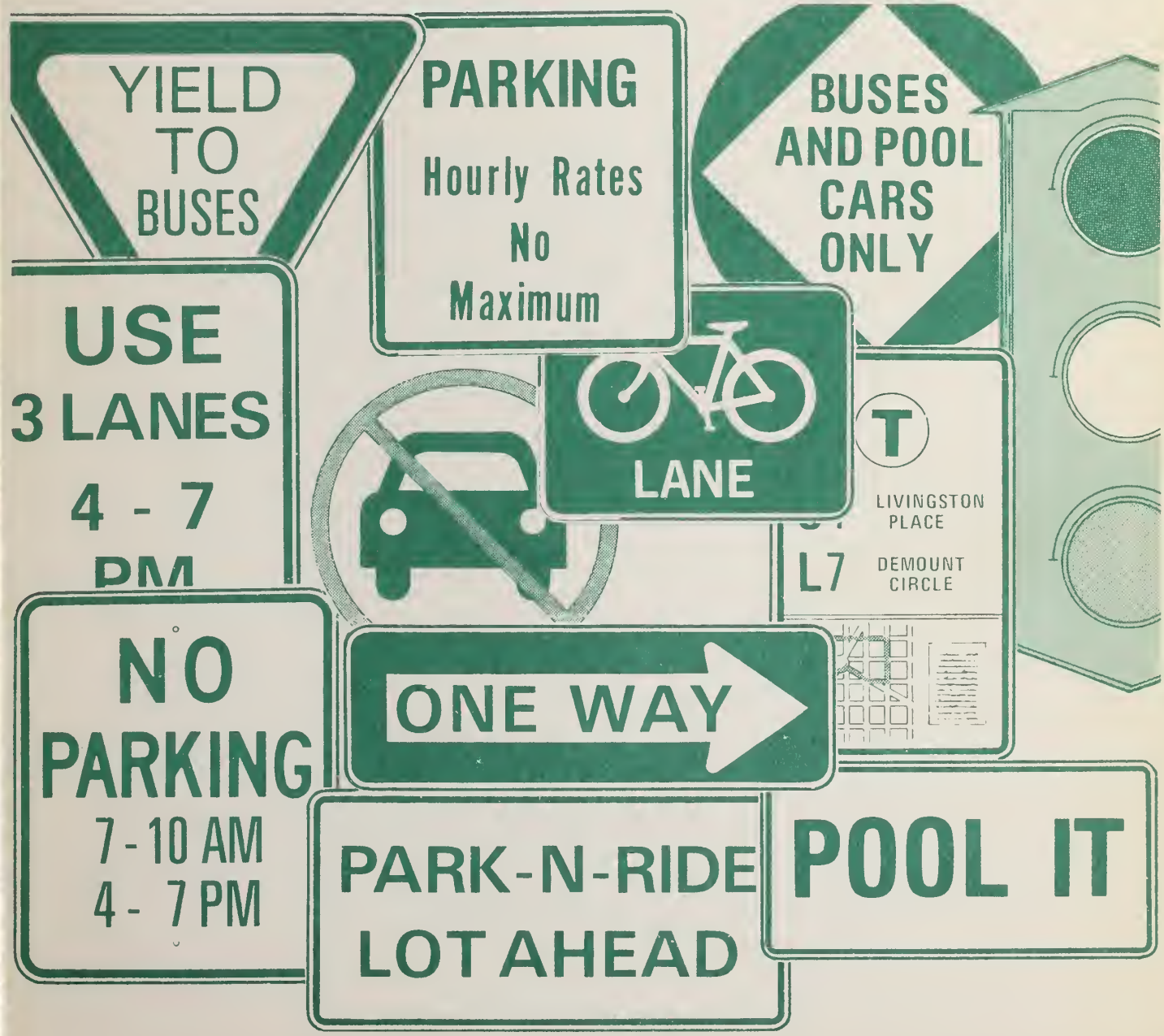
U.S. DEPARTMENT
OF TRANSPORTATION
Urban Mass Transportation
Administration
Office of Policy
and Program Development
Washington, D. C. 20590
Federal Highway
Administration
Office of Highway
Planning
Washington, D.C. 20590

Transportation System Management

a bibliography of technical reports



NOTICE

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
UMTA-UPP-L-76-1		

4. Title and Subtitle	5. Report Date
Transportation System Management: Bibliography of Technical Reports	May 1976
	6. Performing Organization Code
	8. Performing Organization Report No.
7. Author(s)	
Richard L. Oram	

9. Performing Organization Name and Address	10. Work Unit No. (TRAIS)
Urban Mass Transportation Administration Office of Policy and Program Development 400 Seventh Street, S.W. Washington, D. C. 20590	UPP-L
	11. Contract or Grant No. UPP-L
	13. Type of Report and Period Covered Final Report
12. Sponsoring Agency Name and Address Urban Mass Transportation Administration and Federal Highway Administration U.S. Department of Transportation Washington, D.C. 20590	14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

This document is a bibliography of readily obtainable technical reports on operational transportation improvements. It was prepared to assist in the development of Transportation System Management (TSM) plans as required by the Urban Mass Transportation Administration/Federal Highway Administration urban transportation planning regulations that were issued in Fall 1975, and in the implementation of TSM improvements. (TSM plans are intended to document the local strategy for improving air quality, conserving energy, and improving transportation efficiency and mobility through management of the existing transportation system.) Descriptions and availability information on over 150 reports dealing with low-capital, short-range, or policy oriented urban transportation improvements are included and classified into 9 sections. The first, General, includes transportation management overviews, survey reports on the various operational approaches and strategies for improved transportation efficiency, and demonstration program reports. The remaining sections contain more focused reports in the following areas: Preferential Treatment for High Occupancy Vehicles, Traffic Operations, Parking Management, Transit Improvements, Transit Management, Pooling and Paratransit, Pedestrians and Bicycles, and Transportation Demand Management.

17. Key Words	18. Distribution Statement
Transportation System Management; Bibliography; Low Capital/Short Range Urban Transportation Improvements; Transportation Efficiency; Transit, Traffic, Pedestrians, Bicycles	Available from: National Technical Information Service Springfield, VA. 22161

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	149	

TRANSPORTATION SYSTEM MANAGEMENT:

Bibliography of Technical Reports

This document is an annotated bibliography of easily obtainable technical reports related to Transportation System Management. While some of the references are primarily descriptive in nature, most of the material will directly assist the implementation of TSM programs.

The majority of these reports were sponsored by the U.S. Department of Transportation, but abstracts of many other highly useful reports are included as well. Information on how to obtain reports appears on each abstract, and additional ordering information is on page 3.

References within this bibliography are organized under nine subject areas. (Some overlap of subject areas is unavoidable, however, and in these cases, cross references are provided.) The subject areas and topics addressed by each are:

General includes transportation management overviews, planning guides and conference proceedings; studies on energy conservation/air quality/urban transportation improvement actions; demonstration reports and exemplary short-range transportation plans.

Preferential Treatment includes description and implementation oriented material on reserved lanes for high occupancy vehicles, traffic signal bus priority, demonstration reports, priority simulation planning models.

Traffic Operations includes traffic engineering and control handbooks, data storage and analysis system, traffic regulations, computerized signal systems, turn restrictions/provisions, freeway metering and surveillance.

Parking Management includes central city parking policy overviews, feasibility studies, parking handbooks, parking tax implementation and experiment reports, guidelines for park-and-ride facilities, parking system analysis.

Transit Improvements includes transit improvement demonstrations, bus shelters, transit system integration, downtown circulation service.

Transit Management includes marketing (market research, service planning and development, pricing, promotion, etc.), telephone information systems, maintenance and routing/scheduling aids, small city management/marketing techniques.

Pooling/Paratransit includes overviews and general manuals on paratransit and transportation pooling, the transportation brokerage concept, carpool matching and promotion, vanpooling and subscription bus guidelines, demand responsive overviews and planning guidelines, taxi and shared-ride taxi reports, demonstration reports.

Pedestrians and Bicycles includes pedestrian zone overviews and evaluation models/methodologies, traffic planning considerations for malls, pedestrian facility planning guides, bikeway experience and location/design criteria, bicycle programs.

Demand Management includes transportation pricing overviews and conference proceedings, approaches to congestion pricing (supplemental license systems, bridge toll pricing), staggered and flexible work hours.

This bibliography was compiled by Richard L. Oram of the Urban Mass Transportation Administration. Invaluable assistance from Beverly Boyd and Ingrid Goldstrom is gratefully acknowledged.

Ordering Information

Reports included in this bibliography are available from a number of sources. Many of the reports are available free of charge from offices of the Urban Mass Transportation Administration, Federal Highway Administration, Environmental Protection Agency, or other government agencies. Other documents can be ordered from the Transportation Research Board, Urban Institute, U.S. Government Printing Office, National Technical Information Service, or Organization for Economic Cooperation and Development. For these reports, while prices are noted on the abstracts, many report prices have recently been raised. The prices listed do not in all cases reflect these increases. When ordering, either an inquiry for the current price should be made, or a possible additional charge in excess of the listed price should be anticipated. Prices can be checked by mail or by telephone. Information numbers are:

Transportation Research Board	202-389-6251
Urban Institute (Publications Office)	202-223-1950
National Technical Information Service	703-321-8543
U.S. Government Printing Office	202-783-3238
Organization for Economic Cooperation and Development	202-298-8755

For reports available from the Transportation Research Board, Urban Institute, U.S. Government Printing Office, or Organization for Economic Cooperation and Development, checks should accompany orders. Orders will normally be filled by return mail. For reports available from the National Technical Information Service, orders will normally be filled in 1 to 4 weeks, depending on availability. The various ways of ordering documents from NTIS are:

1. NTIS Deposit Account

   The easiest and fastest way of ordering documents is to establish a Deposit Account with NTIS. With a minimum deposit of $25, documents can be ordered and the purchase price is deducted from your account. Contact NTIS for a "Deposit Account Service Application" to establish this type of service.

2. Prepayment

   Send check (payable to NTIS) or money order with request for publication.

3. Ship and Bill

   A $5.00 surcharge is added on each total order for documents, regardless of the number of documents ordered. Orders should be in writing. This is the slowest method of delivery.

GENERAL

TRANSPORTATION SYSTEM MANAGEMENT, SUPPLEMENTARY INFORMATION

IMPROVING URBAN MOBILITY - THROUGH BETTER TRANSPORTATION MANAGEMENT

JOINT STRATEGIES FOR URBAN TRANSPORTATION, AIR QUALITY AND ENERGY CONSERVATION

SOLUTIONS TO PEAK PERIOD TRAFFIC CONGESTION

LOW COST TRANSPORTATION ALTERNATIVES

BETTER TOWNS WITH LESS TRAFFIC

BETTER USE OF EXISTING TRANSPORTATION FACILITIES

GUIDELINES TO REDUCE ENERGY CONSUMPTION THROUGH TRANSPORTATION ACTIONS

TRANSPORTATION CONTROLS TO REDUCE AUTOMOBILE USE AND IMPROVE AIR QUALITY IN CITIES

TECHNIQUES OF IMPROVING URBAN CONDITIONS BY RESTRAINT OF ROAD TRAFFIC

TRANSPORTATION MANAGEMENT STRATEGIES: PROSPECTS FOR SMALL CITIES

SHORT-RANGE TRANSIT PLANNING

UMTA SERVICE AND METHODS DEMONSTRATION PROGRAM ANNUAL REPORT

EVALUATION GUIDELINES FOR SERVICE AND METHODS DEMONSTRATION PROJECTS

STATUS OF THE URBAN CORRIDOR DEMONSTRATION PROGRAM

A SHORT RANGE TRANSPORTATION PLAN OF THE SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

CHARACTERISTICS OF URBAN TRANSPORTATION SYSTEMS - A HANDBOOK FOR TRANSPORTATION PLANNERS

TRANSPORTATION SYSTEM MANAGEMENT

Supplementary Information on Development and Implementation of TSM Plans

December 1975

Prepared by: Urban Mass Transportation Administration and Federal Highway Administration

This brief document provides, in Question-and-Answer format, a discussion of the Transportation System Management (TSM) Requirement, including its background and rationale. The Federal intent and expectation of local response are discussed, including suggestions for initial local efforts. Planning and technical assistance available, and the relationship of the TSM Plan to other transportation planning activities are delineated. Anticipated on-going TSM activity and phasing-in of the requirement are also discussed.

Available from: Urban Mass Transportation Administration, UPP-5
400 Seventh Street, S.W.
Washington, D. C. 20590

IMPROVING URBAN MOBILITY - THROUGH BETTER TRANSPORTATION MANAGEMENT

May 1975

Prepared by: Federal Highway Administration

This report discusses a variety of low-cost traffic engineering and public transit operations which are available to us now and can significantly improve urban mobility. Some of the techniques discussed in the report concentrate on improving the people-moving efficiency of the existing road system through more effective management, i.e., better channelization of traffic, one-way streets, exclusive lanes for turning vehicles, and computerized traffic flow control. Some techniques aim at improving transit operations, i.e., bus lanes, bus streets, transit priority at intersections, and fringe parking facilities. Other techniques concentrate on improving utilization of the automobile through ride sharing programs. Still other techniques attempt to reduce the demand for motor vehicle transportation services and facilities.

30 pages

Available from: Federal Highway Administration, HHP-26
Washington, D. C. 20590

JOINT STRATEGIES FOR URBAN TRANSPORTATION, AIR QUALITY AND ENERGY CONSERVATION

January 1975

Prepared by : INTERPLAN Corporation
Santa Barbara, California

Prepared for: Urban Mass Transportation Administration

Problems of urban mobility, air quality, and transportation-related energy consumption constitute major issues of national concern. This report represents the joint efforts of UMTA, EPA and FEA to develop an integrated approach for resolving problems created by traffic congestion, air pollution, and petroleum shortages. The purposes of this report were to: (1) identify all principal strategies and actions which impact on each of the agencies' transportation-related goals; (2) systematically elucidate the interrelationships among them; and (3) devise a way of isolating those groups of strategies and actions whose total impacts would be synergistically enhanced if implemented jointly. The report represents the culmination of the study effort to attain these objectives. In Part I, the basic relationships among the strategies and actions are summarized in a matrix display. Each item is ranked to access its impact on six subgoals, or phenomena, in the near or long term: improved auto alternatives, improved vehicular flow; reduced auto use; reduced travel demand; reduced vehicular emissions; and reduced vehicular petroleum consumption. Two synergistic joint action programs are presented. Part II contains an information review of experience, impacts on goals (mobility, air quality, energy conservation), and an overall evaluation of 54 specific actions, based on a review of 376 sources listed in the appendix.

390 pages

Available from: Urban Mass Transportation Administration, UPP-5
400 Seventh Street, S.W.
Washington, D. C. 20590

SOLUTIONS TO PEAK PERIOD TRAFFIC CONGESTION

Volume I--State-of-the-Art Survey: December 1974
Volume II--Options for Current Programs: August 1975

National Cooperative Highway Research Program Project 7-10
Roberta Remak and Sandra Rosenbloom

These documents are the interim reports of a study to identify possible solutions to peak period traffic congestion in urban areas. Volume I covers the first phase, a state-of-the-art survey of methods currently in use or envisioned to alleviate peak period congestion. The second phase (Volume II) develops packages of options to maximize the effectiveness of congestion reduction programs.

Volume I identifies and discusses eleven major categories of techniques for reducing peak period traffic: staggered and flexible work hours, shortened work weeks, pricing and regulatory mechanisms, restricting access, land-use planning, marketing, carpooling and ride-sharing, communications in lieu of travel, traffic engineering, and vehicle design factors. A review of experience with these techniques and initial conclusions on the effectiveness of each in reducing peak period congestion is offered. An extensive annotated bibliography is included.

Volume II composes eight "packages" of mutually supportive techniques that would maximize program effectiveness. The benefits and costs and feasibility of applying the actions is documented. Recommendations are made for the application of the proposed packages to particular problem areas, i.e., CBD's of large cities, CBD's of small cities, urban freeways and arterials, roadways with strong one-directional flow, and roadways with limited options for alternative routes. Recommendations for further research are included.

Available from: Program Director, NCHRP
Transportation Research Board
2101 Constitution Avenue
Washington, D. C. 20418

(Reports in publication and prices undetermined as of May 1976)

A STUDY OF LOW COST ALTERNATIVES TO INCREASE THE EFFECTIVENESS OF EXISTING TRANSPORTATION FACILITIES-RESULTS OF SURVEY AND ANALYSIS OF TWENTY-ONE LOW COST TECHNIQUES

January 1973

Prepared by : R.H. Pratt Associates, Inc.
Kensington, Maryland

Prepared for: U.S. Department of Transportation

This study details the findings of a survey and analysis of twenty-one low cost techniques designed to increase the effective processing capacity of fixed capital transportation facilities. The work reported in Volume I represents the initial phase of the study wherein a wide range of possible techniques were analyzed to determine whether any of the candidate techniques offered promise in satisfying the study objectives. Techniques were rated with particular attention to their potential processing efficiencies (volume increases or time reductions in moving people via existing transportation facilities). In addition, the evaluation considered various cost parameters, impacts on the disadvantaged, environmental and transportation safety factors, technical and institutional viability, and the expected response from travelers.

Techniques were grouped according to their all around ratings and case study analysis candidates were selected from the highest ranking group.

Available from: Federal Highway Administration (HHP-26)
Washington, D. C. 20590

BETTER TOWNS WITH LESS TRAFFIC

Organization for Economic Cooperation and Development

1975

This report is the proceedings of an international conference entitled "Better Towns with Less Traffic", held April 14-16, 1975 at O.E.C.D. Headquarters in Paris. The aim of the Conference was to evaluate the possibilities and effects of policies for limiting motor traffic in urban areas, such as are being applied by a growing number of towns in Member countries.

These proceedings contain the seven case studies discussed at the Conference, dealing with towns where overall policies are being pursued to limit motor traffic and improve the environment (Uppsala, Bologna, Singapore, Nagoya, Munich, Beasncon, Nottingham).

The proceedings also contain summaries of the seven specialized sessions arranged during the Conference to deal with the main problems of urban transport (parking; traffic limitation; cyclists and pedestrians; priorities for public transport; paratransit; planning, financing and implementing the policies for urban transport; and the economic and energy implications of these policies).

The findings of the Conference on "Better Towns with Less Traffic" are based on practical experience in a number of large towns. In submitting them in this report the O.E.C.D. hopes to offer some ideas to all the local, national or international authorities concerned with town planning and traffic problems.

290 pages

Available free of charge from: O.E.C.D. Publications Center
Suite 1207
1750 Pennsylvania Avenue, N.W.
Washington, D. C. 20006

BETTER USE OF EXISTING TRANSPORTATION FACILITIES

Transportation Research Board Special Report 153

This Special Report presents the results of a 3-day Conference held in August 1974 in Jacksonville, Florida. Because demand for increased transportation capacity continues in the face of increased resistance to new highway construction, these papers present timely and useful information. Better use of existing transportation facilities is seen as a significant approach to solving the interrelated transportation, environment and resource problems now faced. Introductory material discusses how the management approach can be applied to transportation. Other papers discuss research and experiences with various improvements leading to increased transportation efficiency: freeway metering and control, park-and-ride, bus priority strategies and simulation, traffic signal improvements, facility improvement/maintenance and accident considerations, pricing and work schedule changes to reduce peak period demand, and improved highway safety.

250 pages

Available from: Transportation Research Board
2101 Constitution Avenue, N.W.
Washington, D.C. 20418

Order No. ISBN 0-309-02381-5

Price: $9.80

GUIDELINES TO REDUCE ENERGY CONSUMPTION THROUGH TRANSPORTATION ACTIONS

May 1974

Prepared by : Alan M. Voorhees & Associates
McLean, Virginia

Prepared for: Urban Mass Transportation Administration

This document is intended to serve as an aid to local transportation planners, traffic engineers, and administrators in the incorporation of energy conservation considerations into the transportation planning process, especially in reference to short-range transportation planning. Various types of low cost, short-term transportation actions are summarized and their potential for reducing energy consumption is estimated. Summary tables are presented which array the actions in terms of relevant institutional and legal considerations, and socio-economic and environmental effects. Interrelationships between the energy consumption reduction potential of groups of actions are discussed and a process for formulation of coherent packages of such actions is presented. Guidelines are presented for evaluating and formulating these action packages for large (1,000,000 and over population), medium (250,000 to 1,000,000), and small (50,000 to 250,000) urban areas. General conclusions are drawn. Transportation actions may reduce energy consumption in one or more the following ways: improving efficiency of vehicle operation; causing a shift of trips from one or two passenger autos to higher occupancy buses, vans, and carpools; and, reducing travel demand by, for example, instituting the four-day work week. Appendices are "Actions to Reduce Energy Consumption", "How Transportation Actions Can Reduce Energy Consumption", and a bibliography.

85 pages

Available from: National Technical Information Service
Springfield, Virginia 22161

Refer to: PB-235-983/AS Price: $4.75

TRANSPORTATION CONTROLS TO REDUCE AUTOMOBILE USE AND IMPROVE AIR QUALITY IN CITIES

The Need, The Options, and Effects on Urban Activity

November 1974

Prepared by: U.S. Environmental Protection Agency

This report was prepared pursuant to the Energy Supply the Environmental Coordination Act of 1974, which mandated that EPA conduct a study on the necessity of parking surcharge, management of parking supply, and preferential bus/carpool lane regulations as part of implementation plans to achieve and maintain air quality standards. The report addresses the need for transportation controls and automobile use reductions, discusses alternative methods of reducing automobile use (parking management, transit improvements including preferential treatment, carpooling, transportation pricing, bicycling, etc.) and the effectiveness of each, the background, development process and current status of Transportation Control Regulations, the economic and social effects of reductions in auto use, and the relationship of transportation controls to other aspects of transportation planning and decision-making.

60 pages

Available from: Environmental Protection Agency
Office of Policy Analysis, AW-444
401 M Street, S.W.
Washington, D. C. 20460

TECHNIQUES OF IMPROVING URBAN CONDITIONS BY RESTRAINT OF ROAD TRAFFIC

(Proceedings of a Symposium held in Cologne, Germany in October 1971)

Increasing traffic in urban areas is leading to serious congestion from limited road capacity and street parking. Summaries of the papers presented at the different sessions cover: 1. Objectives of and reasons for traffic restraint. 2. Traffic flow and network planning. 3. Parking control and bus priority measures. 4. Road pricing. 5. Methods of evaluation and comparison of traffic restraint techniques.

192 pages

Available from: O.E.C.D. Publications Center
Suite 1207
1750 Pennsylvania Avenue, N.W.
Washington, D. C. 20006

Refer to: 77-73-06-1 Price: $4.00

TRANSPORTATION MANAGEMENT STRATEGIES: PROSPECTS FOR SMALL CITIES

August 1975

Prepared by: Thomas F. Larwin and Darwin G. Stuart

A case study transportation management program for the Santa Barbara, California, CBD is reviewed. (The population of Santa Barbara is approximately 75,000, the population of the urbanized area is approximately 130,000.) The purpose is to indicate the breadth and scope which similar programs might take in other smaller urban areas. Three alternative scenarios for transportation management are outlined: (1) maximizing non-auto access, (2) minimizing auto access, and (3) maximizing internal circulation opportunities. The evaluation of more specific options within these categories, according to both potential levels of goal-achievement and local community preferences, is described. The recommended transportation management program is then outlined. Conclusions are drawn regarding the applicability of case study concepts and methods to other areas.

32 pages

Available from: Urban Mass Transportation Administration
Office of Policy and Program Development, UPP-5
400 Seventh Street, S.W.
Washington, D. C. 20590

SHORT-RANGE TRANSIT PLANNING
July 1973

Prepared by:

Alan M. Voorhees & Associates, Inc.
Westgate Research Park
McLean, Virginia 22101

Prepared for:

U.S. DEPARTMENT OF TRANSPORTATION
Office of the Secretary
Urban Mass Transportation Administration
Washington, D. C. 20590

This report is a reference document for those communities contemplating the preparation of short-range transit development programs. The basic objectives of these programs are the revitalization of public transportation and the provision of greater mobility for substantial groups of transit-dependent persons.

The report is structured to allow those responsible for local decisions to be better informed on the transit options available to their community. It should be of particular interest to local elected officials, regional planning agencies and transit operators.

