TRANSIT COOPERATIVE RESEARCH PROGRAM

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TCRP Report 49

Using Public Transportation to Reduce the Economic, Social, and Human Costs of Personal Immobility

Transportation Research Board
National Research Council

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Using Public Transportation to Reduce the Economic, Social, and Human Costs of Personal Immobility

CRAIN & ASSOCIATES, INC.
Menlo Park, CA
with
RICARDO BYRD
Washington, DC
and
OMNIVERSED INTERNATIONAL
Los Angeles, CA

Subject Area

Planning and Administration
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TRANSIT COOPERATIVE RESEARCH PROGRAM

The nation's growth and the need to meet mobility, environmental, and energy objectives place demands on public transit systems. Current systems, some of which are old and in need of upgrading, must expand service area, increase service frequency, and improve efficiency to serve these demands. Research is necessary to solve operating problems, to adapt appropriate new technologies from other industries, and to introduce innovations into the transit industry. The Transit Cooperative Research Program (TCRP) serves as one of the principal means by which the transit industry can develop innovative near-term solutions to meet demands placed on it.

The need for TCRP was originally identified in *TRB Special Report 213--Research for Public Transit: New Directions*, published in 1987 and based on a study sponsored by the Urban Mass Transportation Administration--now the Federal Transit Administration (FTA). A report by the American Public Transit Association (APTA), *Transportation 2000*, also recognized the need for local, problem-solving research. TCRP, modeled after the longstanding and successful National Cooperative Highway Research Program, undertakes research and other technical activities in response to the needs of transit service providers. The scope of TCRP includes a variety of transit research fields including planning, service configuration, equipment, facilities, operations, human resources, maintenance, policy, and administrative practices.

TCRP was established under FTA sponsorship in July 1992. Proposed by the U.S. Department of Transportation, TCRP was authorized as part of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). On May 13, 1992, a memorandum agreement outlining TCRP operating procedures was executed by the three cooperating organizations: FTA, the National Academy of Sciences, acting through the Transportation Research Board (TRB); and the Transit Development Corporation, Inc. (TDC), a nonprofit educational and research organization established by APTA. TDC is responsible for forming the independent governing board, designated as the TCRP Oversight and Project Selection (TOPS) Committee.

Research problem statements for TCRP are solicited periodically but may be submitted to TRB by anyone at any time. It is the responsibility of the TOPS Committee to formulate the research program by identifying the highest priority projects. As part of the evaluation, the TOPS Committee defines funding levels and expected products.

Once selected, each project is assigned to an expert panel, appointed by the Transportation Research Board. The panels prepare project statements (requests for proposals), select contractors, and provide technical guidance and counsel throughout the life of the project. The process for developing research problem statements and selecting research agencies has been used by TRB in managing cooperative research programs since 1962. As in other TRB activities, TCRP project panels serve voluntarily without compensation.

Because research cannot have the desired impact if products fail to reach the intended audience, special emphasis is placed on disseminating TCRP results to the intended end users of the research: transit agencies, service providers, and suppliers. TRB provides a series of research reports, syntheses of transit practice, and other supporting material developed by TCRP research. APTA will arrange for workshops, training aids, field visits, and other activities to ensure that results are implemented by urban and rural transit industry practitioners.

The TCRP provides a forum where transit agencies can cooperatively address common operational problems. The TCRP results support and complement other ongoing transit research and training programs.

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The project that is the subject of this report was a part of the Transit Cooperative Research Program conducted by the Transportation Research Board with the approval of the Governing Board of the National Research Council. Such approval reflects the Governing Board's judgment that the project concerned is appropriate with respect to both the purposes and resources of the National Research Council.

The members of the technical advisory panel selected to monitor this project and to review this report were chosen for recognized scholarly competence and with due consideration for the balance of disciplines appropriate to the project. The opinions and conclusions expressed or implied are those of the research agency that performed the research, and while they have been accepted as appropriate by the technical panel, they are not necessarily those of the Transportation Research Board, the National Research Council, the Transit Development Corporation, or the Federal Transit Administration of the U.S. Department of Transportation.

Each report is reviewed and accepted for publication by the technical panel according to procedures established and monitored by the Transportation Research Board Executive Committee and the Governing Board of the National Research Council.

To save time and money in disseminating the research findings, the report is essentially the original text as submitted by the research agency. This report has not been edited by TRB.

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FOREWORD

By Staff
Transportation Research Board

This report provides a method to define and measure the costs of personal immobility at a local level and contains a compendium of public transportation practices that address immobility, help reduce costs, and possibly provide economic benefits to both the riders and the larger community. The focus is on practices that assist people who need transportation to health care or who are transitioning from welfare to work. This report should be of interest to planners, decision makers, and social service and transportation providers. It should also serve as a resource to assist decision makers and transportation service providers in using their services more effectively to address the issue of personal immobility.

The social effects of the post-World War II growth in automobile ownership and highway expansion have been studied extensively. During this period, many businesses and services relocated from transit-oriented cities to automobile-oriented locations, resulting in the migration of homes, employment, health care, education, shopping, and social services to the suburbs. Without a car, it is now difficult to fully participate in American society. However, the 1990 census indicates the approximately 9.2 percent of American households do not have access to a car, and many of these do not have access to good public transportation either. Young, elderly, and poor persons are primarily affected. This lack of personal mobility has an economic, social, and human cost, but the magnitude of these costs has not been well demonstrated. It is known that the costs include higher unemployment, lower tax revenues, higher welfare expenditures, greater medical costs, and limited human development opportunities. How much benefit would be generated by improving mobility for segments of society, and how can public transit play a stronger role? To answer these questions, there is a need to better define and measure the costs of immobility and to identify ways in which public transportation can help improve mobility.

Crain & Associates, Inc., in association with Ricardo Byrd and Omniversed International, was the contractor for TCRP Project H-8 and prepared the final report. To achieve the project objective of developing a product that will assist transit and humanservices professionals in using their services more effectively to address the issue of immobility, the researchers conducted a comprehensive review of the literature on the economic, social, and human costs of immobility and the practices that assist in reducing these costs. Further, a method was developed to define and measure the economic, social, and human costs of immobility at the local level. Solicitations were made through articles in industry publications aimed at transit agencies, human-service agencies, and community-based organizations to identify the most current practices using public transportation. A summary of current practices is included; it highlights the institutional barriers that inhibit more effective use of available public transportation services and presents key findings on how these barriers can be overcome.

In addition to the final report, this project produced in-depth documentation of 11 case studies conducted in six regions of the country. These case studies, which address welfare-to-work and access to health care, can be found on the TCRP home page (www4.nas.edu/trb/crp.nsf) on the Internet's World Wide Web as TCRP Web Document 7.

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AUTHOR ACKNOWLEDGMENTS

The research described in this report was performed under TCRP Project H-8 by Crain & Associates, Inc., Ricardo Byrd, and Omniversed International. Gail Murray was the Principal Investigator and principal author of the summary and all chapters except Chapter 4. She directed and wrote the case studies for the AC Transit service area, South Carolina, Metro-Dade Transit Agency, and two of the Los Angeles cases. Cliff Chambers was the Project Manager, led and wrote the case studies of SEPTA and OATS, Inc., and synthesized the key findings for Chapter 3. Ricardo Byrd provided significant industry outreach in selecting the case studies and participated in the development of the Metro-Dade, OATS, and SEPTA cases. Lou Collier of Omniversed wrote the Numero Uno Supermarket Shuttle case study and provided important contributions to the South Carolina and Los Angeles area case studies. David Curry of Crain & Associates conducted the economic analyses of benefits and costs in the case studies and wrote the economic methodologies guide in Chapter 4. Corinne Goodrich provided valuable assistance in compiling industry best practices for the compendium in Chapter 5.

Guidance for this research was provided by Gwen Chisholm, the Senior Program Officer for the project, and the project panel.

The research team received excellent cooperation from the staff of each of the case study locations. Without this invaluable assistance, the research effort would not have been possible.

This work was sponsored by the Federal Transit Administration and was conducted in the Transit Cooperative Research Program, which is administered by the Transportation Research Board of the National Research Council.

EXECUTIVE SUMMARY

INTRODUCTION

When the Interstate Highway Act was passed in 1956, few could envision the dramatic impact that the highway system would have on the economic and social structure of American society. Because of the easy access created by highways, many businesses and essential services relocated from the inner cities to the outlying suburbs. However, public transportation systems have not kept pace with changing land use patterns and, as a result, many of the transportation disadvantaged now find fewer essential destinations available to them.

"In many metropolitan areas, jobs in the cities are no longer around the corner. Jobs are over the horizon."
Mark Alan Hughes
Public/Private Ventures

The lack of personal mobility has economic, social and human costs, such as higher unemployment, reduced tax revenue, greater welfare and medical costs, and limited social potential. This research identified 11 transportation practices that help reduce such costs and provide economic benefits to both the riders and the larger community.

WHO ARE THE TRANSPORTATION DISADVANTAGED?

The transportation disadvantaged are those people whose range of travel alternatives is limited, especially in the availability of easy-to-use and inexpensive options for trip-making. Factors influencing this immobility are:

1. ACCESS TO AUTOMOBILES
   In 1990, 9.2% of American households did not have an automobile. Almost half of those **without an automobile** are persons 65 years or older, and of these, 81% are women.

"The largest groups of the transportation disadvantaged are those over 65 and those with a physical or mental handicap."
Sandra Rosenbloom
University of Arizona

2. DEMOGRAPHIC FACTORS:
   income: Individuals with incomes below $10,000 make about one trip per day less than individuals with incomes over $40,000 per year.
   disabilities: Non-disabled persons make over 50% more trips than persons with disabilities.
   gender: 23% of full-time working mothers and almost 60% of part-time working mothers have non-traditional work hours. This reduces women's ability to join carpools or find appropriately-scheduled transit options.

During the past 40 years, nearly 2 out of 3 new jobs have been created in the suburbs of metropolitan areas: "If you cannot afford a car, you can't get to work." Director of an economic development program in the Kentucky Highlands.

ethnicity: Nearly 40% of central city African-American households were without access to an automobile, compared to fewer than one out of five white central city households.
education: A change in education produces a greater overall effect on higher trip rates than a change in income, with the more educated taking more trips.

3. AVAILABILITY OF PUBLIC TRANSPORTATION
Almost four in ten American households **do not have public transportation available** within two miles.

VEHICLE OWNERSHIP AND POVERTY LEVELS
(PERSONS 16 AND OLDER)

	HOUSEHOLD VEHICLE OWNERSHIP	
	ONE OR MORE VEHICLES	NO VEHICLES
Below Poverty	76.1%	23.9%
Near Poverty	81.1%	18.9%
Above Poverty	97.6%	2.4%

BARRIERS TO MOBILITY

It is widely believed that persons who are poor, disabled, or elderly cannot participate fully in society without an automobile or high quality, low-cost public transportation. Some of the major reasons for these barriers to full participation are:

- Lack of access to job opportunities for inner-city residents;
- Need to improve basic services in the inner city to reduce travel needs;
- Deficient rural and small town transit services;
- Inadequate funding to improve mobility for the transportation disadvantaged; and
- Need for improved public safety to reduce fear of travel by public transit.

KEY RESEARCH FINDINGS

This research focused on transportation practices that have successfully addressed immobility, particularly those designed for better access to health care and to jobs. Six regions of the country were chosen for in-depth case studies, highlighted in the accompanying sidebars. Rider surveys and documentation from the case study sites form the basis of a guide for economic analysis of the practices. The full research document contains an additional 53 practices, which are summarized in a compendium of operational and community development strategies. The eight key findings below are the result of this extensive look at personal immobility.

1. RETAINING BASIC PUBLIC TRANSPORTATION SERVICES IS CRITICAL TO IMPROVING THE MOBILITY OF THE TRANSPORTATION DISADVANTAGED.

Public comments on AC Transit's weekend cuts:
"No more Sunday concerts."
"Could not visit friend in hospital..."
"Zero night life!"
"San Francisco is out for recreation."
"Trapped at home."

In these days of declining funds, it is important to recognize the fundamental premise of availability which underpins this research; therefore, the first and most obvious finding of this research is that public transportation must be **available** if it is to be used to address immobility. A case study of the AC Transit District in Oakland, California concluded that urban bus service can be enormously productive economically, and its curtailment, even in lowpatronage, off-peak hours, can create added travel costs and income losses for riders that exceed by many times the dollar savings to transit agencies from service reductions. Although AC Transit was able to balance its budget by service reductions which saved $4.8 million, the economic impact on riders was $48.1 million in lost income and added travel time and expenses.

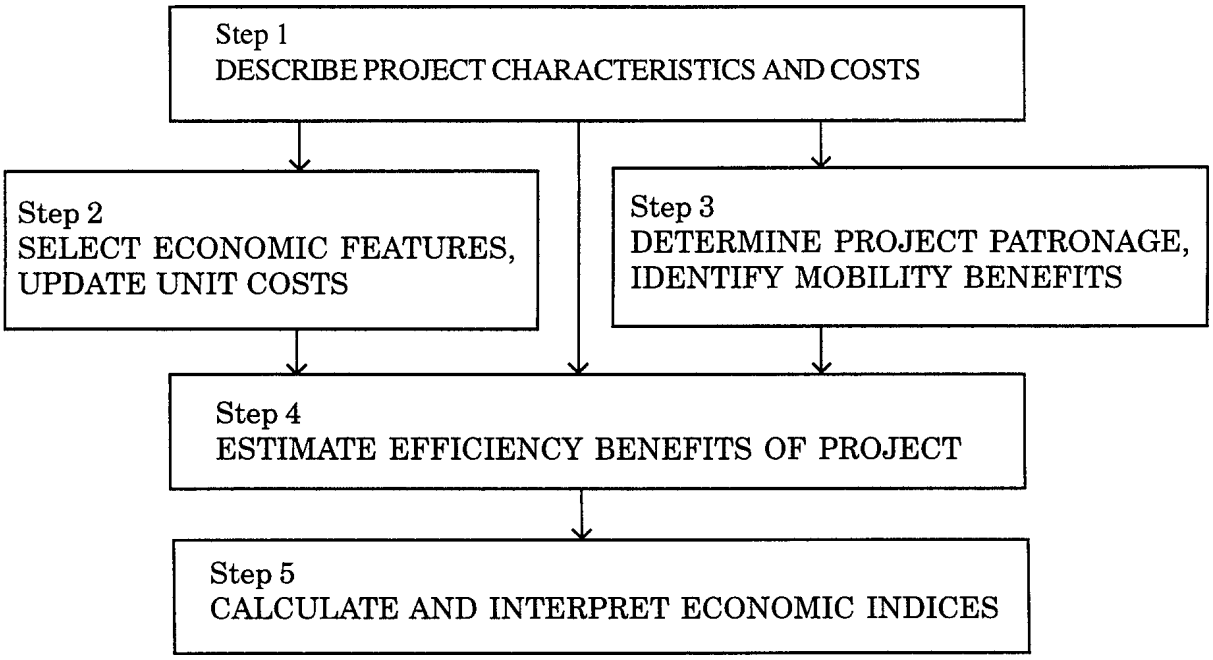
2. PUBLIC TRANSPORTATION PRACTICES DIRECTED AT REDUCING PERSONAL IMMOBILITY ARE ECONOMICALLY BENEFICIAL.

The full research document contains a Guide for Economic Analysis which describes the five steps recommended to perform an economic analysis of transit projects. This analysis can be used to determine the economic value of a proposed project that addresses immobility. The economic

analysis can be used by policy makers in making informed transit investment decisions by comparing the transit benefits and costs of a specific proposed project. For proposed projects where quantified benefits clearly outweigh the costs, the economic analysis can be utilized to build support for budgets that provide sufficient public transportation funding.

The following figure illustrates the five recommended steps for economic analysis. In step 3, mobility benefits refer to benefits from transit trips that would not be made without the availability of transit. Efficiency benefits in step 4, result from the shift of trips from automobiles to transit, which typically improves the efficiency, safety, and environmental performance of the highway transportation system.

RECOMMENDED STEPS FOR ECONOMIC ANALYSIS



The table below depicts results of the economic analysis developed for six of the practices studied in this research. The high ratio of benefits to costs supports this finding that practices directed at reducing personal mobility are economically beneficial. The analysis further demonstrates that the economic productivity of public transit is not very dependent on the income levels served and could greatly benefit the economy by further appropriate expansion in low income areas.

Case Study	Thousands of Dollars: Annual Benefits a	Annual Costs b	Benefit/Cost Ratio (a/b) c	Net Annual Benefits (a-b) c
PDRTA, Myrtle Beach	$2,177	$79	27.4	$2,098
SEPTA Horsham Breeze	1,563	213	7.3	1,350
MDTA Metropass	7,619	1,580	4.8	6,039
MTA Immediate Needs	13,951	5,400	2.6	8,551
OATS, Missouri	13,939	6,010	2.3	7,929
Fremont travel training	52	27	1.9	25
AC Transit service cuts	4,759	48,100	0.1	(43,341)

Society benefits when individuals can access more parts of society. The programs in these case studies also save society money in ways that are not easily quantified by helping to:

- avoid medical institutionalization of the indigent;
- prevent crime by providing job training for employment and food for the hungry;
- reduce the demand on more expensive and oversubscribed paratransit services;
- provide an option to a costly ambulance ride for medical care;
- increase the purchasing power enjoyed by transit riders with access to jobs or to broader market choices; and
- relieve other agencies funded by tax dollars of transportation responsibilities and, thereby, increase their productivity

If transit agencies could incorporate these benefits into new metrices for evaluation, transit's true value to society would be startlingly apparent.

