serving the CBD in the Chicago area to reduce peak demand and optimal peak ridership of commuter rail. The marginal cost of peak demand and optimal peak ridership of commuter rail will be determined from operation and cost data. The stability and potential of expansion of the commuter clubs will be investigated by interviewing the organizers and operators of commuter clubs. The conditions under which an optimal number of commuters will switch from rail to commuter clubs will be analyzed through the use of existing mode split models. Policies that will create these conditions will be generated and evaluated.

PERFORMING AGENCY: Illinois University, Chicago, UMTA-IL-06-0058
INVESTIGATOR: Paaswell, RS Tel (317) 494-2205
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Churchman, MM (URT-33) Tel (202) 426-4984 Gramt UMTA-IL-06-0058
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1983 COMPLETION DATE: Aug. 1984
ACKNOWLEDGMENT: UMTA

32 384939
NEW APPROACHES TO CIRCUITRY IN RIDE SHARING: THE INDIVIDUAL TRAVEL DECISION
To improve on earlier studies by specifying the extent to which certain factors affect circuity, using data from a small urban area. Factors to be tested include trip length, car pool size, job category, network structure, and whether the carpool was formed by a matching service or "spontaneously". Most importantly, these analyses will be conducted with variable values assigned from the individual's perspective, not based on carpool-wide averages or totals. Furthermore, the inaccuracies in the approximation of methods of earlier studies will be examined. The result will have immediate use in a variety of applications for planning and operations. The impacts of energy shortages, changes in transportation service, and other factors that may influence ride sharing can be better quantified if the nature and magnitude of route deviation is better understood.

PERFORMING AGENCY: Purdue University, UMTA-IN-11-0010
INVESTIGATOR: Fricker, J Tel (317) 494-2205
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Churchman, MM (UPM-31) Tel (202) 426-4984 Grant UMTA-IN-11-0010
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1983 COMPLETION DATE: Aug. 1984

ACKNOWLEDGMENT: UMTA

32 384970
TAXI REGULATION IN A FREE ENTRY MARKET: A CASE STUDY OF WASHINGTON, D.C.
Regulatory barriers have often surfaced as the critical limitation in attempts to expand the scope of private sector participation in public transportation. While the regulation of taxicabs generally has been accepted as necessary for the public good, the taxi industry is looked upon as a provider of private transportation to a public market. The project will, through a case study approach, examine regulatory trends and regulators' willingness to encourage increased private sector participation in public transportation. Research methodology will include: (1) examination and analysis of data from files and public records; (2) identification and analysis of regulatory trends since 1970; (3) interviews with public officials and staff involved in taxi regulation; and (4) analysis of alternatives for increasing private sector participation in public transportation. The efforts of this project work will result in the formulation of specific recommendations and implementation strategies for increasing private sector participation in public transportation from the local public body's point of view.

PERFORMING AGENCY: District of Columbia University
INVESTIGATOR: Lyons, DL Tel (202) 727-2530
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Bruno, LA (URT-31) Tel (202) 426-4984 Grant DC-11-0015
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1982
TOTAL FUNDS: $76,853
ACKNOWLEDGMENT: UMTA

32 385028
COMMUTER EXPRESS BUS AND VANPOOL SERVICES
The Brevard Transportation Authority (BTA), located in Melbourne, Florida, was awarded a Service and Management Demonstration grant on October 1, 1982 to expand commuter transportation services to a number of major employers within Brevard County. The project involves the phased implementation of 18 express bus routes and 28 vanpools over a 2-year demonstration period. One of the primary objectives of the project is to demonstrate the application of government assistance in establishing commuter-oriented transportation service that will achieve breakeven operation by the end of the 2-year demonstration period. In addition, the project should demonstrate the willingness of the private sector to support the public transportation needs of the urban area.

PERFORMING AGENCY: Cambridge Systematics, Incorporated, UMTA-MA-06-0049 UMTA-FL-06-0036; Brevard Transportation Authority
INVESTIGATOR: Atherton, T Tel (617) 354-0167
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Goodman, JM (URT-31) Tel (202) 426-4984 Contract UMTA-FL-06-0036
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1982 COMPLETION DATE: Mar. 1985
TOTAL FUNDS: $500,000
ACKNOWLEDGMENT: UMTA

32 385029
INTERCITY BUS DEMONSTRATION
The Florida Department of Transportation (DOT), through its District 4 office in Fort Lauderdale, is implementing inter-county express commuter bus service funded in part by a Service & Management Demonstration grant covering a 2-year demonstration period.

PERFORMING AGENCY: Cambridge Systematics, Incorporated, UMTA-MA-06-0049 UMTA-FL-06-0034; Florida Department of Transportation
INVESTIGATOR: Wold, C Tel (617) 354-0167
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Goodman, JM (URT-31) Tel (202) 426-4984 Contract UMTA-FL-06-0034
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1982 COMPLETION DATE: Aug. 1984
TOTAL FUNDS: $220,000
ACKNOWLEDGMENT: UMTA

32 385033
DADE COUNTY INTEGRATED TRANSIT
A comprehensive demonstration of transportation brokerage—includes taxi regulatory revision, social service agency transportation coordination, special paratransit services, and taxi feeder operations (taxi/transit interface).

PERFORMING AGENCY: Metropolitan Dade County, FL-06-0023
INVESTIGATOR: Sachs, L Tel (305) 579-2593 Marsalla, C Tel (305) 579-2594
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Churchman, MM (URT-31) Tel (202) 426-4984 Contract FL-06-0023
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1981 COMPLETION DATE: Dec. 1984
TOTAL FUNDS: $1,800,000
ACKNOWLEDGMENT: UMTA

32 385034
BROKERAGE DEMONSTRATION
A comprehensive demonstration of transportation borkerage which includes social agency coordination, paratransit service, pricing and marketing innovations, shared ride taxi development, and conventional bus improvements.
REFERENCES:
Transportation Brokerage Demonstration, Bridgeport, Connecticut—Case Study: The Human Service Transp Consortium, Kuzmyak, JR, July 1983

PERFORMING AGENCY: Greater Bridgeport Transit District
INVESTIGATOR: Reynolds, R Tel (203) 366-7070 Oram, R
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Churchman, MM (URT-31) Tel (202) 426-4984 Contract CT-06-0008
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Oct. 1979 COMPLETION DATE: Sept. 1984
TOTAL FUNDS: $1,309,141
ACKNOWLEDGMENT: UMTA

32 385085
MICROCOMPUTER COMMERCIAL SOFTWARE APPLICATIONS: HANDBOOK FOR PARATRANSIT PROVIDERS
The objective of this project is to develop case studies in paratransit (demand responsive transportation) management including: 1) client file maintenance; 2) vehicle seceduling; and 3) budgeting. The study will point out how to use selected commercially available microcomputer software to manage these database processes.

PERFORMING AGENCY: Dynatrend, Incorporated, UMTA-MA-06-0039
INVESTIGATOR: Cutler, M Tel (617) 935-3960 Harmon, L
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Hillegass, TJ (URT-41) Tel (202) 426-9271 Contract UMTA-MA-06-0039
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Feb. 1984 COMPLETION DATE: Sept. 1984
TOTAL FUNDS: $54,000
ACKNOWLEDGMENT: UMTA

32 389721
PLAN FOR A COORDINATED HUMAN SERVICE TRANSPORTATION THROUGH A USER SIDE SUBSIDY APPROACH
This project will utilize the user-side subsidy concept as a way to coordinate public, non-profit, for-profit, and volunteer resources in the provision of specialized transportation services. The concept will be tested and could provide more efficient social service transportation at a lower cost as well as the most efficient use of existing social agency and private sector resources in complementing existing transit systems. This project builds on the results of several user-side subsidy and coordination demonstrations and utilizes the best features from each.