One constraint worthy of note is that the material in this report was designed for communities having less than 1 million residents. The material is not designed for areas with more than 1 million residents because of the increased complexities of transportation/general planning relationships in these areas.

In the development of this report, seven monographs on selected phases of transit planning were prepared. These monographs are not meant to advance the state-of-the-art by presenting new, untried methods of procedures. Nor do the monographs recommend or advocate the use of specific techniques over others. They do however present techniques that have been used successfully in selected urban areas across the country. The monographs are for the following functional areas: routes and schedules; fare structure and pricing; fleet mix; marketing; management; financial planning; and citizen involvement.

180 pages

Available from: Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

Stock No. 5014-00002
Catalogue No. TD7.2:T68
Price: $2.15

UMTA SERVICE AND METHODS DEMONSTRATION PROGRAM ANNUAL REPORT

November 1975

Prepared by : Transportation Systems Center

Prepared for: Urban Mass Transportation Administration

This report contains a description of the Service and Methods Demonstration Program. Transit demonstration projects undertaken in previous years are reviewed. Recently completed and current demonstration projects are described and project results from similar demonstrations are compared. The comparisons are made by grouping projects according to the program objectives addressed: (1) decrease transit travel time, (2) increase transit reliability, (3) increase transit coverage, (4) increase transit vehicle productivity, and (5) improve the mobility of transit dependents. Independent activities carried out in support of the demonstrations are described, such as the development of evaluation guidelines and improved methodologies for demonstration evaluation, analytical studies in support of the development of experimental demonstrations, and case studies of independent local innovations. Information dissemination mechanisms and activities intended to facilitate more widespread knowledge of effective approaches to improving transit are discussed. The Appendix contains a detailed description of each demonstration project including the objectives, history, status, results, evaluation and conclusions.

252 pages

Available from: National Technical Information Service
Springfield, VA. 22161

Refer to: PB-251-325; Price: $8.00

EVALUATION GUIDELINES FOR SERVICE AND METHODS DEMONSTRATION PROJECTS

February 1976

Prepared by : Transportation Systems Center, Cambridge, MA. and
CACI Inc., Los Angeles, CA.

Prepared for: Urban Mass Transportation Administration

This document consists of evaluation guidelines for planning, implementing, and reporting the findings of the evaluation of Service and Methods Demonstration (SMD) projects sponsored by the Urban Mass Transportation Administration (UMTA). The objective of these guidelines is to foster consistency of evaluation philosophy and techniques, and comparability of results so as to improve the output of the UMTA demonstration program. In addition to describing procedures for developing and executing the evaluation of SMD projects, this document contains background information on the SMD Program, a general discussion of the demonstration evaluation process, and appendixes on survey techniques and statistical methodology.

Although these guidelines were prepared specifically for use in evaluating SMD projects, their potential applicability covers the evaluation of any type of transit innovation.

190 pages

Available from: National Technical Information Service
Springfield, VA. 22161

Refer to: PB 251-891; Price: $7.50

STATUS OF THE URBAN CORRIDOR DEMONSTRATION PROGRAM

November 1975

Prepared by : Alan M. Voorhees and Associates, Inc.
McLean, VA.

Prepared for: U.S. Department of Transportation

The U.S. Department of Transportation initiated the Urban Corridor Demonstration Program in 1970 to test and demonstrate low capital intensive techniques for relieving traffic congestion in urban radial corridors. This Report analyzes the Corridor Program by project type, including improved transit services and facilities, roadway and traffic control improvements, and other projects. It compares the similarities and differences of projects in each of the eight demonstration cities; documents a preliminary 'cost-impact' evaluation of different improvement techniques; and summarizes what has been learned to date about the success or failure of various improvement techniques.

Report will be available in April 1976 from : U.S. Department of Transportation
Office of Environmental Affairs, TES-70
Washington, D. C. 20590

STATUS OF THE URBAN CORRIDOR DEMONSTRATION PROGRAM

July 1974

Prepared by : Alan M. Voorhees and Associates

Prepared for: U.S. Department of Transportation

In recognition of the serious transportation problems affecting many urban areas, in January 1970, the Department of Transportation initiated the Urban Corridor Demonstration Program. The main purpose of the program is to test and demonstrate the concerted use of available highway traffic engineering and transit operations technology for relieving traffic congestion in radial corridors serving major urban centers. The program emphasizes low-capital intensive improvements rather than new major construction to demonstrate whether relatively inexpensive projects--which can be implemented rapidly--can play an effective role in relieving urban traffic congestion. This report summarizes the specific demonstration projects and their current status in each of the following urban areas: Cincinnati, Dallas, Louisville, Minneapolis, New York, Philadelphia, and Washington, D.C.

86 pages

Available from: Federal Highway Administration, HHP-26
Washington, D. C. 20590

A SHORT RANGE TRANSPORTATION PLAN OF THE SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

January 1975

Prepared by : Southern California Association of Governments

Prepared for: U.S. Department of Transportation

A summary of proposed short range transportation improvements for the Southern California Association of Governments (SCAG) region are outlined in this report. These improvements are directed towards improving air quality and include preferential treatment on freeways and major arterials for high occupancy vehicles, carpool action programs, transit development strategies, bicycle related programs and commuter rail service.

98 pages

Available from: Federal Highway Administration, HHP-26
Washington, D. C. 20590

CHARACTERISTICS OF URBAN TRANSPORTATION SYSTEMS
A HANDBOOK FOR TRANSPORTATION PLANNERS

May 1975

Prepared by : DeLeuw, Cather & Co. and The Urban Institute
Prepared for: U.S. Department of Transportation

The objective of the handbook specifically for use by transportation planners in the evaluation of alternative systems, is to provide a single simplified reference source which characterizes the most important (from the standpoint of evaluation) performance characteristics of the following contemporary urban transportation systems: (1) Rail (commuter, rapid, and light); (2) local bus and bus rapid transit; (3) automobile-highway system (automobiles and other vehicles); (4) pedestrian assistance systems; and (5) activity center systems--people mover systems that have been installed at airports, zoos, amusement parks, etc. The handbook assesses the supply or performance aspect of urban transportation dealing with passenger demand implicitly. Seven supply parameters studied are: speed, capacity (service volume), operating cost (vehicle), energy consumption (vehicle or source), pollution, capital cost, and accident frequency.

193 pages

Though not explicitly directed to TSM, this document is a primary reference manual.

Available from: National Technical Information Service
Springfield, VA 22151

Refer to PB-245 809/9WT Price: $7.00

PREFERENTIAL TREATMENT

PRIORITY TECHNIQUES FOR HIGH OCCUPANCY VEHICLES

BUS USE OF HIGHWAYS - STATE-OF-THE-ART

BUS USE OF HIGHWAYS - PLANNING AND DESIGN GUIDELINES

LOW COST TRANSPORTATION ALTERNATIVES - BUSWAY APPLICATIONS

BUS RAPID TRANSIT OPTIONS FOR DENSELY DEVELOPED AREAS

THE GOLDEN GATE CORRIDOR BUS PRIORITY SYSTEM

EVALUATION OF SHIRLEY HIGHWAY DEMONSTRATION PROJECT

URBAN CORRIDOR DEMONSTRATION PROGRAM - EXCLUSIVE BUS LANE

SIMULATION OF PRIORITY STRATEGIES AT FREEWAY RAMPS

A COMPUTER SIMULATION MODEL FOR EVALUATING PRIORITY OPERATIONS ON FREEWAYS

SIMULATION OF URBAN BUS OPERATION ON SIGNALIZED ARTERIALS

SIMPLIFIED ESTIMATORS FOR BENEFIT ASSESSMENT OF BUS PRIORITY SYSTEMS

UNCONDITIONALLY PREEMPTIVE BUS PRIORITY SYSTEM: SUMMARY OF SIMULATION RESULTS

OVERVIEW OF EXPERIMENTAL BUS PRIORITY SYSTEMS

PRIORITY TECHNIQUES FOR HIGH OCCUPANCY VEHICLES

State-of-the-Art Overview

November 1975

Prepared by : Transportation Systems Center
U.S. Department of Transportation

Prepared for: U.S. Department of Transportation
Office of the Secretary
Urban Mass Transportation Administration
Federal Highway Administration

This report presents an overview of priority techniques for high occupancy vehicles, a set of transportation improvements that make more efficient use of existing vehicle and highway capacities. The report is designed to make more accessible the body of knowledge that now constitutes the state-of-the-art in priority techniques. Included are discussions of the role of priority techniques, as well as the characteristics of freeway and arterial/street priority applications. An evaluative overview presents implementation guidelines, decisionmaking criteria, and a discussion of impacts.

A special feature is the inclusion of supplementary material to serve as a source-book for further information.

(106 pages)

Available from: Technology Sharing Program Office
Code 151
U.S. Department of Transportation
Transportation Systems Center
Kendall Square
Cambridge, MA 02142

BUS USE OF HIGHWAYS
STATE-OF-THE-ART

1973

Prepared by : Wilbur Smith and Associates
Prepared for: National Cooperative Highway Research Program (Report 143)

This report will be of particular interest to those highway officials responsible for planning, design, and traffic engineering. It constitutes a state-of-the-art of bus utilization of highway facilities and, therefore, contributes to a better understanding of the effectiveness of bus operations on highways in terms of priority treatments relating to freeways, arterials, and terminals. Highway engineers will find this report of special value in helping to identify the multimodal potentials of urban freeway projects, as well as in evaluating the impact of bus operations on the capacity and traffic flow characteristics of existing roadway facilities.

Available from: Transportation Research Board
2101 Constitution Avenue, N.W.
Washington, D.C. 20418

Refer to: ISBN-0-309-02133-2; Price: $6.00

BUS USE OF HIGHWAYS
PLANNING AND DESIGN GUIDELINES

1975

Prepared by : Wilbur Smith and Associates
Prepared for: National Cooperative Highway Research Program (Report 155)

This report will be of particular interest to public officials responsible for transportation policy, planning, design and engineering. It contains guidelines for planning and designing preferential bus facilities relating to freeways, arterials, and terminals. Transportation engineers and planners will find the report of special value in helping to identify appropriate bus priority treatments for specific urban situations. In addition, the report will help the designer to incorporate the essential characteristics required for each type of treatment. It constitutes a single reference source on bus priority measures.

Available from: Urban Mass Transportation Administration
Office of Policy and Program Development, UPP-5
400 Seventh Street, S.W.
Washington, D.C. 20590

A STUDY OF LOW COST ALTERNATIVES TO INCREASE THE EFFECTIVENESS OF EXISTING TRANSPORTATION FACILITIES- RESULTS OF CASE STUDIES AND ANALYSIS OF BUSWAY APPLICATIONS

January 1973

Prepared by : R. H. Pratt Associates, Inc., Kensington, MD.

Prepared for: U.S. Department of Transportation

This report details the results of case study investigations and analyses of seven operating exclusive bus lanes. Three of the exclusive bus lanes operate as contraflow facilities on freeways, three as contraflow bus lanes on arterial streets, and one as a specially constructed bus lane.

The study found that exclusive bus lanes were capable of processing large volumes of passengers often with substantial time savings over competing modes. Findings indicate that busways offer the potential for substantial gain in total capacity to move people. There is strong evidence that commuters are attracted to public transportation such as can be provided via an exclusive bus lane if travel time saving is achieved. Bus lanes can be made operable in a matter of weeks at a cost that can often be absorbed within operating budgets.

A variety of technical, institutional and operating experiences associated with the various bus lanes now operational are detailed. In addition, the potential for bus lanes in five diverse urban environments is analyzed. Data is provided on Federal funding appropriate to establishing bus lanes.

176 pages

Available from: Federal Highway Administration, HHP-26
Washington, D.C. 20590

BUS RAPID TRANSIT OPTIONS FOR DENSELY DEVELOPED AREAS

February 1975

Prepared by: Wilbur Smith and Associates, in association with Sverdrup and Parcel and Associates, Inc., and Stanford Research Institute, GCA Technology Division, Wyle Laboratories

Prepared for: U.S. Department of Transportation

This report describes and evaluates alternative bus rapid transit systems in densely developed urban areas. It reviews the state-of-the-art, identifies significant options and technologies, and assesses their cost, service, and community impacts. It is intended as a guide for community leaders and transportation planners interested in providing fast, reliable metropolitan bus rapid transit service.

The report provides guidelines for providing bus rapid transit in densely developed areas without freeways. This need has been a principal concern of bus rapid transit planning, since ways to optimize regional express bus service--including preferential treatment for buses on urban freeways--have been well documented.

187 pages

For sale by the: Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

Price: $3.05
Stock Number: 050-001-00097-1

THE GOLDEN GATE CORRIDOR BUS PRIORITY SYSTEM

May 1975

Prepared by : Bigelow-Crain Associates, Menlo Park, CA.
Prepared for: Urban Mass Transportation Administration

This report describes and evaluates the bus priority system in operation on U.S. 101 in Marin County, North of San Francisco. The combination contra-flow and no-barrier concurrent flow reserved bus lane system has been in operation since September 1972, and has served to speed buses and increase total person flow and therefore the efficiency of the freeway in peak periods. Of great significance is that the improvements were realized with virtually no reconstruction and only minor operational modifications to the eight mile segment of roadway. The Golden Gate Corridor, the bus priority system, and the transit services offered are described. The involvement of various government agencies throughout the project history is summarized. The costs of implementing and operating the system are documented.

Evaluation findings include time savings, ridership and cost effectiveness, highway safety and traffic enforcement impacts, bus schedule reliability, public reactions, and impacts on transit operating costs and efficiencies. It is concluded that this system is a highly successful operation testing innovations that have significant transferability to other urban areas.

58 pages

Will be available in
July 1976 from : National Technical Information Service
Springfield, VA. 22161

EVALUATION OF THE SHIRLEY HIGHWAY EXPRESS-BUS-ON FREEWAY DEMONSTRATION PROJECT - FINAL REPORT

August 1975

Prepared by : National Bureau of Standards
Prepared for: Urban Mass Transportation Administration

The Shirley Highway Express Bus-on-Freeway Project began in June 1971 and ended December 31, 1974. The principal goal of the project was to demonstrate that express bus-on-freeway operations can improve the quality of bus service and lead to an increase in the people moving capability of peak period transportation facilities for an entire urban corridor. Secondary project goals were to demonstrate the effectiveness of this technology as a means of reducing auto pollutant emissions and gasoline consumption, improving the mobility of the transportation disadvantaged and the economic condition of the transit operator.

This report summarizes project performance with respect to the attainment of the above goals. An analysis of bus operations is presented which shows that the project effected an improvement in the quality of the Shirley Highway Corridor bus service as evidenced by the reduction in travel times by bus, and the increase in both the reliability and the coverage of the bus system. Trends in peak period traffic volumes are presented which show that the subsequent increase in bus patronage and bus' share of Corridor commuters led to an increase in the peak period people moving capability of the Corridor. Corridor people moving capability was also increased by project stimulated growth in carpooling.

Data from surveys of Corridor commuters were used in identifying factors important in commuters' decisions to use bus or to carpool. Bus users who formerly had commuted by auto reported that the most important factors in their decisions to switch from auto were the expense and discomfort of commuting by auto, and the express features of project bus service. Factors reported as most important in decisions to join or form a carpool were reduction in commuting costs, special parking privileges for carpools, and availability of the express busway to carpools.

The report concludes with an analysis of project performance with respect to the secondary goals. The project resulted in significant reductions in peak period auto usage, auto pollutant emissions and gasoline consumption. The utilization of project bus service by transportation disadvantaged persons is discussed and project costs and revenues are analyzed.

133 pages

Available from: National Technical Information Service
Springfield, Virginia 22151

PB 247-637 $6.75

URBAN CORRIDOR DEMONSTRATION PROGRAM
EXCLUSIVE BUS LANE

Interstate 495 - New Jersey Approach to Lincoln Tunnel

July 1972

Prepared by : Tri-State Regional Planning Commission
Prepared for: Urban Mass Transportation Administration

December 18, 1970 marked the establishment of an exclusive bus lane for east-bound (city-bound) buses along a 2.5 mile stretch of Interstate 495 between the Lincoln Tunnel and the New Jersey Turnpike. This experiment was a part of the U.S. Department of Transportation's Urban Corridor Demonstration Program. The project serves as an example of how a significant public transportation improvement can be established quickly and at a relatively low cost in an urban area where several planning and operating agencies exercise jurisdiction. The report reviews the plan for coordinating the inputs and activities of the Urban Mass Transportation Administration, the Federal Highway Administration, the Tri-State Regional Planning Commission, the N.J. Turnpike Authority, N.J. Department of Transportation and the Port of New York Authority. Also discussed are the bus eligibility criteria and traffic-control devices used as well as the public information campaign which was carried out. Significant data on the project include the fact that the reverse-flow exclusive lane shuttles thousands of commuters daily at a time saving varying from 10 to 25 minutes. In 1971, more than 206,000 buses and 8.7 million riders used the lane. During the peak commuting period an average of 809 buses carrying 34,000 passengers used the lane. Few delays were experienced; during 1971, there were only 25 stoppages for such diverse reasons as engine problems and flat tires. The success of the project is established in the analysis of commuter response surveys, etc. Results suggest that 2,300 commuters have become bus riders since the lane's inception.

38 pages

Available from: National Technical Information Service
Springfield, VA 22161

Refer to: PB-229-015; Price: $3.25

SIMULATION OF PRIORITY STRATEGIES AT FREEWAY RAMPS

May 1975

Prepared by : The Institute of Transportation and Traffic Engineering
University of California, Berkeley

Prepared for: Federal Highway Administration

This report describes the development, computerization, and application of an analytical procedure for entry control at freeway ramps. Two types of control strategies are developed: control on a passenger basis and control on a vehicle basis.

The analytical procedure encompasses two models. The first is a simulation model that predicts freeway traffic performance as a function of design and allowable ramp flows. The second is a decision model that selects a control strategy meeting the constraints and stated objectives.

The simulation model was validated under field conditions, and the predicted traffic performance compares very favorably to actual, measured traffic performance. The two models were integrated and computerized, and the composite model was applied to a number of sites to demonstrate its applications and to provide some results for possible implementation.

471 pages

Available from: Federal Highway Administration (HHP-26)
Washington, D. C. 20590

Also see: I-35W: URBAN CORRIDOR DEMONSTRATION PROJECT--FINAL REPORT, abstracted in the Traffic Operations section. The report documents the demonstration of the Bus-on-Metered-Freeway System.

A COMPUTER SIMULATION MODEL FOR EVALUATING PRIORITY OPERATIONS ON FREEWAYS

June 1973

Prepared by : Institute of Transportation and Traffic Engineering
University of California, Berkeley

Prepared for: Federal Highway Administration

This report describes the operation of a computer program, PRIFRE, developed to evaluate priority operations on freeways. Model and program background and structure are discussed; application procedures are described.

PRIFRE was developed primarily to evaluate one-way "normal" priority lane operations, i.e., reserved lane(s) on the same side of the freeway median as the unreserved lanes. However, with some manual interfacing, PRIFRE can be used to evaluate contra-flow lanes, separate busways, and ramp control schemes affording priority entry to high-occupancy vehicles.

PRIFRE can calculate total travel time expended under normal freeway operations and total travel time expended under different priority operation strategies, and compare the two. Any travel time difference (savings or losses) is noted in the final output. Similarly, PRIFRE can also calculate total vehicle miles accumulated under normal and priority operations, and compare the two. Any variety of occupancy shifts, number of priority lanes, modal splits, and growth periods can be input to the program and results calculated and compared using PRIFRE.

Available from: National Technical Information Service
Springfield, Virginia 22151

Refer to: PB-226-752 Price: $7.25

SIMULATION OF URBAN BUS OPERATION ON SIGNALIZED ARTERIALS

December 1973

Prepared by: Federal Highway Administration

This report describes a simulation model that represents urban bus operation on signalized arterial streets. The model can be used as an evaluation tool in the formulation of new schemes to improve bus service in urban areas.

To pave the way for the development of such a model, two basic relationships in urban bus systems were investigated. They respectively involve: (1) the time required to load and unload a certain number of passengers, and (2) the bus speed and acceleration characteristics.

The model developed was named "SUB" (Simulation of Urban Buses) and its program written in FORTRAN language. Traffic is simulated on the model by groups of vehicles that are processed at constant time intervals. Buses, on the other hand, are represented individually and processed only when significant events occur.

The model has been calibrated in Washington, D. C., verified and subjected to sensitivity tests. It has been validated by comparing its results with real-life data and its usefulness has been demonstrated by applying the model to predict the effect of an exclusive bus lane.

251 pages

Available from: National Technical Information Service
Springfield, Virginia 22151

Refer to: PB-236-795 Price: $8.50

SIMPLIFIED ESTIMATORS FOR BENEFIT ASSESSMENT OF BUS PRIORITY SYSTEMS

(Traffic Signal Preemption)

August 1975

Prepared by : MITRE Corporation, McLean, Virginia

Prepared for: Urban Mass Transportation Administration

Simulation studies indicate that a Bus Priority System (BPS) that guarantees a green traffic signal to buses approaching an instrumented intersection provides substantial benefits to buses with little detriment to other traffic. Simplified estimators that correlate well with many aspects of the simulation results provide a better understanding of the BPS process and a means of analyzing the effects of BPS in applications other than that simulated. A bus travel time estimator predicts values within 10 percent for local buses, although the accuracy is less for buses with less frequent stops. An intersection capacity estimator reflects how certain conditions lead to greatly increased travel times for other vehicles in the simulation network and how far-side bus stops are superior to nearside bus stops at short bus headways.

43 pages

Refer to PB-247-975 Price: $4.00

UNCONDITIONALLY PREEMPTIVE BUS PRIORITY SYSTEM: SUMMARY OF SIMULATION RESULTS

July 1975

Prepared by : MITRE Corporation, McLean, Virginia

Prepared for: Urban Mass Transportation Administration

A large number of simulation runs of an urban network traffic model have been used to evaluate a Bus Priority System (BPS) algorithm that automatically grants a green signal to buses as they approach an intersection. BPS was found to provide substantial travel time improvements (20 to 30 percent) to buses in local service (frequent stops), limited service (infrequent stops), and express service (no stops). The disrupting effect of BPS on cross-street traffic is much less when far-side bus stops instead of near-side bus stops are used. The use of BPS also reduced the delaying effect of buses on other traffic. For all conditions tested, total passenger travel time per hour of system operation improved when BPS was used.

31 pages

Refer to PB-247-976 Price: $4.00

Both reports are available from: National Technical Information Service
Springfield, Va. 22161

OVERVIEW OF EXPERIMENTAL BUS PRIORITY SYSTEMS

March 1975

Prepared by: Mitre Corporation
Sponsored by: Urban Mass Transportation Administration
Office of Research and Development

The bus priority strategies tested in eight different cities used a variety of signal control techniques to award priority to buses at traffic control intersections. The reported results range from seven seconds reduction in average bus delay at one intersection in Leicester, England, to 24 seconds reduction in average delay at an intersection in Bern, Switzerland. But, more important, the range of travel time through an intersection in Derby, England was reduced by more than one half. Such reduction in the range of travel time has a significant impact on reducing run time variation along a bus route.

In Washington, D.C., 34 intersections were equipped with bus detectors which fed bus arrival information to the central Urban Traffic Control System/ Bus Priority System computers. Whenever a bus was detected, this bus priority system used either green signal extension or red signal truncation to reduce bus delay at the BPS intersection. In Bern, Switzerland, the normal one-green phase per cycle was split into two green phases of equal length, with the capability of extending either of the green phases whenever a tram was detected. This resulted in a 75 percent reduction in delay time for trams and a 50 percent reduction in delay time for buses.

The U.S. and European approaches to the BPS demonstrations differ in that U.S. BPS demonstrations range in size from 3 to 34 intersections and emphasize hardware and software development. In contrast, the BPS demonstrations conducted in foreign countries typically include one intersection and stress studies of how much the mean travel time and the range of travel time through the intersection have improved with priority as compared to buses operating without priority.

60 pages

Available from: National Technical Information Service
Springfield, Virginia 22151

PB 247-742 $4.50

Also see the report URBAN TRAFFIC CONTROL SYSTEM of Washington, D.C., abstracted in Traffic Operations section. UTCS is an operational computerized signal system with bus priority capability.