Transit Creates Access to Jobs

Southeastern Pennsylvania Transportation Authority's *Horsham Breeze Shuttle meets buses from downtown Philadelphia to connect to suburban employment centers with major employers, such as UPS and Prudential. Extended hours of service are paid for by employers and the county pays for midday service.*

3. PUBLIC TRANSPORTATION AGENCIES THAT ARE ABLE TO DEVELOP NEW ALLIANCES WITH NONTRADITIONAL PARTNERS WILL HAVE THE BEST RESULTS WITH TRANSPORTATION PRACTICES ADDRESSING WELFARE-TO-WORK, EMPLOYMENT AND HEALTH CARE.

600 PARTNERS PROVIDE ACCESS TO IMMEDIATE NEEDS

The Metropolitan Transportation Authority *underwrites both taxi vouchers and bus tokens, which are used by clients of 600 social service agencies in Los Angeles. Clients in the Immediate Needs Transportation Program use the assistance for trips to food banks and grocery stores, medical appointments, job training and job interviews, and for emergencies.*

The transit industry has been in partnership with state and federal governments over the years to fund transportation services. However, almost all the operations spotlighted in the case studies were new services developed with nontraditional partners, such as:

- ❖ social service agencies
- ❖ community-based organizations
- ❖ volunteer groups
- ❖ businesses, and
- ❖ local governments.

Dramatic changes are occurring in the delivery of health care and reform of the welfare system that directly impact transit properties. These case studies identify transit operators that are ahead of the curve in meeting these societal and political shifts in priorities. By designing services in conjunction with their nontraditional partners, they have been able to respond effectively to these external influences and meet the needs of the transportation disadvantaged. Important elements of agreements with nontraditional partners are:

- ❖ a vested interest shared by all parties;
- ❖ a willingness to share control;
- ❖ a climate of trust;
- ❖ consensus on a common agenda;
- ❖ an ability to listen to the partner's needs and respond flexibly; and
- ❖ an action orientation with scheduled, short-term results.

COORDINATION IS CREATING MORE WITH LESS

The Chesterfield County Coordinating Council *in South Carolina is increasing mobility for rural residents by layering a fixed-route system on dial-a-ride routes and allowing adults to ride school buses. The 43 member agencies have also agreed to share their vehicles.*

4. OPPORTUNITIES EXIST FOR BLENDING A WIDE ARRAY OF DIFFERENT HUMAN AND MONETARY RESOURCES TO ADDRESS IMMOBILITY.

This finding is a byproduct of the partnerships discussed above. These partnerships have expanded transit's resources by providing new funding sources or alternative

methods of administering services. The result has been additional services that increase mobility for the transportation disadvantaged. Collectively, the case study sites have tapped funds from:

medical centers and HMOs
dialysis clinics
retirement housing
universities
chambers of commerce
businesses and employers
airlines
social service agencies
school districts
rider voluntary contributions
group travel
local cash contributions
loans and lines of credit
foundation grants
Amtrak
cities' and counties' general funds
cities' federal Community Development block grants
county congestion management agencies
city bond measures
city redevelopment funds
cities' federal Enterprise Community funds
state Medicaid transportation funds
state Departments of Mental Health
state Elderly and Handicapped Transportation Assistance Programs
state Departments of Social Services
U.S. Area Agency on Aging
U.S. Dept. of Transportation
U.S. Dept. of Housing and Urban Development
U.S. Environmental Protection Agency
U.S. Dept. of Commerce

Coordinating with others is another way to blend resources in ways that may not require new funding. By sharing resources, agencies can better use existing capacity of vehicles; reduce liabilities; increase available expertise; create staffing pools; and eliminate redundancy, thereby, freeing up funds.

5. Public transportation practices bundled with other support services most effectively address immobility issues related to welfare-to-work, employment, and health care.

Immobility is an indicator of other social issues that typically cannot be addressed by transportation alone. Although transportation is an essential component in solving immobility, it will not resolve the problem in and of itself, because the origins of immobility are entangled in demographic, geographic and cultural causes as well. Some programs are now being designed through collaborative planning with job training and placement organizations, transportation providers, community-based organizations, human services agencies, and regional planning institutions. These programs include help for inner-city residents in locating job openings, particularly in the suburbs; commute routes targeted to connect inner-city

Riders Increase Mobility Through Peer Training

AC Transit District and the Bay Area Rapid Transit District *funded group travel training with peers as assistants. Conducted by the City of Fremont, California, the travel training empowered persons who are elderly or with disabilities to shift from paratransit to fixed routes for some of their trips, saving both the transit agencies and riders money.*

residents to previously inaccessible employment locations; and support services to mitigate demands created by a commute to distant job locations, including extended childcare arrangements, a guaranteed ride home in an emergency, and conflict resolution with co-workers.

Transit staffs need a new set of skills and knowledge to integrate socio-economic factors into their service planning and delivery. By bundling transportation solutions with packages of support services, public transportation providers will attack the problem more comprehensively, with a higher likelihood of success.

PEOPLE WORK DAY AND NIGHT--SHOULDN'T TRANSIT?

Pee Dee Regional Transportation Authority *runs a 24-hour commute service linking residents in rural South Carolina with entry-level jobs in the tourist industry at Myrtle Beach. Service operates to meet day and night shifts and is coordinated with the Marion County Department of Social Services.*

6. PUBLIC TRANSPORTATION AGENCIES CAN PROVIDE LEADERSHIP IN ECONOMIC DEVELOPMENT, THEREBY REDUCING THE COSTS OF IMMOBILITY.

The suburbanization of jobs has followed the suburbanization of residences. As of 1990, the suburbs account for 60% of the metropolitan work force. Today, just one-quarter of the American people live in central cities, and the largest proportion of people--half the population--live, work, and shop in urban areas outside the central city. At the same time, poverty and disadvantage are concentrated in the former central cities.

TRANSIT + ENTREPRENEUR= MORE MOBILITY

The Metropolitan Transportation Authority's *buses bring customers to the Numero Uno supermarket in South Central Los Angeles, where they can shop and return home with their groceries on free shuttles operated by the market. This entrepreneurial service complements the public transit system and boosts sales at the market.*

Transit agencies have responded with both operational improvements and land-use changes designed to address this jobs/housing mismatch. Reverse commute routes bring inner-city and rural residents to job-rich areas in the suburbs and in the tourist industry. Auto ownership may become more feasible when these employees have work experience which allows them to advance to higherpaying jobs. Whatever ill effects may occur for transit ridership or road congestion, auto ownership under today's land use patterns will definitely increase the personal mobility of these workers. Thus, the reverse commutes will have given these employees an opportunity for entry into the personal mobility enjoyed by most Americans.

Two transit agencies spotlighted in these cases studies are involved in long-term land use changes that can have a more permanent impact on economic development. They are developing services and activity centers around a transit hub, positioning transit as part of a larger economic

development strategy. However, although transit can have an important role in economic development, it cannot substitute for sound land use decisions.

7. Today's mobility issues, particularly in access to jobs, demand regional approaches.

Another outgrowth of the jobs/housing mismatch discussed above is the need for transit agencies to enlarge the sphere of influence used in their planning, perhaps even beyond their own service areas County lines and transit service area boundaries are artificial barriers for people who need to cross them to get to the jobs and services they need.

Oftentimes, a regional approach is part of a larger corporate strategy of mobility management. The definition of mobility management is "an institutional state of mind that emphasizes moving people instead of the mode of transportation." Such tailored approaches are needed for job-access transportation as well as transportation to regional services, such as hospitals and clinics, food banks, and crisis centers.

Given the patterns of land use and demography that now exist in the United States, regional approaches are essential to address the economic, social, and human costs of immobility. It will take a great deal of collaboration on the part of governments, businesses, non-profit agencies, churches, metropolitan planning organizations, and other leading institutions to help knit together a plan that addresses immobility across jurisdictional and institutional boundaries.

Transit Village Brings Services to the People

The Bay Area Rapid Transit District *will revitalize a rail station in a low-income neighborhood in Oakland, California. Its partner, the Spanish Speaking Unity Council, will address immobility by creating a Transit Village at the hub, which features a mix of social services, retail, and residential uses.*

8. Simple ideas and programs can yield significant mobility improvements.

Many of the programs studied in this research begin with simple ideas which have yielded significant results: None are elaborate concepts; none required costly capital investments. Including these simple, independent programs into the overall strategy of a company will reinforce the mobility management ethos of the organizations. Including them can also be more effective than considering them as

Riders Benefit As Metropass Saves $$

Metro-Dade Transit Agency *avoids $10 million annually in paratransit costs through the Metropass program it created in partnership with the Florida Medicare administration. Medicare recipients pay $1 for an unlimited monthly pass, but give up paratransit, saving Medicare over $500K a month.*

adjuncts to the agency's mission, by assuring the programs greater funding security and integration within the organization.

CHECKLIST FOR SUCCESSFUL IMPLEMENTATION

Public transportation organizations cannot solve the problems of immobility alone. As identified in the findings above, coordination with organizations across other strata of society will be needed to enhance options for personal mobility. The transportation organizations visited in the case studies had certain strategies in common that have led to their success, which can be replicated by others. These strategies can be summarized in the following checklist for success:

- ✓ *Exert leadership.*
- ✓ *Win internal support from the staff and the policymakers.*
- ✓ *Adopt a mobility management mission.*
- ✓ *Build community support.*

EXERT LEADERSHIP

Leaders experiment; leaders challenge the status quo; leaders inspire others with their vision. Leaders are needed at many levels of society to solve the difficult issues of immobility that have been presented in this research. The collaborative efforts needed to tackle problems of immobility point to a role for social service agencies, community-based organizations, local governments, and employers, as well as transportation organizations. Public transit cannot tackle immobility alone.

Nonetheless, mobility is the *mission* of transportation organizations. Transit agencies need to seize the initiative in their realm of expertise to insure the best transportation alternatives are implemented. If transportation organizations do not take on this role, they may be preempted by others with their own agendas. It is proper that transportation organizations be among the first to exert leadership in addressing immobility. Without leadership, the problems of immobility will worsen and transportation organizations will have failed in their mission.

"An administrator tells you what you cannot do-what the rules are. A manager rewrites the rules to get things done."
Danny Alvarez, Metro-Dade Transit Agency

WIN INTERNAL SUPPORT FROM STAFF AND POLICY-MAKERS.

The culture of any organization hoping to solve immobility problems must nurture an environment in which the key findings can be implemented. This means encouraging staff to exercise leadership by taking the initiative and being creative. It means preventing bureaucracy and hierarchy from stifling innovation. A leader, by definition, needs followers. If the leader fails to build support within the organization, the innovation will languish or even be sabotaged.

ADOPT A MOBILITY MANAGEMENT MISSION.

Effective mobility management requires viewing the passenger transportation system as a whole. Mobility management is the opposite of an institutional state of mind that offers a single product with a "one size fits all" approach. Specifically, mobility management is defined as brokering, facilitating, encouraging, coordinating, and managing both nontraditional and traditional services to expand the array of transportation services to diverse consumer groups. This is an inclusionary definition which envisions responsibility from many partners to assist public transportation in accomplishing its mission of mobility.

TELEVILLAGE IS A VIRTUAL MAIN STREET

The Metropolitan Transportation Authority's *Blue Line TeleVillage contains a Telework Center, a computer lab with Internet access, a video conference center, and interactive kiosks. Residents and employees in Compton, California can access many services without the need to travel. The TeleVillage will be part of a one-stop training center for welfare recipients.*

BUILD COMMUNITY SUPPORT.

Organizations cannot form nontraditional partnerships (Finding 3), bundle transportation and support services (Finding 5), and plan regionally (Finding 7) in the absence of community support. Building community support takes energy and visibility on the part of transit staff. It means not only attending community meetings but also setting up such meetings. In designing increased access to jobs and health care, it means stepping outside the transportation field and learning other industries' terminology and key players. But the rewards can be a wider constituency of support for transit, an enhanced image of transit, availability of new funding sources and human resources, and, consequently, more participation in society by those now afflicted by immobility.

VOLUNTEERS CONTRIBUTE 76K HOURS FOR TRANSIT

OATS, INC. *blends a wide variety of funding to provide transportation in 87 counties of rural Missouri. Volunteers donate 76,000 hours annually, an equivalent of 36 employees, for scheduling and fundraising.*

1. INTRODUCTION

RESEARCH PROBLEM STATEMENT

Research Problem Statement

In 1956, the Interstate Highway Act was passed. This law was designed to provide the nation with a modern and effective highway system. At the time of the law's passage, few could envision the dramatic impact that the highway system would have on the economic and social structure of the American society. Development has followed the highway system because of its easy access, and many businesses and essential services have relocated from the inner cities to the outlying suburbs. This migration has included employment, health care, educational institutions, shopping, and social services. Despite the broad availability of the automobile, considerable segments of the population do not have access to the highway network because they do not own a car. These segments of the population, which include the nation's youth, the elderly, and low-income groups, remain dependent on public transportation systems. However, public transportation systems have not kept pace with changing land use patterns and, as a result, many transit-dependent users now find fewer essential destinations available to them.

This lack of personal mobility has economic, social, and human costs, such as higher unemployment, reduced tax revenue, greater welfare and medical costs, and limited social potential. There is a need to define and measure the economic, social, and human costs of personal immobility and to identify public transportation services that will help reduce such costs. For the purposes of this project, the public transportation system is broadly defined to include publicly operated rail, bus, and light rail systems; school bus systems, social service agency transportation; paratransit; jitneys; private bus systems; and taxicabs. Many of these transportation services have specific trip purposes, and eligibility is sometimes limited to specific groups. However, some communities have effectively used various combinations of transportation services to reduce personal immobility.

OBJECTIVES

The objectives of this research are:

- to develop a methodology for economic analysis that will assist regions to estimate the economic, social and human costs of personal immobility; and
- to identify or develop public transportation practices to reduce such costs.

The products developed as a result of this research will assist decision makers and transportation-service providers in using their services more effectively to address the issue of personal immobility.

ORGANIZATION OF THIS REPORT

In addition to the Summary and this Introduction, the report includes five additional chapters and three appendixes.

Chapter 2: Immobility Issues

This chapter discusses who the transportation disadvantaged are, key barriers to improving mobility, and six significant public policy efforts that have been used to address the barriers to mobility: basic transit services; reverse commute services, demand responsive services, fare subsidy programs, livable communities, and social services coordination.

Chapter 3: Key Research Findings

Eight key findings are described, based on the case studies and compendium resulting from this research. The first finding is that retaining basic public transportation services is critical to improving the mobility of the transportation disadvantaged. Others describe how transportation practices can be both simple ideas and programs that are also economically beneficial. Successful practices develop partnerships, blend resources, bundle services, plan regionally, and assist in economic development.

Chapter 4: Guide for Economic Analysis of Transit Projects

This chapter explains the guiding principles and procedures that were used in conducting economic analyses of the consequences of immobility. Drawing on the case studies, the guide describes five recommended steps for economic analysis: (1) Describe project characteristics and costs; (2) select economic study features, update cost factors; (3) determine project patronage, identify mobility benefits; (4) estimate efficiency benefits of project; and (5) calculate and interpret economic indices.

Chapter 5: Compendium

Examples of operational and community-based practices to address immobility are briefly presented to complement the in-depth case studies. The Compendium contains 53 additional practices from urban, suburban and rural settings around the country. The Compendium is divided into sections dealing with

Access to Jobs, Filling Mobility Gaps, Coordination with Health and Human Services, Elderly Services, Youth Services, Transit Oriented Development, and Vehicle Programs.

Chapter 6: Implementation and Dissemination Plans

The implementation plan builds on the key findings in Chapter 2 and adds a Checklist for Success. The chapter describes what an organization can do within its own cultural environment by adopting strategies necessary to replicate the successful projects studied during this research. A dissemination plan outlines audiences for this research and mechanisms to reach these audiences, including mass media distribution, traditional methods, and suggested additional products as outgrowths of the research.

Appendix A: Case Studies

In-depth documentation of 11 case studies conducted in six regions of the country is presented in Appendix A. Case studies describe one practice in a suburb of Philadelphia, Pennsylvania; two in rural South Carolina; one in rural Missouri; one in Miami, Florida; three in Los Angeles, California; and three in Oakland, California and its suburbs. The case studies can be found on the TCRP homepage (http://www4.nas.edu/trb/crp.nsf) as TCRP Web Document 7.

Appendix B: Literature Search: Who Are the Transportation Disadvantaged?

This chapter elaborates on the travel and demographic characteristics of the transportation disadvantaged described in Chapter 2.

Appendix C: Glossary of Terms

This appendix defines the key terms utilized in this research.

2. IMMOBILITY ISSUES

WHO ARE THE TRANSPORTATION DISADVANTAGED?

Overall mobility has improved for the average American. Although the U.S. total population grew by only 4% between 1983 and 1990, total travel, measured by person trips, increased by 6% over the same period. Thus, mobility is increasing at a much higher rate than population.(1)

While overall mobility of the population has improved, a significant segment of the population is moderately or severely immobile. This group is defined as the *transportation disadvantaged* throughout this research. The transportation disadvantaged are those people whose range of travel alternatives is limited, especially in the availability of easy-to-use and inexpensive options for trip-making. Examples include persons who are young, elderly, poor, with disabilities, or without automobiles.