PERFORMING AGENCY: Northern Virinia Planning District Commision, UMTA-VA-06-0104
INVESTIGATOR: Grable, P Tel (703) 642-0700

SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Bruno, L (URT-31) Tel (202) 426-4984 Contract
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: Feb. 1983 COMPLETION DATE: Feb. 1985
TOTAL FUNDS: $195,000
ACKNOWLEDGMENT: UMTA

32 389728
COLUMBUS CAB-AND-RIDE DEMONSTRATION
The objective of this project is to demonstrate the feasibility of taxi feeder to fixed route transit in an area where there have been institutional obstacles to the implementation of the concept. The Mid-Ohio Regional Planning Commission (MORPC) will contract with a private taxi operator to provide demand responsive and/or subscription feeder service in two specified areas in the Northwest quadrant of Franklin County. The taxis will feed transit routes operated by the Central Ohio Transit Authority (COTA). Existing park and ride lots will be used as transfer points. Both service areas are of such low density that conventional transit is not considered to be economically practical, but if sufficient demand were to be demonstrated by the feeder service, COTA would consider implementation of new transit service or continuation of the taxi feeder after the demonstration period. If the feeder concept proves successful, COTA will implement additional feeders in other areas. This project benefits the urbanized area of Columbus, Ohio with a population of 877,000.

PERFORMING AGENCY: Mid-Ohio Regional Planning Commission, UMTA-OH-06-0039
INVESTIGATOR: Mansfield, B Tel (614) 228-2663
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Bruno, L (URT-31) Tel (202) 426-4984 Contract UMTA-OH-06-0039
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: 1984 COMPLETION DATE: 1986
TOTAL FUNDS: $225,000
ACKNOWLEDGMENT: UMTA

32 389734
EVALUATION OF TRANSFERABILITY OF THE "PUBLICO" SYSTEM OF PUERTO RICO TO OTHER URBAN AREAS
The potential for a privately operated paratransit mode, the publico system of Puerto Rico, to resolve some of the urban and rural transportation problems in the U.S. will be studies. Recently collected data will be analyzed to determine the supply, demand, performance and regulatory characteristics of this paratransit mode. Markets in the U.S. will be studies to determine if a publico-type system could serve som of the trip patterns effectively. A computerized data base of publico information and possible barriers to implementation in the U.S. will be developed.

PERFORMING AGENCY:
INVESTIGATOR: Luyanda, F Tel (809) 832-4040
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Enty, FE (URT-33) Tel (202) 426-9274 Contract PR-11-0004
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: 1984
ACKNOWLEDGMENT: UMTA

32 390085
VOLUNTEER VAN TRANSPORTATION PROGRAM
The objective of this project is to serve as a model for providing volunteer transportation service as an alternative to establishing a public transit system. The project will develop and demonstrate a neighborhood transportation program in Huntsville, Alabama region using neighborhood organizations to provide services to the residents on a volunteer basis and with no federal operating subsidies. This is an amendment to an existing project regarding volunteer vans.

PERFORMING AGENCY: Huntsville, City of, Alabama, UMTA-AL-06-0007
INVESTIGATOR: Doom, IF Tel (205) 532-7400
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLL INDIVIDUAL: Tate, R (URT-31) Tel (202) 426-4984 Contract UMTA-AL-06-0007
STATUS: Active NOTICE DATE: Oct. 1984
TOTAL FUNDS: $80,000
ACKNOWLEDGMENT: UMTA

33 385031
COORDINATION OF SCHOOL AND PUBLIC TRANSPORTATION SERVICES
The South Tahoe Ground Express (STAGE) and the Lake Tahoe Unified School District (LTUSD) operate overlapping transportation systems in portions of the City of South Lake Tahoe. Direct service overlaps are to be eliminated by substituting STAGE buses for LTUSD buses, as a first step. The second step is to achieve full system coordination, including operations, purchasing, and maintenance. Douglas County (Nevada) would also be potentially included. Institutional coordination is a primary element of the project.

PERFORMING AGENCY: Crain and Associates, Incorporated, UMTA-MA-06-0049 UMTA-CA-06-0180; South Lake Tahoe, City of, California
INVESTIGATOR: Welch, B Tel (415) 327-8101
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Goodman, JM (URT-7) Tel (202) 426-4984 Contract UMTA-CA-06-0180
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1982 COMPLETION DATE: Aug. 1984
TOTAL FUNDS: $151,650
ACKNOWLEDGMENT: UMTA

33 389723
RURAL TRANSPORTATION COOPERATIVES
The overall objective of this project is to have in place a centralized mechanism where rural transportation innovations and issues could be transcribed and disseminated to the rural community. Rural America, Inc. will develop an information clearinghouse designed to provide individualized "demand responsive" information service. In addition, Rural Americal will initiate the development of a "resource bank" listing technical resources (consultants and researchers and published reference materials). This project will increase the awareness of the general public and policymakers at the local, state, and national levels regarding rural transportation needs, activities, programs, and facilitate the exchange of information and views among transportation officials throughout the nation.

PERFORMING AGENCY: Rural America, Incorporated, UMTA-DC-06-0406
INVESTIGATOR: Price, B Tel (202) 659-2800
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Tate, R (URT-31) Tel (202) 426-4984 Contract
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: July 1982
TOTAL FUNDS: $231,000
ACKNOWLEDGMENT: UMTA

33 389729
TECHNICAL SUPPORT FOR THE RURAL TRANSPORTATION PROGRAM
This program provides technical assistance to recipients and nonrecipients of Section 18 funding in order to enhance the efficient utilization of federal funding and to increase the productivity of rural transportation operators in the area of operational planning, service patterns, schedules and fares, and coordination with other service providers. Areas of cooperative purchasing and maintenance of vehicles, and joint ventures in marketing and insurance will also be investigated. Various options for reporting performance and financial data of rural transportation systems will be analyzed. A task force will be created under this program consisting of contractor, Section 18 transit operators, American Association of State Highway Transportation officials, State DOT officials, and UMTA respresentatives to determine the feasibility and acceptability of the proposed data collection methodology.

PERFORMING AGENCY: Ecosometrics, Incorporated, UMTA-MD-06-0106
INVESTIGATOR: Burkhardt, J Tel (301) 652-2414
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Tate, R (URT-31) Tel (202) 426-4984 Contract UMTA-MD-06-0106
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: Aug. 1984 COMPLETION DATE: Aug. 1985
TOTAL FUNDS: $100,000
ACKNOWLEDGMENT: UMTA

33 389736
A FINANCIAL PLANNING GUIDE FOR IMPLEMENTING LOW-COST OR VOLUNTEER TRANSPORTATION PROGRAMS FOR NON-URBAN MOBILITY PROGRAMS
Low-cost alternatives for providing non-urban transportation will be analyzed: Volunteer system; coordinated interagency programs, housewife cooperatives, emergency call systems; informal carpooling, systematized carpooling; shared-ride taxi; and transportation clubs. Systems will be chosen only if they are open to the general public and provide mobility for an entire geographic territory. Financial analysis will cover start-up costs, incentives, project life-cycle costs; opportunity costs of in kind donations; and possible roles of local, state and federal financing. Productivity measures for low-costs systems will be contrasted with those for more conventional systems. Three field trials will be made covering information for the above studies. Finally a manual on financing and sustaining low-costs systems for low-density areas will be prepared.

PERFORMING AGENCY: Syracuse University
INVESTIGATOR: Wallin, To Tel (315) 423-3523
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Enty, FE (URT-33) Tel (202) 426-9274 Contract NY-11-0035
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: 1984
ACKNOWLEDGMENT: UMTA

33 390086
COORDINATED RURAL TRANSPORTATION DEMONSTRATION
The objective of this project is to provide a model for rural areas on ways to coordinate service and utilize various funding sources more effectively. The Central Virginia Community Health Center will be the lead agency to coordinate various operating, planning, maintenance, route structuring mechanisms, etc., of several rural transportation operators in Central Virginia. The project will cover a nine country area and will involve public, private and non-profit organizations.