TRAFFIC OPERATIONS

TRANSPORTATION AND TRAFFIC ENGINEERING HANDBOOK, 1975

TRAFFIC CONTROL SYSTEMS HANDBOOK

GUIDELINES FOR DESIGN AND OPERATION OF RAMP CONTROL SYSTEMS

URBAN FREEWAY SURVEILLANCE AND CONTROL: THE STATE OF THE ART

I-35W: URBAN CORRIDOR DEMONSTRATION PROJECT--FINAL REPORT

MANAGEMENT OF TRAFFIC OPERATIONS (MAGTOP)

TRAFFIC CONTROL IN OVERSATURATED STREET NETWORKS

OPTIMIZING STREET OPERATIONS THROUGH TRAFFIC REGULATIONS

OPTIMIZING FLOW OF EXISTING STREET NETWORKS

URBAN TRAFFIC CONTROL SYSTEM IN WASHINGTON, D.C.

SELECTING DIGITAL COMPUTER SIGNAL SYSTEMS

RIGHT-TURN-ON-RED

GUIDELINES FOR CONTINUOUS TWO-WAY LEFT-TURN MEDIAN LANES

TRANSPORTATION AND TRAFFIC ENGINEERING HANDBOOK, 1975

(A revision of the Traffic Engineering Handbook, Third Edition, 1965)

This volume demonstrates the major broadening of the role and responsibility of the Traffic Engineer that has taken place in the last decade. The traffic engineer has, of necessity, become a transportation engineer persuing "balanced transportation". This Handbook emphasizes the major elements of total transportation planning, particularly as they relate to traffic engineering. The Handbook updates essential facts about the vehicle, the highway, and the driver, but more importantly, also discusses characteristics of other transportation modes as well as innovations such as computer applications, traffic surveillance, etc. that are typical of the increasing complexity of transportation.

In the past, successful traffic engineering improvements have enhanced the capacity and safety of highway facilities, only to have the improvements obliterated by the insatiable desire of motorists for individual freedom. It is important for traffic engineers, and everyone associated with transportation, to view each individual project in the light of the overall goals of society for an improved "quality of life". For this reason, the traffic engineer must focus his attention on increasing street capacity to obtain the highest "level of service" out of the existing highway and street systems while simultaneously trying to decrease the auto traffic demands by actively aiding other modes of transportation. While continuing to strive for technical perfection, the traffic engineer must be willing to accept the possible, recognizing that time does not stand still; he must be flexible, without giving up his principles. It is within this context that this book is a basic requirement for the modern traffic engineer's reference shelf.

The report includes twenty-three chapters written by experts in each of the following areas: Vehicle, Highway and Traffic Facts; Vehicle Operating Characteristics; Driver and Pedestrian Characteristics; General Traffic Characteristics; Urban Travel Characteristics; Mass Transportation Characteristics; Traffic Flow Theory; Highway Capacity and Levels of Service; Traffic Accident Analysis; Traffic Studies; Computer Applications; Urban Transportation Planning; Statewide and Regional Transportation Planning; Geometric Design; Parking, Loading and Terminal Facilities; Traffic Signs and Markings; Traffic Signals; Speed Regulations and Other Operational Controls; Traffic Surveillance; Lighting of Traffic Facilities; Environmental Considerations; Traffic Engineering Administration; and Applications of Systems Concepts.

Available from: Institute of Traffic Engineers
Post Office Box 9234
Arlington, VA 22209

Price: $24.95

TRAFFIC CONTROL SYSTEMS HANDBOOK

December 1975

Author: Pinnell-Anderson-Wilshire & Associates, Inc.
Dallas, Texas

Sponsor: Offices of Research and Development
Federal Highway Administration

This report presents the results of a thorough overview study of traffic control techniques in the form of a Handbook of applicable technology, concepts, and practice. The Handbook is intended to present basic principles for the planning, design, and implementation of traffic surveillance and control systems for the two basic application areas of urban streets and freeways. Major objectives of the Handbook are (1) to provide a compendium of existing traffic control system technology, (2) to facilitate the understanding of the basic elements of traffic control systems, (3) to aid the understanding and application of new technology (such as computers and communications) to the traffic control field, (4) to broaden the viewpoint of the field of traffic control, (5) to serve as a basic guideline to aid the practicing traffic engineer in implementing new and effective traffic control systems, and (6) to serve as a basic text for training programs in the area of traffic control systems.

This document is the Traffic Control Systems Handbook. It is 668 pages in length and comprised of nineteen chapters of text including tutoral chapters on computers and communication techniques. An Executive Summary is presented in a separate document.

Executive Summary available after March 1, 1976
Handbook available after April 10, 1976

Address requests to: Federal Highway Administration
Office of Development
Implementation Division, HDV-21
Washington, D.C. 20590

GUIDELINES FOR DESIGN AND OPERATION OF RAMP CONTROL SYSTEMS

December 1975

Prepared by : Stanford Research Institute
Prepared for: National Cooperative Highway Research Program
Project 3-22

This report is intended as a guide to designers of ramp metering control systems. It is aimed at the working traffic engineer who has had a minimum of freeway operations experience. The emphasis is on practical and proven techniques, not on research or on experimental procedures. As a first step, the report provides guidance in determining whether a proposed metering system is potentially effective. Assuming that cost and related criteria are met, guidelines are given for the design, implementation, and operation of systems using three types of metering: Pretimed, Locally Actuated, and Centralized/Interconnected. Multiple-System Metering is also treated briefly. A final chapter cites the benefits and costs of ramp metering at a number of existing locations and describes techniques for a specific benefit-cost study.

Available from: Program Director, NCHRP
Transportation Research Board
2101 Constitution Avenue, N.W.
Washington, D.C. 20418

Price: $8.00

URBAN FREEWAY SURVEILLANCE AND CONTROL: THE STATE OF THE ART

June 1973

Traffic Systems Division
Office of Research
Federal Highway Administration

This publication surveys today's state of the art in urban freeway surveillance and control systems. Some surveillance and control aspects, such as ramp metering, are beyond the research stage, and these systems are now eligible to be implemented with Federal participation. Until now, however, only a few qualified engineers have known when and where such systems should be installed and how they should be operated. This report should assist others in obtaining this specialized knowledge, and should result in the implementation of freeway surveillance and control systems in many urban areas where freeways become congested. With the current trend of limiting the construction of new controlled-access facilities, it becomes even more important to be able to operate the existing facilities at optimum safety and efficiency.

The document is so organized as to introduce the reader first to freeway problems that are subject to solution by surveillance and control techniques. Measures and methods to document operational problems are discussed to aid the analyst in determining what surveillance and control systems should be considered. Solutions to freeway problems are presented along with descriptions of the detailed hardware requirements. A summary of existing freeway ramp control projects is presented, and a benefit-cost study of their effectiveness is provided.

Available from: Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

Price : $3.50

Stock Number : 5001-00058

I-35W: URBAN CORRIDOR DEMONSTRATION PROJECT--FINAL REPORT

August 1975

The purpose of the I-35W Urban Corridor Demonstration Project was to implement and evaluate the Bus-on-Metered Freeway System. The system concept includes the following elements:

- metering of an urban radial freeway
- a real-time surveillance, command and control system
- extensive express bus service in the corridor
- priority access to the freeway via express bus ramps
- provision of transit passenger amenities, i.e., bus shelters, signs, and park-ride facilities in the corridor

Initial planning for the project was completed in September 1971. Express bus service was begun in the Fall of 1971; nine new express bus routes were initiated in December 1972. Three additional routes were added during 1973 and 1974, for a total of 17 routes as of December 1974. The complete Bus-on-Metered Freeway System became operational in April 1974.

This report evaluates the attainment of the seven project objectives:

1. Improve the I-35W Corridor Level of Service through Ramp Metering
2. Increase the Transit Modal Split in the Corridor
3. Improve the Reliability of the Freeway Operation
4. Improve the Transit System Performance
5. Obtain User Acceptance of the Bus-on-Metered Freeway System
6. Obtain a Positive Environmental Impact for the Project
7. Implement the Bus-on-Metered Freeway System in a Cost-Effective Manner

427 pages

Available from: National Technical Information Service
Springfield, Virginia 22151

PB 247-663 $11.75

MANAGEMENT OF TRAFFIC OPERATIONS (MAGTOP)

User's Manual - Program Documentation

August 1975

Prepared by : COMSIS Corporation, Wheaton, MD.
Prepared for: Federal Highway Administration

The ManAGement of Traffic OPerations (MAGTOP) computer system has been designed to assist the traffic engineer in developing traffic operations improvements as part of the Transportation Systems Management element of an Urban Transportation Plan. The system provides a convenient method for storing the large amounts of traffic operations data and provides the integrated facilities to easily summarize, analyze, and display this data.

Modules are included to calculate capacities, signal offset analysis, statistical analysis and collision diagram analysis. Other modules provide reports on volume counts, speed/delay, accidents, volume/capacity, signal timing, and physical characteristics. Plot modules plot histograms, two variables, network bandwidth, and time space diagrams.

MAGTOP was originally developed for the New York State Department of Transportation and has been converted to ANSI FORTRAN for the Federal Highway Administration. This volume provides program documentation for each of the modules contained in the MAGTOP system. A separate volume, MAGTOP User's Manual - Sample Input and Output, provides sample input/output runs for each module.

Available from: U.S. Government Printing Office
Washington, D. C. 20402

Program Documentation:
Refer to: 050-001-00104-7
Price: $4.30

Sample Input and Output:
Refer to: 050-001-00105-7
Price: $4.20

TRAFFIC CONTROL IN OVERSATURATED STREET NETWORKS

June 1975

Prepared by : Polytechnic Institute of New York
Prepared for: National Cooperative Highway Research Program
Project 3-18(2)

The problems of traffic congestion and saturated networks are found to be widespread and not approached in any consistent manner. This research report identifies measures that can be taken, among which those relating to traffic signal operations have the greatest impact. Constructive non-signal remedies include those that provide space, either for direct productivity increases or for removing impedances to traffic flow. The set of guidelines for treating traffic congestion that has been provided serves both as a tutorial and as a reference regarding usable techniques and their systematic employment.

Currently available (May 1976) on a 30-day loan basis only from : Program Director, NCHRP
Transportation Research Board
2101 Constitution Avenue, N.W.
Washington, D. C. 20418

OPTIMIZING STREET OPERATIONS THROUGH TRAFFIC REGULATIONS

1970

Prepared by : J. H. Kell and B.C. Johnson
Prepared for: National Cooperative Highway Research Program
(Report 110)

This report presents the findings of a two year project that determined the relative areawide effectiveness of traffic engineering techniques in the central business districts (CBD) of two small California cities, Redwood (pop. 61,000) and Sunnyvale (pop. 90,000). The cities participated in a program of traffic operations research, and the results were obtained in a real-time and political environment. In addition, many elements of the urban environment were observed, including business performance, public opinion, and political processes. A base condition traffic operations profile was established for each city and was used for subsequent comparisons as changes in traffic regulations and control were implemented and evaluated through a series of test stages. Operational techniques ranging from relatively simply signal timing to extensive left-turn prohibitions and one-way operations were evaluated. Angle parking, no-stopping towaway, and unbalanced traffic flow were also evaluated throughout an area of urban streets. Average speeds, stops, delays, and a variety of other measures were used to determine relative operational efficiency on an area-wide basis. Business performance, public acceptance, and driver observance were also measured for each combination of traffic improvement techniques.

Can be ordered from: Xerox University Microfilms, Inc.
300 North Zeeb Road
Ann Arbor, Michigan 48106

NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM
REPORT 113, 1971

OPTIMIZING FLOW OF EXISTING STREET NETWORKS

This report will be of special interest to traffic engineers, public works administrators, and other city officials interested in improving the traffic-carrying ability of city streets. The project is unusual in that it is one of the few research endeavors that has actually demonstrated methods of improving traffic flow on complex networks of city streets as compared with spot or arterial improvements. Dozens of traffic engineering improvements were implemented and evaluated. Newark, N.J., and Louisville, Ky., were selected as test cities for this $1 million study, which sought ways for middle-sized cities to expedite their local traffic without expensive reconstruction. The research clearly indicates through examples the benefits that can be achieved for the motoring public by application of traffic engineering knowledge to improve traffic flow and prevent costly travel delays.

414 pages

Available from: Transportation Research Board
2101 Constitution Avenue, N.W.
Washington, D. C. 20418

Stock No. : ISBN 0-309-01903-6

Price : $15.60

Also: Highway Research Board Special Report 93, IMPROVED STREET UTILIZATION THROUGH TRAFFIC ENGINEERING, 1967.
Available from: Transportation Research Board (address above); Pub. No. 1550; Price - $8.00.

URBAN TRAFFIC CONTROL SYSTEM
in Washington, D. C.

September 1974

Prepared by: Federal Highway Administration in cooperation with the Urban Mass Transportation Administration and District of Columbia Department of Highways and Traffic

The Urban Traffic Control/Bus Priority System (UTCS/BPS) in Washington, D.C. is serving its design purpose as an instrumented, real-world laboratory for evaluating new and advanced concepts of traffic control. The product of over five years of planning, design and implementation effort by the Federal Highway Administration, this system is already producing results and data which will be useful to the nation's traffic community. The outputs of these research efforts, documented and made available by the government, will permit municipalities and design consultants to make decisions about designs and techniques with the insight and confidence not heretofore available.

The endeavor which led to the establishment of this system has produced a great deal of useful experience. This brochure was prepared for the purpose of communicating this experience and the anticipated benefits to those interested in the application of a digital computer-controlled traffic system. Presented concisely are the objectives, design features, control strategy descriptions, experience and applicability to other cities. Included also is a bibliography of significant documentation which is currently available, relating in greater detail the various aspects of this program.

31 pages

Available from: Federal Highway Administration
Office of Development
Washington, D. C. 20590

Reports focused primarily on bus priority signal systems are abstracted in the preferential treatment section.

A large number of technical reports have been produced subsequent to this overview report. Those interested in implementation of computerized traffic control systems should contact the Federal Highway Administration at the address above.

A most recent summary of computerized traffic control system research and implementation findings is available in the April 1975 issue of TRAFFIC ENGINEERING ($2, Institute of Traffic Engineers, 1815 N. Ft. Myer Drive, Arlington, VA. 22209).

SELECTING DIGITAL COMPUTER SIGNAL SYSTEMS

December 1972

Prepared by: Office of Research, Federal Highway Administration

This paper points out the problem confronting traffic engineers and decisionmakers as they contemplate the selection of advanced traffic-control systems to alleviate traffic congestion in urban areas. The objective has been to provide guidelines by which alternatives may be evaluated and a traffic-signal system selected. Based on suggested evaluation criteria, each element of a complete signal system may be investigated. These elements include urban types, geographical control areas, control techniques, surveillance systems, intersection equipment communication systems, and data-processing equipment. No attempt has been made to recommend specific control systems, system components, or techniques, but preferred alternatives have been indicated as guides.

Benefits from existing computer installations indicate the general degree of improvements that can be expected in future installations. Total system costs are shown as a measure of expected future investments.

The paper concludes with a compilation of considerations and comparisons that can be used by the decisionmaker as guidelines for evaluating alternatives and selecting a comprehensive control system. The guidelines can also be used by the traffic engineer to formulate system plans and specifications for appropriate traffic control applications.

(84 pages)

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402 Price: $1.05
Stock Number 5001-00057

RIGHT-TURN-ON-RED
Current Practices and State-of-the-Art

October 1974

Prepared by : Alan M. Voorhees & Assoc., McLean, VA.

Prepared for: Office of Research and Development
Federal Highway Administration

Right-turn-on-a-circular-red traffic signal (RTOR) is a practice which has gained wider acceptance. However, there is still disagreement on whether, where, and how RTOR should be implemented. To determine past experiences with RTOR, a literature review and a survey of State and city practices was conducted. A questionnaire sent to all 50 states revealed that 24 States presently allow RTOR as a general rule, 22 States permit it with an authorizing sign and 4 States totally prohibit RTOR. The usage of the RTOR provision in those States where it is permitted by sign varies from 0.1 percent to 64 percent of all the State-controlled signalized intersections. City RTOR practices generally follow those of their respective States.

This report is the initial output from the study whose objectives are to determine whether permitting the RTOR maneuver is desirable and to prepare guidelines for determining inclusion or exclusion of this movement. No recommendations are included within the report because of its preliminary nature and the fact that additional work is still being performed including collecting field data, conducting simulation analysis, performing before-and-after accident analysis and legal and human factor analyses. The report does contain information on accidents, delay, capacity, level of service, gap acceptance, and signing. The data collected to date indicates that RTOR does not significantly increase accidents but does reduce right-turn delay.

91 pages

Available from: National Technical Information Service
Springfield, VA. 22161

Refer to: PB-230-996; Price: $3.75

DEVELOPMENT OF GUIDELINES FOR THE APPLICATION OF CONTINUOUS TWO-WAY LEFT-TURN MEDIAN LANES

July 1975

Prepared by : Engineering Experiment Station
Ohio State University
Columbus, Ohio

Prepared for: Ohio Department of Transportation

The objectives of the research project are to consolidate existing information on continuous two-way left-turn median lanes as a practical measure for increasing the capacity and improving the safety of multi-lane arterials by accommodating mid-block left-turns and to conduct before and after studies at sites which were selected in cooperation with the Ohio Department of Transportation. The research approach selected includes studies in four distinct areas: (a) Literature review; (b) a nationwide expert opinion survey, including some personal interviews; (c) a small scale simulation study; and (d) before-and-after field studies. This report presents the results of the literature review and the opinion survey. Both the literature review and the survey indicate that two-way left-turn lanes work well in spite of a wide variety of methods of signing and marking. There is a uniform agreement that these lanes have excellent safety records and specifically head-on collisions are practically nonexistent.

105 pages

Available from: National Technical Information Service
Springfield, VA 22161

Refer to: PB-247-300; Price: $5.50

PARKING MANAGEMENT

DEVELOPMENT OF A PROTOTYPE PARKING MANAGEMENT PLAN

PARKING MANAGEMENT POLICIES AND AUTO CONTROLS

A GENERALIZED AUTOMOBILE PARKING POLICY TO ENCOURAGE INCREASED USE OF PUBLIC TRANSIT BY COMMUTERS

PARKING PRINCIPLES

PARKING TAXES AS ROADWAY PRICES: A CASE STUDY OF THE SAN FRANCISCO EXPERIENCE

PARKING TAXES FOR CONGESTION RELIEF: A SURVEY OF RELATED EXPERIENCE

THE PITTSBURGH PARKING STRIKE

PHILADELPHIA CENTRAL BUSINESS DISTRICT PARKING RATE EXPERIMENT

GUIDELINES FOR PARK-AND-RIDE LOTS

CHANGE-OF-MODE PARKING--A STATE OF THE ART

MANHATTEN CBD - NORTH JERSEY CORRIDOR JOINT USE PARK-AND-RIDE

FRINGE PARKING--OPERATIONAL EXPERIENCE IN FIVE CITIES

A GUIDE TO PARKING SYSTEMS ANALYSIS

PROTOTYPE SUBURBAN TRANSPORTATION CENTERS

DEVELOPMENT OF A PROTOTYPE PARKING MANAGEMENT PLAN

November 1975

Prepared by : Energy and Environmental Analysis, Inc.
Arlington, VA

Prepared for: Environmental Protection Agency

This study seeks to define the concept of parking management and explore how parking management can be used to improve air quality, support mass transit, reduce energy consumption and improve the amenities of life in urban areas. Specific goals of this study were:

- to develop a prototype parking management plan for the Washington, D.C. metropolitan area illustrating types of measures which can be used for parking management;
- to evaluate the socioeconomic impacts of the parking measures in the plan and their effectiveness in reducing vehicle miles traveled (VMT) and improving air quality;
- to develop a parking management planning process which integrates local and regionwide planning through the use of regional guidelines.

Four target areas in the D.C. region were studied in detail: the D.C. Core, Rosslyn, Va., Silver Spring, Md., and Centreville, Va. A regional plan was then developed from information gathered in the target area studies, including an analysis of regionwide parking related goals and problems.

Available in May 1976 from: Office of Transportation and
Land Use Policy (AW-445)
Environmental Protection Agency
Washington, D.C. 20460

PARKING MANAGEMENT POLICIES AND AUTO CONTROLS

February 1976

Prepared for: U.S. Department of Transportation and Environmental Protection Agency

Prepared by: Metropolitan Washington Council of Governments

This report examines the application of parking management programs in the National Capital Region as a strategy to achieve air quality standards in 1977. Implementation problems are examined from legal, institutional and administrative perspectives.

Three parking programs were sufficient to achieve air quality standards in 1977:

- imposition of prevailing rates on free and low-cost parking plus a parking tax
- imposition of higher parking rates via rate regulation
- restraint on the number of long-term parking spaces in the core, introduction of long- and short-term parking quotas.

A fourth program involving a parking tax and permits for on-street residential parking permits achieved 90 percent of the required emissions reductions.

Implementation problems are less complex for programs involving the imposition of prevailing rates and residential permit systems; however, rate regulation or supply-restraint techniques pose serious implementation problems. A restructuring of the parking supply in the downtown core, preferably in conjunction with an auto control zone, offers exciting potential for reducing auto VMT in a five-ten year time frame.

The auto control zone section of the study focuses on plans for an F and G Streets pedestrian-oriented mall. A zone of this nature would produce immediate reductions in localized CO pollution levels, and if combined with appropriate parking programs, could make a positive impact on regional hydro-carbon pollution.

Summary and full reports are available from:

National Technical Information Service
Springfield, Virginia 22161

A GENERALIZED AUTOMOBILE PARKING POLICY TO ENCOURAGE INCREASED USE OF PUBLIC TRANSIT BY COMMUTERS

July 1972

Prepared by : London Transport Executive in association with Barton Aschman Associates, Inc.
Prepared for: U.S. Department of Transportation

This report results from the extension of an earlier contract between LTE and DOT to explore commuting problems and make recommendations for parking policy for the District of Columbia. The Department considered that many of the principles put forward in the D.C. plan might have general application in major cities throughout the United States. This report further analyses the various aspects of automobile parking in large cities and identifies the major problems. It suggests the broad lines of policy which need to be pursued in the future to bring the situation under control, encourage greater use of public transit by commuters and thereby achieve a more balanced and beneficial transportation situation.

In order to test the validity of the application of general principles to different metropolitan areas, visits were made to five other major cities of differing character in the United States. Research was carried out in Boston, Philadelphia, Denver, Seattle and Chicago, covering a wide range of discussions with responsible organizations and interests and the evaluation of such relevant reports and material as already existed.

It should be stressed that the ensuing arguments and proposals are related primarily to the commuting problem associated with the center of the city, where the concentration of movement favors the use of public transit. Separate considerations must apply in cases of de-centralization where peripheral development has taken place. In these instances the distribution of trips is likely to be much more diverse; different considerations apply in relation to the congestion factor and the feasibility of catering to scattered movements by public transit.

32 pages

Available from: National Technical Information Service,
Springfield, Virginia 22151

Refer to: PB-213-991 Price: $3.75

PARKING PRINCIPLES

1971

Transportation Research Board Special Report 125

This document, developed by the Highway Research Board Committee on Parking, is a summary of parking principles, procedures and practices that have proved to be effective in handling parking and terminal problems. The subject is treated broadly, focusing on each aspect of parking from the home to central business districts. The eight major topics addressed are: parking characteristics, zoning, parking programs, parking studies, location and design, operation, parking at transit stations, and curb parking. The three appendices comprise a glossary of terms, legal aspects of parking and public use, and change-of-mode facilities.

217 pages

Available from: Transportation Research Board
2101 Constitution Avenue, N.W.
Washington, D.C. 20418

Refer to: ISBN-0-309-01958-3

Price : $8.00

PARKING TAXES AS ROADWAY PRICES: A CASE STUDY OF THE SAN FRANCISCO EXPERIENCE

rban Institute Paper 1212-9, March 1974

This paper presents an ex post facto analysis of the impacts of a 25 percent parking tax which was in effect in San Francisco from October 1, 1970 to June 30, 1972. It develops parking price elasticity estimates for various types of parking facility. Commuters demonstrated greater sensitivity to the price changes than did shoppers, but the overall effect on the number of parking stall occupancies was relatively slight. The impact on parking lot profitability was found to be severe.