1. Individuals Without Access to Automobiles

In the auto-dominated American society, a primary factor for immobility is lack of access to an automobile. In 1990, 9.2% of American households did not have an automobile. The typical zero-vehicle household has no one in the labor force (either employed or searching for work), has a lower than average income, and lives in the central part of a large urban area, according to an analysis of the 1990 Nationwide Personal Transportation Survey. (2)

One measure of mobility is the average number of trips per day made by an individual. During the Nationwide Personal Transportation Survey, 46% of the households without an automobile took no trips, compared to 21% of the general population. Almost half of those without an automobile are persons 65 years or older, and of these, 81% are women. Those between ages 65-74 with no automobile make about 1.34 trips per day, compared to 2.32 trips for individuals of the same age with an automobile.

2. Demographic Factors Affecting Mobility

Income, disabilities, gender, ethnicity, and education are all factors affecting mobility. For example, individuals with **incomes** below $10,000 make about one trip per day less than individuals with incomes over $40,000 per year. Non-disabled persons make over 50% more trips than persons with **disabilities**. (3)

Gender also plays an important role in mobility. Women, in general, make slightly more trips per day than men. However, 23% of full-time working mothers

and almost 60% of part-time working mothers have non-traditional work hours. This reduces their ability to join carpools or find appropriately-scheduled transit options. (4) Furthermore, almost 70% of adults living in households without automobiles are women.

According to the 1990 Nationwide Personal Transportation Survey, there is a relationship between **ethnicity** and travel. Nearly 40% of central city African-American households were without access to an automobile, compared to fewer than one out of five white central city households. Nonetheless, African-Americans have the least immobility stemming from absence of a vehicle, partly because of a higher overall use of public transit: Their rate of transit use is more than twice as high as whites'.(5)

Education probably has the strongest impact on the propensity to make trips. As education level increases, the average number of person trips per day increases for both those without an automobile and those with an automobile. According to an analysis by Dr. Charles Lave and Richard Crepeau, "increased education produces increased income, which in turn produces more travel. The data indicates that a change in education produces a greater overall effect on trip rates than the change in income." (6)

3. Availability of Public Transportation

If a household does not own an automobile but has reliable, affordable, and convenient public transportation, then mobility levels are retained. However, almost four in ten American households do not have public transportation available within two miles. This is most pronounced in non-urbanized areas, where only 20.2% have public transportation within two miles of their houses. By contrast, in central cities almost 83% of the households have public transportation available, and trip-making is greatly increased. For example, in areas with a million or more in population, people without automobiles but with access to subways or elevated rail lines took almost 30% more trips per household than those living in large urban areas without these public transportation modes.

KEY BARRIERS TO IMPROVING MOBILITY

The following discussion highlights several major themes on the causes and key barriers to countering the economic, social, and personal costs of immobility. These barriers can be characterized by a lack of:

- Access to job opportunities for inner-city residents.
- Basic services in the inner city.

- Rural and small town transit services funding.

- Public safety measures to combat crime and fear of crime.

Geography and Economics of Opportunity

Job Opportunities for Inner-City Residents

Changing land use patterns and resulting economic development locations have had a profound impact on employment opportunities for residents of the inner city. During the past 40 years, nearly two out of every three new jobs have been created in the suburbs of metropolitan areas, and most of the new jobs are not accessible by public transportation.(7) The pace of suburban employment growth during the 1980s was phenomenal. In 1980, 57% of all office space was located in urban centers and 43% in suburbs. By 1986, the situation had reversed itself with 60% of the jobs in suburbs compared to 40% in cities. A key factor in this growth is that many firms in the financial/insurance/real estate (FIRE) sectors, one of the nation's fastest growing, have opted for the suburbs, moving the back office and clerical workers to branch facilities. Low land prices and the availability of pools of (primarily female) second wage earners have been the primary lures attracting FIRE firms to the fringes.(8)

Philadelphia, which was the location of one of the case studies for this research, illustrates the impact of the suburbanization of jobs. Between 1982 and 1992, 163,000 new service jobs and 58,000 retail jobs were created. Approximately 87% of the new service jobs and 97% of new retail jobs opened outside of Philadelphia. Philadelphia is following a nationwide trend of increased reverse commuting. Between 1980 and 1990, there was a 43.7% increase in journey to work trips between Philadelphia and the suburbs.

The Philadelphia experience mirrors a national trend of increased reverse commuting and a decline in the share of transit use for those trips. From 1970 to 1990, the number of work trips from central cities to suburban rings increased by 25%; from 1970 to 1990, the number of work trips by transit declined by 33%.(9)

For many inner-city residents, there are fewer employment opportunities closer to home. According to some observers, the inner-city job market is changing to a highly skilled, predominantly white-collar market for which many inner-city residents with low incomes lack the necessary skills to obtain gainful employment. The number of white-collar jobs generated have failed to replace the loss of blue-collar jobs in the city. The white-collar jobs in the inner city are accessible by public transportation, but many inner-city residents with low incomes are not qualified for them.

The disparity of opportunities between the inner city and suburbs is documented in a study contrasting geographical and socioeconomic indicators between the central cities and suburbs in eight of the largest metropolitan areas plus four additional metropolitan areas. Mark Alan Hughes found that in 7 of 12 metropolitan areas, population growth in the central cities has declined between 1980 and 1990. Population suburbanization had gone so far that suburban residents outnumbered city residents in all 12 of the metropolitan areas. Among his other key findings were: (10)

- A significant disparity of poverty rates exists in cities and suburbs. Six percent of the residents in suburbs versus 28% of residents in the central city are below the poverty level in Detroit. In general there is less disparity as you go West and South. In Los Angeles, 10% of the suburban population and 18% in the central city live in poverty.

- Central cities remain disproportionately African-American compared to the general population. In all 12 metropolitan areas, the percentage of central city population that was African-American was at least twice as high as the suburban percentage, and in half of them it was at least four times as high. In Milwaukee, 26.9% of City residents are African-American compared to 0.8% in the suburbs.

- In six of the eight largest metropolitan areas, most if not all job growth during the 1980s was located in the suburbs. The suburbs appear to be the engines of employment growth in these metropolitan areas.

- In sum, there is an extreme pattern in these metropolitan areas: poverty and joblessness are concentrated in formerly central cities while prosperity and job growth are deconcentrating toward the metropolitan periphery. **In many metropolitan areas, jobs in the cities are no longer around the corner. Jobs are over the horizon** (emphasis added).

Most public transportation systems were developed to converge in central business districts (CBD). Access and headways are designed, in general, to encourage the commute to the CBD. The widely dispersed settlement patterns of the suburban office park are a difficult market to serve. There has been a long history of attempts to provide reverse commute services. Overall, among the lessons learned is that reverse commute transportation services alone will not address the employment mismatch between the suburbs and inner-city residents.

Transportation access is not <u>the</u> problem, but it is certainly <u>part</u> of the problem. The evidence points to declining transit access to suburban employment opportunities as a significant problem, particularly in those cities with the largest

numbers of transit dependent minorities. Steven Blake of the National Association of Regional Councils concludes that the data strongly suggests that in most metropolitan areas, "most jobs are beyond the reach of the transit dependent, among whom minorities are disproportionately represented."(11)

If transit service is available, it must be affordable and convenient. According to a number of stakeholders interviewed in the Los Angeles case study for this report, minimum wage jobs are available in the San Fernando Valley but are inaccessible to inner-city residents because the fare on the bus would cost too much to make it worthwhile to even take the job. For the new commuter rail services, it would cost $200 dollars a month to travel on Metrorail from San Bernardino to jobs in Los Angeles, a fare beyond the capability of most low income people.

Efforts to Improve Basic Services Within Inner City

Site visits to both Philadelphia and Los Angeles point to the lack of basic services, such as a grocery store, in many inner-city neighborhoods. Residents have to rely on more expensive convenience stores and spend a higher percentage of their low incomes on food. Both site visits revealed significant community efforts to improve basic services within the community.

After the 1965 Watts riots in Los Angeles, local services, such as grocery stores and banks, left the community. Watts residents, who do not have supermarkets near their homes, must pay $2.70 to get to the grocery store and back on the bus. Consequently, residents often go to the local liquor stores with minimarts, where they can pay $5.00 for a gallon of milk. The lack of basic services in the community has significant personal and social costs for residents.

In a progressive effort to improve local services, a 500-member community church in South Central Los Angeles is spearheading redevelopment plans for a shopping center with a major supermarket as the anchor tenant. According to the minister, residents are currently paying 30 to 50% more for their goods in the small minimarts that are available in the neighborhood. He said that church members often pay people with cars to go the market, because public transit service is unreliable and inconvenient. The minister pointed to two-hour headways for some routes and significant out of direction travel to an isolated transfer point, where riders fear being assaulted. "Young males enrolled in a job training program cannot get to work on time because the bus service is infrequent," he said.

The minister is currently working with the Metropolitan Transportation Authority (MTA), The U.S. Housing and Urban Development, the City of Los Angeles Redevelopment Agency, California Department of Transportation (Caltrans), and the International Council of Shopping Centers to secure financing to support a 50,000 square foot national chain grocery store near the Harbor Freeway.

He has involved MTA and Caltrans to ensure appropriate access to the proposed grocery store.

In West Philadelphia, the community is planning a major mixed-use intermodal transportation center at 52nd St. and Lancaster. One of the key objectives presented by community leaders is to attract a local grocery store and other basic services for local residents. Many of these services are only available outside West Philadelphia and require long journeys by residents.

Almost 20 years ago, the Southeastern Pennsylvania Transportation Authority (SEPTA) discontinued stops on two different train lines at the 52nd St. station, reportedly due to crime concerns. The abandoned station is a major public eyesore to the community. There are currently 250 zone businesses and nearly 10,000 residents located in the vicinity of the former SEPTA rail station. AMTRAK train service runs through the site, but does not stop. Two bus routes and a light rail line provide good access to the site, but no bus shelters and little lighting discourage use, according to community members.

Since January of 1993, a committee of business leaders and community residents have been meeting to devise a strategy to improve both public transportation and economic development in the area. Plans envision a major intermodal center with a new supermarket, shopping center, a few strip stores, and a parking garage as part of the master plan. Significant publicity and political fanfare for the demolition of the old abandoned station overpass is expected to draw continued external political support for the project. Improving public transportation services and attracting basic services go hand-to-hand, according to community organizers.

Community members are hopeful that a successful intermodal transit center will provide momentum to local economic development in an adjacent business park. The Philadelphia Industrial Development Corporation now owns an adjacent 68-acre industrial park that was formerly an abandoned rail yard. The community has a future vision of local jobs for local residents of West Philadelphia.

The lack of services and reliable public transportation in the inner city has significant economic, social, and personal costs. Because public transportation is unreliable and basic services are not available locally, many residents buy old junker cars according to the Los Angeles minister interviewed for this research. Owners often do not have driver's licenses; and the cars are not smog checked, registered, or insured because of the high costs for residents who can barely find enough gas money. As a result, owners will leave the area and their job to avoid being arrested for unpaid tickets, he said.

Because employers want to know that employees will be able to get to work on time, they won't hire employees without driver's licenses. The minister contends that employers will not recruit from his area, because of its reputation for a labor pool without driver's licenses. His experience has shown that, since many prospective employees do not have a license or a car, they don't even try to find a job, because they believe they won't be hired.

Deficient Rural and Small Town Transit Services

Much of rural America remains unserved by public transit. According to the Community Transit Association of America (CTAA), 38% of the nation's rural residents live in areas without any public transit and another 28% live in areas in which the service level is negligible.

Providing public transit in rural areas is the responsibility of a network of 1,162 agencies funded under Section 18 of the Federal Transit Act. Their collective service area includes 53 million people, or six out of ten persons living in rural areas or small towns. The network provides 95 million trips a year. This is equivalent to less than two trips per capita in the service area, compared to 49 trips per capita in urban areas.(12)

Interviews were held with six stakeholders in two rural empowerment zones and two locations with CTAA JobLinks grants. The Kentucky Highlands Empowerment Zone includes an 11-county area in southeastern Kentucky. The overall population is 266,000 with 32.5% of the residents having incomes below the poverty level. Despite the poverty, over 95% of households have at least one car. According to the Executive Director of a local economic development program, "If you cannot afford a car, you can't get to work." There is no public transportation in the area. Local residents either have a car or have a family member who has one. A key effort of the economic development program has been to invest in local credit unions which make low- or no-interest loans to residents who wish to purchase cars. For those without access to automobiles, a critical need is nonemergency transportation to medical appointments within southeastern Kentucky and to Louisville, which is three to four hours away by car.

The Rio Grande Valley Empowerment Zone consists of portions of four counties with a total population of 29,900 over a 228-square mile area. Although population densities are very low, there is an intercity fixed-route service that provides minimal levels of service. During the strategic planning process for the empowerment zone, transportation was frequently cited by all participants in the process as a significant impediment to achieving an enhanced quality of life. Social service agencies have expressed concern over their inability to provide services to those most in need due to the lack of transportation. Residents have expressed similar frustration over their inability to access even the most basic community

facilities, such as grocery stores and medical facilities. Two primary objectives of the strategic plan are to:

- Enhance access to medical and social service providers.

- Provide residents with access to training and employment opportunities.

To achieve these objectives, one of the empowerment subzones has set aside $200,000 for improved transportation services. The Rio Grande Empowerment Zone Board is currently addressing policy issues about how the funds should be spent. For example,

- Although empowerment zone funds could be utilized to provide transportation to job training, what transportation will be available when trainees are placed in a permanent job?

- If public transportation services are expanded with empowerment zone funds, where will the long term funds come from to continue the service?

Inadequate Funding and Equity Issues

Inadequate Funding

Inadequate funding was identified as a key barrier to addressing immobility during the stakeholder interviews. In Philadelphia, at the time the site visit interviews were held, a 10% budget cut was about to take place. Significant concerns were expressed about future reductions in transit service levels and the impact that they may have on the transit dependent population. The Rio Grande Valley Empowerment Zone Corporation is reluctant to use Empowerment Zone funds as seed money because it is fearful that longer term operating assistance will not be available after the demonstration period is over. Federal Transit Administration staff who were interviewed said that a constraint on public funding and a failure to develop more diverse sources of funding is a primary barrier to improving mobility.

Funding Equity

With scarce financial resources, the investment of transportation dollars raises questions of policy priorities. A major policy issue raised during the interview process and literature review is: "Are the transportation disadvantaged receiving an equitable share of funding to address immobility issues?"

Studies of the benefits and tax burdens of transit subsidy allocations among income classes have led to the following general conclusions: (13,14,15)

1. Overall, transit subsidization redistributes income from high-income to low-income classes, but it is not very effective in targeting benefits to the poor.

2. Long-distance, peak-hour, suburban trips are more heavily subsidized and have significantly higher income riders than their converse.

3. Of the three modes (bus, commuter rail, and rail rapid transit), buses transport the largest percentage of riders, transport the lowest income riders, and receive the least amount of capital subsidy.

4. The transit industry generates indirect benefits to the local, state, and national economy in terms of jobs created and business revenues from operating and capital investments.

5. Federal income and corporate taxes are progressive. State and local taxes, especially sales and property taxes, are regressive. (In 1981, the conclusion was that since more transit subsidy is generated at the federal level, the overall burden of transit taxation is progressively distributed.)

When MTA in the Los Angeles area raised its fares recently, a lawsuit was brought against MTA by a legal defense fund representing bus drivers in the NAACP, indicating that the fare hike was inequitable and the impacts would fall more heavily on the poor. The lawsuit also claimed that MTA was investing more in railways, which the lawsuit argued serves predominantly the affluent suburbs, than it was in transportation for the poor. MTA is now sponsoring a mobility allowance program, which is trying to determine how to subsidize transportation equitably.

In his article, "Discrimination in Mass Transit," J. Pulcher includes four recommendations for improving the equity of subsidy programs: (16)

1. Increase fares for commuter rail service. This would decrease the amount of subsidy needed for the more affluent riders.

2. Put a hold on construction of new multi-billion dollar rail transit systems which benefit the affluent.

3. Impose peak hour surcharges and distance-based fares on all transit modes.

4. Set up a program of discount transit passes for the poor and improve service in low-income neighborhoods.

Public Safety

Crime and fear of crime is an important barrier to increased use of public transportation by many inner-city residents. The elderly often are fearful of walking to and waiting at the bus stop and riding with unruly passengers on the bus. In West Philadelphia crime was a significant factor in closing the 52nd St. station.

Fear of crime was expressed by a representative of the Los Angeles Housing Authority, who runs a youth entrepreneur program. She is fearful of putting the students of her program, who are 16 to 25 years old, on public transit because one of her students was "jumped" at a transfer point while participating in the program. She now transports the students through more costly door-to-door service. In general, public transit has a poor image in her community, in large part due to a fear of crime, she said.

The MTA spends $6 million per year on security with 500 transit police officers. There are police officers on most light rail trains, according to an MTA representative, because lots of people can be protected on one train with one officer. Because there are not public resources to put an officer on every bus, security on buses is less than the security on the trains, and there is no security at most stops and stations.

USING PUBLIC TRANSPORTATION TO ADDRESS THE BARRIERS TO MOBILITY

Prior to 1960, little effort was devoted to alleviating the barriers to mobility described in the previous section. Persons who were poor, disabled or elderly were thought to benefit from existing transportation programs. In the 1960s and 1970s, however, the civil rights movement brought greater political awareness of this segment of society. In urban transportation, as in other areas, government programs proliferated to meet the problems faced by the transportation disadvantaged.