PERFORMING AGENCY: Central Virginia Community Health Center, UMTA-VA-06-0114
INVESTIGATOR: Newel, B Tel (804) 581-3271
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Tate, R (URT-31) Tel (202) 426-4984 Contract UMTA-VA-06-0114
STATUS: Active NOTICE DATE: Oct. 1984
TOTAL FUNDS: $80,000
ACKNOWLEDGMENT: UMTA

33 390087
RURAL TRANSPORTATION INFORMATION DISSEMINATION
The objective of this project is to provide technical assistance and nationwide information dissemination to the rural transportation constituency. The project will provide a mechanism by which the communities of rural areas throughout the nation can obtain information concerning rural transportation concepts.

PERFORMING AGENCY: Rural America, Incorporated, UMTA-DC-06-0476
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Tate, R (URT-31) Tel (202) 426-4984 Contract UMTA-DC-06-0476
STATUS: Active NOTICE DATE: Oct. 1984
TOTAL FUNDS: $326,000
ACKNOWLEDGMENT: UMTA

34 369387
THE BALTIMORE AREA ELDERLY TRANSPORTATION PROJECT: AN INNOVATIVE SELF-HELP PROMOTION, TRAINING AND CURRICULUM DEVELOPMENT PROGRAM
To develop and implement an innovative self-help educational program focusing on the transportation needs and problems of the elderly with the cooperation of the private sector, including churches. In order to have a greater impact on and improve the quality of life for the transportation disadvantaged, it is important to involve them in the planning, implementation and evaluation of a transportation research project in higher education. The present proposal is a joint venture between the University, the elderly, the public and private sectors, to improve transportation services to the elderly.

PERFORMING AGENCY: Morgan State University, Urban Gerontology Program
INVESTIGATOR: Abrams, WJ Tel (301) 444-3362
SPONSORING AGENCY: Department of Health and Human Services, Administration on Aging; Morgan State University

STATUS: Active NOTICE DATE: Nov. 1982
START DATE: Mar. 1983 COMPLETION DATE: Sept. 1984
TOTAL FUNDS: $112,815
ACKNOWLEDGMENT: Morgan State University

34 369390
HARTFORD REVERSE COMMUTER EVALUATION
This project is an evaluation of Hartford's Reverse Commuter Service. First, the evaluation is assessing the distribution of systemwide transit costs and benefits among income and racial groups, and among users and nonusers. Second, it will measure the impacts of reverse commuter service on the accessability of inner-city workers and the cost of service provision. Finally, the evaluation will examine changes in the distribution of costs and benefits due to reverse commuter service.
REFERENCES:
Hartford Reverse Commuter Evaluation Plan May 1981
Evaluation Plan Refocus Lovely, M, Nov. 1981

PERFORMING AGENCY: Charles River Associates, Incorporated, 495.09
INVESTIGATOR: Lovely, ME Tel (617) 266-0500
SPONSORING AGENCY: Transportation Systems Center Contract DOT-TSC-1757-09
STATUS: Active NOTICE DATE: Nov. 1982
START DATE: May 1981 COMPLETION DATE: Dec. 1983
TOTAL FUNDS: $100,000
ACKNOWLEDGMENT: Charles River Associates, Incorporated

34 385021
DATA COLLECTION SYSTEM FOR PLANNING SERVICES FOR ELDERLY AND HANDICAPPED PERSONS
The project was designed to develop an integrated approach to the collection of data for the planning of services for elderly and handicapped persons. The system designed includes use of census data, an areawide telephone survey with two stages—a screening stage and a detailed stage and use of onboard and self-identification type surveys for service monitoring.
REFERENCES:
Planning Services for Transportation Handicapped People: Data Collection Manual, Dornan, D; Middendorf, D, DOT-I-83-40, Aug. 1983

PERFORMING AGENCY: Peat, Marwick, Mitchell and Company, UMTA-IT-09-9009 UMTA-DC-09-9049
INVESTIGATOR: Ellis, R Tel (202) 223-9525
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Steinmann, R (UBP-30) Tel (202) 426-4058 Contract UMTA-IT-09-9009
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Nov. 1977 COMPLETION DATE: Dec. 1983
TOTAL FUNDS: $305,000
ACKNOWLEDGMENT: UMTA

34 389738
A STUDY OF ELDERLY AND HANCICAPPED PERCEPTION OF TRANSIT RIDER PROGRAMS FROM RURAL TO URBAN COMMUNITIES IN NORTHERN MISSISSIPPI
The perceptions of elderly and handicapped regarding a viable transit rider program in rural areas and communities around Holly Srpings, MS, will be studied. The data obtained will be used to examine those comparisons which would highlight selected features of a series of focus group discussions for broader applications. Mathermatical analysis will be made to rank the significance of the responses.

PERFORMING AGENCY: Rust College
INVESTIGATOR: James, J Tel (601) 252-4661
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Enty, FE (URT-33) Tel (202) 426-9274 Contract MA-11-0002
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: 1984
ACKNOWLEDGMENT: UMTA

34 389739
IMPLICATIONS OF USER-SIDE SUBSIDIES FOR TRANSIT FINANCING
Although user-side subsidies may make for more efficient use of transportation resources, it is useful to define the determinants of travel demand by the elderly and handicapped. If their travel needs are almost completely determined by other variables such as health status, employment or availability of an automobile, then user side subsidies will have little impact on demand and therefore little impact on transit financing. Necessary data do exist in the form of serveral state needs-assessment surveys. These will be used to estimate geographically-specific demand functions, utilizing appropriate statistical techniques that have been developed for analysis of data sets involving qualitative dependent variables. The results will provide quantitative estimates of the factors determining the transportation demands of older persons, providing information for the current debate over the efficacy of user-side subsidies.

PERFORMING AGENCY: Brandeis University
INVESTIGATOR: Crown, WH Tel (617) 647-2931
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Enty, FE (URT-33) Tel (202) 426-9274 Contract MA-11-0042
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: 1984
ACKNOWLEDGMENT: UMTA

34 390088
MOBILITY TRAINING FOR THE BLIND AND DEAF
The objective of this project is to develop materials for training visual and hearing impaired persons to use mass transit systems. The results of this project will be a training package designed specifically to train handicapped persons in the use of mass-transit both bus and rail transit. Training handicapped persons to use mass transit will decrease the demand for expensive specialized service and lower the cost per trip considerably.

PERFORMING AGENCY: Independent Community Assistance Network, UMTA-CA-06-0201
INVESTIGATOR: Simpson, C Tel (916) 920-0551
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Cass, P (URT-32) Tel (202) 426-9274 Contract UMTA-CA-06-0201
STATUS: Active NOTICE DATE: Oct. 1984
TOTAL FUNDS: $70,000
ACKNOWLEDGMENT: UMTA

41 179331
MARTA IMPACT STUDY
This study is designed to provide a continuing assessment of the impacts of the new rail rapid transit system in Atlanta. Work prior to the opening in 1979 concentrated on obtaining "before" and base-case data on the impacts of construction. Operational impact measurement began in 1979.

PERFORMING AGENCY: Atlanta Regional Commission
INVESTIGATOR: Stone, J Tel (404) 656-7700
SPONSORING AGENCY: Urban Mass Transportation Administration, Office of Planning Assistance, 400 7th Street, SW
RESPONSIBLE INDIVIDUAL: Steinmann, R Tel (202) 472-5140 Contract GA-09-7002
STATUS: Active NOTICE DATE: Aug. 1980
START DATE: Mar. 1976 COMPLETION DATE: Dec. 1983
ACKNOWLEDGMENT: UMTA

41 384971
A STUDY TO ASSESS THE IMPORTANCE OF PERSONAL, SOCIAL, PSYCHOLOGICAL AND OTHER FACTORS IN RIDESHARING PROGRAMS
The dominant techniques which have been used to promote and implement ridesharing programs has been global TV, radio and newspaper advertisement, and the implementation of computer matching programs. But some studies have found that the decision to rideshare is not entirely an economic choice in that it is strongly influenced by personal, social and psychological factors (Margolin and Misch, 1978). There is little or no knowledge about the factors which contribute to the success or failure of most ridesharing programs sponsored both by private and public agencies. There are successful employer programs as well as unsuccessful employer sponsored programs. Using the study of Margolin and Misch as a basis, this project will investigate the building of ridesharers profiles based on social, economic, political, psychological and personal factors. It will attempt to investigate the ridesharing programs across various agency types and determine the extent to which employer sponsorship influences participation in ridesharing programs. It is anticipated that the results of the research effort should lead to a more comprehensive approach to develop and promote ridesharing programs. It is expected that the effort may lead to the inclusion of social, political, religious, ethnic, personal, psychological variables in the development of ridesharing programs. In the long run, the results of this study could form the basis for conducting workshops and seminars for ridesharing coordinators with the main objective of increasing ridership. This case study is expected to be useful to improve other ridesharing programs throughout the nation.