Because of the small effect on parking lot usage, the parking tax had little influence on problems of congestion, air pollution, and energy consumption. There was also no evidence of any harm to downtown businesses (other than parking lots) which could be traced to the tax.

46 pages

Available from: Publications Office
The Urban Institute
2100 M Street, N.W.
Washington, D. C. 20037

Refer to URI 68000 when ordering; $2.25.

PARKING TAXES FOR CONGESTION RELIEF: A SURVEY OF RELATED EXPERIENCE

Urban Institute Paper 1212-1, March 1974

The application of marginal cost pricing has been suggested by many as a partial remedy for urban passenger transportation congestion. The best way to apply it has never been generally agreed upon; the use of parking taxes has been one of the more frequent suggestions.

This paper examines previous experience with parking price changes to determine the likely impacts of a parking tax on travel patterns. This experience comes from a variety of places and types of studies, but it is reasonably consistent in its findings that the demand for parking for work trips on an areawide basis is inelastic, with an elasticity around -.3. The impact on traffic conditions has been slight, almost negligible for any areawide parking policy tested to date.

Part of the reason for this insensitivity in traffic conditions is that through trips are not affected by a parking tax. However, analysis of a number of areas suggests that through travel, as it currently exists, is not a major obstacle to the effectiveness of a parking tax.

The low parking demand elasticity and the relative insensitivity of traffic conditions to parking taxes suggest that this policy, implemented by itself, is not an effective instrument for congestion relief, air pollution reduction, or energy conservation.

47 pages

Available from: Publications Office
The Urban Institute
2100 M Street, N.W.
Washington, D. C. 20037

Refer to URI 67000 when ordering; $2.50

THE PITTSBURGH PARKING STRIKE

December 1972

Prepared by : Carnegie Mellon University
Transportation Research Center

Prepared for: Urban Mass Transportation Administration

A strike by Pittsburgh area parking lot employees in August 1972 closed all but about 1,800 of the 25,400 downtown parking places. With 900 fringe parking lots also closed, fewer than 20 percent of the area's total parking capacity was available. This report attempted to investigate the impact of the parking strike on commuter travel and transit usage.

A principal conclusion is that large numbers of automobile commuters found alternative means of transportation, especially in carpools and on public transit. During the strike, the number of autos entering the central business district declined by nearly 25 percent. The report examines the strike effects on retail business sales, entertainment patronage (a 60-70 percent decline), and job absenteeism. The availability of alternative transportation modes is cited as a major factor in the low absenteeism observed.

Plans for local stores to encourage transit use by offering free transit trips to shoppers, the attitudes of businessmen toward transit, and editorial reaction by the local press are described. Changes in the normal operations of bus and trolley service are discussed along with comparative ridership and revenue data for the periods before, during and after the strike.

Available from: National Technical Information Service
Springfield, VA 22161

Refer to: PB-213-789; Price: $4.00

PHILADELPHIA CENTRAL BUSINESS DISTRICT
PARKING RATE EXPERIMENT

Prepared by : Delaware Valley Regional Planning Commission

Prepared for: Urban Mass Transportation Administration

The Philadelphia Central Business District (CBD) Parking Rate Experiment is one of the elements of DOT's Urban Corridor Demonstration Program. The Program's purpose is to maximize the use of transportation related facilities with a relative minimum expenditure of capital. This particular project was designed to investigate public response to an experimental rate structure of an off-street parking facility. This would provide the short-term (non-commuter) parker with a marked rate advantage so as to stimulate transient-type activity at the expense of the all-day (commuter) parker. Additionally, this project demonstrated the capability of the proposed rate structure to act as a mechanism for increasing the turnover rate (utilization) of such a facility. Data collected for the period Jan. 1970 to Oct. 1973 was evaluated to determine how natural rate changes affected the general parking behavior. Two garages were chosen for this analysis on the basis of their different locations within the Philadelphia CBD. A sensitivity analysis was conducted. According to the authors, changes made in the rate structures showed that the objectives of the experiment were accomplished. Rates favored the short-term parker while long-termers have shown decreased usage over most periods. Turnover rates have increased thereby requiring potentially less new parking space construction. The economic viability of both facilities was maintained; both garages showed growth in gross revenue.

40 pages

Available from: National Technical Information Service
Springfield, Virginia 22161

Refer to: PB-238-168/AS Price: $3.75

LOCATING AND OPERATING BUS RAPID TRANSIT PARK-RIDE LOTS: A SYNTHESIS OF EXPERIENCE AND SOME PRELIMINARY PLANNING GUIDELINES

August 1973

Prepared by : University of Washington
Seattle, Washington

Prepared for: Urban Mass Transportation Administration

This report reviews and synthesizes previous experiences with locating and operating park-ride lots throughout the country in such places as Seattle, Washington; Washington, D.C.; New Brunswick, New Jersey; Milwaukee, Wisconsin and the Northeast Corridor in general. The data represents the experiences of 7 municipalities and accounts for approximately 4500 park-ride spaces in 13 park-ride lots serving as change of mode facilities for bus transit. The characteristics of park-ride users are investigated. Data were analyzed to determine the characteristics of trip lengths and trip times as well as the trip purpose, type of employment, trip origin and mode to bus. Further considerations included mode of travel to work prior to the establishment of park-ride lots and environmental impact factors. From the analysis of data gathered, some preliminary and general planning guidelines relevant to the location and sizing of a park-ride facility in an urban transportation corridor are developed. References are furnished.

33 pages

Available from: Urban Mass Transportation Administration, UTM-20
400 Seventh Street, S.W.
Washington, D. C. 20590

CHANGE-OF-MODE PARKING--
A STATE OF THE ART

January 1973

The urban commuter facing high parking costs and congested streets and highways may not want to drive all the way to work in the city center. Change-of-mode parking offers an alternative to automobile travel, using both the automobile and public transit to best advantage.

ITE Committee 6H-A undertook a study in several cities with experience in change-of-mode operations to determine the availability of change-of-mode parking, its usage, factors contributing to its success, and the potential for further application. Members of ITE Committee 6H-A provided information on current applications in their respective cities. This report reflects these findings.

Prepared by and available from : Institute of Traffic Engineers
1815 N. Fort Myer Drive
Arlington, Virginia 22209

Price: $1.50 for ITE members.
$2.00 for non-members.

MANHATTEN CBD - NORTH JERSEY CORRIDOR
JOINT USE PARK-AND-RIDE

February 1975

Prepared by : New Jersey Department of Transportation
Prepared for: U.S. Department of Transportation

This report summarizes the work performed as a sub-project of the Urban Corridor Demonstration Program. Information is given concerning the methods used to attempt a successful demonstration of the concept of using parking lots used for other activities as park-and-ride sites. Types of facilities investigated include shopping centers, drive-in theatres, and factories. Requirements for joint use park-and-ride facilities were determined and are presented.

Available from: National Technical Information Service
Springfield, VA 22161

Refer to: PB-244-475 Price: $4.00

FRINGE PARKING AND INTERMODAL PASSENGER TRANSPORTATION: OPERATIONAL EXPERIENCE IN FIVE CITIES

November 1971

Prepared by : Peat, Marwick, Mitchell & Co., Washington, D.C.

Prepared for: Federal Highway Administration

This is a report on experience with 17 selected fringe parking facilities--located within a mile of the central business district (CBD) in Atlanta and Cleveland and between 6 and 14 miles from the CBD in Milwaukee, Philadelphia, and Seattle. Survey analyses show that a large percentage of commuters with alternatives are using fringe lots and peak hour automobile traffic volumes are being lowered by these improvements.

The report discusses user socio-economic characteristics as well as observed operational characteristics of the facilities studied. Generalized tendencies and preliminary indications of considerations, impacts, and implications are posited. Some generalized findings include that fringe parking facility use is apparently strongly effected by cost, convenience, safety, and travel time factors. The strongest potential for fringe parking facilities is suggested: (1) at locations on transportation corridors where there are enough home-to-CBD work trips to support good transit service; (2) where land is available in low-grade use, vacant, or already devoted to parking; (3) where nearby uses are compatible with parking; and (4) where facilities have adequate drainage, lighting, walkways, and aesthetics.

Available from: Federal Highway Administration, HPP-40
Washington, D.C. 20590

A GUIDE TO PARKING SYSTEMS ANALYSIS

October 1972

Prepared by : Peat, Marwick, Mitchell, and Co.
Washington, D. C.

Prepared for: Federal Highway Administration

The report describes the procedures to be followed in performing a system analysis of parking. Seven analysis and data processing modules are used to prepare travel data, examine parking behavior, calibrate disutility measures, and validate a linear programming model of parking choice. Travel data may be derived either from a standard parking survey or from home interview data. The procedure allows the user to make better use of home interview data, provide expanded tabulation and analysis capability, and incorporates a parking allocation model into the planning and evaluation of parking facilities. The parking allocation model is embedded in a parking system simulation procedure which explicitly considers the effect of parking capacity in addition to traditional measures of parking choice. A case study is described and a set of appendixes describing the function of component programs is included.

May be purchased from: Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

Price: $2.60
Stock Number 5001-00049

PROTOTYPE SUBURBAN TRANSPORTATION CENTERS

March 1971

Prepared by: Northeastern Illinois Planning Commission

Prepared for: Urban Mass Transportation Administration

The purpose was to develop criteria for prototype commuter transportation centers at which the interchange of rail passengers to automobile, bus or other rail modes would be facilitated with maximum convenience. Criteria for designing the prototype transportation centers was developed with reference to: (1) the enclosed structure; (2) pedestrian circulation; (3) provision of commercial and other public facilities; (4) parking; (5) loading operations; and (6) landscaping. Each functional aspect of the efficient rail station is described briefly along with such general planning requirements as the estimated volume of commuter passengers and vehicles. Particular emphasis is focused upon convenience for the transit user as the transit environment may be a principal factor in attracting new ridership. Consequently, such variables as walking distances, pedestrian access, passenger amenities, and functional design are emphasized in the analysis. Three prototype transportation center designs were developed for application in different types of urban and suburban locations. Estimated cost factors for each prototype design are provided. The possible impact of new transit technology on future station configurations is discussed. A final section details implementation procedures for commuter transportation centers. Different sources of financing are examined with reference to local contributions, parking fees, commercial leases or land sales, and participation in relevant federal assistance programs.

Available from: National Technical Information Service
Springfield, VA. 22161

Refer to: PB-204-931; Price: $4.75

TRANSIT IMPROVEMENTS

BUS SHELTERS

INTEGRATION OF TRANSIT SYSTEMS

DOWNTOWN CIRCULATOR SERVICE IN KANSAS CITY

BLUE STREAK BUS RAPID TRANSIT DEMONSTRATION PROJECT

REVERSE COMMUTER SERVICE ON SHIRLEY HIGHWAY

BUS SHELTERS

February 1973

Prepared by: Federal Highway Administration

This report was prepared from information furnished by the American Transit Association and the Urban Mass Transportation Administration and from a FHWA survey. Information on desirable characteristics of bus shelters is provided, such as size and capacity, materials, location and site preparation, and the provision of complementary and supplementary facilities. Factors to be considered in the evaluation of bus shelter projects are presented, with a suggested approach to economic analysis. The results of the surveys of States' and Transit Companies' experiences with bus shelters are also included. An appendix includes descriptions of the different types of shelters.

56 pages

Available from: Federal Highway Administration, HHP-26
Washington, D.C. 20590

INTEGRATION OF TRANSIT SYSTEMS

Prepared by : INTERPLAN Corporation
Santa Barbara, California

Prepared for: Urban Mass Transportation Administration

The objective of this four volume report is to assess the potential for interagency and intermodal integration of transit systems in U.S. urban areas, drawing on an analysis of the successful experience of European transit systems.

Volume I - Concepts, Status, and Criteria (May 1973)
Documents the need for transit integration in U.S. urban areas, presents the conceptual and evaluative framework, and reviews current transit integration efforts by Federal, State and local governments.

145 pages

Volume II - Integrated European Transit Systems (May 1973)
Describes in detail four major European transit systems (London, Hamburg, Paris, Munich), gives brief descriptions of six others, and summarizes and appraises the applicability of European successes to U.S. systems.

322 pages

Volume III - Transit Integration in U.S. Urban Areas (June 1973)
Provides application of techniques to Philadelphia, San Francisco, and Seattle, as well as to an archtypal smaller urban area, and gives a brief assessment of potential for application to six other U.S. cities.

332 pages

Summary (October 1973)
Serves as a guide to the location of detailed factual information upon which conclusions found in this volume are based. Salient points of each volume are brought together, including definitions of the forms which integration may take, evaluation of U.S. deficiencies, an approach to identifying systems ready for integration, and estimates of costs of U.S. expansion and improvement.

73 pages

Available from: National Technical Information Service
Springfield, Virginia 22161

	Reference No.	Price
Volume I	PB-241-270	$ 5.75
Volume II	PB-241-271	9.25
Volume III	PB-241-272	9.50
Summary	PB-241-273	4.25
Set of all four	PB-241-269	25.00

DOWNTOWN CIRCULATOR SERVICE IN KANSAS CITY

AN EVALUATION OF DIME-A-TIME

February 1974

Prepared by : Urban Transportation Study Group
University of Missouri

Prepared for: Urban Mass Transportation Administration

Since a number of cities have or are considering adopting some kind of downtown circulator service, it is useful to describe and analyze a specific bus circulator service such as Dime-A-Time in Kansas City, Missouri. This study describes Dime-A-Time and its history and then goes on to analyze Dime-A-Time by comparing its operations and characteristics with similar service in Cleveland and Denver. It is shown that by eliminating rush hour service (as in Denver), Dime-A-Time could cut its operating deficit although at the price of providing less service. A multiple regression model is used to test several hypotheses and estimate the value of the relationships among ridership, fare policy and external conditions. The estimates obtained from this regression model make it possible to evaluate the impact of fare changes. It is shown that a somewhat higher fare would increase total revenue but not substantially.

Conclusions are offered on Dime-A-Time operations. Other cities may wish to adopt alternative systems such as the shorter hours used in Denver or the provision of circulator service with regular route buses. Benefits and costs of various alternatives are discussed.

81 pages

Available from: National Technical Information Service
Springfield, Virginia 22161

Refer to: PB-231-911/AS Price: $4.00

BLUE STREAK BUS RAPID TRANSIT DEMONSTRATION PROJECT

Final Report and Appendix

June 1973

Prepared by : Alan M. Voorhees, Inc.
Seattle, Washington

Prepared for: U.S. Department of Transportation

Blue Streak was an express bus demonstration project to test the effects of increased levels of service on transit routes and the overall impact of a park-ride lot with express service to downtown. Blue Streak buses used the reversible lanes of Interstate 5 between their service area and downtown Seattle, and had exclusive use of a reversible ramp in the central business district.

The two and one-half year demonstration produced patronage increases in the face of overall system declines. The impact of the service on the freeway was transitory since freeway volumes were also declining. The park-ride aspect was very successful with an estimated potential of more than twice the patronage generated by the project. Park-ride patronage was limited by the parking space capacity of the lot.

Guidelines were studied for the location of park-ride lots, the impact of exclusive transit freeway ramps was simulated, and a modal split model was calibrated.

214 pages

The appendix contains an introduction, a description of Blue Streak, an outline of the routes, a description of the data collection and, as the bulk of the report, a series of charts and figures which serve to illustrate the main body of the report.

98 pages

Available from: National Technical Information Service
Springfield, Virginia 22161

Final report -- PB-222-126 Price: $7.00
Appendix -- PB-222-128 Price: $4.85

Also see I-35W: URBAN CORRIDOR DEMONSTRATION PROJECT--FINAL REPORT, abstracted in the Traffic Operations Section. The report discusses the provision of extensive express bus service using priority access ramps, park-and-ride facilities, and passenger amenities (shelters and signs).

THE SHIRLEY HIGHWAY EXPRESS-BUS-ON-FREEWAY DEMONSTRATION PROJECT: A STUDY OF REVERSE COMMUTE SERVICE

January 1975

Prepared by : National Bureau of Standards

Prepared for: Urban Mass Transportation Administration

The Shirley Highway Corridor (I-95) peak period bus service has been overwhelmingly oriented toward trips made in the direction of the primary flow of peak period traffic. However, in early 1973, peak period reverse commute service was established on three Shirley Highway Express-Bus-on-Freeway Demonstration routes. Reverse commute service is an operation which provides peak period transit service in the direction opposite the primary flow of peak period traffic. This report is based upon an analysis of these reverse commute routes. The purpose of the report is to: (1) describe the Shirley Highway peak period reverse commute routes; (2) analyse success of reverse commute service; (3) determine factors conducive to the success of reverse commute service; and (4) identify employment areas within the Shirley Highway Corridor which have high potential as markets for a reverse commute service. In early 1973, two major reverse commute routes began service to a newly opened high-rise office building in Northern Virginia. After eleven months, patronage was measured. Responses to an on-board survey of riders, taken in February 1974, revealed that at least 43% of riders had no other means than bus for getting to work. The service has enabled many of these riders, therefore, to accept jobs that they might otherwise would have had to forego. The service was also found to be slightly profitable to bus operators on an incremental cost basis. Cost and revenue estimates showed that the bus operators margin of income over costs was positive. It was concluded that because the reverse commute service was beneficial to its users and slightly profitable to the bus operator, it has been a successful operation. Conditions deemed important to success are delineated.

70 pages

Available from: National Technical Information Service
Springfield, VA. 22161

Refer to : COM-75-10412; Price: $3.75

TRANSIT MANAGEMENT

AN INTRODUCTION TO TRANSIT MARKETING

NATIONAL TRANSIT MARKETING CONFERENCE PROCEEDINGS

TRANSIT MARKETING MANAGEMENT HANDBOOK
- Marketing Organization
- User Information Aids
- Pricing
- Marketing Plan
- Market Research
- Service Planning and Development
- Sales Communication

TRANSIT FARE PREPAYMENT: A GUIDE FOR TRANSIT OPERATORS

EVALUATION OF A PREPAID PAYROLL DEDUCTION TRANSIT PASS

OFFPEAK RIDERSHIP AND REVENUE TECHNIQUES

MARKETING TECHNIQUES AND THE MASS TRANSIT SYSTEM

CONSUMER ORIENTED APPROACHES TO MARKETING URBAN TRANSIT

TRANSIT PROMOTION FOR NON-CAPTIVE, MIDDLE-INCOME HOUSEHOLDS

LONG BEACH TRANSIT MARKETING PROJECT

POINT-TO-POINT TRIP MANAGEMENT PROGRAM

APPLICATION OF COMPUTERS TO TRANSIT INFORMATION SERVICES

TRANSIT TELEPHONE INFORMATION SYSTEMS

BUS MAINTENANCE FACILITIES

MAINTENANCE PLANNING SYSTEM OVERVIEW

SIMS OVERVIEW AND IMPLEMENTATION HANDBOOK

RUCUS OVERVIEW

RUCUS IMPLEMENTATION MANUAL

SCHEDULE CONTROL AND MANAGEMENT INFORMATION SYSTEM

MARKETING PACKAGE FOR SMALLER TRANSIT SYSTEMS

MASS TRANSIT MANAGEMENT: A HANDBOOK FOR SMALL CITIES

AN INTRODUCTION TO TRANSIT MARKETING

1975

Prepared by and available from : U.S. Department of Transportation
Urban Mass Transportation Administration
Office of Transit Management
Washington, D.C.

This booklet is designed to familiarize non-marketing professionals with the subject of transit marketing. It provides an overview of the marketing process. The booklet addresses transit's need for utilizing marketing techniques and their potential value for managerial decisionmaking, consumer satisfaction, and organizational innovation. The necessity of preparing a formal marketing plan and the various components included in this plan are outlined.

13 pages

NATIONAL TRANSIT MARKETING CONFERENCE PROCEEDINGS

September 1975

Prepared by and available from : U.S. Department of Transportation
Urban Mass Transportation Administration
Office of Transit Management
Washington, D.C.

This document presents the proceedings of the National Transit Marketing Conference, June 1975, sponsored by UMTA in cooperation with the American Public Transit Association (APTA). The conference was intended to foster the transit industry's awareness, acceptance, understanding and successful application of marketing techniques. The Proceedings offer an excellent resource of marketing tools and components. Specific marketing techniques falling under the broad categories of marketing's applicability to transit, the UMTA Transit Marketing Project, and the "how to" of marketing, including objective formulation, budget development, marketing department organization, and pricing policies are discussed.

190 pages

TRANSIT MARKETING MANAGEMENT HANDBOOK

This Handbook, consisting of separate-bound "chapters" addressing the elements of transit marketing, is intended for use by transit marketing practitioners. It is intended to serve as a management tool and reference document and will be periodically evaluated, augmented and revised as necessary. The individual products are listed below (with the expected availability dates) and abstracted on the following pages.

Chapter	Availability
Marketing Organization	Nov. 1975
User Information Aids	Nov. 1975
Pricing	April 1976
Marketing Plan	April 1976
Market Research	Summer 1976
Service Planning and Development	Summer 1976
Sales Communication	Summer 1976

These reports are (or will be) available from the : U.S. Department of Transportation
Urban Mass Transportation Administration
Office of Transit Management, UMD-20
Washington, D.C. 20590

MARKETING ORGANIZATION

November 1975

Prepared for: U.S. Department of Transportation

Prepared by : Lesko Associates,
Washington, D.C.

This document, a chapter of the Transit Marketing Management Handbook, provides guidance to transit professionals on effectively integrating marketing into the organizational structure and decision processes of the transit system. It also provides assistance in evaluating an existing marketing function within the transit system. The manual presents an evaluation of the extent to which the transit industry has adopted the marketing function. Several examples of the impact of marketing organizational structures within the transit industry are included.

USER INFORMATION AIDS

November 1975

Prepared for: U.S. Department of Transportation

Prepared by : Ilium Associates, Inc.,
Seattle, Washington

This document, a chapter of the Transit Marketing Management Handbook, provides an approach for custom designing or improving a transit user information system. The manual explores a system of information aids and dissemination channels adaptable to a variety of community and transit system needs. A logical process for building a well-founded information system is presented. This process includes steps for gaining a community perspective and identifying the audience, creating conceptual objectives, working with elements, modules, and components, developing dissemination techniques, and initiating the total program. The document concludes with a sample of a photographic inventory of information aids.

Both reports are available from: U.S. Department of Transportation
Urban Mass Transportation Administration
Office of Transit Management, UMD-20
Washington, D. C. 20590

PRICING

Prepared for: U.S. Department of Transportation

Prepared by : Grey Advertising, Inc.,
New York, New York and
Chase, Rosen & Wallace, Inc.,
Alexandria, Virginia

This document, a chapter of the Transit Marketing Management Handbook, provides an introduction to fares and fare collection techniques. It contains information on the role of pricing in the marketing process, a review of elasticity, fare structure and collection methods, and several case studies of recent fare changes. The major portion of the report is devoted to defining fare practices, including implementation factors, effects on operation, usage, and revenue.

Will be available in April 1976 from: U.S. Department of Transportation
Urban Mass Transportation Administration
Office of Transit Management, UMD-20
Washington, D. C. 20590

MARKETING PLAN

Prepared for: U.S. Department of Transportation

Prepared by : Grey Advertising, Inc.,
New York, New York and
Chase, Rosen & Wallace, Inc.,
Alexandria, Virginia

This document, a chapter of the Transit Marketing Management Handbook, presents a systematic approach to the development of a marketing plan for a transit system. The components of a marketing plan are described in detail. These include the business review and analysis, statement of objectives, budget, strategy formulation, and an action program. The manual integrates these components with the basic marketing functions of market research, service planning and development, pricing, user information, and sales communication/promotion.

Available from: U.S. Department of Transportation
Urban Mass Transportation Administration
Office of Transit Management, UMD-20
Washington, D. C. 20590

MARKET RESEARCH

Prepared for: U.S. Department of Transportation

Prepared by : Grey Advertising, Inc.,
New York, New York and
Chase, Rosen & Wallace, Inc.,
Alexandria, Virginia

This document, a chapter of the Transit Marketing Management Handbook, provides information on transit marketing research including purpose, methodological development, strategy formulation and implementation factors. Emphasis is placed on the importance of organizing and integrating service and promotion efforts to respond to consumer needs. Procedures are described for identifying prospective transit patrons, transit's competition, trip taking characteristics of consumers, consumer motivations and needs, and communication techniques.