This section describes significant public policy efforts to provide public transportation that addresses the economic, social, and human costs of immobility:

- Development of Public Transportation
- Reverse Commute Services
- Demand Responsive Services
- Fare Subsidy Programs
- Livable Communities
- Social Services Coordination

- Empowerment Zone and Enterprise Communities (EZ/EC)

The development of these public policies is discussed below, illustrated by specific examples from the case studies conducted for this research. Further examples are given in Chapter 5. Documentation of the case studies can be found in Appendix A.

Development of Public Transportation Services

There are over 6,000 transit systems in the United States. About 2,250 operate bus service, 5,200 operate demand response service, and about 150 operate other modes. In 1995, 3.5 billion miles of service were operated, providing about 7.9 billion trips.(17)

Today's network of bus, rail, and ferries provides an important mobility option for millions of people. The development and maintenance of core public transportation services, however, has been reliant on a number of public policy efforts to ensure that public transportation services remain a viable choice. The twentieth century has seen a significant transformation in public transportation service levels and in how transit agencies are organized and funded.

To the urban dweller of the first quarter of the twentieth century, transit was as pervasive a travel mode and sociological phenomenon as the automobile is today. The street railway system provided significant access to downtown areas for urban residents during their 6-day workweek, but also allowed the family a Sunday visit to amusement parks located at the end of the transit line.(18)

As suburbanization and automobile ownership increased, transit experienced a well-documented countervailing downward spiral: diversion of patronage to the automobile forced service reductions that further eroded patronage and revenue, necessitating far increases and loss of ridership. During World War II, the public transportation service network and patronage reached its peak with over 20 billion annual passengers. Many historians argue that the decline in public transportation service really started in the 1920s, and only the war provided an artificial boost to the transit industry.(19)

As public utilities began divesting their public transportation networks and private operators became increasingly financially unstable, Congress began to debate the importance of maintaining a basic network of public transportation services in 1960. The first federal aid passed in 1961 authorized $50 million in low-interest loans and $25 million in demonstration projects. The first federal capital assistance was included in the Urban Mass Transportation Act of 1974, while funds to defray operating expense were authorized by Congress in 1974.

Only a handful of cities provided municipal tax subsidies for the operation of transit systems in 1960.(20) David Jones points to an important matter of public policy development:

> "Federal initiative preceded local concern about the future of transit in most communities; indeed the congressional supporters of transit assistance argue that federal involvement was necessary to motivate and stimulate state and local action in an arena heretofore neglected."(21)

As federal initiatives were undertaken to address urban problems in the 1960s and 1970s, maintenance of a viable public transportation network was supported as a means to address a number of societal goals, including the restoration of the economic vitality of cities, protecting the environment, conserving energy, easing the mobility of transit dependent persons, and providing inner-city residents with better access to jobs.(22) Many states and municipalities followed the federal initiatives with funding to support and maintain a viable public transportation network.

After hitting a low in the 1970s, the infusion of public funding enabled the maintenance of core public transportation services, and patronage continued to rise slowly through 1990. While this basic network is widely available, and transit service has improved in many cities, Arthur Saltzman concludes that "most passengers are still those who do not have easy access to an automobile and are thus captive to the transit system".(23) Thus, public policy efforts to maintain a basic public transportation network have provided an important mobility option for the transportation disadvantaged.

The importance of core transportation services and the impact on riders when the services are reduced was the subject of one of the case studies for this research.

AC Transit Service Reductions

At the end of its 1994-95 fiscal year, the Alameda-Contra Costa (AC)Transit District, headquartered in Oakland, California, had a $2.3 million shortfall out of a total budget of $144,464,000 and faced an even larger deficit for the following fiscal year. To address this financial crisis, the District implemented an 11% reduction in service between December, 1995 and June, 1996. Before implementing the service reductions, AC Transit attempted to reduce its internal costs and pursue grants and private-sector partnerships. In May, 1995, the District also adopted a fare increase, raising the cash fare from $1.10 to $1.25. Despite these measures, the District found it necessary to cut approximately 1,000 hours of bus service by reducing some frequencies and eliminating most evening, owl and weekend service, except on 21 basic trunk lines. A survey of riders revealed that the changes in travel time and

in bus and rail expenses before and after the cuts cost riders $48.1 million in added travel expenses, income losses, and the value of added travel time.

The AC Transit case study demonstrates the importance of fixed-route service to the community and the economic costs that can result from its curtailment even in low patronage, off-peak hours. It has implications for welfare reform measures, which have assumed that public transportation will be available for new job-seekers. The majority of the practices illustrated in the other case studies and in the Compendium are *dependent* on a core fixed-route service--one that operates 20-24 hours a day, seven days a week.

Reverse Commute Services

Between 1966 and 1970, the federal government paid community groups for 14 demonstration projects in 14 cities to test the hypothesis that improved bus service to outlying employment centers would reduce unemployment in inner-city neighborhoods. These demonstration projects were a response to the McCone Commission's report following the 1964 riots in Watts, California, which blamed the civil disturbance on a lack of employment. The Commission argued that unemployment was due, in part, to the inadequate and expensive public transportation connecting Watts with the suburban areas where jobs were increasingly concentrated.

Although local and state recipients of the federal grants stressed finding employment for inner-city residents as the purpose of these routes, federal officials desired to create 50 new routes with long-term viability for traditional transit operations. By this measure, the reverse commute routes were a failure; only three of the 14 demonstration reverse commute projects developed routes that were taken over by the transit operators. In addition, "There was little evidence in Watts or elsewhere that reverse commute services got people jobs or even better jobs."(24)

1990s Reverse Commute Programs

There has been renewed interest in reverse commute programs in the 1990s. According to a 1993 survey by the American Public Transit Association, 458,500 riders were utilizing 37 reverse commute programs. Office parks were the key destinations. (25)

Several differences between the programs in the 1960s and those of the 1990s are **keys to the success** of the new reverse commute programs:

- **involvement of public transit operators with non-traditional partners;**

- **collaboration with private sector firms needing increased access to labor; and**
- **linkage with support services.**

The two reverse commute practices documented in this research illustrate the more comprehensive approach of the 1990s.

PDRTA's 24-hour rural commute service

With the advent of welfare reform, Pee Dee Regional Transportation Authority (PDRTA) in South Carolina has begun 24-hour commute services linking residents in rural areas with entry-level jobs in the tourist industry along the Grand Strand at Myrtle Beach. PDRTA coordinates with the Marion County Department of Social Services (DSS)to transport persons transitioning from welfare to work. Because the labor market is so tight, several employers have agreed to subsidize some of the routes to bring workers living 40-70 miles away to their retail establishments. DSS provides assistance with support services, such as job training, child care, and counseling, to help workers succeed in this transition. DSS has dramatically decreased its welfare caseload. At the same time PDRTA's reverse commute program has contributed to an increase in net annual benefits of more than $2 million from earnings of those formerly unemployed or underemployed, and from savings in unemployment, welfare, and food stamp assistance. For every $1 invested in the program, there is an annual net economic benefit of $26.60.

SEPTA's Horsham Breeze Shuttle

Developers initiated discussions with the Southeastern Pennsylvania Transportation Authority (SEPTA) for improved transit service from downtown Philadelphia to Horsham business parks, 18 miles to the north. In November, 1996, SEPTA introduced the Horsham Breeze, a 10-mile loop serving major employers, such as United Parcel Service (UPS) and Prudential Insurance, which connects with timed transfers to three fixed routes. The 25-foot buses, funded by a federal Congestion Management and Air Quality (CMAQ) grant, are driven by part-time drivers, under a labor agreement allowing 40% less wages than full-time drivers. With peak service at 10-20 minute headways, ridership has grown to 800 passengers on 39 daily trips. The Partnership Transportation Management Association (TMA), which actively promotes the Horsham Breeze, attributes some of the swelling ridership to new employers who moved to the business park partially because of the Horsham Breeze's ability to supply them with entry-level and service employees. Employees can earn $8-12 an hour in these jobs. To meet the extended workday hours typical of these types of jobs, Montgomery County pays for midday hourly service, and employers subsidize evening and

Saturday service. For every $1 invested in the program, there is an annual net economic benefit of $7.30.

As these two case studies indicate, increasing access to jobs involves strong alliances between the public transportation operator and non-traditional partners. According to one evaluation of the 1960s reverse commute programs designed by community organizations, the lack of involvement by the mass transit industry "...undermined the program and made testing of innovative operation rather meaningless." (26) In contrast, both of these examples are dependent upon a willingness of the public transit provider to actively participate. The result is routes designed to meet transit industry standards as well as the social and economic goals of transit's partners.

In the SEPTA example, traditional funding partners, such as Montgomery County and the federal government, were supplemented by subsidies from UPS and Prudential. Similarly, PDRTA received private sector funding support. In both instances, the need for labor by businesses meshed well with the transit agencies' mission to increase ridership and to fill mobility gaps within their service areas.

Another non-traditional partner highlighted in the PDRTA case study is the Department of Social Services. It has not been typical for transit staff and social workers to collaborate so directly. In this example, DSS also provides support services critical to the success of the transit routes. Without DSS' resources to assist employees in keeping their jobs, ridership could be too unstable to maintain the transit routes. In the SEPTA example, promotion by the Partnership TMA has been an important contributor to the increases in ridership.

Another example, from the Compendium in Chapter 5, further illustrates these keys to success in the 1990s reverse commute programs:

Bridges to Work

Bridges to Work is an $8 million project funded primarily from the Ford Foundation and the federal Housing and Urban Development Department. Its goal is to combine reverse commute transportation services with job placement and **support services** in five metropolitan regions. This model goes well beyond the historical reverse commute programs because of its greater attention to a "bundling" of services to meet human needs.

<u>Demand Responsive Services</u>

Congress passed legislation in 1973 encouraging door-to-door services for the elderly and persons with disabilities. Transit agencies responded by providing special demand responsive services using vans or small buses or by equipping half

of their fleets with wheelchair lifts. In July, 1990, Congress passed the Americans with Disabilities Act (ADA), requiring all transportation providers to equip new vehicles with wheelchair lifts and to provide comparable paratransit service for those unable to utilize the accessible fixed-route service.

The federal effort to reduce the economic, social, and personal costs of immobility has been impressive in both the number of programs and in the amount of expenditures. In 1977, the U.S. General Accounting Office estimated that 114 separate federal programs expended money on transportation services for the disadvantaged and elderly, over half of which were located in the Department of Health and Human Services (HHS). By 1985, HHS estimated that it spent $800 million on transportation services alone, or roughly eight times the combined 1989-90 expenditures of the U.S. Department of Transportation's funding of programs for rural residents, the elderly, and individuals with disabilities. (27)

An array of state programs also provide significant funding for demand responsive services directed at the transportation disadvantaged. For example, Florida's legislature has funded a state-level policy board charged with coordinating specialized transportation services for transportation disadvantaged persons. In 1971, the California legislature enacted the Transportation Development Act, creating a fund out of 1/4-cent of the statewide six-cent retail sales tax. The law has provided a stable state funding source for public transportation, including demand responsive services, in California.

Case Study Examples

Four very different demand response programs were studied during this research. All have in common their success as mobility managers backed by community support.

OATS, INC.

Since 1971, OATS has been providing rural transportation, serving 87 of Missouri's 114 counties. The extensive use of volunteers and a creative blending of funding sources have been particularly important contributing factors to reducing immobility in rural portions of the state. The door-to-door service delivery is fairly conventional; the means of organizing, scheduling and dispatching trips is not. OATS volunteers are responsible for scheduling the trips in their county. In 1996, for example, volunteers donated almost 76,000 hours recording ride requests, communicating with drivers and riders, fundraising and providing publicity. County committees are the backbone of the OATS operation. This decentralized decision-making leads to a sense of ownership and motivation among the volunteers. Local funding provides 35.1% of the total revenues. The diverse array of funding sources and contracts is a testament to the flexible and entrepreneurial management

style. OATS returns $2.30 to the community for every $1 invested in the program.

MTA's Immediate Needs Transportation Program

The Los Angeles County Metropolitan Transportation Authority (MTA) in California has developed the Immediate Needs Transportation Program, a $5 million program funded from local sales taxes to underwrite both taxi vouchers and bus tokens. MTA staff notes that Immediate Needs "is filling a service niche which is not effectively addressed through other transportation programs." (28) Under the administrative brokerage of two community-based organizations, about 600 social service agencies participate in providing bus and taxi trips to food banks and grocery stores, medical appointments, job training and job interviews, and for emergencies. In the first half of 1997, over 403,000 trips were provided at an average cost of $5.50. (29) For every $1 invested in the program, the annual net economic benefit is $2.60.

City of Fremont's Travel Training Project

Unlike the two programs described above, the Travel Training Project developed by Fremont, a suburban city of 190,000 located in Northern California, seeks to increase mobility for the elderly and people with disabilities by decreasing their reliance on demand responsive services. Goals are to expand travel options and create long term behavioral change by training this population to ride fixed-route, public transit. Central to the philosophy of the program's design is that training should occur in groups with peers as travel training assistants. The Travel Training Project was conducted with residents from Fremont and four adjacent cities in July, 1993 through June, 1996. AC Transit District, the Bay Area Rapid Transit District and Union City Transit funded the project to determine whether it could reduce the costs and demands on their paratransit systems resulting from ADA. An analysis demonstrates that the transit agencies will potentially save $407,442 over five years, assuming each transit trip made by participants offsets one paratransit trip. The benefit/cost ratio is 1.9, meaning that for every $1 invested in the Travel Training Project, the benefit is $1.90. Individuals who have been trained also save $1.90 (the difference between the bus fare and the paratransit fare).

Numero Uno Market Shoppers' Shuttle

As was shown in the reverse commute case studies, private businesses will often provide transportation assistance if they perceive a positive economic return. The owner of Numero Uno Supermarket in South Central Los Angeles, California, recognized difficulties his customers had carrying their groceries home without an automobile. Many ride an MTA bus or walk to the store, very often accompanied by their children. To help his customers and to build customer loyalty, this entrepreneur provides a modified demand

responsive system to customers who buy at least $30 worth of groceries. After making their purchases, customers can board one of the nine vans he has available to take them and their families and bags of groceries home free of charge. The store is one of the top five supermarkets in Los Angeles, grossing more than the industry's average sales. The van service is less than 1% of the market's gross volume in sales.

The Compendium includes additional examples of demand responsive services, such as the San Diego DART in California, which uses vans as feeders to fixed routes, picking up callers in suburban and rural areas and transporting them to a transfer point for the mainline bus routes.

Reduced Fares

Historically, mechanisms to reduce fares have been focused on the elderly and people with disabilities. In late 1974, Congress made **discount fares** for the elderly virtually universal by requiring that any urban transit system receiving federal operating assistance charge elderly and riders with disabilities half or less of the base fare. In the late 1970s and early 1980s, the federal government funded demonstration projects to provide low-cost, shared-ride taxi services for the elderly and individuals with disabilities. These **"user-side" subsidies** consisted of below-cost vouchers, scrip, or tickets which the user could buy from a sponsoring agency and then redeem from a transportation provider for the full value of a trip. (30)

Case Study Examples

Both these mechanisms--discounted fares and user subsidies--continue to be cost-effective means of reducing fares for the transportation disadvantaged. Use of the mechanisms has expanded to aid low-income groups, although not with the widespread application afforded the elderly and people with disabilities. **The Immediate Needs Transportation Program,** described in the previous section, is an example where the MTA has used discounted tokens and taxi vouchers to fund $5 million toward the unmet transportation needs of its poorest constituents. In the case study below, a reduced fare program provides greater mobility for Medicare patients in Miami, Florida, while containing the state's Medicare costs and increasing the transit agency's fixed-route ridership.

MDTA's Medicaid Metropass Program

Medicaid is a federal entitlement program that pays for basic health care services for people with low incomes and long-term care for the elderly and persons with disabilities. In order to reduce its transportation costs for non-emergency medical services, the Medicaid office in Miami, Florida, contracts with Metro-Dade Transit Agency (MDTA) to administer a Metropass program. Under this program, a Medicaid recipient who agrees to give up

door-to-door paratransit receives a monthly bus pass for $1. To make the program cost-effective, Medicaid requires that only recipients who make six or more one-way trips a month for three consecutive months are eligible. The third one-way trip is the break-even point for Medicaid, when the cost of the paratransit trips matches the cost of a monthly pass. The result of the Metropass program is a savings to Medicaid of over $500,000 a month in transportation costs. MDTA benefits by increased pass sales of 3,600 a month, by receipt of $4-6 per pass in reimbursement from Medicaid for administration of the program, and by avoidance of $10 million in potential ADA costs. Riders benefit from increased mobility, independence and flexibility. Since the $1 per month bus pass is less than the $1 per ride copayment on paratransit, Medicaid recipients also have an economic incentive to enroll in the Metropass program.

The Compendium features additional examples, including systems in Utah and Washington where fares are free.

Livable Communities

In 1994 the Federal Transit Administration (FTA) introduced the Livable Communities Initiative to improve mobility and the quality of life by:

1) strengthening the link between transit and community planning, including land use policies and urban design standards which support the use of transit;
2) promoting increased participation by neighborhood and community organizations, small and minority businesses, persons with disabilities and the elderly;
3) increasing access to or generating employment through high quality community-oriented transit services and facilities; and
4) serving, where appropriate, as the transportation component for the Empowerment Zones and Enterprise Communities (EZ/EC) Program of the Department of Housing and Urban Development (HUD) and the United States Department of Agriculture (USDA). (31)

To date, FTA has awarded 17 demonstration grants in various communities, including the Fruitvale BART Station project in Oakland, California, detailed below.