PERFORMING AGENCY: Morgan State University
INVESTIGATOR: Nyame-Mensah, H Tel (301) 444-3348
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Tate, R (URT-31) Tel (202) 426-4984 Grant MD-11-0005
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1982
TOTAL FUNDS: $65,623
ACKNOWLEDGMENT: UMTA

41 385041
STANDARDIZATION AND DOCUMENTATION OF TRANES
The TRANES computer program uses U.S. Census Data (GBF/DIME File) to estimate persons and households within walking distance of proposed, alternative transit routes.

PERFORMING AGENCY: Puget Sound Council of Governments, WA-06-0022
INVESTIGATOR: Frysztacki, W Tel (206) 464-6174
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Hillegass, TJ (URT-41) Tel (202) 426-9271 Contract WA-06-0022
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Aug. 1982 COMPLETION DATE: Jan. 1984
TOTAL FUNDS: $149,820
ACKNOWLEDGMENT: UMTA

41 385042
INNER CITY MOBILITY
As part of overall brokerage effort, GBTD is looking closely at the transportation needs of one particular inner city neighborhood on Bridgeport's East Side. Based on the results of market research and citizen participation services will be designed and promoted. Focus will probably be on improved information about existing services and promotion of shared ride taxi.

PERFORMING AGENCY: Greater Bridgeport Transit District
INVESTIGATOR: Brennan, P Tel (203) 366-7070
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Churchman, MM (URT-31) Tel (202) 426-4984 Contract CT-06-0010
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1980 COMPLETION DATE: Sept. 1984
TOTAL FUNDS: $360,000
ACKNOWLEDGMENT: UMTA

41 389740
ANALYSIS OF 1970 AND 1980 CENSUS DATA ON TRANSIT TRIPS FOR THE JOURNEY TO WORK
Multivariant analyses will be performed on the 1970 to 1980 changes in transit work trips for approximately 100 U.S. metropolitan areas stratified by geographical region and population. Independent variables will be selected representing four factors hyphthesized to influence transit use: (1) redistribution of population and employment; (2) social and economic variables; (3) structure of the metropolitan area; and (4) supply of transit service. Finding should be valuable to transportation analysits and policy makers in understanding changes in transit ridership. It may be determined whether public actions governing the level or transit service have any major effect on transit ridership or whether such patterns are overwhelmed by basic demographic and economic trends. Possible transit markets may also be identified.

PERFORMING AGENCY: Kansas University
INVESTIGATOR: Black, A Tel (913) 864-4184
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Enty, FE (URT-33) Tel (202) 426-9274 Contract KS-11-0003
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: 1984
ACKNOWLEDGMENT: UMTA

42 349148
NATIONAL TRANSIT COMPUTER SOFTWEAR DIRECTORY
Over the past decade, computer software systems have gained widespread acceptance as important management and operating tools in public transit agencies. Representative software applications include planning (UTPS), scheduling (RUCUS), operations control, maintenance (SIMS), finance, and personnel. Software developed by one agency can often be adapted for use by other agencies, but lack of knowledge of existing software and its applications is resulting in costly duplication of development efforts. The objective of this research is to develop and pilot test a methodology for the establishment and continuous updating of an automated directory of computer software to be used as a clearinghouse, making information available to individual public transit agencies that are planning software development. The directory shall have the capability of including (1) software suitable for use by transit agencies of all sizes, and (2) existing and future software for use on computers of all types and sizes.

PERFORMING AGENCY: Comsis Corporation
INVESTIGATOR: Levinsohn, DM Tel (301) 933-9211
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Smith, HA Tel (202) 334-3224
NCTRP 38-1
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Jan. 1983 COMPLETION DATE: Apr. 1984
TOTAL FUNDS: $100,000
ACKNOWLEDGMENT: National Cooperative Transit Res and Dev Program

42 369374
SIMPLIFIED GUIDELINES FOR EVALUATING TRANSIT OPTIONS IN SMALL URBAN AREAS
Guidelines will be developed for use by transit and municipal agencies in guiding their analysis of proposed transit and paratransit alternatives and in presenting their proposals to the decision-making bodies, resulting in the public's better understanding of proposed investments for new or improved existing transit systems. Sound benefit-cost techniques should guard against inadequate analysis. Guidelines will be designed for use by nontechnical people and apply to urban areas of up to 200,000 population. Considerations such as total costs, aviodable costs, transportation alternatives, ridership, urban development factors, conservation of energy and other resources, and typical transit evaluation criteria will be addressed. Priceable and nonpriceable factors will be identified that should be included in guidelines for small urban areas. A portable educational package will be developed for use in demonstrating the analytic procedures to city councils and transportation planning boards.
NCTRP Rpt. 8 Published.

PERFORMING AGENCY: Barton-Aschman Associates, Incorporated
INVESTIGATOR:
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Spicher, RE Tel (202) 334-3224
NCTRP 40-1
STATUS: Completed NOTICE DATE: Nov. 1984
START DATE: Oct. 1982
TOTAL FUNDS: $150,000
ACKNOWLEDGMENT: National Cooperative Transit Res & Dev Program

42 384928
TRANSIT SERVICE IMPROVEMENTS IN ORLANDO'S SOUTHWEST CORRIDOR
Continuing growth of tourist attractions in Orlando's Southwest corridor has created traffic congestion and the potential for fixed guideway service. This project will provide bus service for tourists and employees along the alignment of a potential future $500 million fixed guideway facility. The project will serve as a test and provide useful data for planning the future $500 million fixed guideway facility.

PERFORMING AGENCY: Transportation Systems Center, UMTA-FL-06-0037; Multisystems, Incorporated
INVESTIGATOR: Day, B Tel (617) 864-5810
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Goodman, JM (URT-31) Tel (202) 426-4984 Contract UMTA-FL-06-0037
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: 1983 COMPLETION DATE: 1985
TOTAL FUNDS: $735,000
ACKNOWLEDGMENT: UMTA

42 384934
1980 CENSUS INFORMATION: ANALYSIS FOR USE IN SMALL CITY SYNTHETIC TRANSPORTATION PLANNING MODELS
To provide practical responses to the needs of Alabama's smaller cities for information and assistance in transportation planning support of central business district revitalization. Included will be an analysis of 1980 census information for use in synthetic transportation planning models and adjustment to those models for use in smaller cities. Testing of the models in two Alabama urbanized areas, translation of models for use in smaller cities, and adjustment of models to account for small city central business districts will also be attempted. The report will be a guide for the use of 1980 census information in synthetic transportation models for smaller urbanized areas and small cities in support ofcentral business district revitalization.

PERFORMING AGENCY: Auburn University, UMTA-AL-06-0012
INVESTIGATOR: Meyer, D Tel (205) 526-4577
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Meade, JZ (URT-33) Tel (202) 426-0080 Grant UMTA-AL-06-0012
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Aug. 1983 COMPLETION DATE: Aug. 1984
TOTAL FUNDS: $84,820
ACKNOWLEDGMENT: UMTA

42 384984
EVALUATION OF SECTION 3(A)(1)(C) AND 4(I) PROGRAM
The New Technology Introduction, Section 3(a)(C) and Innovative Techniques and Methods, Section 4(i), programs are designed to provide incentive for transit agencies and other local and State jurisdictions to implement new technology and techniques. The project will evaluate the effects of the first years's funding (FY82) of 35 projects, by evaluating a sample of approximately 20 projects for general results such as increase in patronage, decrease in operating costs, etc.