Available in Summer 1976 from: U.S. Department of Transportation
Urban Mass Transportation Administration
Office of Transit Management, UMD-20
Washington, D. C. 20590

SALES COMMUNICATIONS

Prepared for: U.S. Department of Transportation

Prepared by : Grey Advertising, Inc.,
New York, New York, and
Chase, Rosen & Wallace, Inc.,
Alexandria, Virginia

This document, a chapter of the Transit Marketing Management Handbook, presents techniques for increasing the awareness, acceptance, and support for transit services in a community. The elements addressed include advertising, publicity, public relations, merchandising, promotions, and personal selling. These are discussed in detail, focussing on methodological development, strategy, and plans for implementation. The manual provides guidance in designing communications programs to respond to consumer based research and to persuade market groups to use transit by altering negative perceptions or creating new positive ones where none presently exist.

Will be available in Summer 1976 from: U.S. Department of Transportation
Urban Mass Transportation Administration
Office of Transit Management, UMD-20
Washington, D. C. 20590

SERVICE PLANNING AND DEVELOPMENT

Prepared for: U.S. Department of Transportation

Prepared by : Grey Advertising, Inc.,
New York, New York and
Chase, Rosen & Wallace, Inc.,
Alexandria, Virginia

This document, a chapter of the Transit Marketing Management Handbook, provides an introduction to the steps required in the service development process consistent with the satisfaction of recognized consumer needs. The manual addresses the areas of service criteria; inputs to service planning, including consumer characteristics, consumer needs, awareness of transit's services, and system capability; selecting the type of service; routing and scheduling; and the monitoring of service improvements.

Will be available in
Summer 1976 from : U.S. Department of Transportation
Urban Mass Transportation Administration
Office of Transit Management, UMD-20
Washington, D. C. 20590

TRANSIT FARE PREPAYMENT: A GUIDE FOR TRANSIT OPERATORS

February 1976

Prepared by : Huron River Group, Ann Arbor, Michigan

Prepared for: U.S. Department of Transportation

This report documents a study of transit fare prepayment techniques, which are considered a meaningful stimulus to increasing transit ridership. The history of fare prepayment techniques is reviewed, noting the development and use of different fare structures, and of various prepayment methods: tickets, tokens punch cards, passes, permits, and automatic fare collection. Recent trends affecting prepayment (public operation of transit, paratransit, payroll deduction, and transit as an employee benefit concept) are also discussed. From a survey of U.S. transit operators, data is presented on plans currently in use and the affects of multiple ride prepayment and pass programs on ridership and revenue. Transit user attitudes toward fare prepayment were also surveyed. Conclusions and recommendations are offered. Appendices include detailing of sampling procedures and results.

Available from: U.S. Department of Transportation
Urban Mass Transportation Administration
Office of Transit Management, UMD-20
Washington, D.C. 20590

EVALUATION OF A PREPAID PAYROLL DEDUCTION TRANSIT PASS

Prepared for: U.S. Department of Transportation

Prepared by : Massachusetts Bay Transportation Authority
Boston, Massachusetts and
Decision Research Associates, Inc.,
Boston, Massachusetts

This report documents an evaluative study of the Massachusetts Bay Transportation Authority (MBTA) Prepaid Transit Pass Program. The marketing program is designed to promote the increased use of transit by allowing employees to buy annual travel passes through conventional payroll deduction. This document evaluates the concept and presents implementation procedures for use by other transit systems.

Will be available in
Summer 1976 from : U.S. Department of Transportation
Urban Mass Transportation Administration
Office of Transit Management, UMD-20
Washington, D. C. 20590

OFFPEAK RIDERSHIP AND REVENUE TECHNIQUES

Prepared by : Ilium Associates, Inc., Seattle, WA.

Prepared for: U.S. Department of Transportation

This document discusses approaches for improving the utilization of existing personnel and capacity during nonpeak periods. The material is organized within a series of modules keyed to the resources and needs of transit systems of varying sizes. The modules are designed for incorporation and implementation in a comprehensive marketing program. The manual encompasses consideration of numerous issues including method of implementation, cost implications, demonstrated ridership and revenue benefits, operational considerations, actual and potential problems encountered, advertising or other sales communication support, and institutional constraints. Commercial sector techniques adaptable to transit are also provided.

Will be available in
Fall 1976 from : U.S. Department of Transportation
Urban Mass Transportation Administration
Office of Transit Management, UMD-20
Washington, D.C. 20590

MARKETING TECHNIQUES AND THE MASS TRANSIT SYSTEM

July 1973

Prepared by : National Urban League, New York, N.Y., and
Mark Battle Associates, Washington, D.C.

Prepared for: Urban Mass Transportation Administration

This report, a transit information and marketing study, was performed with two objectives in mind: (1) to identify marketing and information techniques being used successfully by mass transit systems to increase patronage and to make their systems more accessible to the public, and (2) to develop a model for evaluating transit information and marketing systems and to develop methods to increase the effectiveness of these systems. Three methods were used to gather the information in this report: a literature search, a written questionnaire to transit systems, and visits to five cities for personal interviews with transit system officials. This study describes a number of efforts being made in various places to overcome the problems confronting transit systems. The main problems are found to be competition with other travel modes (especially automobiles), increasing costs, and communications barriers between the transit service and the public. Recommendations are made and areas where further work and research may be useful are suggested. The report is divided in ten chapters arranged in three sections: Marketing Concepts, Marketing in Five Selected Transit Systems, and a Systematic Marketing Evaluation. A companion handbook to this report includes creative examples of advertisements and promotional pamphlets for use by all media that were provided by the 58 transit systems surveyed. The volume is designed as a guide to aid other transit systems in the selection of materials for their own marketing campaigns. Contents include pamphlets and newspaper advertisements for rider reinforcement, encouraging modal switch and giving notice of system changes, schedules, special information tools, maps, news releases, radio spot advertising, multi-lingual announcements and announcements of special public relations activities. The format is largely graphic.

Available from: National Technical Information Service
Springfield, VA 22161

Report----PB-223-735; $4.25
Handbook--PB-223-736; $4.25

CONSUMER ORIENTED APPROACHES TO MARKETING URBAN TRANSIT

March 1973

Prepared by: Stanford University, Graduate School of Business

Prepared for: Urban Mass Transportation Administration

Marketing plays a key role in the development and management of urban transit operations because of its focus on understanding and satisfying consumer needs. One goal of this study was to determine the feasibility and efficacy of increased marketing activity in an industry which has emphasized engineering and economic considerations.

Marketing strategy must be based upon detailed knowledge of how the consumer goes about deciding to make a trip and selecting a mode of transportation for it. To facilitate understanding of this decision process, a mode choice bahavior model was developed in flow chart form. Unlike most modal choice models, the model's focus is on relationships between psychological variables and modal choice.

To improve knowledge of these variables, a large scale consumer survey was undertaken which may be regarded as a prototype of the research effort required. Sample design and delivery procedures made it possible to focus on subjects in the San Francisco Bay area for whom both public and private transportation are available as viable alternatives for many trips.

Statistical techniques are used to analyze the survey data. Hypothesized relationships that mode choice is effected by consumer attitudes, knowledge of transit services and a marketing orientation on the part of the transit operator were strongly supported.

The report outlines three basic strategies for inducing transit patronage: (1) improving physical attributes of vehicles and facilities, (2) improving operational characteristics of services, and (3) undertaking persuasive communications campaigns. By highlighting the consumer's need for information and the relationship between modal choice behavior and attitudinal and perceptual variables, the survey findings indicate that relatively inexpensive marketing and communications strategies might prove effective in encouraging use of public transportation. The study concludes with several proposed strategies involving the use of different elements in the marketing mix.

Available from: National Technical Information Service
Springfield, VA 22161

Refer to: PB-220-781; Price: $12.00

PROMOTIONAL STUDY FOR PUBLIC BUS TRANSPORTATION TO IMPROVE KNOWLEDGE AND RIDERSHIP BY NON-CAPTIVE, MIDDLE-INCOME HOUSEHOLDS

January 1973

Prepared by : University of Iowa
Prepared for: Urban Mass Transportation Administration

This study involves an investigation of the information currently available and of the means and effects of supplying transportation information to middle-income households. The main objectives of the study were: (1) to determine the level of knowledge the public presently has about the city's transit systems; (2) to determine what effect a change in the level of knowledge would have on daily ridership; (3) to induce people to ride the city bus system through different promotional materials; and (4) to measure the effectiveness of the promotional materials used in the study. Cedar Rapids, Iowa, an urban region with approximately 125,000 inhabitants, was the study area. The smaller cities and towns might be effectively applied to transit promotion. Pre- and post-treatment of transit related knowledge, combined with monitoring of patronage to and from the sampling area, were employed. General characteristics of two respondent groups as obtained from home interviews were presented. Among the conclusions are that the majority of trips from middle-income areas are made without regard to potentialities of existing transit systems and that informational levels regarding existing systems can be improved through relatively inexpensive promotional materials. References are furnished. The appendix contains the study questionnaire.

57 pages

Available from: National Technical Information Service
Springfield, VA 22161

Refer to: 237-147 Price: $4.25

LONG BEACH TRANSIT MARKETING PROJECT

January 1974

Prepared by : Cunningham/Short/Berryman & Associates, Inc., Los Angeles, CA
and VTN Consolidated, Inc., Irvine, CA

Prepared for: Urban Mass Transportation Administration

In February 1972, the Long Beach (California) Public Transportation Company received an UMTA demonstration grant to fund a program which, through innovative marketing, would attempt to focus on increased ridership among traditional "non-transit users", specifically those in moderate income categories and others not considered "transit captives". The foremost goal of the Transit Marketing Project was to familiarize every Long Beach citizen with the advantages of bus travel and the services of the city-owned Long Beach Public Transportation Company. To this end, community representatives delivered transit information hand-outs to homes in the selected market areas and gave presentations at service and luncheon clubs, as well as other places of public gathering. Augmenting the community outreach efforts were a newspaper-radio campaign and special on-board services to enhance the general public image of the desirability of transit services. It was felt that these measures would do much to increase "middle class" acceptance of transit as a socially acceptable form of mobility, in addition to an increase in awareness of the availability of public transportation among lower income persons. Statistical analysis enabled the determination of changes in 5 basic variables: ridership patterns; attitude toward riding the bus; trip frequency; source of bus information; and revenue data. Results of the evaluation are in table form. Appendices include the survey instrument and examples of newspaper advertisements.

41 pages

Available from: National Technical Information Service
Springfield, VA 22161

Refer to: PB-233-876/AS; Price: $3.25

POINT-TO-POINT TRIP MANAGEMENT PROGRAM

(Telephone Information Systems)

Preliminary Analysis, November 1974
Path Finding Algorithms and Data Structures, January 1975

Prepared by : National Bureau of Standards

Prepared for: Urban Mass Transportation Administration

Point-to-Point Trip Management is concerned with providing prospective riders of mass transit with the necessary detailed information for particular trips. The preliminary report contains the results of a literature search on automation in the telephone information center, and analyzes the data collected from 29 existing centers. Additionally, on-site visits were made to three operational centers, and tapes of actual telephone inquiries and responses were obtained and analyzed. The use of microfiche and computers are examined as an aid to the operators in these centers. Total automation of these centers is also discussed. Conclusions and recommendations for further study in this area, and an annotated bibliography, are also part of this report.

The Path Finding Algorithms and Data Structures report identifies and characterizes the data base and computer software requirements of a Point-to-Point Trip Management System which provides detailed transit trip itineraries in response to inquiries made by prospective passengers. Procedures for path calculation are discussed, including techniques for improving shortest path algorithm performance both through optimized computational schemes and through special methods of representing and manipulating the data base describing transit routes and schedules.

Available from: National Technical Information Service
Springfield, VA. 22161

Preliminary Analysis: COM-75-10421; Price: $4.00

Path Finding Algorithms
and Data Structures: COM-75-10697; Price: $5.00

APPLICATION OF COMPUTERS TO TRANSIT INFORMATION SERVICES

January 1973

Prepared by : Mitre Corporation, McLean, VA.

Prepared for: Urban Mass Transportation Administration

A telephone information service is used by many transit companies to provide information to the public on routes, schedules and fares. The operation of a number of transit telephone information services has been investigated to determine whether the introduction of computer systems would lead to an increase in efficiency. It is concluded that a computer system would not be cost effective, but that the standard of service would be raised if one were introduced into the information system.

Available from: National Technical Information Service
Springfield, VA. 22161

Refer to: PB-221-748; Price: $3.25

TRANSIT TELEPHONE INFORMATION SYSTEMS

March 1973

Prepared by : Mitre Corporation, McLean, VA.

Prepared for: Urban Mass Transportation Administration

While intended to be a guide for transit properties considering the establishment of a transportation information service, this report is also useful to transit agencies that wish to evaluate the effectiveness of existing transit information systems. The report begins with an analysis of system requirements and data on representative system operating costs. Included are recommendations for system inauguration and maintenance, a discussion of the operation of regional transit information systems, and a discussion of the alternative methods of information distribution being used in order to minimize the use of telephone information retrieval.

Available from: National Technical Information Service
Springfield, VA. 22161

Refer to: PB-221-459; Price: $4.25

BUS MAINTENANCE FACILITIES

A Transit Management Handbook
November 1975

Prepared by : Mitre Corporation

Prepared for: Urban Mass Transportation Administration

An understanding of current urban transit bus maintenance facility capabilities is needed for use in planning new facilities and for the evaluation of requests for aid. Industry guidelines, based on a survey of 55 properties with fleets of 11 to 4300 buses, were developed for garages, shops, service lanes, and capital equipment. Facility ages varied from new to 100 years; 61 percent were older than 21 years. Building costs varied from a low of $12 to $28 a square foot for indoor bus storage space, to a high of $55 to $82 a square foot for equipment intensive servicing facilities (1975 dollars). Cost multiplier curves for bid forecast years from 1975 to 1985 were developed, including inflation rates varying from 6 to 12 percent per year. Small, single facility properties (less than 100 buses) were found to have greater unit space needs for repairs than large properties.

Though this document is written from the perspective of new capital facilities, much of the information will assist efforts to improve maintenance using existing facilities.

135 pages

Available from: Urban Mass Transportation Administration
Office of Transit Management, UMD-10
2100 Second Street, S.W.
Washington, D. C. 20590

MAINTENANCE PLANNING SYSTEM OVERVIEW

February 1975

Prepared by : Mitre Corporation
Prepared for: Urban Mass Transportation Administration

The Maintenance Planning System (MPS) is a set of operating procedures and computer programs designed to assist rapid transit management in control of maintenance operations and modification programs and in the establishment of effective failure recording and analysis programs. MPS provides user reports in three general categories: Maintenance control, Equipment Status, and Failure Analysis.

The maintenance control reports provide assistance in scheduling the work to be performed in maintenance departments, while allowing for the unpredictable nature of repair work. The maintenance schedules, normally generated weekly, identify the preventive maintenance and major repairs to be performed during the period. In order to assist maintenance supervisors in assigning work, priorities are determined according to the sensitivity of the maintenance. Where necessary, work can be delayed or by-passed. This is taken into account when the work is scheduled so that, if necessary, a higher priority can be assigned. Performance reports provide management with a monitor of the performance of each section, so that corrective action can be taken if necessary.

The equipment status reports cover maintenance history, configuration control, and modification programs. Maintenance history reports contain records of all maintenance, repairs, failures and modifications on each item of equipment. Configuration control reports allow the location of selected items to be determined, while the modification portion of the MPS allows maintenance management to monitor and control modification programs.

The failure analysis reports provide for the identification of items having a high failure rate, so that changes in scheduled maintenance or a modification program can be adopted. They also provide for identification of items that have failed during the warranty period.

In addition to these computer-generated reports, the information is presented in a form that facilitates manual production of charts and graphs related to maintenance and reliability.

The Maintenance Planning System is designed so that any one, or any combination, of these major categories of reports can be implemented independently. Similarly, the MPS can be applied to one section of a system (such as the car shops) and subsequently extended to cover other sections. This allows for progressive implementation of the MPS on a transit property, as staff and funds permit.

MPS was initially installed in the Bay Area Rapid Transit District (BART) and has been modified to operate on an IBM 360/370 series computer under OS. The programs have been written in the ANS COBOL language.

50 pages

Available from: Urban Mass Transportation Administration
Office of Transit Management, UMD-10
2100 Second Street, S.W.
Washington, D. C. 20590

SIMS OVERVIEW AND IMPLEMENTATION HANDBOOK
Service, Inventory, and Maintenance System

OVERVIEW--October 1973
HANDBOOK--December 1974

Prepared by : The Mitre Corporation, McLean, VA
Prepared for: Urban Mass Transportation Administration

UMTA's Transit Operations and Management (TOMS) project includes the development of a maintenance management information system for use by the urban mass transportation industry in the maintenance of bus fleets. The Service, Inventory, and Maintenance System (SIMS) has been developed to operate as a software package at computer service bureaus or on computers operated by transit properties. SIMS consists of a package of computer programs written on ANSI COBOL language and currently operates on an IBM 360/50 or larger computer. The package has been tested by the Dallas Transit System (DTS), Dallas, Texas and Alameda-Contra Costa Transit District (ACTD), Oakland, California. The system has been operating daily at both DTS and ACTD on a demonstration basis. The OVERVIEW provides a general description of the system using illustrations of the reports produced by SIMS. Information displayed on the reports allows management to plan repair actions, avoid road calls and control expenses. The Service module helps to identify comsumption of oil and coolant. Stock room supplies are monitored through the use of Inventory module. The Maintenance (Repair Cost) module provides repair costs data for individual buses and divisions, segregating costs into subassemblies, inspections, accidents, and vandalism repairs, and provides information about total maintenance labor utilization. Appendices contain computer requirements and glossary. The HANDBOOK furnishes guidance to management in planning and implementation of the SIMS components at individual properties, by outlining such steps as data base generation, training, and acquisition of data processing services.

Available from: National Technical Information Service
Springfield, VA 22161

OVERVIEW: PB-241-495; Price: $4.25
HANDBOOK: PB-245-610; Price: $4.75

For additional information and implementation assistance, contact Mr. Dennis Goeddel, Transportation Systems Center/430, Kendall Square, Cambriade, MA 02142 Tel.: 617-494-2205

RUCUS OVERVIEW
(Vehicle Scheduling and Driver Run Cutting Package)

November 1973

Prepared by : Mitre Corporation, McLean, VA
Prepared for: Urban Mass Transportation Administration

This report describes the Run Cutting and Scheduling (RUCUS) package, which is a set of computer programs designed to assist in headway sheet development, vehicle scheduling and making driver work assignments. The purpose of using computer programs for this task is to cut down on the time involved in designing schedules while improving the accuracy of the finished product. The RUCUS package seeks to avoid the three major pitfalls which have been responsible for a lack of success in previous attempts to design computer scheduling systems. These include: (1) Partial computer implementations were hard to integrate into an existing process; (2) Industry is not, according to the author, computer-oriented and analytical personnel attempting computer implementations were not familiar with industry problems; and (3) The computer equipment used previously was not large enough or fast enough. The RUCUS package attempts to cover all phases of the scheduling department's activities, yet still be suitable for stage or partial implementation. This package is designed to operate on large scale equipment, yet many of the utility programs can be run on in-house computers operated by many properties. Formal field tests were negotiated with Baltimore Transit, D.C. Transit and San Diego Transit.

Available from: National Technical Information Service
Springfield, VA 22161

Refer to: PB-241-501; Price: $3.25

For additional information and implementation assistance, contact:
Mr. Dennis Goeddel, Transportation Systems Center/430, Kendall Square,
Cambridge, MA 02142 Tel.: 617-494-2205

RUCUS IMPLEMENTATION MANUAL

(Driver Run Cutting and Vehicle Scheduling Package)

July 1975

Prepared by : Mitre Corporation
Prepared for: Urban Mass Transportation Administration

The Run Cutting and Scheduling (RUCUS) package is a set of computer programs designed to assist transit properties in developing headway sheets, scheduling vehicles, and making driver work assignments. RUCUS has been extensively field-tested and is currently supporting the scheduling activities at a number of properties. The package, which is now available to the transit industry, includes detailed program documentation, descriptions of the required input data, output reports and messages, and the program source code. This handbook provides guidance in implementing the RUCUS system at the user's property, outlining such steps as obtaining and organizing the necessary resources, constructing the initial data base, and using the RUCUS programs. The handbook is to be used as an adjunct to existing documentation which defines in detail the execution of the system programs.

(198 pages)

Available from: National Technical Information Service
Springfield, Virginia 22161

Refer to: PB 247-754 Price: $7.50

For additional information and implementation assistance contact:

Mr. Dennis Goeddel
Transportation Systems Center/430
Kendall Square
Cambridge, Massachusetts 02142

Telephone: 617-494-2205

SCHEDULE CONTROL AND MANAGEMENT INFORMATION SYSTEM STUDY

November 1974

Prepared by : I.B.M. Corporation, Gaithersburg, MD.

Prepared for: Chicago Transit Authority and
Urban Mass Transportation Administration

This report culminates a study performed for the Chicago Transit Authority (CTA) to develop recommendations and development plans for a Schedule Control and Management Information System. According to the authors, this system would be a further improvement upon and extension of the Automatic Vehicle/Bus Monitoring (AVM) System which was installed by CTA in 1970 and was the first of its kind in the U.S. Section 1 of the report presents an overview of the system, giving the purpose, background data, and scope of the study. Section 2 gives system requirements, functional information flow, and a brief system description. Section 3 comprises a comprehensive system description by subsystem including bus control, communications, communications processing, main processing, operations control center, route control, street displays, customer information system, and radio maintenance. Section 4 details the implementation plan with a breakout of functions and task objectives including a discussion of schedules and personnel organization and responsibilities, and a detailed discussion of potential benefits. Appendices contain detailed data in support of the analysis tasks described in the body of the report. A list of references cited is also included in each section.

546 pages

Available from: National Technical Information Service
Springfield, VA. 22161

Refer to: PB-250-986; Price: $13.50

MARKETING PACKAGE FOR SMALLER TRANSIT SYSTEMS

Prepared for: U.S. Department of Transportation and
Georgia Department of Transportation

Prepared by : Alan M. Voorhees & Associates, Inc.,
McLean, Virginia

This "package" will provide guidance to transit managers of smaller systems in conducting an effective marketing program. The package includes elements that provide an introduction to marketing and detailed treatment of all marketing phases. These phases include organizational goalsetting, objective formulation, strategy and budget development, market research, transit service planning and development, equipment packaging and graphics development, pricing policies, promotional activities, information dissemination, performance evaluation, marketing management, employee relations, community assistance and resources maximization. The package consists of "core" programs graded to systems of varying sizes,characteristics, and resources.

Will be available in October 1976 from: U.S. Department of Transportation
Urban Mass Transportation
Administration
Office of Transit Management, UMD-20
Washington, D. C. 20590

MASS TRANSIT MANAGEMENT: A HANDBOOK FOR SMALL CITIES

February 1971

Prepared by : Graduate Business School
Indiana University

Prepared for: Urban Mass Transportation Administration

The purpose of this study is to provide information for the management of mass transit particularly for smaller cities in the U.S.; that is, cities with a population of 150,000 or less. The cities in question are in rather isolated areas and therefore cut off from the experienced transit management people in and around large metropolitan areas. The two major constraints discussed are the amount of money which is available and the degree of specialization possible with the limited manpower of a small enterprise. Practices of smaller transit systems in the United States were investigated in order to discover some of the methods and problems of such properties. The best methods utilized by these undertakings have been included. Ways in which it might be possible to improve on existing management and conventional practices of the transit industry are included. A consumer-oriented approach is strongly emphasized because the author is of the opinion that today's transit industry is primarily operations oriented in a relatively unsystematic fashion to a degree unusual for American enterprise today. Public and private ownership is discussed in relation especially to consumer service quality. Much attention is also paid to the gaining of public support, and to financing mass transit in small cities. The report is directed not only toward transit managers but toward public officials and private citizens who wish to inaugurate or improve transit service through public action. The report is divided into four sections. Each is designed to be complete in and of itself. They are: Organization and Finance, Management and Control, Operations, and Marketing. There is a bibliography, maintenance forms and a complete index.