Case Study Examples

Fruitvale BART Transit Village

The Fruitvale BART Transit Village is an example of community-based planning which responds to immobility by moving the services to the people who need them. The centerpiece of the plan is the Bay Area Rapid Transit

District's (BART) commuter rail station located in the Fruitvale neighborhood of Oakland, California. The Spanish Speaking Unity Council, a community development corporation serving the 51,000 people in this neighborhood, has taken the lead in the revitalization of the BART station area. It has proposed the Transit Village, which will link transportation with a mix of social services, retail, and residential uses. Among the community services planned are a health care center, a senior citizens' center, housing for senior citizens, a child care center, a community resource center, and a library branch. One of the most impressive aspects of the Transit Village project is the package of public funding that has been assembled by the Unity Council, which includes federal funds from FTA, HUD, the EC Program and three other agencies, along with county and city funds. A private developer will build the market rate retail and residential projects in partnership with the Unity Council.

City of Compton's Blue Line TeleVillage

The Blue Line TeleVillage creates mobility through technology. Located in Compton, a California city of over 90,000 near South-Central Los Angeles, the TeleVillage allows residents and employees to access many services without the need to travel. The TeleVillage is a virtual Main Street which connects people electronically through a Telework Center, a computer lab with Internet access, a video conference center, and interactive kiosks. Funded by the Los Angeles County Metropolitan Transportation Authority (MTA) and the City of Compton, it is served by local bus routes, MTA routes, Greyhound and the Blue Line light rail at Compton's transit hub. Although the project was not FTA-funded, part of the impetus for building the TeleVillage was the transportation agency's desire to create Livable Communities through joint development at the light rail stations. With federal welfare reform, the TeleVillage will now also become part of a onestop training center, where welfare recipients will be enrolled in computer courses and distance learning classes.

While not formally Livable Communities Initiative projects, examples in the Compendium of a Neighborhood Travel Center in Texas and the Broadway-Manchester Transit Center in Los Angeles follow the Initiative's principle of strengthening the link between transit and community planning.

Social Services Coordination

While coordination of public transportation with the transportation provided through the social service system has long been a goal, the goal has been difficult to achieve. One reason is the division of responsibility for transportation at the federal level. Whereas public transportation is the primary focus of the Federal Transit Administration, it is only an ancillary service for many other federal

departments that fund transportation. Yet Medicaid non-emergency transportation, which the federal Department of Health and Human Services (HHS) funds, is the second largest federal expenditure for public transportation, amounting to $1.5 billion. (32) Although transportation is recognized as important to current welfare recipients' successful entry into the job market, transportation is not called out specifically as an expenditure in the $3 billion the federal Department of Labor will administer to accomplish welfare reform. (However, Congress has required the Department of Transportation to develop joint planning guidelines with HHS on ways to provide transportation under welfare reform.)

Instead, coordination of public transit and social services has historically taken place at the state level. Florida has developed a five-year plan and has designated an official planning agency in each county to coordinate services for the transportation disadvantaged. California state law allows for the designation of a consolidated transportation service agency to coordinate social service agency demand responsive services through such actions as joint dispatching, purchase of vehicle insurance, driver training and shared vehicle use. South Carolina has formed an Interagency Steering Committee to address the concerns of inefficiency in transportation services. Thus, although implementation of the public policy to coordinate public transportation with social services transportation has been spotty, it is continuing to evolve with the impetus of welfare reform.

Case Study Examples:

Even at the local level, coordination of transportation among social service agencies and with the public transportation provider is not easy. Many social service agencies do not track transportation costs as separate line items. Within some social service agencies, drivers serve dual functions, and the salaries are allocated to a program other than transportation, Some vehicles are multi-purpose, used for transporting clients, staff, hot meals, supplies, etc. (33) Agencies lack an understanding of each other's goals and fear that their programs will suffer if they share scarce resources. This TCRP research includes a case study on such barriers to coordination faced by a rural county in South Carolina and the methods participants undertook to overcome them.

Chesterfield County Coordinating Council in South Carolina

The Chesterfield County Coordinating Council (CCCC) strives to better utilize existing resources in order to increase mobility for clients of rural human services agencies. By tapping into unused capacity of vehicles owned by several organizations, it is an example of coordination among the social services, school district, and the public transportation provider. Transportation has emerged as one of the primary obstacles to better delivery of social services among its 43 member agencies. Some of the elements of its coordinated transportation plan include:

- sharing vehicles and drivers among agencies,
- pooling driver training,
- layering a new fixed route on top of door-to-door transportation,
- adding adult passengers on school buses, and
- freeing case workers from transporting clients.

For other case study examples of coordination with health and human services transportation, refer to these practices described above in other sections:

- MDTA's Medicaid Metropass Program;
- MTA's Immediate Needs Transportation Program;
- PDRTA's 24-hour rural commute service; and
- OATS, INC.

EMPOWERMENT ZONE AND ENTERPRISE COMMUNITIES (EZ/EC)

At the time of this research, the EZ/ECs contacted were only in the planning stage for the transportation projects under consideration. Future research could document the community efforts and barriers overcome in moving these projects to implementation. The ideas being developed by these EZ/ECs are described earlier in this chapter.

KEY FINDINGS

The next chapter presents eight key findings of this research. It is based on the literature review, stakeholder interviews, and case studies, including an economic analysis of the 11 practices investigated. The chapter captures themes that are central to using public transportation to address the economic, social and human costs of personal immobility.

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3. KEY RESEARCH FINDINGS

Public transportation plays a significant role in providing mobility to the transportation disadvantaged. While most Americans drive an automobile, people who are young, old, poor or disabled often rely on public transportation as their lifeline. The title of this research, "Using Public Transportation to Reduce the Economic, Social and Human Costs of Personal Immobility," presupposes that public transportation will exist. However, in these days of declining funds, it is important to recognize the fundamental premise of availability which underpins this research; therefore, the first and most obvious finding of this research is that public transportation must be **available** if it is to be used to address immobility. This, and the other seven findings of the research, are summarized below, followed by a discussion of each of the points based upon the literature review, stakeholder interviews, case studies, and economic analyses of the 11 practices investigated.

SUMMARY OF KEY FINDINGS

1. Retaining basic public transportation services is critical to improving the mobility of the transportation disadvantaged.
2. Public transportation practices directed at reducing personal immobility are economically beneficial.
3. Public transportation agencies that are able to develop new alliances with nontraditional partners will have the best results with transportation practices addressing welfare-to-work, employment and health care.
4. Opportunities exist for blending a wide array of different human and monetary resources to address immobility.
5. Public transportation practices bundled with other support services most effectively address immobility issues related to welfare-to-work, employment, and health care.
6. Public transportation agencies can provide leadership in economic development, thereby reducing the costs of immobility.
7. Today's mobility issues, particularly in access to jobs, demand regional approaches.
8. Simple ideas and programs can yield significant mobility improvements.

1. Retaining basic public transportation services is critical to improving the mobility of the transportation disadvantaged.

One danger in addressing specific mobility problems--such as services to meet welfare reform or provide access to health care--is the temptation to focus on the immediate transportation need without considering the health of the basic

system. For example, in the recent transformation of welfare to workfare, there was an assumption on the part of many state and local governments that public transportation was available to meet the new demands. The absence of a transportation discussion in the federal welfare bill and the lack of specific dollars for transportation support services is evidence of this assumption. However, government officials learned what transit operators had been trying to tell them for years--that funding reductions had taken their toll on what public transit could deliver in many systems around the country.

The AC Transit case study on service reductions is strong confirmation that these cutbacks hurt the very population that the government is now trying to help into the job market. AC Transit was forced by budget shortfalls from reduced state and federal funds to cut 1,000 weekday platform equivalent hours, thereby saving $4.8 million. However, a survey conducted during the AC Transit study revealed that 7.4% of the riders lost $2.2 million in job income as a result of the cuts, and 4.2% were continuing to lose income one year later because they had not found other employment, amounting to an additional $8.5 million a year. The total annual costs to the community from the service reductions were $48.1 million.

Over a year after the reductions were implemented, the District responded to residents in an isolated pocket of its service area by adding back hourly service from 8 p.m. to 1 a.m. Of the approximately 3,000 people living in the area, more than half were on public assistance and did not have access to a car. To help residents travel to jobs with evening or night hours, a set-aside in the budget for experimental programs was used to fund approximately seven months of service. The District is pursuing new welfare-to-work funds through the county Department of Social Services and private funding from employers served by the route in order to continue the route in the new fiscal year. External funding will also be needed to respond to similar pleas from other constituencies, according to the Manager of Service Development.

The results of the AC Transit case study demonstrate the importance of fixed-route service to the community and the impact when it is reduced. **Urban bus service is enormously productive, and its curtailment even in low-patronage, off-peak hours can create added travel costs and income losses that exceed by several times the dollar savings to transit agencies from the service reductions.**

The case studies in this research are replete with examples of customized services that are **dependent** on the existence of a strong core system--one that operates 20-24 hours a day, seven days a week. The system must provide reliable service over a span of hours and days that meet the needs of the local economy. For example:

- SEPTA's Horsham Breeze route to a suburban business park is an extension of reverse commute bus routes and rail service from the central city. The shuttle runs six days a week from 6:12 a.m. to 11 p.m. and meets two daily, 21-hour per day mainline routes.

- MDTA's Medicaid Metropass Program could not exist if basic service levels were not available to meet the needs of Medicaid patients.

- MTA's Immediate Needs Transportation Program is able to grow and serve more people because of its increasing use of bus tokens. If basic bus service were not available at the days and hours needed, the program would not be attractive to the 600 participating social service agencies.

- About 48% of MTA's Blue Line TeleVillage users arrive by transit. The availability of transit services helps create this "virtual" mobility.

- The private entrepreneur who operates the Numero Uno Supermarket Shuttle relies on transit access from MTA lines to bring his customers to the store.

- The Marion County Department of Social Services worked with PDRTA to expand an existing route into a 24-hour service in order to link welfare recipients with entry-level jobs.

- The heart of the concept for the Fruitvale BART Transit Village is its location at a hub well-served by public transportation.

- The City of Fremont's Travel Training Program increases mobility for the elderly and persons with disabilities by training them to ride a fixed-route system that already exists.

This finding, **retaining basic public transportation services is critical to improving the mobility of the transportation disadvantaged** is listed first because the research team believes it the most important. Investment in a basic level of transit services will have the broadest impact on reducing personal immobility for the transportation dependent.

2. Public transportation practices directed at reducing personal immobility are economically beneficial.

Society benefits when individuals can access more parts of society. The programs in these case studies save society money by helping to:

- avoid medical institutionalization of the indigent;
- prevent crime by providing job training for employment and food for the hungry;
- reduce the demand on more expensive and oversubscribed paratransit services;
- provide an option to a costly ambulance ride for medical care;
- increase the purchasing power enjoyed by transit riders with access to jobs or to broader market choices; and
- relieve other agencies funded by tax dollars of transportation responsibilities and, thereby, increase their productivity.

Although these benefits are not easily quantified, they should not be overlooked. If transit agencies could incorporate them into new measures for evaluation, transit's true value to society would be startlingly apparent.

In order to quantify the benefits of these programs in more traditional terms, an economic analysis was performed for seven of the eleven transportation practices studied. Four of these involved surveys developed by the research team, and the other three were based on data gathered from the transportation organization. The results show a high ratio of benefits to costs, supporting the finding that public transportation practices directed at reducing personal immobility are economically beneficial.

Below is a table summarizing the results of the economic analyses.

Case Study	Annual Benefits	Net Annual Costs	Benefit/ Cost Ratio (a/b)	Net Annual Benefits (a-b)
	a	b	c	d
Completed Analyses				
PDRTA, Myrtle Beach	$2,176,570	$79,430	27.4	$2,097,140
SEPTA Horsham Breeze	1,563,361	213,192	7.3	1,350,169
MDTA Metropass	7,619,000	1,580,000	4.8	6,039,000
MTA Immediate Needs	13,951,000	5,400,000	2.6	8,551,000
OATS, Missouri	13,939,330	6,009,825	2.3	7,929,505
Fremont travel training	52,150	26,956	1.9	25,194
AC Transit service cuts	4,759,000	48,100,000	0.1	-43,341,000

As can be seen by the benefit/cost ratio, SEPTA's Horsham Breeze Shuttle has a very high rate of return. For every $1 invested in this reverse commute service, there is a benefit of $7.30. Even more astonishing is PDRTA's benefit/cost ratio of 27.4, made possible because PDRTA has so successfully minimized its out-of-pocket costs through fares and employer contributions. Transit's role in helping control health care costs is illustrated by MDTA's Metropass program, which saves over $6 million a year in federal and state Medicaid dollars. In the case of Immediate Needs, for the annual $5.4 million invested by MTA, there is a positive economic benefit in the community of almost $14 million and a benefit/cost ratio of 2.6. Not surprisingly, service cuts have a negative effect on the community. When AC Transit cut 1,000 weekday platform equivalent hours, the annual economic losses to AC Transit riders were more than $48 million, compared with only $4.8 million in annual savings to AC Transit.

Chapter 4 provides guidelines for conducting the type of economic analysis on which these findings are based.

3. **Public transportation agencies that are able to develop new alliances with nontraditional partners will have the best results with transportation practices addressing welfare-to-work, employment and health care.**

The transit industry has been in partnership with state and federal governments over the years to fund transportation services. However, almost all the operations spotlighted in the case studies were new services developed with nontraditional partners, such as:

- social service agencies
- community-based organizations
- volunteer groups
- businesses, and
- local governments.

Illustrations of these nontraditional partners can be highlighted from the case studies. For example, PDRTA works hand-in-glove with the **Department of Social Services (DSS)** to provide service to entry-level jobs for people transitioning off welfare, and MDTA introduced its Metropass program with the full involvement of the regional **Medicare** administrator. One element of both these successful working relationships is a vested interest shared by both parties. For example, the Medicaid Program Administrator in Miami had an interest in reducing the transportation costs for her program; MDTA had an interest in avoiding additional ADA paratransit trips that would have been required if Medicaid had stopped taking responsibility for these same trips. The Metropass

was born from these shared vested interests. Medicaid was also willing to share control over its clients and database to make the program succeed.

A prime example of a willingness to share control is OATS, where volunteers prepare monthly schedules, promote ridership, and raise matching funds. The outcome is a sense of ownership among the **County Committee members,** who donate 76,000 hours worth $524,000 per year to the success of the operation. The MTA and BART case studies represent other examples of willingness to share control with nontraditional partners. MTA provides general oversight and policy direction to the Immediate Needs Transportation Program, which is entirely run by two community-based organizations, **First African Methodist Episcopal (FAME) Renaissance program and the International Institute of Los Angeles (IILA).** Similarly, BART has been willing to share control by relinquishing the lead on development around one of its stations to the **Spanish Speaking Unity Council.** Like FAME and IILA, the Unity Council is another community-based organization with a history of respect and competency among residents and other institutions.

Fundamental to shared control is a climate of trust between the transit agencies and their partners. OATS trusts its volunteers with key functions of the service, and BART and MTA have a corresponding trust with their community-based partners. In Chesterfield County, South Carolina, building trust was one of the most important functions of the first two years of the Coordinating Council, according to the participants. Their director cites "a significant increase in cooperation of staff at the direct service level" as a result of the time they spent building trust.

Another issue the Chesterfield County Coordinating Council had to address was forming a consensus on a common agenda. Although the members agreed with the goal of coordination, they were reluctant to take the steps to make coordination happen. Only when they were able to agree that sharing each agency's resources was their best path to coordination were they able to overcome their parochial concerns. In contrast, BART and the Unity Council share the common goal of economic development at the Fruitvale BART station, a goal which serves both the immediate constituency around the station and BART's broader mission of diversifying revenues and increasing ridership. The partnership between PDRTA and DSS works so well because of their joint agenda to provide transportation to jobs.

A key ingredient in a successful partnership is the ability to listen to the partner's needs and respond flexibly. SEPTA's ability to address the employment needs of private sector partners, such as **United Parcel Services** and **Prudential**, created a win-win opportunity for all parties. The small vehicles and flexible funding package SEPTA offered to create the Horsham Breeze shuttle

responded to the image the business park tenants wanted and the share of the service for which they were willing to pay. The resulting partnership realizes economies of scale that would not be possible with a single public or private entity working alone.

Local governments can also make good partners for a transit agency. For example, MTA has located the management of the Blue Line TeleVillage with the **City of Compton** and plans to form similar partnerships with the cities of El Monte and Inglewood to generate the community buy-in that is necessary for the long-term funding and usage of other televillages. AC Transit and BART funded a partnership with the **City of Fremont** to conduct peer travel training for ADA-eligible seniors and persons with disabilities.

The travel training case study illustrates another element of a successful partnership: an action orientation with scheduled, short-term results. Every rider trained in the six-session course who takes a fixed-route trip instead of a paratransit trip saves the transit agencies $25. Riders themselves save $1.90 per trip. Thus, the savings from the training not only occurred immediately but continues over the long run. In Miami, MDTA and the Medicare Program Administrator also adopted an action agenda, by challenging the status quo. The excellent, short-term results from their pilot program with 126 people have snowballed to 3,600 people, saving Medicaid $503,000 a month and MDTA a potential $10 million a year.

Important elements of agreements with nontraditional partners, as illustrated above by the case studies, can be summarized as follows:

- a vested interest shared by all parties;
- a willingness to share control;
- a climate of trust;
- consensus on a common agenda;
- an ability to listen to the partner's needs and respond flexibly; and
- an action orientation with scheduled, short-term results.