PERFORMING AGENCY: Comsis Corporation, UMTA-MD-06-0098
INVESTIGATOR: Kuzmyack, JR Tel (202) 933-9211
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Goodman, JM (URT-31) Tel (202) 426-4984

STATUS: Active NOTICE DATE: Apr. 1984
START DATE: 1983 COMPLETION DATE: 1984
ACKNOWLEDGMENT: UMTA

42 384995
TECHNOLOGY TRANSFER AND THE ACADEMIC
To review the technology transfer process and to investigate the appropriate role of the academic to address training and application needs of Urban Mass Transportation Administration clients. A literature review of education needs in urban mass transportation will be conducted as well as an analysis of university involvement. Background development of the professional role of the university academician and the technology transfer process will be analyzed. A literature survey will be supplemented by personal or telephone interviews with the staffs of technology transfer agencies in U.S. DOT and elsewhere. There interviews will be conducted in Washington, D.C., Norman, Oklahoma and Oklahoma City, Oklahoma. In addition, a questionnaire survey will be sent to Transportation Research Board University representatives.

PERFORMING AGENCY: Oklahoma University
INVESTIGATOR: Cook, AR Tel (405) 325-5911
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Baxter, MP (UOA-1) Tel (202) 426-0080 Grant OK-11-0002
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Jan. 1982
TOTAL FUNDS: $9,510
ACKNOWLEDGMENT: UMTA

42 385020
STRATEGIC PLANNING FOR TRANSIT OPERATORS
The project is designed to demonstrate the application of private sector strategic planning methods to a public transit agency. This study involves a broad look at all aspects of WMATA internal operating procedures together with a review of the likely future environment in which it will operate. This study is designed to look beyond traditional facilities or financial planning at the entire organization.

PERFORMING AGENCY: Washington Metropolitan Area Transit Authority, UMTA-DC-09-7007
INVESTIGATOR: Burke, A Tel (202) 637-1481
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Steinmann, R (UBP-30) Tel (202) 426-4058 Contract UMTA-DC-09-7007
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1982 COMPLETION DATE: Sept. 1984
TOTAL FUNDS: $162,750
ACKNOWLEDGMENT: UMTA

42 385025
URBAN MASS TRANSPORTATION RESEARCH INFORMATION SERVICE
Acquisition, selection, storage, retrieval and dissemination of research information that is generated by and/or that is useful to administrators, researchers and other specialists in the public transit and related fields of transportation research. To provide a central point for industry, academia, government and others to disseminate technical information, research results, and information on ongoing research efforts to facilitate technology utilization.
REFERENCES:

PERFORMING AGENCY: Transportation Research Board
INVESTIGATOR: Houser, FN Tel (202) 334-3251
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Durham, J Tel (202) 472-7037
Contract UMTA-DC-06-0285
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Aug. 1981 COMPLETION DATE: Oct. 1984
TOTAL FUNDS: $900,000
ACKNOWLEDGMENT: UMTA

42 385043
PUBLIC/PRIVATE TRANSPORTATION MANAGEMENT
This project is to establish a public/private transportation organization in Hartford. The objective is to develop a balanced set of strategies for increasing the capacity of all the transportation system elements and to improve intermodal coordination.

PERFORMING AGENCY: Greater Hartford Ridesharing Agency, CT-06-0014
INVESTIGATOR: Blanco, M Tel (203) 527-4472
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: McKeown, SN (URT-31) Tel (202) 426-4984 Contract CT-06-0014
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Oct. 1982 COMPLETION DATE: Oct. 1984
TOTAL FUNDS: $222,000
ACKNOWLEDGMENT: UMTA

42 385060
PILOT TESTING OF PLANNING METHODS
This project is intended to assure the integrity of transportation planning software and manual techniques developed and distributed by UMTA. It also will assist the planning community in the use of these methods. These objectives are accomplished through operation of a UTPS Support Center, development of training and user materials, and teaching of courses on the planning methods available. The Support Center assists users of the Urban Transportation Planning System through a hotline, a newsletter of user-reported "bugs" and distribution of supporting documents and computer tapes.

PERFORMING AGENCY: Comsis Corporation, DTUM60-82-C-72115
INVESTIGATOR: Levinsohn, D Tel (301) 933-9211
SPONSORING AGENCY: Urban Mass Transportation Administration; Federal Highway Administration
RESPONSIBLE INDIVIDUAL: Ossi, AJ (URT-41) Tel (202) 426-1700 Contract IT-06-0119
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Jan. 1982 COMPLETION DATE: Jan. 1985
TOTAL FUNDS: $700,000
ACKNOWLEDGMENT: UMTA

42 389742
DEVELOPMENT OF A SELF-INSTRUCTING COURSE IN DISSAGGREGATE MODE CHOICE MODELING FOR PRACTICING TRANSPORTATION PROFESSIONALS
Transportation professionals have found it difficult to evaluate and apply disaggregate demand modeling methods. There are no instructional meterials covering this relatively new method for travel demand modeling. The course will be designed with the information needed to use these travel demand models for solving real-world prolbems with emphasis on mode choice modeling. Possible extensions of this course include video-taped lectures, a case study using real data and computer software for use in case study and problem assignments.

PERFORMING AGENCY: Iowa University
INVESTIGATOR: Horowitz, JL Tel (319) 353-3131
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Enty, FE (URT-33) Tel (202) 426-9274 Contract IA-11-0006
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: 1984
TOTAL FUNDS: $74,221
ACKNOWLEDGMENT: UMTA

43 372982
SECTION 15 REVIEW STUDY
An investigation of impacts on the transit industry that will result from the reduction or elimination of Section 15 funds. Final ridership, fare and operating expense levels are calculated under the assumption that transit operators will attempt to increase fares and/or reduce service in amounts that will make up for the reduction of subsidies. A number of financial and operating performance measures are also investigated in order to determine trends over time and find reasons for differences in performance among the reporting systems.
Final report issued.

PERFORMING AGENCY: Polytechnic Institute of New York
INVESTIGATOR: Pignataro, LJ Tel (212) 643-5272 Bladikas, A
SPONSORING AGENCY: Urban Mass Transportation Administration Contract
STATUS: Completed
START DATE: Sept. 1980
TOTAL FUNDS: $60,000
ACKNOWLEDGMENT: Polytechnic Institute of New York

43 384937
DEVELOPMENT AND IMPACTS OF DEDICATED FUNDING SOURCES FOR PUBLIC TRANSIT SYSTEMS
To examine a set of stable and reliable dedicated funding sources by state and local governments and to trace the life-cycle of the arrangements from inception to current and projected transit systems. Alternative stable and reliable dedicated funding sources will be explored. The research effort will also examine systems which do not have dedicated funding arrangements and assess the impacts and particulars of the level of non-dedicated sources of funding including the rationale for such non-dedication.

PERFORMING AGENCY: North Carolina Agricultural and Technical State U, UMTA-NC-11-0013
INVESTIGATOR: Walther, E Tel (919) 379-7745
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Thomas, E (URT-33) Tel (202) 426-9267 Grant UMTA-NC-11-0013
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Nov. 1983 COMPLETION DATE: Aug. 1984
ACKNOWLEDGMENT: UMTA

43 384946
FEASIBILITY AND IMPACTS OF RETURNING TRANSIT TO PRIVATE OWNERSHIP
To evaluate the feasibility of returning transit to private ownership, and assess the impacts of such strategy. A survey of the investment community will assess the availability, requirements, and expectations of private investors in order to determine the necessary levels of profitability, return on investment, growth, and financial strength that a privately owned transit industry would have to sustain. The assessment will determine the fare levels under private operation, the capital infusion that may have to be provided to the present systems and the price at which those systems would have to be sold. The direct economic impacts to government and the public will be calculated. A methodology will be developed that would provide guide lines to assess economic and social/political impacts. Local decision makers will thus be able to superimpose the indirect and non-monetary impacts on the purely economical impacts to make final decisions.