334 pages

Available from: National Technical Information Service
Springfield. Virginia 22161

Refer to: PB-222-386; Price: $7.25

POOLING/PARATRANSIT

PARATRANSIT CONFERENCE PROCEEDINGS

PARATRANSIT: NEGLECTED OPTIONS FOR URBAN MOBILITY

TRANSPORTATION POOLING

INCREASED TRANSPORTATION EFFICIENCY THROUGH RIDESHARING: THE BROKERAGE APPROACH

RIDESHARING AND THE KNOXVILLE COMMUTER

HOW TO POOL IT

CARPOOL AND BUSPOOL MATCHING GUIDE

USER DOCUMENTATION FOR THE FHWA CARPOOL MATCHING PROGRAM

THE 3M COMPANY COMMUTE-A-VAN STATUS REPORT

CARPOOL INCENTIVES

CARPOOLING: STATUS AND POTENTIAL

CARPOOL INCENTIVES AND OPPORTUNITIES - REPORT TO CONGRESS

A MARKETING APPROACH TO CARPOOL DEMAND ANALYSIS

PORTLAND METROPOLITAN AREA CARPOOL PROJECT - INTERIM REPORT

GUIDELINES FOR THE ORGANIZATION OF COMMUTER VAN PROGRAMS

AN ANALYSIS OF COMMUTER VAN EXPERIENCE

VANPOOLING: A SUMMARY AND DESCRIPTION OF EXISTING VANPOOL PROGRAMS

VANPOOL IMPLEMENTATION IN LOS ANGELES

VANPOOLING

GUIDELINES ON THE OPERATION OF SUBSCRIPTION BUS SERVICES

A CITIZEN-SPONSORED BUS SYSTEM

DEMAND RESPONSIVE SYSTEMS AND SERVICES - Conference Proceedings

DEMAND RESPONSIVE TRANSPORTATION: STATE-OF-THE-ART OVERVIEW

DEMAND RESPONSIVE TRANSPORTATION SYSTEM PLANNING GUIDELINES

IMPLEMENTATION AND OPERATION OF A DEMAND RESPONSIVE PUBLIC TRANSPORTATION SYSTEM

DIAL-A-RIDE TRANSIT IN AN AGRICULTURAL COMMUNITY

POINT DEVIATION SERVICE IN A RURAL COMMUNITY

CITY-WIDE SHARED RIDE TAXI SERVICE

INNOVATIVE USES OF TAXIS AND JITNEYS FOR PUBLIC TRANSPORTATION

SMALL TRANSIT VEHICLE SURVEY

IMPLEMENTING SHARED TAXICAB SERVICES

SHARED RIDE TAXI SYSTEMS: AN ANALYSIS IN SUMMARY

THE ROLE OF TAXICABS IN URBAN TRANSPORTATION

PARATRANSIT

March 1976

Transportation Research Board Special Report 164

This Special Report presents the results of a 3½-day Conference on Paratransit held November 9-12, 1975, in Williamsburg, Virginia. The conference was conducted by the Transportation Research Board at the request of the Urban Mass Transportation Administration. The conference keynote session discussed the role of paratransit and its relationships with the transit and taxi industry. In an opening plenary session, commissioned papers provided an overall state-of-the-art of paratransit, a synthesis of integrated demand-responsive systems, an overview of two successful commuter pooling programs, and a case study in overcoming institutional barriers effecting paratransit innovation. Papers from six workshops that focused on specific concepts, aspects and applications of paratransit are included. A closing plenary session included the findings of the workshops and a general conference summary.

Available from: Transportation Research Board
2101 Constitution Avenue, N.W.
Washington, D.C. 20418

Price : $12.00

PARATRANSIT: NEGLECTED OPTIONS FOR URBAN MOBILITY

June 1974

Prepared for: Urban Mass Transportation Administration

Prepared by : The Urban Institute, Washington, D.C.

Increasing concern over the pollution, congestion, and fuel consumption impacts associated with the use of private autos in urban areas, together with greater emphasis on needs of those without access to autos, has led to major efforts to upgrade scheduled bus and rapid rail transit service in U.S. cities. Other forms of transportation which are available to the public and use the streets and highways of urban areas, referred to as "para-transit", are now under consideration as transportation alternatives. This study was designed to review the experience to date with para-transit services, to access their potential for servicing urban transportation demand, and to design a research, development and demonstration program as needed to identify and demonstrate innovations in the provision of para-transit services which would be beneficial. Services studied were grouped into 3 categories: (1) "hire and drive" - daily car rentals and forms of short-term car rentals that have been proposed including Minicar and Public Automobile System; (2) "hail" or "phone" - taxi, dial-a-ride, jitney and related services; and (3) prearranged ride-sharing - forms of carpool, vanpool, and subscription bus services. Four major applications of para-transit services are identified. Chapters include comparative study of para-transit modes, innovations in para-transit regulations and case studies. A para-transit bibliography is furnished.

442 pages

Available from: Publications Office
The Urban Institute
2100 M Street, N.W.
Washington, D. C. 20037

Stock No. URI 78000 Price: $4.95

The executive summary and overview of this report is PARATRANSIT: A SUMMARY ASSESSMENT OF EXPERIENCE AND POTENTIAL. (48 pages)

Available from: Federal Highway Administration (HHP-26)
Washington, D. C. 20590

TRANSPORTATION POOLING

January 1974

Prepared by : Alan M. Voorhees & Associates, Inc.
McLean, Virginia

Prepared for: Urban Mass Transportation Administration

With the advent of impending energy shortages in the winter of 1973-74, the U.S. Department of Transportation embarked on an accelerated program to promote increased use of high-occupancy vehicles--transit and carpools. As part of this program a series of reports was prepared that summarized the major aspects of carpool programs designed to assist local areas in initiating successful pooling action programs. This report is a collection of the ten individual reports. The goal of the Carpool/Buspool Program is to satisfy travel requirements more efficiently by increasing passenger occupancy in autos and buses, thereby reducing the number of vehicles using the streets and highways. Achievement of that goal calls for coordination among many institutions within a metropolitan region including public agencies and citizen and business groups. The information and techniques presented in this report should be considered as a guide to the development of a sound program in a metropolitan area. The individual reports contained in this volume are: Review of Carpool Activities, Organization for Carpooling, Approaches to Matching, Legal and Institutional Issues, Incentives to Carpooling, Transit/Taxi Coordination, Vanpools, Buspools, Pooling for the Disadvantaged, and Carpool Backup Systems.

283 pages

Available from: National Technical Information Service
Springfield, VA. 22161

Refer to: PB-236-157; Price: $9.25

Selected portions of this report (Incentives to Carpooling, Vanpools, Buspools, and Manual Carpool Matching Methods) are available from:

Federal Highway Administration
Urban Planning Division, HHP-26
Washington, D. C. 20590

INCREASED TRANSPORTATION EFFICIENCY THROUGH RIDESHARING: THE BROKERAGE APPROACH

January 1976

Prepared by : Transportation Center, University of Tennessee
Prepared for: U.S. Department of Transportation

This report explores the feasibility of a public transportation brokerage system to achieve the following objectives: (1) identify individuals with similar travel demands; (2) determine the specific service which specific groups of people desire; (3) identify potential suppliers of ridesharing services; (4) assist each group in finding the lowest cost means of obtaining the required service; (5) overcome the legal, regulatory, informational, sociological, and other barriers which inhibit increased ridesharing, so that agreements between users and suppliers are consummated.

Forms of ridesharing examined include carpooling, vanpooling, taxicab service, express subscription bus service, and fixed route transit. The comparative economics of these public transportation systems are developed. The report also discusses the benefits of increased vehicle occupancy, assessment of the commuter ridesharing market, determining demand for ridesharing, institutional considerations, and strategies for increased ridesharing.

Available in August 1976 from: U.S. Department of Transportation
Office of Environmental Affairs (TES-70)
Washington, D.C. 20590

RIDESHARING AND THE KNOXVILLE COMMUTER

August 1975

Prepared by : Transportation Center, Tennessee University
Knoxville, Tennessee

Prepared for: U.S. Department of Transportation

The report gives a detailed analysis of the Knoxville commuter, identifies the current commuting methods and their relative importance to members of the Knoxville work force, studies the relative importance of sharing rides for work trips in the firms observed and analyzes employee attitudes towards various aspects of shared rides. The report also outlines the current rate of travel within various corridors of the Knoxville community and offers a detailed summary of the benefits of ridesharing in terms of congestion, fuel consumption, present and future highway capacity, and public acceptance of ridesharing. The report examines the legal and institutional constraints which are currently inhibiting the development of various ridesharing alternatives and offers recommendations for improving public transportation in Knoxville.

66 pages

Available from: National Technical Information Service
Springfield, VA. 22161

Executive Summary: PB-247-187; Price: $4.50
Full Report : PB-247-146; Price: $9.75

TRANSPORTATION POOLING

- How to Pool It, May 1975
  Prepared by: Highway Users Federation
  1776 Massachusetts Avenue, N.W.
  Washington, D. C. 20036

  This manual gives detailed guidance to employers interested in implementing and maintaining ride sharing programs. The manual promotes carpooling and encourages employers to contact the regional agency promoting ride sharing for assistance before embarking on a ride sharing program of their own.

  54 pages

- Carpool and Buspool Matching Guide, Fourth Edition
  Prepared by: Lew Pratsch
  Department of Transportation
  Federal Highway Administration
  January 1975

  This publication describes case studies of successful carpool programs in the United States. It summarizes new and successful approaches to commuter ride sharing, i.e., carpools, vanpools, and buspools. In addition, discussions on public information, incentives, and data processing, vital to the success of ride sharing programs are covered in this publication.

  39 pages.

- User Documentation for the FHWA Carpool Matching Program, Second Edition--June 1975
  Prepared by: Robert Redmond
  Department of Transportation
  Federal Highway Administration
  Washington, D. C. 20590

  This documentation for users of the FHWA Carpool Matching Program is intended to be used as a guide and set of instructions for operating the program. It provides persons interested in computerized carpool/buspool matching programs a complete description of the user documentation for the FHWA Carpool Matching Program.

  53 pages

- The 3M Company Commute-A-Van Program Status Report, May 1974
  Prepared by: Robert D. Owens
  Helen L. Sever
  3M Company
  St. Paul, Minnesota 55101

  A summary of the 3M Company's experience with an employer sponsored vanpool program. The report describes the many transportation, environmental, and energy benefits that have been achieved as a direct result of 3M's Commute-A-Van Program. In addition to environmental and energy conservation benefits, the 3M Company was able to delay the need to construct a substantial amount of ramp-type parking spaces at the 3M Center.

  50 pages

These reports are available from: Federal Highway Administration (HHP-26)
Washington, D. C. 20590

CARPOOL INCENTIVES

December 1975

Part I: Evaluation of Operational Experience

Part II: Analysis of Transportation and Energy Impacts

Prepared by : Cambridge Systematics, Inc.
Alan M. Voorhees & Associates, Inc.
Prepared for: Federal Energy Administration (FEA)

The study evaluates the potential impact on travel behavior and energy consumption of a wide range of carpool incentives through the use of disaggregate demand models. In addition, the study includes a comprehensive review and evaluation of past, present or proposed uses of carpool incentives, implementation characteristics, results achieved, institutional problems encountered, and public acceptability. Explicit quantitative predictions of impacts are made for nineteen individual and for various combinations of carpool policy incentives using behavioral models of household travel demand applied to two case study cities, Washington, D.C. and Birmingham, Alabama. The changes in public use of single occupant cars, carpools, and mass transit are estimated and effects on work and non-work travel, automobile ownership, and energy consumption, are analyzed.

Available from: Federal Energy Administration
Transportation Programs
1200 Pennsylvania Avenue, N.W.
Washington, D. C. 20461

CARPOOLING: STATUS AND POTENTIAL

June 1975

Prepared by : Transportation Systems Center
Prepared for: U.S. Department of Transportation

This report contains the findings of studies conducted to analyze the status and potential of work-trip carpooling as a means of achieving more efficient use of the automobile. Current and estimated maximum potential levels of carpooling are presented together with analyses revealing characteristics of carpool trips, incentives, impacts of increased carpooling and issues related to carpool matching services. National survey results indicate the average auto occupancy for urban work-trip is 1.2 passengers per auto. This value, and average carpool occupancy of 2.5, have been relatively stable over the last five years. An increase in work-trip occupancy from 1.2 to 1.8 would require a 100 percent increase in the number of carpoolers. A model was developed to predict the maximum potential level of carpooling in an urban area. Results from applying the model to the Boston region were extrapolated to estimate a maximum nationwide potential between 47 and 71 percent of peak period auto commuters. Maximum benefits of increased carpooling include up 10 percent savings in auto fuel consumption. A technique was developed for estimating the number of participants required in a carpool matching service to achieve a chosen level of matching among respondents, providing insight into tradeoffs between employer and regional or centralized matching services. Issues recommended for future study include incentive policies and their impacts on other modes, and the evaluation of new and ongoing carpool matching services.

122 pages

Available from: National Technical Information Service
Springfield, VA. 22161

Refer to : PB-244-609; Price: $5.50

CARPOOL INCENTIVES AND OPPORTUNITIES - REPORT OF THE SECRETARY OF TRANSPORTATION TO THE U.S. CONGRESS

February 1975

Prepared by: Federal Highway Administration

Section 3(e) of the Emergency Highway Energy Conservation Act directed the Secretary of Transportation to conduct a full investigation of the effectiveness of carpool promotional methods employed in the carpool demonstration program, and other methods which might lead to significant increases in carpool ridership in urban areas throughout the country. This report was submitted to the U.S. Congress in response to that directive.

The report includes (1) a description of methods and programs used to promote carpooling, (2) a discussion of the success of these methods, (3) an evaluation of a broad range of incentives to promote carpooling, and (4) recommendations on government actions to encourage carpooling.

The report recommended that the Federal Government broaden its efforts to encourage carpooling to set an example as a major employer. The report also recommends that State and local governments expand efforts to encourage carpooling through (1) the development of highway projects providing preferential treatment for carpools, and (2) assistance to employers in promoting carpooling among their employees.

Available from: National Technical Information Service
Springfield, VA. 22161

Refer to: PB-241-823; Price: $5.50

"DOUBLE UP, AMERICA" CARPOOLING INFORMATION KIT

1975

A basic reference document for carpooling information. Included are brief discussions of carpooling benefits, successful on-going programs, approaches to carpool matching, carpools and the insurance question, and Federal aid to carpool programs. Also offered are sources of additional information (promotion, technical assistance, etc.).

65 pages

Available from: Office of Public Affairs (S-83)
U.S. Department of Transportation
Washington, D. C. 20590

A MARKETING APPROACH TO CARPOOL DEMAND ANALYSIS

Prepared by : Peat, Marwick, Mitchell & Company
Prepared for: Federal Energy Administration (FEA)

In this study a marketing-oriented approach is adopted to examine tripmaker perceptions and "soft" variables in the decision to carpool. For this study, a specially designed survey of 900 work tripmakers was conducted in three representative metropolitan areas: Pittsburgh, Chicago, and Sacramento. The questionnaire produced a sizeable data base on respondent socioeconomic characteristics, work trip characteristics, perceptions, and travel preferences.

Using the responses to specially designed paired comparison questions of the survey, a tradeoff model generated modal split, VMT, and related impact estimates for thirteen carpooling incentives policies.

A summary report with conclusions and recommendations and the following four technical memoranda are available:

- Survey Documentation
- Survey Tabulations and Evaluation
- Tradeoff Model and Policy Simulation
- Evaluation of Model Impact Estimates

Available from: Federal Energy Administration
1200 Pennsylvania Avenue, N.W.
Washington, D. C. 20461

PORTLAND METROPOLITAN AREA CARPOOL PROJECT - INTERIM REPORT

December 1974

Prepared by: Oregon Department of Transportation

The Interim Report of the Portland Metropolitan Area Carpool Project describes the development and success of carpool promotional efforts undertaken in Portland during 1974. Elements that contributed to the success of the program include: extensive marketing activities, carpool matching services, employer support, and identification of park-and-ride facilities. Based on follow-up surveys the report estimates that more than 22,000 persons, or nearly 7 percent of area employees, were induced to carpool as a direct result of project activities. The report also describes the institutional and financial arrangements for areawide carpool promotion in Portland.

74 pages

Available from: National Technical Information Service
Springfield, VA. 22161

Refer to: PB-245-857; Price: $5.00

GUIDELINES FOR THE ORGANIZATION OF COMMUTER VAN PROGRAMS

February 1976

Prepared by: The Urban Institute, Washington, D.C.
Prepared for: Urban Mass Transportation Administration

This document describes the major stages in the development of a company sponsored commuter van program including: the investigation of program feasibility, the promotion and organization of the service, and the operation and administration of an ongoing operation. These guidelines are based on the experience of several successful programs and potential sponsors should find them useful for their particular situation. Seven detailed case studies, representative of the major types of commuter van services, are also presented in the Appendix.

87 pages

This report will be available In June 1976 from : National Technical Information Service Springfield, VA. 22161

AN ANALYSIS OF COMMUTER VAN EXPERIENCE

February 1976

Prepared by : The Urban Institute, Washington, D.C.
Prepared for: Urban Mass Transportation Administration

This report analyzes the planning, organization, and operation of commuter van programs (often called van pools) in the U.S. and Canada. More than 30 existing operations have been examined and classified by considering the major organizational arrangements for providing the service. The potential benefits van commuting generates for the users, employers and community are discussed, and the paper presents guidelines on the demand environment and indicates the service characteristics that are likely to be important in attracting riders. Major legal issues including public regulation, competition with bus transit, liability and insurance, and implications of driver compensation are also reviewed. The potential for widespread van programs and the proposals for large-scale, areawide van service are also discussed.

34 pages

This report will be available in June 1976 from : National Technical Information Service Springfield, VA. 22161

VANPOOLING: A SUMMARY AND DESCRIPTION OF EXISTING VANPOOL PROGRAMS

January 1976

Prepared by: Environmental Protection Agency

The purpose of this booklet is twofold: (1) to present in one source the current data on known vanpool programs; and (2) to allow prospective vanpoolers to analyze and compare the various approaches made to vanpooling by those programs already in operation. It is the key characteristic of vanpool programs that, despite the essential similarity among them, each is a unique adaption to a particular situation. A knowledge of these possible variations should prove helpful to an employer planning to embark on a vanpool project.

Above all, it is hoped that this booklet will to some extent further the exchange of information among vanpooling companies, prospective vanpooling companies, and all levels of government that is so vital to the successful expansion of the commuter van concept. To that purpose, each summary description of a program contains a contact name and phone number so that interested persons can obtain more specific information. The best advocates and sellers of the vanpool concept are frequently the very persons who are actually running the program. In most cases these people are more than willing to share their time and expertise to interested individuals or corporations.

The material contained herein is the result of extensive interviews and information gathering during October and November 1975. Included with the current status of existing vanpool programs are discussions of various approaches and considerations important to vanpool programs, vanpool cost and fare parameters, and a bibliography of vanpool resource materials. The fast expanding nature of vanpooling renders a project such as this partly outdated almost as soon as it is completed. However, this report can continue to serve prospective vanpoolers as a source of information on programs already underway--programs which will have already answered many of the questions a prospective vanpooler is likely to raise and which will have also solved many of the problems that a prospective vanpooler is likely to encounter.

71 pages

Available from: Office of Transportation and Land
Use Policy (AW-445)
Environmental Protection Agency
Washington, D. C. 20460

VANPOOL IMPLEMENTATION IN LOS ANGELES

November 1975

Prepared by: Aerospace Corp., El Segundo, CA.

This paper documents the formation and operation of a very successful vanpool at The Aerospace Corporation and the Air Force's Space and Missile Systems Organization (SAMSO), two employers colocated at El Segundo in the Los Angeles basin. The program is currently being expanded to include 17 company-leased vans, seating 10 to 12 passengers each and operating at breakeven fares over round-trip distances from 25 to 110 miles. Detailed guidelines are presented on organization, costs, data base requirements and operating procedures. Some insight is also provided on factors and unique features which have made the program successful.

Available from: Federal Highway Administration
Urban Planning Division (HHP-26)
Washington, D. C. 20590

VANPOOLING

A New Low Capital Transportation Alternative

November 1975

Prepared by: Baltimore Regional Planning Council

This report discusses the low capital transportation alternative of vanpooling. The benefits of vanpooling for individual users, employer-sponsors, and society are analyzed. The market potential for vanpooling is analyzed generally and specifically for the Baltimore region. Legal issues concerning the implementation of vanpooling are explored. Possible and likely sponsors of vanpooling programs are discussed, and guidelines for instituting an employer sponsored vanpool program are suggested. The potential role of State and local governments in fostering and insuring the success of vanpool programs is developed. An appendix provides information on an implemented vanpooling program, The 3-M Commute-a-Van Program.

63 pages

Available from: Regional Planning Council
Atten: E. Hines
701 Saint Paul Street
Baltimore, MD 21202

GUIDELINES ON THE OPERATION OF SUBSCRIPTION BUS SERVICES

August 1974

Prepared by : The Urban Institute
Washington, D. C.

Prepared for: Urban Mass Transportation Administration

This report provides guidelines on the planning, organization, and operation of subscription bus services. The report deals with identifying potential riders; obtaining vehicles and drivers; meeting regulatory requirements; setting routes, schedules and fares; revising routes and schedules as demand changes; and obtaining special privileges such as the use of express lanes, priority movement at intersections, and close-in parking. The term "subscription" has been applied to a variety of specialized bus services tailored to serve urban travelers who patronize them on a regular basis, usually for their daily trips to and from work. This report concentrates on services provided by large buses. Guidelines are presented which are critical to the successful operation of subscription bus services. These guidelines are based on detailed case studies of subscription services in ten cities. The report concludes with a discussion of the potential impacts of subscription services on the congestion, pollution and fuel consumption associated with urban travel. A glossary and bibliography are furnished.

75 pages

Available from: Federal Highway Administration (HHP-26)
Washington, D. C. 20590

A CITIZEN-SPONSORED BUS SYSTEM
The Knoxville, Tennessee Experience

December 1974

Prepared by : Stan Stokey, Tennessee Valley Authority

Reprinted by: Federal Highway Administration

This paper traces the chronology of a citizen-sponsored express bus program. In less than one year a citizen-sponsored express bus has ballooned to a fleet of 12 express buses. The paper also discusses the impact of the express bus program on the local transit corporation and the community.

15 pages

Available from: Federal Highway Administration (HHP-26)
Washington, D. C. 20590

DEMAND-RESPONSIVE TRANSPORTATION SYSTEMS AND SERVICES

Transportation Research Board Special Report 154, 1974

(Proceedings of the Fifth Annual International Conference on Demand-Responsive Transportation Systems, November 11-13, 1974)

During the past 4 years, the demand-responsive transportation (DRT) concept has evolved from an experimental to a production stage. Therefore, this conference did not focus on concepts and systems that had already been tested, but it was oriented toward a number of significant issues that are still unresolved and will impact the future of DRT. The papers in this proceedings discuss these issues: (a) Integration of demand-responsive and fixed route bus services; (b) service for the elderly and handicapped; (c) role of automated dispatching approaches; (d) role of taxi companies in DRT operations and general issues of taxicab operations; (e) marketing and promotion of DRT: (f) important elements in the evaluation of DRT systems; and (g) political and public policy issues related to DRT.

184 pages

Available from: Transportation Research Board
2101 Constitution Avenue, N.W.
Washington, D. C. 20418

Stock No. : ISBN-0-309-02382-3

Price : $7.40 (add 5% for postage and handling)

Also: Transportation Research Board Special Report 136, DEMAND RESPONSIVE TRANSPORTATION SYSTEMS, Proceedings of 1973 Conference. Pub. No. ISBN-0-309-02099-9; Price: $3.60.