Dramatic changes are occurring in the delivery of health care and reform of the welfare system that directly impact transit properties. These case studies identify transit operators that are ahead of the curve in meeting these societal and political shifts in priorities. By designing services in conjunction with their nontraditional partners, they have been able to respond effectively to these external influences and meet the needs of the transportation disadvantaged.

4. Opportunities exist for blending a wide array of different human and monetary resources to address immobility.

This finding is a byproduct of the partnerships discussed in the previous item. These partnerships have expanded transit's resources by providing new funding sources or alternative methods of administering services. The result has been additional services that increase mobility for the transportation disadvantaged.

Two agencies studied particularly stand out for their creative packaging of funds: OATS and the Spanish Speaking Unity Council, which is leading the Fruitvale BART Transit Village development. Below is a list of the wide range of funding sources that have been garnered in support of their transit projects:

OATS REVENUE BUDGET	FRUITVALE BART TRANSIT VILLAGE
Special Billings/Contracts (24.8%)	Federal Highway Administration
Cities and counties	Federal Transit Administration
Medical centers and HMOs	City of Oakland Community Development Block Grant
Dialysis clinics	
Retirement housing	City of Oakland bond measure
Universities	U.S. Dept. of Housing and Urban Development
Chamber of commerce	
Local school districts	U.S. Environmental Protection Agency
Social service agencies	City of Oakland Enhanced Enterprise
Medicaid transportation	Community Fund
Rider Contributions (5.7%)	City of Oakland redevelopment funds
Group Travel (2.8%)	Alameda Co. Congestion Management Agency
Local Cash (2.1%)	
Non-Transit Resource (0.3%)	U.S. Dept. of Commerce
Missouri Dept. of Mental Health (3.2%)	Ford Foundation
Missouri Elderly and Handicapped	Hewlitt Foundation
Transportation Assistance Program (0.4%)	Loans and lines of credit
U.S. Area Agency on Aging (40.6%)	
U.S. Dept. of Transportation (20.2%)	

Add to this list the additional funding sources from partnerships that have been developed by other case study agencies: businesses and the county (SEPTA); the state Department of Social Services (PDRTA and CCCC); other contracts, such as Amtrak (PDRTA); the school district (CCCC); and Medicare (MDTA).

Besides direct funding, transit agencies can leverage their own funds by tapping human resources available from partners. Volunteers donate 76,000 hours valued at $523,000 a year to OATS budget. The 600 social service agencies that participate in MTA's Immediate Needs Transportation Program provide an in-kind contribution by helping MTA fulfill its mission of increasing mobility for Los Angeles County residents.

5. **Public transportation practices bundled with other support services most effectively address immobility issues related to welfare-to-work, employment, and health care.**

Chapter 2 discussed the characteristics of the transportation disadvantaged and previous public policies that attempted to address immobility. One conclusion that can be drawn is that immobility is an indicator of other social issues that typically cannot be addressed by transportation alone.

This research uncovered a number of examples of how transportation agencies have worked with others to bundle services. Here again, these practices are an outgrowth of effective **partnerships.**

Bridges to Work is one of the most systematically organized programs. The design is based on collaborative planning with job training and placement organizations, transportation providers, community-based organizations, human services agencies, and regional planning institutions. The program, which is being tested in Baltimore, Chicago, Denver, Milwaukee, and St. Louis, consists of:

- *Metropolitan Placement* to help inner-city residents locate job openings, particularly in the suburbs;
- *Targeted Commute* to connect inner-city residents to previously inaccessible employment locations; and
- *Support Services* to mitigate demands created by a commute to distant job locations, including extended child-care arrangements, a guaranteed ride home in an emergency, and conflict resolution with co-workers.

Similarly, most of the case studies validate this emphasis on support services that are packaged with transportation. For example:

- The City of Fremont's Travel Training Program recognizes that persons who are elderly or disabled may need the support of peer training to develop the confidence to ride AC Transit and BART fixed routes.

- The Department of Social Services in Marion County, South Carolina includes PDRTA's rural commute routes with other assistance it offers to Family Independence Act recipients, along with job placement, family living skills classes, child care subsidies, and post-placement counseling.

- The Chesterfield County Coordinating Council and the MTA Immediate Needs Transportation Program have at their heart the integration of transportation and social services to address human needs holistically.

Recognition of the importance of support services extends to other aspects of economic development and welfare-to-work programs. The federal government, for example, instituted the Empowerment Zone and Enterprise Communities initiative in 1994, an economic development program which is also designed to address social problems, including immobility. Besides over $1 billion in funds, the selected communities are eligible for other supporting programs, such as tax-exempt facility bonds, employer wage credits, certain tax deductions, and assistance in overcoming regulatory barriers. This program recognizes that a strategic vision for change must encompass multiple aspects of a community, such as economic opportunity, sustainable development, community-based partnerships, and stimuli for private sector investments. Transportation is a mandatory component in each community's strategic plan.

In the area of welfare reform, the South Carolina Department of Social Services (DSS) is an example of a comprehensive approach which includes both assistance to the client, as described in the paragraph above on Marion County, and incentives for the employer. These incentives include: (34)

- Work Experience Program, an unsalaried, apprenticeship program that allows employers to observe and train prospective employees at no cost;
- Work Supplementation Program, which allows employers to hire interns at minimum wage and be reimbursed at $1.10 per hour;
- Family Independence Employer Tax Credit equal to 20% of the eligible employee's wages per month for the first year and declining to 10% by the third year;
- New Jobs Tax Credit of $1,500 to $4,500 per job per year for up to five years;
- Job Development Training Fee equal to 2-5% of a new employee's state withholding taxes for 15 years, which can be used for transportation as well as training, training facilities, real estate, infrastructure or to meet environmental regulations; and

- Job Retraining Fee, a retention of up to $500 in state withholding taxes for each production employee to be retrained for a maximum of $2,000 per employee over five years.

The Enterprise Communities initiative and the South Carolina DSS program are cited to illustrate how current thinking places importance on an inclusive approach to addressing societal problems. In their book, *Auto, Transit, and Cities*, J.R. Meyer and J.A. Gomez-Ibanez explain the failure of early reverse commute programs:

> "When compared with racial discrimination or lack of skills and education, employment decentralization and inadequate or expensive public transportation appeared to be relatively minor causes of unemployment (or underemployment) among low income central city residents."(35)

In other words, although transportation is an essential component in solving immobility, it will not resolve the problem in and of itself, because the origins of immobility are entangled in demographic, geographic and cultural causes as well. Transit staffs need a new set of skills and knowledge to integrate these socioeconomic factors into their service planning and delivery. By bundling transportation solutions with packages of support services, public transportation providers will attack the problem more comprehensively, with a higher likelihood of success.

6. Public transportation agencies can provide leadership in economic development, thereby reducing the costs of immobility.

The suburbanization of jobs has followed the suburbanization of residences. As of 1990, the suburbs account for 60% of the metropolitan work force. Today, just one-quarter of the American people live in central cities, and the largest proportion of people--half the population--live, work, and shop in urban areas outside the central city.(36) At the same time, poverty and disadvantage are concentrated in the former central cities.(37)

Transit agencies have responded with operational improvements designed to address this jobs/housing mismatch. The two reverse commute routes studied for this research are good examples. PDRTA takes employees from rural South Carolina to jobs in the tourist industry at Myrtle Beach, a commute of one to two hours. Although International Paper is building 50,000 homes near Myrtle Beach, prices are out of the range of these riders, necessitating this continuing commute for entry-level workers. SEPTA's Horsham Breeze allows employees to transfer from main line routes originating in Philadelphia to a shuttle route looping around a jobrich suburban business park. The average commute is one hour and 28 minutes one

way. Prudential's decision to locate its telephone center in a suburban business park instead of downtown Philadelphia is illustrative of the suburbanization of jobs, the cause behind the mismatch of potential employees with job locations.

What the long-term prospects for these routes will be cannot be known at this time. Will workers become discouraged by such long bus commutes and purchase an automobile as soon as possible? Auto ownership may become more feasible when these employees have work experience which allows them to advance to higherpaying jobs. Whatever ill effects may occur for transit ridership or road congestion, auto ownership under today's land use patterns will definitely increase the personal mobility of these workers. Thus, the reverse commutes will have given these employees an opportunity for entry into the personal mobility enjoyed by most Americans.

On the other hand, increased auto ownership by these current employees may not affect the viability of the reverse commute routes if the experience of United Parcel Service (UPS) in Horsham Township is any evidence. UPS has an extremely high employee turnover rate and is constantly recruiting new applicants, who will need the bus service. Burger King in Myrtle Beach has jobs that go begging, and is willing to subsidize the PDRTA routes to enlarge its labor pool. Even assuming a change in current land use policies occurs, the jobs/housing imbalance cannot be corrected in anything but a long time frame. Therefore, it is likely that such operational strategies as those implemented by PDRTA and SEPTA will continue to be needed for economic development as long as the economy remains strong.

Two California transit agencies spotlighted in these cases studies are involved in long-term land use changes that can have a more permanent impact on economic development. The Fruitvale BART Transit Village is being built at a rail station. Its central feature will be a large pedestrian plaza surrounded by small retail uses, multi-family dwellings, and public services. The design responds to immobility by moving the services to the people who need them and clustering the development around a transit hub. Similarly, MTA's Blue Line TeleVillage moves services to the people, but through technology. Located at the City of Compton's transit hub, the TeleVillage allows residents and employees to access many services electronically, without the need to travel.

Both of these case studies are examples of transit as part of a larger economic development strategy. A 1996 TCRP report entitled *Transit and Urban Form* discusses the relationship between mobility and economic development: "Reduction in accessibility and service quality accelerates the economic decline of city neighborhoods and business districts." The report goes on to list characteristics of regions with successful transit-oriented development, including these characteristics related to economic development:

- regional growth that channels development to station areas;
- transit stations located in areas where the market supports development;
- regional policies that focus growth in transit corridors and limit it elsewhere;
- station-area policies and programs to support private sector investments and transit-friendly development; and
- long-term commitment. (38)

Public transportation can have an important role in economic development, both through operational improvements and through land use strategies. However, it cannot substitute for sound land use decisions.

7. Today's mobility issues, particularly in access to jobs, demand regional approaches.

Another outgrowth of the jobs/housing mismatch discussed above is the need for transit agencies to enlarge the sphere of influence used in their planning, perhaps even beyond their own service areas. This need surfaced during interviews with staff at the Employment Development Department (EDD) conducted in the AC Transit case study. EDD representatives indicated that 67% of their caseload of people looking for jobs live in Oakland, which lacks enough jobs to meet the caseload's demand. The jobs are in the southern portion of the county and adjacent counties, which are very poorly connected by public transportation to Oakland. In Chesterfield County, South Carolina the same type of problem was identified for access to health care. Only one of the five hospitals that patients need to go to is in the county.

Nationally, only 6% of welfare recipients have cars.(39) Yet, most new job growth is occurring in the suburbs, largely inaccessible by public transportation. Clearly, the nation cannot rely on transit alone to solve this piece of welfare reform. It will take a great deal of collaboration on the part of governments, businesses, non-profit agencies, churches, metropolitan planning organizations, and other leading institutions to help knit together a plan that addresses immobility across jurisdictional and institutional boundaries.

The case study on the Chesterfield County Coordinating Council (CCCC) shows how difficult this coordination can be, even in a small rural area. Before coordination could be undertaken, CCCC members had to confront turf battles, dissolve resentment between agencies, and build trust and rapport. The barriers to coordination were similar to those found in other recent TCRP studies conducted by Crain & Associates(40) and in the literature search for this research. Some of the underlying issues hindering regionalism include:

- lack of understanding about other institutions' goals and services;
- reluctance to share scarce resources for fear that the agency's own programs will suffer;
- worry that the bigger or more powerful agencies will overpower the desires of the smaller or less powerful agencies;
- suspicion that revealing costs will reflect unfavorably without taking into account basic differences among the agencies;
- inability to change inhibiting federal, state and local regulations;
- concern about inappropriate measures of success applied to nontraditional services;
- fear of job loss;
- competition for funding, prestige, control, and personal recognition; and
- pressure in the political environment to promote local interests over regional goals.

Clearly, society should not expect quick fixes leading to regionalism that can overcome decades of separateness and autonomy. Yet, despite these barriers, there are examples of agencies moving forward across regional lines with coordinated services.

Oftentimes, the regional approach is part of a larger corporate strategy of mobility management. MTA's Immediate Needs Transportation Program, using taxis as well as buses, serves facilities in all of Los Angeles County, even though other fixed-route operators exist in some of the outlying cities. MTA program staff expect that Immediate Needs will become part of a three-tiered strategy in the agency's Long Range Transit Plan. High frequency, high capacity buses would comprise tier one; 40-foot buses along fixed lines with flexible routing in the neighborhoods would comprise tier two; tier three would be a community-based network, including point deviation routes, late night taxi service, Immediate Needs, and the currently contracted Americans with Disabilities Act program. The program would become part of a portfolio of services available to the nine million people of Los Angeles County.

Similarly, PDRTA and OATS, serving 11 and 87 counties respectively, look at the various components of their services as pieces of a corporate vision embracing mobility as a goal. In discussing its rural commute services, PDRTA states, "PDRTA is accepting the critical responsibility of providing the coordinated, efficient, and specialized transportation network which will allow these people to have access to job opportunities."(41) The fact that PDRTA crosses into the service area of another operator in order to bring its residents to jobs in Myrtle Beach demonstrates that transit connections between residential areas and workers *can* be designed regionally instead of locally. And OATS' mission is to "provide reliable transportation for transportation disadvantaged Missourians so they can live independently in their own communities."(42) Both these statements exhibit the

core institutional state of mind that looks for opportunities, the characteristic of a mobility management agency.

The Job Oasis Worker Mobility Project in Chicago is a multi-agency partnership that not only *coordinates transportation* within a region but also *coordinates services* across disciplines. Managed by the nonprofit Suburban JobLink, Inc., it provides a mix of fixed-route, subscription and vanpool services for unemployed and inner-city residents on Chicago's West Side to jobs in suburban industrial parks around O'Hare Airport. Support services include job placement and job retention services, referrals to child care, and a guaranteed ride home program. Partners include the PACE Suburban Bus Company and key Chicago and county employment and training councils.

County lines and transit service area boundaries are artificial barriers for people who need to cross them to get to the jobs and services they need. The same tailored approaches described above for job-access transportation are also necessary for the design of transportation to regional services, such as hospitals and clinics, food banks, and crisis centers. Given the patterns of land use and demography that now exist in the United States, **regional** approaches are essential to address the economic, social, and human costs of immobility.

8. Simple ideas and programs can yield significant mobility improvements.

Many of the programs studied in this research began with simple ideas which have yielded significant results:

- OATS is a shoestring operation that makes things happen through extensive use of volunteers and creative blending of a wide variety of funding sources.
- MDTA designed the Metropass as a pragmatic approach for transporting Medicare clients who are able to ride fixed-route transit.
- MTA provides oversight to the Immediate Needs Transportation Program, run by community-based organizations with a wide network of social service agencies, and based on existing taxi and bus services.
- The City of Fremont's Travel Training Program teaches persons who are elderly or disabled to ride fixed-route transit through the use of peers.
- The CCCC created a new fixed route system in rural South Carolina by layering it onto existing dial-a-ride services. Bus stops for the general public are designated along dial-a-ride routes that are consistent, such as from a board-and-care home to a sheltered workshop.

Including these simple, independent programs into the overall strategy of a company will reinforce the mobility management ethos of the organizations, which

emphasizes moving people rather than the mode of transportation. Including them can also be more effective than considering them as adjuncts to the agency's mission, by assuring the programs greater funding security and integration within the organization.

None of these programs are elaborate concepts; none required costly capital investments. Yet, as Finding 2 illustrates, the net annual benefits range from thousands to millions of dollars. The following chapter is a Methodologies Guide. It discusses how these numbers were derived and describes the steps to perform an economic analysis of transit projects.

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4: GUIDE FOR ECONOMIC ANALYSIS OF TRANSIT PROJECTS

OVERVIEW

This chapter explains the guiding principles and procedures that were used in conducting economic analyses for the accompanying case studies of the consequences of immobility. Drawing on the case studies for illustration, the guide outlines the approach to economic analysis in enough detail for the average well-informed person with some grounding in economic theory first to understand the approach, and second to replicate the approach either for past, for ongoing, or for future projects. The aim is to provide enough structure for finding and calculating transit costs and benefits that no important costs or benefits will be overlooked or underestimated. This process requires both creative imagination and economic rigor.

There are a number of purposes for which economic analysis can be utilized. Perhaps most importantly, the results of the economic analysis process described in this chapter can be used by policy makers in making informed transit investment decisions by comparing the transit benefits and costs of a specific proposed project. For proposed projects where quantified benefits clearly outweigh the costs, the economic analysis can be utilized to build support for budgets that provide sufficient public transportation funding overall. The recommended steps for economic analysis described below can be applied by transportation practitioners to:

- Determine if a proposed transit mobility project has sufficient benefits to justify the costs of the project. The methodology provides a means for determining who is benefiting from a proposed project, and how those benefits can be valued.