PERFORMING AGENCY: Polytechnic Institute of New York, UMTA-NY-06-0108
INVESTIGATOR: Pignataro, L Tel (213) 643-5272
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Jasper, N (URT-33) Tel (202) 426-0080 Grant UMTA-NY-06-0108
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1983 COMPLETION DATE: Aug. 1984
ACKNOWLEDGMENT: UMTA

43 384972
LOCAL AND STATE RESPONSES TO THE PROPOSED LOSS OF FEDERAL TRANSIT OPERATING ASSISTANCE
The proposed elimination of federal operating assistance for transit is expected to significantly alter the structure of public transit. In many ways, this represents a challenge to states and localities committed to maintaining viable transit service. It is extremely important that the impacts of this proposed Federal policy be fully understood and that the range of alternative responses be identified and evaluated. The success or failure of state and local efforts in meeting this challenge may vitally affect future life within U.S. cities for some time. This project will help address this challenge by (1) identifying the relative dependency of transit systems upon operating subsidies; (2) identifying those systems presently most vulnerable to loss of Federal support; (3) determining the relationship of system operating characteristics to their financial health; (4) clarifying state and local options available to cover the expected revenue shortfalls; (5) identifying the planned state and local responses to any new Federal funding policy; and (6) suggesting an appropriate role for the Federal government during the period of transition that would encourage responsible state and local responses to proposed reductions of Federal funding. The results will be made available through working papers, published articles, and distribution of transit systems responding to the project's surveys.

PERFORMING AGENCY: Tennessee University, Knoxville
INVESTIGATOR: Arbeit, D Tel (615) 974-5159
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Bennett, J (UBP-20) Tel (202) 426-4058 Grant TN-11-0006
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1982
TOTAL FUNDS: $50,322
ACKNOWLEDGMENT: UMTA

43 385044
STATE OPTIONS FOR TRANSIT FINANCING
To identify state-by-state priorities for public transportation investment(s), system improvements, and operations; to compile state expenditures for public transportation and determine methods of state financing which supplement federal grants-in-aid programs. This is to be achieved through a survey of state public transportation agencies which will result in a report and by undertaking four case studies.

PERFORMING AGENCY: Council of State Governments
INVESTIGATOR: Reinshuttle, RJ Tel (606) 252-2291 Dorfman, GA
SPONSORING AGENCY: Urban Mass Transportation Administration Contract KY-09-7001
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1983 COMPLETION DATE: July 1984
TOTAL FUNDS: $123,875
ACKNOWLEDGMENT: UMTA

44 384920
SECTION 19 CIVIL RIGHTS PROGRAM: STRATEGIC MODEL FOR PROGRAM DEVELOPMENT AND IMPLEMENTING PROCEDURES
To develop a strategic model civil rights program, with a range of recommendations for alternative approaches to implement and enforce Section 19 requirements particularly that are effective, cost-efficient and non-burdensome to UMTA recipients as well as to the Government. Contractor will survey other Federal agencies' procedures, review related statutes, regulations, guidelines, current trends in court cases and related civil rights studies to develop comprehensive requirements and alternative approaches to enforcement.

PERFORMING AGENCY: TRITON Corporation, UMTA-DC-09-9053
INVESTIGATOR: Billingy, E Tel (202) 332-8310
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Takai, H (UCR-20) Tel (202) 426-2285 Contract DTUM60-83-R-71063
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1983 COMPLETION DATE: June 1984
TOTAL FUNDS: $98,743
ACKNOWLEDGMENT: UMTA

44 384930
MINORITY BUSINESS ENTERPRISE (MBE): AN ANALYSIS OF THE BARRIERS TO MBES IN OPERATING UMTA FUNDED PROCUREMENT CONTRACTS AT STATE AND LOCAL LEVELS
To identify and quantify barriers to entry by MBEs in obtaining procurement contracts at state and local levels; to investigate the exclusion to minority businesses from UMTA contracts and procurement through policies, policy decisions, administrative rulings, and state and local legislation; to evaluate the present levels of minority participation in UMTA funded projects; to create criteria for judging minority business involvement in UMTA procurements and transportation contracts; to examine historical issues and forces that have characterized minority participation and development policies on state and local levels for involving minorities; to explore bid preparation requirements and contract award policies established by state and local governments. The project effort will concentrate on major areas of minority involvement in planning and administration in construction and land development.

PERFORMING AGENCY: Edward Waters College, UMTA-FL-11-0010
INVESTIGATOR: Jackson, V Tel (904) 355-3030
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Jasper, N (URT-33) Tel (202) 426-0080 Grant UMTA-FL-11-0010
STATUS: Active NOTICE DATE: Apr. 1984
ACKNOWLEDGMENT: UMTA

44 384967
A COMPREHENSIVE ANALYSIS OF THE ROLE, OPERATIONS AND FUNCTIONS OF THE MARTA BOARD OF DIRECTORS AS COMPARED WITH THE DADE COUNTY BOARD OF DIRECTORS
There is a dearth of research on the structures, decision-making processes and operations of governing boards of public transit agencies. Few studies have attempted to show the relationship between a Board's policy making process and its impact on the distribution of transit benefits among groups in the service area. Boards use different strategies to resolve complex problems within constraints posed by internal and external environmental factors. This study will comprehensively examine how the MARTA Board of Directors has operated since 1965 and why it has functioned as it has. The research will endeavor to ascertain the answers to a number of policy relevant questions including: How have the values, background and method of selection of Board members affected policy outcomes? Has the decision making process resulted in an unequal distribution of transit benefits for minority and central city inhabitants? Does MARTA have an effective inter-governmental relations strategy? How successful has the Board been in resolving intra-Board and Board-staff conflicts? What changes can be made to enhance the Board's effectiveness and improve its operation? The study will analyze thoroughly the internal and external factors impacting MARTA and made a detailed assessment of the roles, functions and operations of the Board. The conclusions and comparisons with the Dade County (Florida) Board and findings of this case study can be used to improve the functioning of MARTA as well as assist the governing boards of other urban transit agencies, such as Washington, D.C., Baltimore and Miami, to operate more efficiently and effectively.

PERFORMING AGENCY: Atlanta University
INVESTIGATOR: Holmes, RA Tel (404) 681-0251
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Hallman, AB (UPM-43) Tel (202) 426-9274 Grant GA-11-0013
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1982
TOTAL FUNDS: $84,997
ACKNOWLEDGMENT: UMTA

44 384988
URBAN TRANSPORTATION: AN ORGANIZATIONAL ASSESSMENT IN THE DELIVERY OF PUBLIC TRANSPORTATION SERVICE
The objective of this research is to review one area of urban transportation, the organization aspect; and, (1) to identify, describe, document, and quantify some of the reasons why the present organizational structure has not been appropriate for the adequate delivery of public transportation services; (2) to examine state and local organizational structures and Federal transit policies which might interfere in different ways and to different extents, with the overall process of planning and implementing the delivery of public transportation services. The ultimate results of this research may be used by government planning agencies (state, local and federal) for improving, streamlining and making the organizational approach more responsive to the public needs in the delivery of public transportation services.
Final report published.