DEMAND RESPONSIVE TRANSPORTATION: STATE-OF-THE-ART OVERVIEW

August 1974

Prepared by : Transportation Systems Center
U.S. Department of Transportation

Prepared for: U.S. Department of Transportation
Office of the Secretary, and Urban
Mass Transportation Administration

This report presents an overview of demand responsive transportation, an innovative approach that may help fill the need for flexibility in public transportation. The report is designed to make more accessible the body of knowledge that now constitutes the state-of-the-art in demand responsive transportation. Included are discussions on the market context, concept, role, and economics of demand responsive transportation, as well as summaries of demand responsive system services and characteristics. Discussion of implementation considerations (decision-making, planning, and operational) are offered.

A special feature is the inclusion of supplementary material to serve as a sourcebook for further information.

(105 pages)

Available from: Technology Sharing Program Office
Code 151
U.S. Department of Transportation
Transportation Systems Center
Kendall Square
Cambridge, MA. 02142

DEMAND RESPONSIVE TRANSPORTATION SYSTEM PLANNING GUIDELINES

April 1974

Prepared by : The MITRE Corporation
McLean, Virginia

Prepared for: Urban Mass Transportation Administration

Based on the limited empirical information of 12 demand-responsive transportation systems, preliminary planning guidelines have been developed to aid in the design of new demand-responsive systems. These guidelines facilitate the estimation of ridership, fleet size, staff requirement and costs.

A summary is also presented of the major characteristics of these 12 demand-responsive systems that are operating in the United States and Canada. This summary illustrates the types of systems that have been recently implemented. They include many-to-many, many-to-few, many-to-one and route deviation systems.

41 pages

Available from: National Technical Information Service
Springfield, Virginia 22161

Refer to: PB-232-970/AS Price: $3.25

IMPLEMENTATION AND OPERATION OF A DEMAND RESPONSIVE PUBLIC TRANSPORTATION SYSTEM (Haddonfield Dial-A-Ride)

March 1974

Prepared by : LEX Systems, Inc. and DAVE Systems, Inc.

Prepared for: Urban Mass Transportation Administration

This publication describes features of the installation and operation of the manually scheduled Haddonfield, New Jersey Dial-A-Ride system. Considerable interest has arisen in providing Dial-A-Ride service to other localities. The purpose of this document is to provide guidelines from the experience in the Haddonfield project to assist others in procuring and operating a Dial-A-Ride system. Included are sections on: the facility and equipment, operations, handling of and accounting for revenue, communications, personnel training, and sales promotion. In order to serve as a guide for implementing a similar system, information for ordering and building equipment as well as actual operating procedures and forms are reproduced. The appendices explain the logic and rationale behind the development of certain procedures. This information should be useful in adapting those procedures to different situations. An executive summary is also available.

Available from: National Technical Information Service
Springfield, Virginia 22161

Executive Summary: PB-233-379/AS; $3.00
Full Report : PB-233-380/AS; $5.50

Note: A number of technical reports have resulted from the continuation of the Haddonfield project. Information on the most recent technical reports is available from th e Office of Research and Development, Urban Mass Transportation Administration, Washington, D.C. 20590

Case Studies--Small City Transit

March 1976

Prepared by: Transportation Systems Center

Merced, California--DIAL-A-RIDE TRANSIT IN AN AGRICULTURAL COMMUNITY

PB-251-510 $3.50

Merrill, Wisconsin--POINT DEVIATION SERVICE IN A RURAL COMMUNITY

PB-251-511 $3.50

El Cajon, California--CITY-WIDE SHARED RIDE TAXI SERVICE

PB-251-507 $3.50

Available from: National Technical Information Service
Springfield, VA. 22161

POTENTIAL FOR FLEXICAB SERVICES: INNOVATIVE USES OF TAXIS AND JITNEYS FOR PUBLIC TRANSPORTATION

December 1975

Prepared by : INTERPLAN Corporation, Santa Barbara, CA

Prepared for: U.S. Department of Transportation
Office of Transportation Policy Development

Taxis and jitneys can be significant urban transportation resources. Used innovatively to provide public transit services, they can offer mobility in low density areas where mass transit is not feasible, supplement mass transit economically to improve the overall level of service, and promote ridership of regional rapid rail and commuter rail systems and express bus services to reduce the use of private vehicles.

The term "flexicab" has been coined to refer to the range of demand-responsive and fixed-route services that can be offered as extensions of existing taxi/jitney operations. The taxi industry, with its experience in small vehicles, dispatching and flexible routing is particularly suited to flexicab operations. Opportunities for profit exist, particularly when several types of flexicab services are offered by the same operator, permitting him to make maximum use of his labor force and equipment.

Three examples of multi-service flexicab systems are presented in the form of scenarios set in hypothetical urban areas (small, medium, and large). The examples include the calculation of revenues, operating costs, and net earnings.

The report also reviews the present status of the taxi and jitney industry and makes policy and research recommendations. A bibliography and a list of contacts are included in the appendixes.

162 pages

Available from: National Technical Information Service
Springfield, VA 22161

Refer to: PB-248-783; Price: $6.75

SMALL TRANSIT VEHICLE SURVEY

June 1975

Prepared by : ECI Systems, Inc. and Transportation Systems Center
Prepared for: U.S. Department of Transportation

Small transit vehicles, defined as those vehicles seating 7-25 passengers and intended for public transportation use, are available in a variety of makes and models with markedly different characteristics affecting both operators and users. This report documents the specifications and operating experience of small transit vehicles available in the United States.

Despite the fact that the demand for small transit vehicles has only recently begun to grow there are many more manufacturers of these vehicles than there are of full size transit vehicles. This report provides a summary of the availability and operational experience of small transit vehicles in the United States.

Vehicles are divided into three main categories: vans and van conversions, small buses, and converted motor homes. Operating experience was obtained by sampling from manufacturer provided user lists. Vehicle specifications were obtained directly from the manufacturer.

No vehicle has been completely free of problems; no one vehicle is clearly superior to all others, nor is any one category of vehicle clearly superior to any other. A vehicle operator must weigh a number of variables before determining which vehicle is best for a particular application.

140 pages

Available from: National Technical Information Service
Springfield, VA. 22161

Refer to: PB-243-228; Price: $6.00

IMPLEMENTING SHARED TAXICAB SERVICES

A Case Study in Arlington, Virginia

February 1975

Prepared by : The Urban Institute, Washington, D.C.
Prepared for: Urban Mass Transportation Administration

Recent research has suggested that significant improvements in urban mobility could be achieved by allowing taxicabs to offer a variety of shared-ride services, for which passengers with different trip origins or destinations can share the same taxicab. Local regulations in most urban areas in the U.S. have historically discouraged or prohibited such services, however. Arlington County, Virginia, recently decided to introduce shared taxicab services on an experimental basis, with a view to their eventual implementation as a permanent new form of public transportation for the County. This paper discusses the motivation for this experiment, the issues and problems encountered in designing it, and the specific service provisions and fare structure adopted. The paper also outlines measurement procedures designed to assist Arlington County in evaluating the experiment.

42 pages

Available from: National Technical Information Service
Springfield, VA 22161

Refer to: PB-245-645; Price: $4.00

SHARED RIDE TAXI SYSTEMS: AN ANALYSIS IN SUMMARY

August 1973

Prepared by : Transportation Center
University of Tennessee

Prepared for: Urban Mass Transportation Administration

Two privately owned demand-responsive transportation systems, one in Davenport, Iowa, and the other in Hicksville, New York, were studied to determine the economic feasibility and marketability of these systems and the roles they play in small and medium-sized urban areas. The systems analyzed offer door-to-door service on a shared-ride basis using six-passenger automobiles. The overall objectives of this study were to: (1) determine the cost, revenues, ridership, and other benefits of providing public transportation service with privately owned demand-responsive systems; (2) analyze the market demand for each level of service; (3) analyze the contribution of each level of service for providing mobility for specific segments of the urban community; (4) measure the economic viability of different levels of service; (5) measure the demand for service as a function of level of service and pricing scheme; (6) determine the effectiveness of automatic scheduling and monitoring on system performance, costs, and revenues, if put into operation; and (7) determine the economic feasibility of combining products (i.e., people and goods) into a single transportation operation.

21 pages

Available from: National Technical Information Service
Springfield, Virginia 22161

Refer to: PB-245-101 Price: $3.75

Five additional reports, providing detailed information, were produced under this study: "A Preliminary Analysis of Two Shared Ride Taxi Systems", "An Organizational and Environmental Review of Two Privately Owned, Shared Ride Taxi Systems", "Economic Characteristics of Privately Owned Shared-Ride Taxi Systems", "An Analysis of the Demand for Bus and Shared-Ride Taxi Service in Two Smaller Urban Areas", and "An Analysis of Two Privately Owned Shared-Ride Taxi Systems: Executive Summary". The complete set is available from NTIS; PB-245-099; $27.00.

THE ROLE OF TAXICABS IN URBAN TRANSPORTATION

December 1974

Prepared by: U.S. Department of Transportation

This report deals with one of the para-transit modes, the taxicab. The report's main objectives are to:

- Provide background on the structure of the taxicab industry
- Describe the nature of taxicab operations including:
  - Rider and trip characteristics
  - Fare structure, and
  - Taxicab company operations
- Indicate some of the potentialities as to the taxicab's role in urban transportation
- Discuss some of the energy aspects of taxicab operations
- Discuss possible courses of action relating to taxicab operations.

75 pages

Available from: Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

Price: $1.75

Stock No.: 5000-00093

PEDESTRIANS AND BICYCLES

STREETS FOR PEOPLE

TRAFFIC FREE ZONING: AN APPRAISAL

LIVEABLE URBAN STREETS: MANAGING AUTO TRAFFIC IN NEIGHBORHOOD

THE BENEFITS OF SEPARATING PEDESTRIANS FROM VEHICLES

A COMPARISON OF COSTS AND BENEFITS OF FACILITIES FOR PEDESTRIANS

PLANNING FOR PEDESTRIAN MOVEMENT AT INTERCHANGES

A FEASIBILITY STUDY MODEL FOR PEDESTRIAN MALLS

AUTO FREE ZONES: PLANNING AND IMPLEMENTATION METHODOLOGY

TRAFFIC PLANNING AND OTHER CONSIDERATIONS FOR PEDESTRIAN MALLS

A MANUAL FOR PLANNING PEDESTRIAN FACILITIES

PEDESTRIAN PLANNING AND DESIGN MANUAL

BICYCLE/PEDESTRIAN PLANNING, DESIGN AND IMPLEMENTATION--Conference Proceedings

EUROPEAN EXPERIENCE IN PEDESTRIAN AND BICYCLE FACILITIES

BIKEWAYS - STATE-OF-THE-ART, 1974

SAFETY AND LOCATIONAL CRITERIA FOR BICYCLE FACILITIES

BIKEWAY DESIGN

BICYCLE TRANSIT - IT'S PLANNING AND DESIGN

FROM RAILS TO TRAILS

BICYCLE TRANSPORTATION

BART/TRAILS

BICYCLE AND PEDESTRIAN FACILITIES IN THE FEDERAL-AID HIGHWAY PROGRAM

BICYCLE TRANSPORTATION PLAN AND PROGRAM FOR THE DISTRICT OF COLUMBIA

REGIONAL BIKEWAY SYSTEMS PLANNING AND IMPLEMENTATION, Denver

BIKEWAY SYSTEM PLANNING AND DESIGN MANUAL, Seattle

STREETS FOR PEOPLE

Organization for Economic Cooperation and Development

1974

Concern for maintaining and improving the quality of the environment has prompted a number of cities in OECD countries to experiment with ways to limit the number of vehicles crowding into central areas. Many measures to curtail traffic are being explored, some involving indirect means such as parking restrictions, others aiming at reducing the traffic flow directly by imposing physical restraints.

One of the most effective direct approaches--though admittedly practicable only on a limited scale--is to exclude traffic entirely from certain areas. This method has proved to be very popular, and today a very large number of cities in OECD countries have banned motor vehicles from portions of their central areas. The evidence from these projects demonstrates that vehicle-free zones are feasible--technically, commercially and politically. Attention is now focusing on another order of questions: What factors contribute to a successful car-free area? How are the problems of goods delivery and access handled? How extensive an area can be freed from traffic before some form of mechanized transport within the area becomes necessary? What long-range effects can traffic bans be expected to have on land use and the character of the area?

The answers to these questions become more urgent as the need to relieve our cities from paralysing congestion grows. This publication presents the experiences of several cities which pioneered in the creation of traffic-free environment. The information is based on reports presented to the OECD Sector Group on the Urban Environment in the Autumn of 1971 and the Spring of 1972 in support of its investigation into practical, low-cost measures to reduce congestion and improve the environment of the city centre. This information is being made available to a wider audience in the hope of stimulating public debate on ways of reducing the conflict between the city and the motor vehicle.

126 pages

Available from: O.E.C.D. Publications Center
Suite 1207
1750 Pennsylvania Avenue, N.W.
Washington, D. C. 20006

Price : $7.00

TRAFFIC FREE ZONING: AN APPRAISAL

May 1976

Prepared by: Institute for Environmental Action

The document addresses the basic reasons for and benefits to be derived from traffic free zones, and provides guidance and other useful information on the development, planning and implementation of traffic free zones. A section entitled "Know Why" discusses the goals that traffic free zones can help achieve. These goals are mainly the benefits of traffic free zones in terms of traffic management, environmental improvement, economic revitalization and social improvements. A "Know How" section discusses issues related to legislation and finance, the importance of and keys to public participation, and planning, design and implementation considerations. Also included is information on the Urban Mass Transportation Administration (UMTA) demonstration program in auto restricted zones.

140 pages

Available from: Institute for Environmental Action
81 Leonard Street
New York, New York 10013

(Small charge for mailing)

Reports to be available from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 in Fall 1976:

AMERICAN URBAN MALLS: A COMPENDIUM
HANDBOOK FOR PEDESTRIAN ACTION

Both prepared by Institute for Environmental Action.

LIVEABLE URBAN STREETS:
MANAGING AUTO TRAFFIC IN NEIGHBORHOODS

January 1976

Prepared by: Institute of Urban and Regional Development
University of California at Berkeley

Prepared for: Federal Highway Administration

This study reports the effects of auto traffic on street life and residential neighborhoods, evaluates efforts to manage traffic in residential neighborhoods, and proposes methods for carrying out and evaluating traffic management plans.

The study first reports on about 500 home interviews taken in San Francisco on residential streets with varying volumes, compositions, and types of traffic. Some reactions reported include the following: (1) Heavy traffic caused many people to move away from a street; (2) People who remained on a street with heavy traffic adapted through withdrawal from their yards and even from the fronts of their houses; (3) Even on lightly traveled streets traffic safety was seen as a problem, but it was the occasional fast car rather than the continual traffic; (4) lightly traveled streets were occupied by more families, owners, and long-term residents than more heavily traveled streets.

Following this section are descriptions of pioneering traffic management problems in three London boroughs, other international efforts to protect neighborhoods, and similar efforts in the San Francisco Bay Area. The final section summarizes traffic impacts and proposes a process of analysis, alternatives evaluation, and experimentation that can be undertaken by a city wishing to make its streets and neighborhoods more liveable.

Available in July 1976 from: Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

THE BENEFITS OF SEPARATING PEDESTRIANS FROM VEHICLES

December 1975

Prepared by : Stanford Research Institute
Prepared for: National Cooperative Highway Research Program
Project 20-10

This report presents a methodology for evaluating social, economic, and environmental impacts of pedestrian facilities. The types of facilities for which this methodology is applicable are those that improve safety and movement (overpasses, underpasses, pedways, and transitways) and those that provide a pleasant environment for social interaction and commercial enhancement (malls, auto-free zones, and street closures). The direct and indirect benefits of separating pedestrians and vehicles are identified and classified under pedestrian, vehicle, and other transportation; safety, attractiveness of surroundings, environment and health; residential, commercial, and industrial districts; and the planning process, community impacts and indirect impacts. Specific population segments likely to benefit from pedestrian-vehicular separation are identified. Techniques for measuring 36 specific impacts of pedestrian facilities were developed, as well as a procedure for applying weights signifying the importance to the decision-maker of the different variables for specific types of facilities. These techniques were tested for two existing and two planned facilities--a planned pedestrian overpass and a bridge closure to motor vehicles in Seattle, the successful Sparks Street Mall in Ottawa and the proposed Fulton Street Arcade in New York City's borough of Brooklyn. Other applications of the techniques are discussed. Also included is a discussion of the need for separating pedestrians from vehicle traffic, and the results of a questionnaire circulated among pedestrian facility planners, engineers and decision-makers.

Currently available (May 1976) on
a 30-day loan basis only from : Program Director, NCHRP
Transportation Research Board
2101 Constitution Avenue, N.W.
Washington, D. C. 20418

A COMPARISON OF COSTS AND BENEFITS OF FACILITIES FOR PEDESTRIANS

December 1973

Prepared by : Peat, Marwick, Mitchell and Co. and
RTKL Associates, Inc.

Prepared for: Federal Highway Administration

This report discusses the costs and benefits of facilities for improving pedestrian circulation, safety, and environment. The report categorizes the various types of facilities and improvements for pedestrians in downtown areas and at grade separation projects. A general framework for estimating total facility cost over time is developed and examples of costs are provided. The nature of pedestrian travel is examined as an aid to determining the requirements for and impacts of pedestrian facilities. The cost and benefit impacts of facilities upon pedestrians, vehicles, and abutting properties are each examined. Finally, examples of cost and benefit analysis of highway crossings are provided along with case studies of grade separated facilities in central business districts.

293 pages

PLANNING FOR PEDESTRIAN MOVEMENT AT INTERCHANGES

July 1974

Prepared by : Peat, Marwick, Mitchell and Co. and
RTKL Associates, Inc.

Prepared for: Federal Highway Administration

This report provides highway and traffic engineers with an understanding of the basic considerations necessary to plan effective pedestrian accommodations at urban freeway interchanges. The individual design components used to facilitate pedestrian movement are evaluated on the basis of their impacts on pedestrians and on vehicle flow. Case studies of existing interchanges illustrate common problems and potential solutions. A general approach to the design and evaluation of pedestrian facilities is suggested.

111 pages

Both reports are available from: Federal Highway Administration
Office of Research, HRS-41
Washington, D.C. 20590

A FEASIBILITY STUDY MODEL FOR PEDESTRIAN MALLS

September 1974

Prepared by : University of Colorado at Denver
Prepared for: Urban Mass Transportation Administration

A model for performing feasibility studies of pedestrian mall proposals is presented and demonstrated by application of the model to a case study. The model is based upon the systems approach to solving large-scale decision problems. It is designed to determine which, if any, of a set of possible mall configurations is the most feasible alternative, based upon the results of a comprehensive cost-benefit analysis.

The cost-benefit analysis procedure involves several steps. First, a direct benefit-to-cost ratio is calculated for each of the alternatives. This ratio is based only upon those direct costs and benefits which can be converted into dollars. Direct costs include construction costs and other costs such as design fees, expenses for traffic rerouting, and side-street improvements. Direct benefits are comprised of increased sales tax and property tax revenues which will result from the mall. If this direct benefit-to-cost ratio is greater than unity for any proposed alternative, then the model has provisions to modify this direct ratio based upon the indirect factors which will affect the overall desirability of the project. The method which is presented is designed to evaluate the relative impact of such factors as noise, pollution, impact on public transit, and so forth. First, a summary of available background information on these factors and their relationship to malls is provided, and second, the evaluation problem is presented in a concise format which allows the decision-maker (mayor, planner, or engineer) to easily evaluate the indirect costs and benefits. This technique assigns a weighting factor to the various indirect cost and benefit areas and modifies the direct dollar costs and benefits as a result of these weighting factors. Therefore, it has been designated the weighting factor method.

The case study was chosen to demonstrate the feasibility study model with a real-world decision problem, the proposed Sixteenth Street mall for Denver's Central Business District. Two alternative mall configurations are compared--a pedestrian-only mall and a pedestrian mall with an exclusive bus lane. The case study illustrates all of the facets of the model and based upon the value system of the author, the pedestrian-only alternative is shown to be slightly more desirable than the transit mall, although both alternatives are shown to be feasible projects.

Available from: National Technical Information Service
Springfield, VA. 22161

Refer to: PB-248-908; Price: $4.50

AUTO FREE ZONES:
A METHODOLOGY FOR THEIR PLANNING AND IMPLEMENTATION

July 1972

Prepared for: U.S. Department of Transportation
Office of the Secretary

Prepared by : London Transportation Executive
in association with
Barton-Aschman Assoc., Inc.

This report results from the extension of an earlier contract between London Transportation Executive and the Department of Transportation that developed recommendations for creating auto-free zones within Washington, D.C. DOT concluded that many of the principles and concepts contained in the Washington report might have general application to other major cities, and subsequently authorized the development of a second report more suitable to broad distribution to communities interested in auto-free zones.

This report includes an analysis of the concept of auto-free zones with emphasis on factors leading to proposals for such areas, a discussion of the various types of auto-free zones, and the settings for their development. In addition to defining possible goals and objectives for auto-free zones, the report suggests the framework for an evaluation system to monitor how well different types of auto-free zones function. Planning techniques and implementation methods are outlined as a guide to cities which may be considering the creation of auto-free zones. The report also reviews alternative modes of transportation which might be used in association with such areas.

64 pages

Available from: National Technical Information Service
Springfield, Virginia 22151

Refer to: PB-213 992 $4.25

(Also see "Parking Management Policies and Auto Controls", abstracted in the PARKING Section. It includes an auto control zone preliminary study.)

TRAFFIC PLANNING AND OTHER CONSIDERATIONS FOR PEDESTRIAN MALLS

October 1966

Prepared by: Institute of Traffic Engineers

Pedestrian malls represent one of many devices now being used to revitalize central business districts. The usual incentive is to improve the competitive position of the downtown area in relation to suburban shopping centers. Consequently, downtown interests have found it necessary to examine critically what specific features make suburban centers attractive to shoppers.

Many factors account for the success of the outlying centers, including improved traffic circulation and access, parking space availability, separation of pedestrians from automobile traffic, and careful attention to environmental and esthetic values. The pedestrian mall represents an attempt by downtown interests to incorporate one of the principal basic features of successful suburban centers; namely, the separation of pedestrians from the more serious traffic conflicts within the retail environment, thereby improving the shopping "atmosphere".

This document offers guidelines for the planning and provision of CBD pedestrian facilities. Descriptions of the many types of pedestrian improvements, and general guidelines for planning a successful pedestrian mall are included. Traffic functions such as circulation, parking, transit, trucks and freight distribution, and pedestrian characteristics are the primary focus. Considerations important to the maintenance of police and fire protection and utility systems are also included. The implementation phase is illustrated by two brief case studies of successful malls (Pomona, California and Kalamazoo, Mich.). Appendices include detailed descriptions of American and European malls, and an extensive selection of references.

66 pages

Available from: Institute of Transportation Engineers
P. O. Box 9234
Arlington, VA. 22209

Price: $4 ($3 ITE members)

A MANUAL FOR PLANNING PEDESTRIAN FACILITIES

July 1974

Prepared by : Peat, Marwick, Mitchell and Co; and
RTKL Associates, Inc.

Prepared for: Federal Highway Administration

This manual provides the planner and the engineer with the basic considerations necessary to plan pedestrian facilities or systems of facilities. Included are the basic concepts in pedestrian trip generation and movement, and basic types of facilities available to the planner, categorized by horizontal, vertical, and time separations.

Each of the types of impacts to users and nonusers of pedestrian facilities is discussed. The interrelationships among facility characteristics and the various levels of impacts on pedestrians, motorists, abutting property occupants, and the community in general are presented.

An approach to general economic cost estimating in terms of both construction cost and continuing operating and maintenance costs is described. Several means of converting these costs to a figure useful in comparing facilities and evaluating benefits are given.

75 pages

Available from: Federal Highway Administration
Implementation Division, HDV-20
Washington, D. C. 20590

PEDESTRIAN AND BICYCLE PLANNING

Metropolitan Association of Urban Designers and Environmental Planners (MAUDEP) Publications

PEDESTRIAN PLANNING AND DESIGN MANUAL

Authoritative reference on the planning and design of buildings and street spaces for pedestrains.