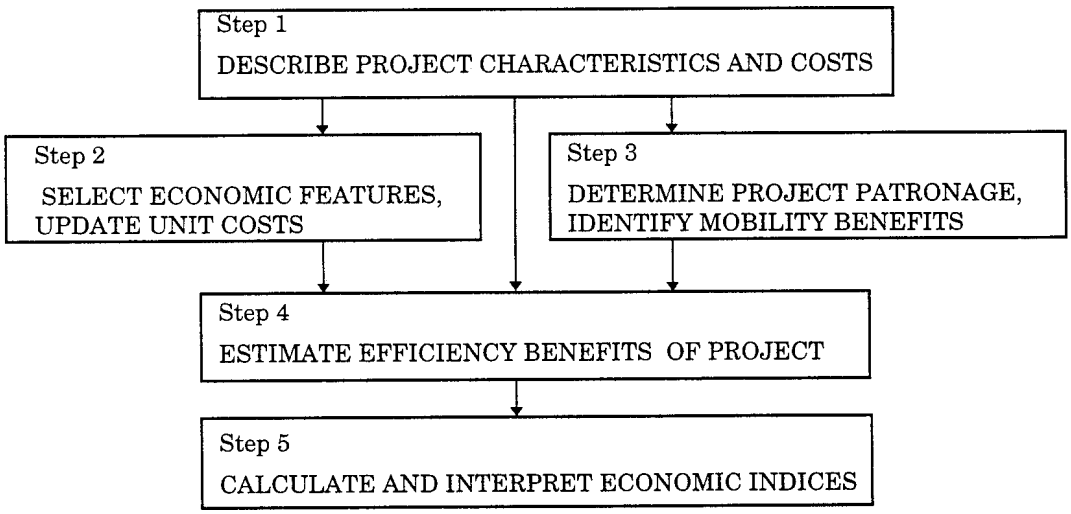
- Evaluate ongoing projects to determine if a project has been successful in economic terms. The practitioner can determine if proposed modifications to a transit project would increase benefits relative to the costs of the proposed changes.

- Provide a basis for comparing alternative projects. For example, for a local sales tax measure, the economic merits of a transit project that improves mobility for the transportation disadvantaged can be compared with the economic results of a highway investment.

- Analyze the impacts of transit service reductions on the transportation disadvantaged. The economic costs of such reductions can be compared to cost benefits of the service cutbacks.

Five sequential steps are recommended for these types of economic analysis, as shown graphically in Figure 4-1.

Figure 4-1: Recommended Steps for Economic Analysis



In step 3, *mobility benefits* refer to benefits from transit trips that would not be made without the availability of transit. *Efficiency benefits,* in step 4, result from the shift of trips from automobiles to transit, which typically improves the efficiency, safety, and environmental performance of the highway transportation system. Each of these five steps is explained in turn below, and special terms are defined in the accompanying glossary. Both the definitions and the steps of the economic analysis process are adapted from the current US guidebook on transportation user benefits(43) plus a recent comprehensive paper on the subject by the Victoria Transport Policy Institute.(44)

STEP 1: DESCRIBE PROJECT CHARACTERISTICS AND COSTS

The principal items of information needed for initiating an economic analysis of a transit improvement project are summarized below and discussed in turn.

- Sponsor and purpose of project.
- Implementation period and project lifetime.
- Locations served and operating plan or plans.
- Investment cost.
- Annual maintenance and operating cost.
- Alternatives to be considered.

GLOSSARY OF KEY TERMS

Transit or bus operating costs The cost of implementing and operating a transit improvement, including drivers' wages, vehicle operation and maintenance, managerial labor, and vehicle rental or depreciation.

User costs The sum of relevant transit and highway user costs on a specified improvement. *Transit user costs* generally consist of fares, any costs of getting to a transit stop or terminal, and the value of time accessing, waiting for, and riding on the transit vehicle. *Highway user costs* are the sum of vehicle running costs, the mileage-related cost of owning a motor vehicle, and the value of travel time. *User benefits* are usually net savings in user costs.

Mobility benefits Benefits from transit trips that would not be made without the availability of transit.

Efficiency benefits Benefits resulting from the shift of trips from automobiles or other modes to transit, which typically improves the efficiency, safety, and environmental performance of the transportation system.

Incremental or marginal costs The net change in dollar costs directly attributable to a given transit or highway improvement, decision, or proposal compared with some other alternative, usually the existing situation or "do nothing" alternative, but possibly some other, lower-cost alternative.

Analysis period or study period The number of years chosen for consideration and study of incremental benefits and costs in an economic analysis. The year of implementation is usually designated year 0 (zero). The year operations commence is year 1, and subsequent years are year 2, year 3, etc.

Discount rate An annual percentage figure that represents the rate of interest that money invested in an improvement could earn over the analysis period if invested in other opportunities (the *opportunity cost* of capital), or not spent, or in the case of governments, not even raised in taxes or not borrowed.

Internal rate of return An interest rate that would return the estimated benefits of the project from investment of the cost of the project.

Benefit / cost ratio Present or annual value of project benefits divided by present or annual value of project costs, recommended as the best single figure of economic merit for public transportation projects.

Net present value Present or annual value of benefits minus present or annual value of costs.

Present value The translation of costs or benefits that occur in different time periods to a single equivalent amount at a single instant, usually the beginning of year 1 of the analysis period, at the specified discount rate.

Equivalent uniform annual value, or simply annual value The translation of costs or benefits into a series of equal annual payments at the chosen discount rate for the project.

Compound interest factors Multipliers for determining present values and equivalent annual values from annual or periodic cash flows, which can be found in any standard text for *microeconomics or engineering economy*, the two academic disciplines that guide this type of economic analysis. Or, buy a pocket financial calculator.

Sensitivity analysis An evaluation of alternative assumptions about the numbers in an economic analysis that are most crucial or uncertain, to demonstrate what the effect will be on the economic merit of the project.

Equity Substantially equivalent treatment of persons in the same circumstances, and appropriately different treatment of persons in different circumstances.

First, the sponsor: who all is paying for the project, and who is implementing it? To what end or purpose? To the extent possible, the economic analysis should measure benefits that are related closely to the purposes of the project. On the other hand, your inquiries could help clarify the purpose of the project in terms of the benefits that you can measure, especially mobility and efficiency goals.

Next, how much time will be required to implement the project, if it's not already begun? Then how many years of legal authorization or funding is assured? Is the funding level, indexed to inflation, or demand driven, and how is it likely to change during the life of the project?

What does the operating plan call for in terms of urban, suburban, and rural locations served, frequency or timing of service, speed or schedules, fares, capacity, and any other important variables? If there is more than one plan (for example, expanding capacity by either 10% or 15%), consider the plans in order of increasing cost and what exactly any *added* features (in this example, the extra 5% capacity) cost and produce, in revenues and benefits, so that *each separable increment of cost can be evaluated separately*.

Does investment cost include the price of vehicles? If so, it is usually more convenient to treat vehicle costs as annual depreciation or rental, hence part of operating costs. Are there any non-transportation costs that should be considered? For example, any relevant job training costs should be included in project costs if the monetary benefits of jobs resulting from a new transit service are being evaluated.

How should you document annual maintenance and operating cost? Encourage the sponsoring agency to 1) fully disclose and carefully identify or estimate *all* operating costs associated with particular projects, and 2) clearly specify the proportion of total operating cost met by different funding sources, such as fares, charter service revenues, business subscriptions or donations, and government sources. This is especially important because *only the government or "public" cost of the project*, net of fares and other commercial revenues, should be counted as project costs. For future projects, you will of course have to rely entirely on estimates of future costs and revenues. These estimates should be guided by experience with similar projects, either by the sponsoring agency or elsewhere.

Lastly, to what alternatives should the project under study be compared? Usually the alternative chosen for comparison with the primary alternative is the status quo, appropriately called the "do nothing" alternative. One important variation is comparison with a lower-cost and mutually exclusive alternative, with which both the incremental costs and benefits of the primary alternative should be compared. Another variation is to consider a higher-cost alternative that would

have to be undertaken if the basic project is terminated. Then the difference between the two costs is the saving or benefit from the project.

Table 4-1 presents both information on the alternatives used in the case studies and some key reference information about the economic analyses for the case studies that is useful for understanding their similarities and differences. For example, average trip length varied over a range of 5 to 40 miles; and the average number of users for the service studied varied from 106 to 43,639. The setting of the studies was diverse, with two rural, two suburban, and three urban locations. Transit dependence (percentage of users whose only alternative was transit) was only measured by surveys in the PDRTA and SEPTA case studies, where respondents with no auto alternative were 71.8% and 63.3%, respectively. Similar rates were suspected but not documented for the other case studies.

Table 4-1
Selected Case Study Data

Case Study	Average One-way Miles	Average Users	Setting	Dependence Percentage	Comparison Alternative
PDRTA, Myrtle Beach	40	380/day	Rural	71.1%	Status quo
SEPTA Horsham Breeze	19.3	444/day	Suburban	63.3	Status quo
MDTA Metropass	n.a.	3,492/mo.	Urban	n.a.	Paratransit
OATS, Missouri	5.9	25,298/yr.	Rural	n.a.	No OATS
MTA Immediate Needs	5-11	13,762/mo.	Urban	n.a.	Status quo
Fremont travel training	n.a.	106/yr.	Suburban	n.a.	Paratransit
AC Transit service cuts	n.a.	43,639/day	Urban	n.a.	Status quo

n.a. = not available

The last column of Table 4-1 shows *what alternative was used for comparison with the system or prospect under study.* In four cases, it was the status quo, or "do nothing" alternative--for PDRTA, Horsham Breeze, Immediate Needs, and AC Transit service cuts. In other words, the *benefits* of the project stemmed from the comparison between doing nothing and the existing transit system configuration. In contrast, the MDTA Metropass and Fremont travel training case studies were comparing the existing fixed route service (or training for its use, in Fremont's case) with the alternative of serving the same population with more expensive paratransit service.

The existing OATS system was compared with an alternative *without OATS,* in which some passengers switched to rides in autos, usually with others; some switched to riding other, more expensive paratransit substitutes for essential OATS service; and many trips, called "missing," were simply not made. The OATS economic analysis was the most complex modeling of the comparison alternative

undertaken in these case studies, while MDTA and Fremont travel training were the simplest, with the others in between.

STEP 2: SELECT ECONOMIC FEATURES, UPDATE UNIT COSTS

The economic features of the study that need determination are:

- The length of the analysis or study period.
- The discount rate.
- Treatment of inflation, risk, and uncertainty.
- Choice of present value or equivalent annual value.

Fifteen years is recommended as the usual analysis period for transit projects, based on the maximum prospective life of buses before replacement. Highway project study periods should be keyed to the length of the traffic projections, usually 20 to 25 years. Rail and other major transit construction projects could base their study periods on the expected useful life of the resulting facility if traffic projections are available that far out. Normally a single year, called the *study year,* is designated for detailed projections or modeling of project outcomes. Then the study year outcomes are expanded or converted to equivalent annual values--see below--to represent the results over the entire analysis period.

The recommended discount rate is 4%, to represent the long-term average cost of capital with no allowance for inflation or risk.

Because inflation is ignored in the recommended discount rate, any future costs or benefits should be *priced at current rates.* Because risk is ignored, any unusually risky projections of costs or benefits should adopt one of three strategies: 1) specify a *range of possible outcomes* rather than only the average or most-likely value, or 2) specify a *higher acceptable threshold value* for the economic index (for example, a minimum benefit/cost ratio of at least 2.0 rather than 1.0), or 3) include a *sensitivity analysis* that reveals the effects of possible variations in the underlying assumptions. A sensitivity analysis is usually preferred, as it provides the reader with quantitative information that he or she can use to assess the effects of a specified range of uncertainty. For example, see the last section of the economic analysis for the OATS case study.

Usually it is more convenient in transit studies to convert all costs and benefits to equivalent annual costs or benefits, because they almost all originate as annual amounts anyway. The main exceptions would be vehicle acquisition costs, which can readily be restated as average annual depreciation or rental charges. For projects of short duration, such as the five-year Fremont travel training study, present value can be a logical choice.

Note that vehicle costs have been ignored in these case studies, for two reasons. First, vehicle costs are relatively minor on an annual basis, typically around 10% of full operating costs. Second, the cost of vehicles is sometimes difficult to relate to individual projects through a transit agency's accounting system because vehicle costs are not usually included in the operating budgets. And, in the taxi voucher and bus coupon distribution activities of the Immediate Needs program, vehicle costs are not even relevant.

Updating unit cost factors is a routine but important part of economic analysis. Any users of the factors in this report should either consult a current source for the prices or utilize the *ratio of relevant price indexes* in the year of their study compared with the index for the specified year for the cost factor. A summary of illustrative cost factors, most of them used in the case studies, is presented in Table 4-2.

Table 4-2
Illustrative Unit Cost Factors

Item (& Case Study)	Value	Year	Source
1. Automobile operating & ownership costs (OATS)	$.41/mile	1997	AAA, *Your Driving Costs*, adjusted to a 10-year vehicle life.(45)
	$.31/mile	1997	Same source, adjusted further to delete time-related costs(46)
2. Value of travel time (AC Transit & OATS)	$5.15/hour	1997	Current US minimum wage
3. Average annual cost of one suburban parking lot space (Horsham Breeze)	$264	1996	KPMG, Commuter Choice Initiative, June 1996, p. 36
4. Average Medicare costs for:			*Medicare State Summary,*
Hospital stay	$13,296	1996	1996, Health Care Financing
Skilled nursing stay	$2,240	1996	Division, Office of Information
Ambulance trip (Immediate Needs)	$117	1996	Services, Enterprise Data-Based Group, Division of Information Distribution
5. Average cost of visit to doctor by Medicare patients (OATS)	$84	1993	Dr. Gregg Meyer, New England J. of Medicine, 12/18/97, p. 1819
6. Job training costs per student hour (Immediate Needs)	$11	1997	Telephone poll of selected job training providers in Los Angeles

For item 1, auto operating and ownership costs, the higher cost of $.41/mile is the total estimated cost of owning and operating a motor vehicle. This figure is appropriate for *transit-dependent riders who have given up their car to ride transit*--or vice versa, who would have to buy a car or another car if they stopped riding transit. The second, lower cost factor of $.31/mile(47) is appropriate for *transit*

riders who have a car that they could use, because that cost factor includes only mileage-dependent costs, as explained in reference 46. Please note that:

- The 1997 IRS allowance of $.31/mile for business travel on income tax returns coincides with the lower cost factor, whether fortuitously or intentionally.

- These cost factors are about four to six times the typical cost of about $.07/mile for fuel that is misperceived by many drivers as their total cost of driving.

- The average cost per vehicle mile of parking and tolls should be added to these figures if local data are available for such costs.

For item 2, the value of travel time, higher values than $5.15/hour can be used if there is evidence that the average income levels of your transit riders would justify the increase. Significant benefits attributable to travel time valuation should generally be identified separately in the summary of project costs and benefits. The value of travel time is not an economic cost for people who are not losing work time and wages due to their travel time, but repeated studies have shown that in their choices of modes and routes, *travelers behave as if they value travel time* at some fraction of their average hourly income; 80% is a representative figure for highway travelers.(48)

Transit riders' value of travel time depends on the level of comfort and convenience provided. For example, if bus or other transit travel is comfortable, riders will be willing to spend from 30% to 100% longer on a transit trip than if they were driving alone, the higher figure representing the alternative to driving in congested peak-period conditions.(49) This is equivalent to experiencing benefits of $1.80 to $7.80 an hour for transit trips with the same travel time by auto, if travel time is valued at $12/hour.

The other illustrative unit cost factors are less widely used, but should be self-explanatory. Table 4-4, in step 4, also presents several factors for estimating the value of efficiency benefits.

STEP 3: DETERMINE PROJECT PATRONAGE, IDENTIFY MOBILITY BENEFITS

Patronage--the number of riders using the service day by day and month by month throughout the study period--is usually available directly from transit agency records and on-board surveys for past projects, and from use estimates for prospective projects. In some cases, you may have to translate available data (such

as transit tickets and vouchers distributed--see economic analysis for MTA Immediate Needs case study) into patronage or conduct your own survey of current usage. In other cases, monthly or seasonal variations in patronage may need to be modeled in deriving annual patronage counts (see economic analysis for PDRTA, for example).

A key twin question for the economic analysis comes next, which can require more effort to answer than all of the other steps combined: *how and by how much* do patrons or other beneficiaries actually benefit, in dollars and cents, from the project? It has already been proposed that benefits be divided for convenience into two categories, to distinguish between those arising from trips that would not be taken without transit service (mobility benefits) and those arising from trips by passengers shifted from automobiles (efficiency benefits). In this step 3 are presented examples of both types, with a detailed explanation of efficiency benefits reserved for step 4.

In some cases, mobility and efficiency benefit data can be derived or inferred from information available in transit agency records. This was true for three of the seven case study economic analyses: Fremont travel training, OATS, and Metro-Dade Transit Agency. In the other four cases--AC Transit service reductions, PDRTA bus service to Myrtle Beach, MTA Immediate Needs program in Los Angeles, and the Horsham Breeze--transit passenger surveys were designed, pretested, administered, and analyzed to obtain the needed benefit information. Readers can consult those four case studies for accounts of the surveys and survey results. *Detailed guidelines recommended for surveys of user benefits are provided at the end of this chapter.*

Table 4-3 shows the *type of benefits* documented for each case study, using the broad mobility and efficiency categories as the first level of discrimination. The three types of mobility benefits identified are described below the tabulation.