PERFORMING AGENCY: Edward Waters College
INVESTIGATOR: Jackson, VV Tel (904) 355-3030
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Griffin, Y (UBP-20) Tel (202) 426-1428 Grant FL-11-0006
STATUS: Completed NOTICE DATE: Nov. 1984
START DATE: July 1982
TOTAL FUNDS: $49,988
ACKNOWLEDGMENT: UMTA

44 389732
PUBLIC VS. PRIVATE OWNERSHIP OF TRANSIT SYSTEMS
This research investgates the potential benefits to be realized by transferring delivery of transit service or ownership of transit assets (or both) from public to private ownership. How such transfers could occur will be investgated and case studies will then examine how such a process might actually be implemented. To be prepared will be: (1) Computer model of financial operation of transit entities; (2) Discussion of advantages and disadvantages of private ownership; (3) Discussion of alternative transactions which might transfer service or assets to the private sector; (4) Examination of financial implications of such a spin-off; (5) Case study. Results will be useful for federal and local policy makers and administrators, private investors and transit service users.

PERFORMING AGENCY: Rice University
INVESTIGATOR: Windsor, DO Tel (713) 527-4869
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Enty, FE (URT-33) Tel (202) 426-9274 Contract TX-11-0017
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: 1984
ACKNOWLEDGMENT: UMTA

44 389743
EFFECTIVE POLICY MAKING IN TRANSIT: ROLE OF THE BOARD
There is no generally available mechanism for acquainting new and existing transit board members with the institutional, environmental and economic characteristics of transit. They are often unable to assess managerial performance. Because they are elected or appointed for limited terms, turnover is high compared with the private sector. The training seminar will clarify the unique duties and responsibilities for board members to prepare them to discharge theri fiduciary responsibilities to their communities and citizens. The training will be directed at the role and relationships

that exist between directors and executive management as well as with appointed or elected officials that influence urban transit financing, planning, marketing and operations.

PERFORMING AGENCY: University of North Florida
INVESTIGATOR: Smith, JA Tel (904) 646-2860
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Enty, FE (URT-33) Tel (202) 426-9274 Contract FL-11-0014
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: 1984
ACKNOWLEDGMENT: UMTA

45 372980

STRATEGIES TO IMPLEMENT BENEFIT-SHARING FOR FIXED TRANSIT FACILITIES

A number of major American cities are considering either new fixed-rail transit systems or additions to existing systems. Previous studies have shown a high correlation between the presence of fixed-rail transit and a significant increase in the value of land adjacent to the transit line(s). The first objective of this research is to develop a methodology to calculate the financial benefits that will be realized by owners of property adjacent to transit improvements. The second objective is to develop a method to recapture for public use a portion of these financial benefits to help defray the cost of transit improvements. The method of value recapture would probably involve some form of financial "assessment" of the owners of land adjacent to fixed-rail transit lines. Among the specific issues to be addressed: (1) Should the "assessment" be based only on the capital cost of the transportation improvements or on both capital and long-term operating costs? (2) Should the "assessment" be imposed only on new developments or on both new and existing projects? (3) Should the "assessment" be a one-time payment or spread over an extended period of time, such as the life of the building (as defined by the IRS)? (4) Should the "assessment" take a variety of forms, at the option of the landowner, such as cash payment; subsidized transit passes, or support for a ridersharing program? (NOTE: Given the UMTA position that a wealth of information seems to exist in this problem area, this research-rather than developing new methodology-could take the direction of a summary and evaluation of existing methodology, or the topic could be broadened (funding permitting) to include an assessment of alternative financing schemes for transit).

PERFORMING AGENCY: SG Associates, Stuart Street
INVESTIGATOR: Howard, J Tel (617) 542-1416
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Kingham, RI Tel (202) 334-3224 NCTRP 40-3
STATUS: Active NOTICE DATE: May 1984
START DATE: Nov. 1983 COMPLETION DATE: Feb. 1985
TOTAL FUNDS: $100,000
ACKNOWLEDGMENT: National Cooperative Transit Res & Devel Program

46 315712
EVALUATION OF PROVIDENCE AUTO RESTRICTED ZONE SERVICE AND METHODS DEMONSTRATION PROGRAM
This project will evaluate the impacts of auto restrictions, transit route interlining, downtown free fare service, and transfer point consolidation on changes in transportation supply and level of service, travel behavior, pedestrian and purchasing behavior and business establishment activity using before and after data. This project also includes extensive documentation of the urban revitalization process in downtown Providence.
REFERENCES:
Final Evaluation Framework for the Providence Auto Restricted Zone Demonstration, Charles River Associates, Aug. 1979
Draft Data Collection Plan for the Providence Auto Restricted Zone Demonstration, Charles River Associates, Nov. 1979

PERFORMING AGENCY: Charles River Associates, Incorporated, 495.21
INVESTIGATOR: Lovely, ME Tel (617) 266-0500
SPONSORING AGENCY: Transportation Systems Center
RESPONSIBLE INDIVIDUAL: Jacobson, J Tel (617) 494-2510
Contract DOT-TSC-1757-21
STATUS: Active NOTICE DATE: Nov. 1981
START DATE: May 1979 COMPLETION DATE: Dec. 1984
TOTAL FUNDS: $120,000
ACKNOWLEDGMENT: Charles River Associates, Incorporated

46 384927
HARTFORD TRANSPORTATION MANAGEMENT ORGANIZATION
The Hartford Transportation Management Organization (HTMO) will coordinate all aspects of transportation in the Hartford Central Business District (CBD). It will be a cooperative effort of the public and private sectors control to the growth of parking and the single occupant automobile by making the most use of existing resources such as transit, ridesharing, private buses, and existing street space. Ultimately, this project will provide a model for other cities to manage their transportation resources more effectively.

PERFORMING AGENCY: Greater Hartford Ridesharing Corporation, UMTA-CT-06-0014
INVESTIGATOR: Blanco, M Tel (203) 525-2277
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: McKeown, SN (URT-31) Tel (202) 426-4984

STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Oct. 1982 COMPLETION DATE: June 1984
TOTAL FUNDS: $372,000
ACKNOWLEDGMENT: UMTA

46 385023
TSM IN NEIGHBORHOODS: INVOLVING CITIZENS IN THE PLANNING PROCESS
The study is designed to develop methods to obtain the participation of neighborhood residents in the development of plans for managing traffic in the area. The main tool involves development of a simulation designed to involve the citizens in all stages of the decision and to improve their understanding of the various points-of-view of different actors in the process. The results will include neighborhood level TSM plans involving traffic diversion, signal operations, parking policy and transit.

PERFORMING AGENCY: District of Columbia Department of Transportation, UMTA-DC-09-7006
INVESTIGATOR: Simkowitz, H Tel (202) 727-5843
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Steinmann, R (UBP-30) Tel (202) 426-4058 Contract UMTA-DC-09-7006
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1982 COMPLETION DATE: July 1984
TOTAL FUNDS: $136,000
ACKNOWLEDGMENT: UMTA

46 385030
PROVIDENCE AUTO RESTRICTED ZONE
The Providence Auto-Restricted Zone evaluation focuses on the effects of a series of transit and pedestrian improvements in the context of a downtown area undergoing extensive urban revitalization. The demonstration, designed to complement Providence's existing auto-restricted zone (the Westminster Mall) and ongoing downtown projects, consists of a number of major elements. First, to ease transferring and to link the bus network to Westminster Mall, the demonstration consolidates transfer locations and creates new pedestrian areas and walkways in the Kennedy Plaza area. Second, to improve the regional bus network, the demonstration includes the through routing of seven bus routes and the designation of bus priority lanes in the downtown. Third, to encourage intra-downtown trips, the project utilizes through-routed buses to create a CBD free-fare zone. Finally, the demonstration involves the management of programmed ARZ activities by setting up a Mall Management Office.

PERFORMING AGENCY: Charles River Associates, Incorporated, UMTA-MA-06-0049 UMTA-RI-06-0010; Providence, City of, Rhode Island
INVESTIGATOR: Slaughter, S Tel (617) 266-0500
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Goodman, JM (URT-31) Tel (202) 426-4984 Contract UMTA-RI-06-0010
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: June 1981 COMPLETION DATE: June 1984
TOTAL FUNDS: $960,000
ACKNOWLEDGMENT: UMTA

46 385045
PRIVATE/PUBLIC TRANSPORTATION MANAGEMENT INITIATIVE FOR DOWNTOWN DENVER
This project is to provide the recipient with the necessary technical assistance to establish a transportation management component to access and develop new techniques to resolve the transportation problems in downtown Denver.