Available from: MAUDEP Press
P.O. Box 188
Massapequa, New York 11718

Price: $7.00 ($5.95 MAUDEP Members)

Conference Proceedings:

1972, PEDESTRIAN PLANNING AND DESIGN

Available from: MAUDEP
P.O. Box 722
Church Street Station
New York, New York 10008

Price: $7.50

1973, BICYCLE/PEDESTRIAN PLANNING AND DESIGN

Available from: ASCE, Publication Sales
345 E. 47th Street
New York, New York 10017

1974, BICYCLE/PEDESTRIAN PLANNING, DESIGN AND IMPLEMENTATION

Available from: J. O'Shea
Institute of Traffic and Transportation Engineering
Room 416 McLaughlin
University of California at Berkeley
Berkeley, CA. 94720

Price: $9.90 (payable to Regents of the University of California)

EUROPEAN EXPERIENCE IN PEDESTRIAN AND BICYCLE FACILITIES

April 1975

Prepared by: Mrs. Julie Anne Fee
Federal Highway Administration

During the past decade, a bicycle renaissance has occurred in the United States. In 1973, about 16 million bicycles were sold, and it is estimated that over 83,000,000 Americans own bicycles. Coupled with this increase in popularity there has been an increase in bicycle accidents. In 1972, over 1,100 bicycle fatilities occurred on public highways, an increase of over 100 percent in a decade. Funding is now available for the construction of bicycle facilities, but criteria for bicycle location and design are lacking, especially in urban areas on facilities shared with motor vehicles.

It was decided that information relative to the European experience in this area would be beneficial. Thus during May 1974, an investigation was designed to find out how bicycles were accommodated in European cities, and what special devices are used to control bicycles in the traffic stream.

In addition, an investigation of European experience relative to pedestrian facilities and pedestrian control was also undertaken. In Europe, where space is at a premium, historically there has been more activity relative to pedestrian accommodations than in the United States. It was hoped that a review of pedestrian facilities in several European countries and a review of their traffic control devices would aid in developing appropriate information for possible use in American cities.

50 pages

Available from: Federal Highway Administration
Office of Research, HRS-41
Washington, D.C. 20590

BIKEWAYS
State-of-the-Art, 1974

July 1974

Prepared by : DeLeuw, Cather and Company
San Francisco, California

Prepared for: Federal Highway Administration

The recent phenomenal growth of bicycling activity has been paralleled by accelerating concerns for increases in bike-involved accidents and demands for good recreational and utility-oriented facilities on which to ride. All jurisdictional levels have responded with enforcement, development of bikeway locational and design criteria, and provision of physical facilities. Unfortunately, U.S. planners and designers were generally unprepared to deal with the bicycle and programs were based largely on intuitive judgements, European experience and trial and error. Results of initial experiences in various localities are now becoming available. This "State of the Art" report focuses on planning and design practices employed to date, reviews their successes and failures, outlines practices which appear to contribute to bicycle facility utility and safety, and identifies design pitfalls.

This report is the first of four documents to be published in connection with this study. A final technical report and user manuals on design and location criteria will be available in May 1976.

97 pages

Available from: Federal Highway Administration
Office of Research, HRS-41
Washington, D. C. 20590

SAFETY AND LOCATIONAL CRITERIA FOR BICYCLE FACILITIES

March 1976

Prepared by : DeLeuw, Cather and Company
San Francisco, California

Prepared for: Federal Highway Administration

User Manual Volume I "Bicycle Facility Locational Criteria" - This manual is designed to enable users to make judgements on the need for and the location and form of bicycle facilities. The document offers an overview of the planning process and relevant locational criteria. In addition, a methodology for estimating potential bicycle activity is presented. An appendix which discusses the use of surveys in locational planning has also been included. Finally, a design solution for the provision of bikeway grades based upon a consideration of physiological work capability is described.

User Manual Volume II "Design and Safety Criteria" - This manual is designed to assist a designer of bicycle facilities in providing a safe and effective environment for bicyclists, pedestrians, and motor vehicle operators. The document discusses the bikeway design process and relates it to locational decisions. Route and right-of-way specifications are detailed. Various intersection treatments are presented. Signing and markings applicable to bikeways are also covered.

An additional "Technical Report" provides background information and documents all research conducted under the FHWA Bicycle Facilities Program.

These reports will be available in May 1976 : Federal Highway Administration
Office of Research, HRS-41
Washington, D. C. 20590

BIKEWAY DESIGN

January 1974

Oregon State Highway Division

After two years of planning, designing, building, and maintaining bikeways and footpaths under the provision of the 1971 Bicycle Bill, the Oregon State Highway Division has gained experience to revise the design standards for these facilities. Though much remains to be learned, this report sets forth standards and recommendations reflecting the present level of knowledge. For three classifications of bikeways, this manual sets standards for design speed, curves, widths and clearances, grades, treatment at intersections and railroad crossings, drainage, surfacing, etc. Also discussed are considerations due to manholes, grates, curbs, guardrails and fences, and needs for signing, signals and illumination.

39 pages

Available from: Oregon State Highway Division
Office Engineering Section
Photocopy and Map Distribution Unit
Room 17, Highway Building
Salem, Oregon 97301

Cost: $2.00

BICYCLE TRANSIT
IT'S PLANNING AND DESIGN

1975

Prepared by: B. Balshone, P. Deering, B. McCarl, University of Oregon

In the fall of 1973, a research team within the Urban Planning and Landscape Architecture Departments of the University of Oregon joined together as the Oregon Bicycle Transit Study Committee. The committee's goals were to evaluate and assimilate the bicycle studies of various governmental planning agencies, universities, and private consultants, and then produce a text which could be used by professionals and students as a guideline for establishing bicycle planning and design criteria. It is hoped that this book will serve as a comprehensive resource for the investigation of bicycle systems history, planning, engineering, legislation, and design concepts. The primary content of the book provides comprehensive information on planning and design characteristics of bike facilities and services. Potential bikeway corridors (railroad and roadway right-of-way, canals and waterways) are outlined. Mixed-mode bike systems, i.e., bike on auto to fringe parking, bike to transit and bike on transit, are described. Engineering imformation on the standardization and physical requirements of bikeways and intersection considerations, and the use of plantings, barriers, separators, signs, grating and paving is provided. An extensive bibliography is included.

163 pages

Available from: Praeger Publishers
111 Fourth Avenue
New York, New York 10003

Price : $14.00

FROM RAILS TO TRAILS

February 1975

Citizens Advisory Committee on Environmental Quality

Washington, D. C. 20006

This booklet is directed to community leaders, State and local recreation planners, and interested citizens who wish to preserve and utilize an important resource. It describes how citizens can work together to accomplish the conversion of rights-of-way to recreation trails. Each step, from locating trails to laying a finished surface, is discussed so that readers may know just how to conduct a trail project and where to anticipate problems. Potential rights-of-way, legal considerations, and case histories are included.

The goal of this report is to discuss the significant opportunities which exist to put old thoroughfares (principally abandoned railroad rights-of-way, because they are the most common) to new uses and to stimulate citizen action as one means of ensuring that these lands are used for the greatest public benefit.

60 pages

Available from: Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

Stock No. : 040-000-00330-4

Price : $1.50

BICYCLE TRANSPORTATION

Office of Planning and Evaluation
U.S. Environmental Protection Agency

December 1974

The purpose of this report is to determine the potential role of the bicycle for transportation in the United States. This role has special significance given the energy shortage and current problems of air pollution. Energy shortages and more expensive fuel prices may induce citizens to reduce their travel or shift to modes with lower energy requirements. Thus, the bicycle may well fulfill these needs.

It is necessary to determine the effects and feasibility of the use of bicycle transportation by more people. This report investigates the feasibility of using bicycles as an alternative mode of transportation. To determine the potential for bicycle use, the report examines current trends of bicycle use in the United States, the conditions facing the American cyclist, the benefits and deterrents to bicycling, Federal, State, and local considerations affecting bicycle use, and foreign bicycle experience.

Available from: Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

Price : $0.95

BART/TRAILS

A Study of the Commuter and Recreational Trail Potential to the Bay Area Rapid Transit System

February 1974

This report discusses ways to increase bicycle commuter accessibility to the Bay Area Rapid Transit (BART) system and to see how access to regional recreational opportunities could be improved by the development of trails from the transit system.

Available from: Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

Refer to: TD1.2:T68/19; Price: $2.55

BICYCLES AND PEDESTRIAN FACILITIES IN THE
FEDERAL-AID HIGHWAY PROGRAM

1974

Prepared by: U.S. Department of Transportation
Federal Highway Administration

This publication explains the FHWA involvement in the bicycle and pedestrian program, as expanded by the passage of the 1973 Federal-Aid Highway Act. The publication describes how Federal-aid highway funds can be used for the planning and construction of bicycle and pedestrian facilities. The report also includes references of readily available research and planning reports that assist the planning, development and construction of bicycle facilities.

18 pages

Available from: Federal Highway Administration, HHP-26
Washington, D. C. 20590

Exemplary Bicycle Planning Reports

BICYCLE TRANSPORTATION PLAN AND PROGRAM FOR THE DISTRICT OF COLUMBIA Prepared by Barton-Aschman Associates, Inc., June 1975. Available from District of Columbia Department of Transportation, Office of Policy and Plans, Residential Building, 415 12th Street, N.W., Washington, D.C. 20004.

REGIONAL BIKEWAY SYSTEMS PLANNING AND IMPLEMENTATION. Prepared by Denver Regional Council of Governments, May 1975. Available from National Technical Information Service, Springfield, Va. 22161. (Refer to PB #242-375, price: $7.00). For updated or additional information, contact Mr. Frederick L. Wolfe, Denver Regional Council of Governments, 1776 S. Jackson Street, Suite 220, Denver, CO 80210. Telephone number 303-758-5166.

BIKEWAY SYSTEM PLANNING AND DESIGN MANUAL. Prepared by the Seattle Engineering Department. Available from Seattle Engineering Department, Traffic and Transportation Division, 708 Municipal Building, Seattle, WA 98104.

DEMAND MANAGEMENT

URBAN TRANSPORTATION PRICING ALTERNATIVES--Conference Proceedings

IMPLEMENTATION PROCEDURES FOR PRICING CONGESTED ROADS

WHAT CAN WE DO ABOUT URBAN TRAFFIC CONGESTION?: A PRICING APPROACH

CONGESTION PRICING--A RESEARCH SUMMARY

ROAD USER CHARGES--SOME PRACTICAL CONSIDERATIONS

EVALUATION OF TRAVEL CHARGES IN LONDON

ENCOURAGING MULTIPLE OCCUPANCY OF VEHICLES USING TOLL FACILITIES

STAGGERED HOURS FINAL EVALUATION - QUEEN'S PARK DEMONSTRATION

WORK SCHEDULE CHANGES--STAGGERED WORK HOURS IN NEW YORK

FLEXIBLE WORK HOURS EXPERIMENT AT THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY

TORONTO VARIABLE WORK HOURS PROJECT

REDUCING THE NEED FOR TRAVEL

URBAN TRANSPORTATION PRICING ALTERNATIVES

June 1976

(Review Draft of pending Transportation
Research Board Special Report)

This document is the collection of papers presented at the Urban Transportation Pricing Conference held May 14-17, 1976 at Easton, Maryland. The conference was conducted by the Transportation Research Board and sponsored by the Department of Transportation (Office of the Secretary, Urban Mass Transportation Administration and Federal Highway Administration), Federal Energy Administration and Environmental Protection Agency.

The conference introductory session provided overviews of current urban transportation problems, the role of pricing in the urban transportation market, and the Urban Mass Transportation Administration's (UMTA) demonstration program in transportation pricing. Four more focused sessions discussed topics such as: the reasons for pricing urban transportation, quantitative analysis of approaches to automobile pricing to achieve environmental and energy goals, the congestion pricing/supplemental licensing system in Singapore, analysis of a supplemental license scheme for London, low fare transit pricing experience in Atlanta, peak-hour transit fare increases in Washington, D.C., the applications of bridge pricing in San Francisco, the developing UMTA congestion pricing demonstration, pricing research in Los Angeles, legal considerations in transportation pricing, and advancing the state-of-the-art in transportation pricing.

Limited supply of review draft
available from : Transportation Research Board
2101 Constitution Avenue, N.W.
Washington, D.C. 20418

Final report will be available in June 1977.

IMPLEMENTATION PROCEDURES FOR PRICING CONGESTED ROADS

November 1975

Prepared for: Urban Mass Transportation Administration

Prepared by : Kiran Bhatt, Joel Eigen, and Tom Higgins; Urban Institute

This paper provides detailed information about how a congestion pricing scheme could be designed, implemented, administered, and enforced. The paper is aimed at planners and analysts, and is intended to assist the technical staff in providing to city officials and their constituents a description of the scheme: what the available alternative plans and procedures are, how area motorists will be affected, what the city officials have to do to plan, administer, and enforce such a scheme, and what institutional changes would be required for successful implementation. This paper suggests that considerable flexibility in design of the plan will be available to the city planners so as to enable them to develop a scheme most appropriate for their particular area.

56 pages

Available (free) from: Transportation Studies Program
Urban Institute
2100 M Street, N.W.
Washington, D. C. 20037

Requests should refer to WP-5032-3-3

WHAT CAN WE DO ABOUT URBAN TRAFFIC CONGESTION?: A PRICING APPROACH

February 1975

Prepared for: Urban Mass Transportation Administration

Prepared by : Kiran Bhatt, Urban Institute

This paper proposes an approach to reducing traffic congestion in urban areas which would combine charges for vehicles using congested streets with expansion of services by high occupancy transportation modes. The paper provides the economic rationale for pricing roads, and brings together the most relevant evidence bearing on congestion pricing: the likely benefits, the possible alternative schemes, the legal aspects, the financial and fiscal implications, the administrative difficulties, the possible impacts on activities and employment in the priced area, and the possible ill effects on the poor. The purpose of this paper is to provide a clearer perspective on the subject to policy-makers and analysts, and suggest congestion pricing as a potential option for improving urban transportation in congested areas.

36 pages

Available (free) from: Transportation Studies Program
Urban Institute
2100 M Street, N.W.
Washington, D. C. 20037

Requests should refer to WP 5032-3-1.

CONGESTION PRICING--A RESEARCH SUMMARY

July 1974

Prepared by: Damian Kulash, Urban Institute

This paper defines congestion pricing and summarizes research on the optimal level of charges for road use and on the various techniques that have been suggested for implementing road pricing. It also examines existing evidence bearing on the effectiveness of congestion pricing in changing traveller behavior based on analysis of bridge toll, parking charge and transit fare changes. The reasons why local governments have not been willing to apply marginal cost pricing to their transportation facilities are raised, and additional steps which could be taken to provide policymakers with better information for evaluating policies which would use pricing as a means of reducing traffic congestion are suggested.

Refer to: URI-83000; Price: $2.50

ROAD USER CHARGES--SOME PRACTICAL CONSIDERATIONS

March 1974

Prepared by: Ronald Kirby, Urban Institute

While a number of proposals for applying road user charges have been considered by analysts and policymakers, little unanimity currently exists on the most appropriate scheme. Much of the difficulty stems from the fact that transportation systems interact in a complex manner with many facets of urban life, and any particular scheme of user charges is likely to have some undesirable impacts which will make it difficult to implement. This paper reviews past experience with road user charges, principally automobile tolls, and estimates the changes in traveller behavior which are likely to result from the use of congestion tolls. It concludes with some general observations on how congestion pricing policies might be made more palatable politically.

Refer to: URO-66000; Price: $1.50

Both reports are available from: Urban Institute, Publications
2100 M Street, N.W.
Washington, D. C. 20037

THE APPLICATION OF CRISTAL TO EVALUATE CHANGES IN TRAVEL CHARGES IN LONDON

1974

Prepared by: Transport and Road Research Laboratory

This report describes the application of CRISTAL, a strategic model for urban transport planning, to assess the economic benefits that might arise from various forms of road pricing, parking charges, supplementary licences, entry charges or changes in public transport fares in the London area. The model deals only with those benefits accruing to transport users and operators, including changes in tax revenue. The desirability of implementing the policies discussed will be heavily influenced by wider social, environmental and political considerations.

Conclusions include that all the restraint schemes would yield similar benefits if applied optimally to Central London in 1980. Extending the priced area to Inner London significantly increases the benefits from road pricing charges, gives a smaller increase in benefits from parking charges but gives no extra benefit from supplementary licenses or entry charges. Comparative tests with free bus and rail fares give benefits similar to those from restraint for both Central and Inner areas. The existence of restraint or free fare schemes would not substantially reduce the economic benefits obtainable from motorway investment.

The validity of these conclusions depends on how adequately the assumptions and approximations in the model represent the real situation; understanding of how travellers would react to large changes in travel charges is limited.

Available from: Transport and Road Research Laboratory
Department of the Environment
Crowthorne, Berkshire
ENGLAND

ENCOURAGING MULTIPLE OCCUPANCY OF VEHICLES USING TOLL FACILITIES

November 1972

Prepared by: Washington State Department of Highways

This report is concerned with the feasibility of modifying the toll charges on certain toll facilities to encourage multiple-passenger use of private and public transportation vehicles. The report discusses the need for additional capacity along State Road 520, and explores the feasibility of adjusting toll policies on the Evergreen Point Bridge over Lake Washington to reduce the need to construct additional roadway capacity. Observed trends in vehicle occupancy are discussed and an analytical procedure (a form of a modal split model) to estimate the effect of various toll and reserved lane schemes on automobile occupancy levels and peak hour traffic demands. Measures that were considered include abolishment of commuter discounts, establishment of discounts for carpools, permitting carpools free use of the facility, and others. For comparative reasons, the effect of enabling a five minute time savings for high occupancy vehicles was also simulated. A conclusion is that changes in toll structure on the bridge would have a lesser effect on average vehicle occupancy than time savings resulting from improvements for carpools and transit use.

Available from: Washington State Department of Highways
Advance Planning Section
6431 Corson Avenue, S.
Seattle, WA. 98108

Reports abstracted elsewhere in this bibliography that deal with management of transportation demand through pricing techniques include the following.

In addition to generalized reports on parking management, three reports on parking taxes and pricing structure are abstracted in the Parking section:

PARKING TAXES FOR CONGESTION RELIEF: A SURVEY OF RELATED EXPERIENCE

PARKING TAXES AS ROADWAY PRICES: A CASE STUDY OF THE SAN FRANCISCO EXPERIENCE

PHILADELPHIA CENTRAL BUSINESS DISTRICT PARKING RATE EXPERIMENT

Reports on transit pricing, abstracted in the Transit Management section, include:

Pricing Chapter, TRANSIT MARKETING MANAGEMENT HANDBOOK

OFFPEAK RIDERSHIP AND REVENUE TECHNIQUES

EVALUATION OF A PREPAID PAYROLL DEDUCTION TRANSIT PASS

TRANSIT FARE PREPAYMENT: A GUIDE FOR TRANSIT OPERATORS

STAGGERED HOURS FINAL EVALUATION
QUEEN'S PARK DEMONSTRATION

May 1975

Prepared by: Ontario Ministry of Transportation and Communication

This report summarizes the final evaluation of the staggered hours demonstration that involved approximately 11,000 Ontario public servants working at the Queen's Park complex in Toronto. Survey results showed that an increased percentage of employees arrived at or before 8:00 a.m. and after 9:00 a.m. The peak distribution shifted from the period between 8:00 a.m. and 8:30 a.m. to that between 7:45 a.m. and 8:00 a.m. In addition, employees' use of carpools increased slightly. (A decrease had been anticipated.) Thirty-three percent of the employees reported that their travel time had been shortened, and approximately the same number described their travel as more comfortable and convenient. The majority (91 percent) of employees expressed a favorable overall reaction to the demonstration.

39 pages

Available from: Human and Social Factors Research
Ministry of Transportation and Communication
1201 Wilson Avenue
Downsview, Ontario M3M 1J8
CANADA

WORK SCHEDULE CHANGES
Staggered Work Hours in New York

August 1974

Prepared by: Port Authority of New York and New Jersey

This paper is a discussion of a program to reduce transportation congestion by encouraging voluntary work schedule changes in the Manhattan and New York-New Jersey Region's Central Business Districts. Begun in 1970, currently more than 220,000 men and women in over 400 organizations in Manhattan are participating by staggering their work hours, i.e., changing their work schedule by at least one-half hour either earlier or later than the customary work schedule of 9:00 AM to 5:00 PM. First started in Lower Manhattan, it has been expanded to include Midtown Manhattan and is now under study in Newark, New Jersey. The results of many surveys of transportation systems, worker attitudes, work schedules and productivity measures are included. The surveys in almost every case yielded results which were positive and have been used in an ongoing program to expand participation. The elements of this marketing effort are discussed at length. Also discussed is the recent Federal Technical Study Grant which will enable the sponsors to fully document the program and will include a manual and instructions which can be used by other cities considering the implementation of staggered work hours to help reduce transportation congestion.

75 pages

Available from: Port Authority of New York & New Jersey
One World Trade Center, 72E (Stgrd. Hrs. Program)
New York, New York 10048

FLEXIBLE WORK HOURS EXPERIMENT
AT THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY

December 1975

Prepared by: Port Authority of New York and New Jersey

Prepared for: Urban Mass Transportation Administration

In September 1974, the Port Authority of New York and New Jersey undertook a flexible work hours experiment involving approximately 850 persons of its headquarters staff, located mainly at the World Trade Center in New York City. Those persons were given the ability to arrive at work and leave from work anytime during the 90-minute time bands in the morning and afternoon respectively so long as they worked the required total number of hours over the regular five-day workweek. The formal experiment lasted for eight months during which time the effects of the flexible hours system on travel patterns, office operations and employee attitudes were analyzed. This report covers the background of the experiment, the guidelines which were established, the methodology used to evaluate the experiment and the effects of flexible work hours in a large governmental organization.

45 pages

Available from: Port Authority of New York and New Jersey
One World Trade Center, 72E (Stgrd. Hrs. Program)
New York, New York 10048

TORONTO VARIABLE WORK HOURS PROJECT
Summary Report

January 1975

Prepared by: Metropolitan Toronto Planning Department

Metropolitan Toronto Council approved the establishment of the Variable Work Hours Project on January 29, 1974 to encourage a wider adoption of staggered and flexible work hours within Toronto in order to relieve peak period congestion on the transportation system. The Project focused on the downtown area and concerned about 260,000 employees, one quarter of Metropolitan Toronto's total employment.

This report summarizes the information obtained from a survey taken ten months after the beginning of the project. Involvement in the program by 490 employers is discussed, emphasizing the extent of participation in variable work hours by employer type, and the transportation effects of the work schedule changes.

Two information booklets were also prepared to encourage and facilitate employer participation in the project. "An Approach to a Transportation Problem" outlines the characteristics of peak period traffic congestion in Toronto, and proposes staggered and flexible work hours as a potential solution. "Initiating and Implementing a Variable Work Hours Program" offers a guide to implementing variable work hours programs and includes four case studies of successful programs introduced by Toronto employers. A report documenting the strategy used to gain employer involvement in the variable hours program will be prepared in 1976.

Reports available from: Metropolitan Toronto Planning Department
11th Floor, East Tower
City Hall
Toronto, Ontario
CANADA

REDUCING THE NEED FOR TRAVEL

March 1974

Prepared by : INTERPLAN Corporation
Santa Barbara, California

Prepared for: Urban Mass Transportation Administration

This report identifies alternatives for reducing the volume of urban travel while satisfying travel needs, assesses the potential impact of these alternatives, and recommends UMTA R&D activity. The underlying reasons for travel are analyzed. Candidate solutions for reducing travel are described and grouped into three classifications: (1) provision of communications substitutes; (2) changes in the location and structure of cities; and (3) rescheduling of work hours. A fourth alternative, that of reshaping the need for travel through increases in the cost of travel by auto and re-education of the public, plays a major role in the proposed UMTA program. The national impact for the alternatives is estimated in terms of the reduction in vehicle-miles traveled, the number of auto owned, the energy required, and the consumer cost savings. The report includes a bibliography of 136 sources.

The "rescheduling of work hours" section is particularly relevant to Transportation System Management. Discussions of staggered and flexible work hours, shortened work week concepts, and impacts of each are included.

163 pages

Available from: National Technical Information Service
Springfield, Virginia 22161

Refer to: PB-234-665/AS Price: $5.00

CONTENTS

HOW TO USE THIS INDEX

Place left thumb on the outer edge of this page. To locate the desired entry, fold back the remaining page edges and aline the index edge mark with the appropriate page edge mark.