PERFORMING AGENCY: Denver Civic Ventures, CO-06-0013
INVESTIGATOR: Fleming, R Tel (303) 534-6161
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: McKeown, SN (URT-31) Tel (202) 426-4984 Contract CO-06-0013
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1982 COMPLETION DATE: Sept. 1984
TOTAL FUNDS: $300,000
ACKNOWLEDGMENT: UMTA

46 389720
EUGENE PARKING PRICING STRATEGY DEMONSTRATION
The purpose of this project is to test the utilization of on-street parking strategies, including the restriction of free long-term street parking from specific areas of the city. The City will attempt to eliminate subsidized long-term parking in certain areas, and limit heavy traffic from the central business district to other major arterials throughout the city, and to create a short-term metered parking area in the downtown business district. The City's new policies emphasizing innovative modes of transportation should reduce automobile dependence and alleviate traffic and parking problems within certain areas of the city. This project will help the City in its effort to meet the parking needs of its residents, produce additional revenue, and promote new transportation concepts.

PERFORMING AGENCY: Eugene, City of, Oregon, UMTA-OR-06-0010
INVESTIGATOR: Slue, T
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Tate, R (URT-31) Tel (202) 426-4984 Contract
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: 1983 COMPLETION DATE: 1985
TOTAL FUNDS: $551,060
ACKNOWLEDGMENT: UMTA

46 390091
PUBLIC/PRIVATE TRANSPORTATION MANAGEMENT ORGANIZATION
This project is to develop and implement the framework for a Transportation Management Organization (TMO). The success of this program and the strong support of the local private sector have opened many new opportunities for public/private cooperation that this amendment addresses. This project will expand on the work of the initial grant that developed the TMO in Hartford and pulled together various private sector

participants to work on transportation problems. It will develop further opportunities for the private sector to profitably aid in the improvement of parking, traffic flow, public transportation, and pedestrian movement in downtown Hartford. Results of the original grant have indicated that the lessons learned and the techniques developed in Hartford will have a significant benefit for many cities trying to rationalize transportation service provision in their downtown and suburban centers.

PERFORMING AGENCY: Greater Hartford Ridesharing Corporation, UMTA-CT-06-0014
INVESTIGATOR: Coleman, J Tel (203) 527-4472
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: McKeown, S (URT-31) Tel (202) 426-4984 Contract UMTA-CT-06-0014
STATUS: Active NOTICE DATE: Oct. 1984
START DATE: 1983 COMPLETION DATE: 1985
TOTAL FUNDS: $37,200
ACKNOWLEDGMENT: UMTA

46 390092
PUBLIC/PRIVATE PARTNERSHIPS INVOLVING DOWNTOWN BUSINESS GROUPS
The objective of this project is to serve as the vehicle for coordinating and disseminating the results of five projects, sponsored by UMTA, to test the concept of establishing transportation management organizations (TMO) in central business districts (CBD). Member organizations of IDEA are heavily involved in these projects. IDEA will spread the results of these projects to its constitutency and organize meetings of representatives from the five cities to discuss common problems.

PERFORMING AGENCY: International Downtown Executives Association, UMTA-DC-06-0475
INVESTIGATOR: Bradley, R Tel (202) 783-4963
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: McKeown, S (URT-31) Tel (202) 426-4984 Contract UMTA-DC-06-0475
STATUS: Active NOTICE DATE: Oct. 1984
TOTAL FUNDS: $70,000
ACKNOWLEDGMENT: UMTA

48 384965
AN EVALUATION OF URBAN TRANSPORTATION ENERGY CONTINGENCY PLANS AND PLANNING INCLUDING THEIR IMPACTS ON DELIVERY OF SERVICES

Objectives are to analyze the possible impacts of urban transportation on the delivery of transit service to the elderly, handicapped and poor in the event of energy contingency; to facilitate the minimum possible implementation time by providing well-structured course of action(s) in the event of energy emergency; to develop plans which are consistent with Federal, state and regional energy plans and; to review metropolitan energy contingency plans and analyze their impact on transit. This research project will address two main areas: (1) the analysis of contingency plans from local governments and transit organizations to identify the most successful strategies; and (2) measurement of the impacts that these strategies have on the delivery of transit service to minorities. Completed contingency plans will be assembled and analyzed to select a set of guidelines for a "mode" transit contingency plan. Variables which dictate certain actions will be identified and available analytical techniques for evaluation will be modified for utilization in this study.

PERFORMING AGENCY: Atlanta University
INVESTIGATOR: Davis, EL Tel (404) 577-8786 Glover, I
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Steinmann, R (UBP-30) Tel (202) 472-5140 Grant GA-11-0012
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Sept. 1981
TOTAL FUNDS: $69,649
ACKNOWLEDGMENT: UMTA

48 384987
OIL DEREGULATION AND ITS IMPACTS ON PUBLIC TRANSPORTATION FUEL SUPPLY

The federal government has withdrawn from its role as the formulator and controller of oil allocation procedures during energy supply shortages. States are faced with a new set of questions: can public transportation services be assured now of adequate (and even additional) fuel supplies during energy contingencies; and are there actions that can be taken on the state and local level to assure an adequate allocation to transit systems, and/or services? The research will provide answers to those two questions. The methodology which this research employs includes examining the 1979 fuel crisis for insight into oil industry allocation behavior; surveying state and local actions taken since 1979 to fill the energy deregulation vacuum; and interviewing oil industry representatives to ascertain intended allocation procedures under various energy contingency scenarios. Results will indicate the likelihood of public transportation fuel needs being met in contingency conditions, from which recommendations will be formulated concerning appropriate (and inappropriate) actions which states and local areas could take to benefit (or adversely affect) transit fuel supply.

PERFORMING AGENCY: Polytechnic Institute of New York
INVESTIGATOR: McShane, WR Tel (212) 643-5525
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Steinmann, R (UBP-30) Tel (202) 426-2053 Grant NY-11-0027
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: July 1982
TOTAL FUNDS: $84,723
ACKNOWLEDGMENT: UMTA

48 385007
TECHNICAL ASSISTANCE FOR ENERGY AND PROPULSION TECHNOLOGY

The purpose of this study is to obtain DOE technical assessment and program evaluation of: 1) the UMTA energy and propulsion technology program, and 2) the DOE energy and propulsion programs using the urban bus as a potential application. The study provides technology overview information and data on DOE present and planned advanced propulsion system projects, and technical review and assessment inputs in overlapping energy and propulsion. This study will reduce duplication of effort in energy related topics by both agencies.

PERFORMING AGENCY: Department of Energy, UMTA-DC-06-0259
INVESTIGATOR: Patterson, E Tel (202) 353-4498
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Asatoorian, SD (URT-22) Tel (202) 426-8483 Contract UMTA-DC-06-0259
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: May 1979 COMPLETION DATE: June 1984
TOTAL FUNDS: $70,000
ACKNOWLEDGMENT: UMTA

48 385093
FUEL CELL FEASIBILITY STUDY

This activity is to ensure that fuel cell feasibility study performed by Los Alamos National Laboratory adequately covers transit operating agencies' needs and concerns. Information will be provided to Los Alamos in the preparation of the fuel cell study report and assistance given to UMTA in review of the report. Fuel cells are accepted environmentally as efficient alternatives for propulsion systems. The effort is to determine their cost effectiveness.

PERFORMING AGENCY: Georgetown University, UMTA-DC-06-0471
INVESTIGATOR: Price, D Tel (202) 625-4352
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Sullivan, PJ (URT-21) Tel (202) 426-8483 Contract UMTA-DC-06-0471
STATUS: Active NOTICE DATE: Apr. 1984
START DATE: Apr. 1984 COMPLETION DATE: Apr. 1985
TOTAL FUNDS: $8,000
ACKNOWLEDGMENT: UMTA

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