Table 4-3
Illustrative Benefits
(thousands of dollars)

	Annual Mobility Benefits			Annual Efficiency Benefits				
Case Study	Job Benefits	Medical Benefits	Shop., Other	Parking Benefits	User Benefits	Social Program Savings	Employer or Provider Savings	Total
PDRTA, Myrtle Beach	$2,116						$61	$2,177
Horsham Breeze	1,506			23	$34			1,563
MDTA Metropass						$7,619		7,619
MTA Immediate Needs	5,066	$4,552			4,333			13,951
OATS, Missouri	1,652	3,272	362		2,542	5,588	523	13,939
Fremont travel training					6	46		52
AC Transit service cuts	(8,900)				(39,200)		4,759	(43,341)

- *Job benefits* resulted from enabling formerly unemployed or underemployed passengers to reach their job sites. Known costs of job training of passengers for this purpose in the Immediate Needs program were first deducted from these benefits. The negative benefits in the case of AC Transit were from job losses due to the service cutbacks. For OATS job benefits include the value of missing employment, business, and education trips.

- *Medical benefits* resulted primarily from the avoided costs of more intensive care, as by continuing to see one's own doctor, but also from being able to stay mobile and thereby care for oneself at home, from getting bused to nutrition programs, and from getting meals delivered at home. In the OATS case study, the average Medicare cost of doctors' visits was used as an estimate of the minimal value of missed trips to doctors in the absence of the OATS service. Total medical benefits for OATS were the value of missed medical, nutrition, and meal delivery tickets.

- *Shopping and other benefits* stemmed from assigning an estimated value of $4 per round-trip shopping journey (for 93% of the $362,000 total), and a nominal $2 per recreational and "other" trip, to missing OATS trips of those types.

One type of expected benefit, for savings in unemployment, welfare, and food stamp payments, was estimated from survey results in the PDRTA case study to be $313,000 annually. However, this saving in federal and state costs is offset by the

loss to recipients of that same amount when they start working. Therefore, this government saving is noted but not counted in total project benefits, even though it seems counterintuitive to leave it out.

STEP 4: ESTIMATE EFFICIENCY BENEFITS OF PROJECT

Efficiency benefits accrue to highway users as a byproduct of the millions of daily trips taken on transit vehicles, mainly through the resulting reductions in vehicle miles driven on highways. The efficiency benefit estimates for the seven case studies summarized in Table 4-3 are considered next.

- *Parking benefits* valued at $23,000 annually in the Horsham Breeze case study came from potential savings in avoiding the costs of providing parking to employees who drove prior to implementation of the shuttle service.

- *User benefits*, mainly from savings in transportation costs, were found for the Horsham Breeze, Fremont travel training, and OATS case studies. The $39.2 million user loss for AC Transit was the result of added travel costs, chiefly for taxis, necessitated by the transit service cuts. A sizable $4.3 million user benefit for the Immediate Needs program represents the value of transit tickets and taxi vouchers distributed free by MTC to program participants. *Please note that any new fares paid by transit users in the project under study represent added costs to users that need to be deducted from their benefits.*

- *Social program savings* from avoided paratransit expenses for three of the case studies are listed as an efficiency benefit because they represent *savings to the social welfare agencies* that would, in the absence of the service being evaluated, have had to provide paratransit or other special transportation for their clients at higher cost.

- *Employer benefits* of $61,000/year from improved access to the labor force were estimated in the PDRTA case study as equivalent to the payments that Myrtle Beach employers make to PDRTA for timely bus service to their sites.

- *Provider savings* of two types were found. The first was savings to OATS of $523,000 from the value of its dedicated volunteer labor force, which is unlikely to be available to small, scattered transit and paratransit operators. The second was savings of $4.8 million to AC Transit as a result of their service cutbacks.

The types of efficiency benefits just illustrated are repeated in the more comprehensive list in Table 4-4, which includes typical current unit values for most types of benefit. Examples have been provided above for benefit types 1 through 5

from the case studies (parking, user, social program, employer, and provider benefits). Benefit types 6, 7, and 8 (congestion delay reductions, reduced environmental burden, and roadway related savings) tend to occur for transit projects that aim to relieve peak-period traffic on highly congested roads. None of the case study projects had this aim, but many transit projects do, especially in high-traffic urban corridors.

Table 4-4
Types and Values of Efficiency Benefits

Type of Benefit	Typical Unit Values
1. Parking benefits, from reduced parking fees or more efficient use of land devoted to parking.	Parking fee estimates for rural areas, up to $1/day; suburban areas, up to $2/day; cities, $3-4/day; CBDs, $6-8/day. Average annual cost of 1 suburban space, $264 (see Table 4-2, item 3).
2. User benefits, mainly from lower cost of transit versus single-occupant autos.	Auto cost of $.31 or $.41/vehicle mile (from Table 4-2) versus fares for the transit service under study.
3. Social program savings, from reduced or avoided paratransit costs.	Single-ride paratransit averaged $15/trip in Dade County; $25 in Fremont, CA; and $19 in Missouri (OATS) case studies.
4. Employer benefits, from improved access to labor force	Varies with local circumstances.
5. Provider savings, from reduced operating costs or donated services	Varies with local circumstances.
6. Congestion delay reductions due to removal of transit users' autos from roads.	$.10 to $.30/vehicle mile for peak-period congestion conditions, depending on severity.
7. Reduced environmental burden, especially air and water pollution.	$.042/vehicle mile for air pollution + $.01 for water pollution = $.052/vehicle mile.
8. Roadway related savings, from decrease in highway facility construction, operating, and maintenance costs.	$.05/vehicle mile shifted to transit in short term to $.10 long term.

Sources: For #1, 6, 7, and 8, Todd Litman, op. cit.; for #2 and 3, this study (as noted in table)

In Table 4-4, the typical unit values shown can be used in the absence of local information on the values for that benefit. For this purpose, as in Table 4-2 earlier, the unit values should be updated as necessary from the 1997 values shown. For the seven case studies, the typical unit values cited in Table 4-4 were used for benefit types 1, 2, and 3 (parking, user, and social program benefits). Benefit types 4 and 5 were calculated from local information.

A recent study by Donald Camph(50) has examined a very similar list of efficiency benefits on a national level, finding about $36 billion in total benefits versus $15.4 billion for the public costs of transit in 1955. The resulting benefit/cost ratio of 2.3 makes a strong case for substantial funding of transit from highway fuel taxes, because efficiency benefits are returned principally to highway users or taxpayers (in the cases of social program savings and provider savings, for example). A complementary study by David Lewis and Michael O'Conner(51) found a mobility benefit for US transit riders of $34 billion in 1993, which is 2.2 times the public cost of transit. *In total, according to these two sources, national mobility and efficiency benefits of public transit are about $70 billion annually, for an overall benefit / cost ratio of 4.5 to 1.*

STEP 5: CALCULATE AND INTERPRET ECONOMIC INDICES

An economic index is the culmination of an economic analysis, the single measure that summarizes for the reader the economic value of a project, first in relation to its own internal costs, and second in relation to other projects, which can be either variations of the examined project in scale or approach, or entirely separate enterprises. There are three principal indices to choose from:

- Internal rate of return
- Net annual benefits (benefits minus costs)
- Benefit/cost ratio

The internal rate of return is an interest rate that would earn the estimated benefits of the project from investment of the cost of the project, assuming reinvestment of all interim benefits (until the final study year) *at the internal rate of return for the project.* This may be a tenable assumption for private sector projects where a business actually has such opportunities for reinvestment, but it is unrealistic for public sector projects where, as proposed in Step 2 of this analysis process, the preferred annual discount rate is 4%.

Net annual benefits, or benefits minus costs, reveal the total excess value created by a project. They are therefore useful in comparing the overall value to society of different projects or project portfolios. However, net annual benefits should not be used as a criterion for project *selection*, because choosing projects with the highest net annual benefit first may exhaust the budget with costly projects that have a lower return per dollar than the set chosen *in order of highest payoff first*--in other words, in *order of declining benefit / cost ratios*, the highest ratio first, then the next highest, and so forth. For this reason, the ratio of benefits to costs is recommended as the primary economic index, with two cautions:

- If projects contain mutually exclusive alternatives, each increment of cost should be evaluated separately on the basis of that increment's benefit/cost ratio.

- Other than economic criteria may dictate the final choice of projects.

To illustrate these two principals, if a *new transit service to area A* costing $100,000/year in public funding and offering benefits of $400,000/year has the option of increasing its initial service levels by $100,000/year with added benefits of $200,000 (incremental B/C ratio of 2.0, total B/C ratio of 3.0) versus *starting an independent service to area B* for the same $100,000 with benefits of $250,000 (B/C ratio of 2.5), it is perhaps obvious that the *economic* preference would be for enlarging the service to Area B, because *only the incremental B/C ratio of 2.0 is relevant in deciding how to spend the added $100,000.*

Now let's switch the assumptions and find that *service to area B* has benefits of only $200,000 while the *increase in service to area A* would bring benefits of $300,000, a substantial excess over the service to area B. Then the *economic* criterion favors area A, but the transit agency's decision may still go to starting area B service, based on the principle of *equity*--treating clients in similar circumstances similarly. Other noneconomic considerations that may influence project selection include the competence of the transit agency to undertake a project, assurance of continued funding availability, environmental benignity, and public acceptance.

Benefit/cost ratios also have the advantage of familiarity in public sector economic analysis, especially in transportation studies where the economic standard that project benefits should at least equal project costs (a benefit/cost ratio of 1.0 or more) is well accepted. The California State Department of Transportation has long required that benefit/cost ratios be calculated for all highway construction projects included in the State Transportation Improvement Plan, and projects with a ratio of less than 1.0 would have to be extraordinarily attractive in some other way to gain approval.

Transit projects are often more complex to evaluate than highway projects, because they can include such a diversity of beneficiaries and the benefits in transit studies are not as predictable or easily defined as they are in the standard traffic stream of vehicles on highways. Nevertheless, when the studies are properly conducted, *the relative economic merits of transit projects can validly and usefully be compared with the economic results of highway investments via benefit / cost ratios.* These comparisons should be invited by transit operators in situations such as the division of transportation taxes, because the benefit/cost ratios of transit improvements are frequently higher than those of highway projects, which are often in the range of 1.0 to 2.0.

Table 4-5 presents a summary of economic indices from the case studies that can also be used to illustrate the preferred nature of benefit/cost ratios for project comparison and selection. Projects are listed in order of declining benefit/cost ratios. The Immediate Needs study, though fourth in the list, leads in net annual benefits with $8.6 million. However, the total net annual benefits of the first three projects, with higher benefit/cost ratios, is $9.4 million. These results demonstrate that, based on economic criteria alone, if these first three projects were alternatives to the Immediate Needs program, choosing them first on the basis of their benefit/cost ratios would also maximize net annual benefits.

Table 4-5
Economic Indices for Case Studies

	Thousands of Dollars			
Case Study	Annual Benefits	Annual Costs	Benefit/Cost Ratio (a/b)	Net Annual Benefits (a/b)
	a	b	c	c
PDRTA, Myrtle Beach	$2,177	$79	27.4	$2,097
SEPTA Horsham Breeze	1,563	213	7.3	1,350
MDTA Metropass	7,619	1,580	4.8	6,039
MTA Immediate Needs	13,951	5,400	2.6	8,551
OATS, Missouri	13,939	6,009	2.3	7,930
Fremont travel training	52	27	1.9	25
AC Transit service cuts	4,759	48,100	0.1	(43,341)

The economic criteria in Table 4-5 verify the substantial economic merits of the projects evaluated, with one exception. The exception is the case study of AC Transit service cuts that show only a 0.1 return on investment. Actually, the tables are turned here somewhat, because the AC Transit *investment cost* consists of sacrifices by transit riders, to bring the *benefits* of lower operating costs to AC Transit. That only 1/10 of the amount sacrificed by riders was returned in lower costs to AC Transit is unfortunate, but AC Transit knew of no less painful way to eliminate their budget deficit. The AC Transit results are a powerful economic argument for expanding rather than contracting urban transit bus service.

It is also noteworthy that *these highly favorable economic results came from public transit systems that primarily serve the relatively poor, underemployed, handicapped, and less mobile segments of society,* whereas US transit as a whole (which also shows a high ratio of benefits to costs) serves a broader range of wealth and mobility in its clientele, especially on rail systems. This suggests that *the economic productivity of public transit is not very dependent on the income levels served, and could greatly benefit the economy by further appropriate expansion in*

low income areas Equally important are public policies that help to create more equitable financing opportunities for public transit, such as the following(52):

- Allow transit improvement and transportation demand management projects to compete with highway projects for transportation funding, based on their economic performance.

- Base automobile insurance and state vehicle registration fees more on annual miles driven.

- Encourage employers to give equivalent financial benefits to non-drivers when they offer free or subsidized parking to their employees.

SURVEY GUIDELINES
(Referenced in Step 3)

1. *Clearly define your survey objectives.* A critical first step is determining the type of benefits on which you would like to gather information. List the type of benefits you would like to quantify, and determine the type of output you would like to have in order to conduct the analyses. This will enable you to construct the survey instrument.

2. *List the information to be included in the survey instrument.* Typical information might include the trip purpose, fare paid, trip distance and/or travel time enroute, the days of the week such a trip is usually made, how such trips were made before this service existed (or how they would be made without it), the time and cost that would be involved in alternative transportation, and any other financial results of having to find alternative transportation, such as loss of income (at what monthly wage level?) or shopping opportunities (at what average monthly cost?). The effect on unemployment or welfare payments is another type of financial effect that could be explored, as is the effect on access to transportation for other types of trip purposes.

3. *Convert the desired information into a questionnaire that is clear, simple, and as short as possible.* Examples of questions are contained in the sample questionnaires following each of the four case studies that included rider surveys: AC Transit, PDRTA, MTA Immediate Needs, and Horsham Breeze.

4. *Define your survey sample.* Will you be conducting a random sample or will you be conducting a census of all users? If you are conducting a random sample, as a rule of thumb you should plan on about 400 questionnaires to achieve a 95% confidence level with a margin of error plus or minus 5%. If you would like statistically valid results on subpopulations, you will need to collect additional surveys; about 400 per subpopulation is a conservative estimate.

5. *Decide on the method of distribution for the survey, based on the size and location of the target survey population.* Usually the simplest approach with the best return rate is an on-board written questionnaire, completed and returned by the time riders exit the transit vehicle. Other options with a lower response rate are a telephone or direct interview survey, or mailback surveys. Account for the expected return rate in deciding how many surveys to distribute.

6. *Conduct a pretest of the survey.* Prepare a draft questionnaire, distribute copies with instructions--ideally to at least 5% of the desired sample size--and collect the results.

7. *Review the results of the pretest carefully for questions that respondents clearly did not understand.* For example, in the PDRTA survey, the pre-survey was not tested due to time constraints. Respondents were asked: "What time did you get on this bus?" and "What time did you get off this bus?" in order to quantify the average in-bus travel time from their origin to destination. Although the question clearly asks about this bus, about 40% of the respondents answered the question for their bus to their destination and their return bus from their destination to their home. The question was not understandable to respondents and needs some rewording; for example, "For the trip you are making now, what time did you board the bus you are on now?"

8. *Plan for survey administration.* This includes the survey date or dates, bus departure and arrival times and/or bus run numbers, number of survey forms and survey workers needed over what time period, written and oral training instructions, etc. Good organization, supervision, and training of survey workers is very important.

9. *Collect and tabulate the survey results.* For tabulation, use the statistics software package your agency utilizes. Spreadsheets can also be utilized for data entry, but are a bit clumsy when it comes to performing repeated or complex computations with the data.

10. *Summarize the survey results in a short, easily understood text.* Use tables or graphs as necessary and preserve any important computations of benefits and costs.

CHAPTER REFERENCES

(43) *A Manual on User Benefit Analysis of Highway and Bus-Transit Improvements,* American Association of State Highway and Transportation Officials, Washington, DC (1977).

(44) Litman,T., *Defining and Quantifying Public Transit Benefits*, Victoria Transport Policy Institute, Victoria, BC, Canada (1997). Summarizes the Institute's *Transportation Cost Analysis*, a compendium of transportation cost and benefit estimating guidelines, which is also available as software for transit and highway benefit/cost studies.

(45) The AAA figures assume a four to six year vehicle life of 60,000 miles for an "average" car, based on business reimbursement standards for employees in late model cars, thereby overstating annual depreciation and other "ownership" or time-related charges for the normal lifetimes of automobiles (because ownership costs tend to decline with the age of a vehicle). Based instead on a 10-year, 100,000 mile life for the 1977 cost of about $18,000 for a six-cylinder Ford Taurus (the close equivalent of AAA's average car) gives annual depreciation of $1,800. The AAA finance charges add $307 when spaced over 10 years rather than 4. Average AAA insurance costs of $847/year and average license, registration, and tax costs of $216/year would likely decline by at least 15%, to $720 and $184, respectively, for a 10-year vehicle life. This brings adjusted ownership costs to $3011/year, or $.301/mile, which added to operating costs of $.108/mile ($.066 for gas & oil, $.028 for maintenance, and $.014 for tires) = $.409 or $.41/mile. The unadjusted AAA costs for an average car in 1997 are $.448 for motorists driving 15,000 miles/year for 4 years, and $.550 for a car driven 10,000 miles/year for six years.

(46) Time-related costs are deleted in order to obtain the cost per mile of driving a car that is already owned. The time-related costs are finance charges ($307); license, registration, and taxes ($151); and the time-related component of depreciation. The estimated time-related component of depreciation is $569, calculated as 31.6% of annual depreciation of $1,800 (calculation of time-related depreciation is based on Robley Winfrey's approach and data in *A Manual on User Benefits Analysis of Highway and Bus-Transit Improvements*, op. cit., page 181). The sum of these three deductions is $1,027, or $.103/mile for 10,000 miles, and $.103 subtracted from the adjusted cost per mile of $.409 derived in the preceding footnote leaves $.306, rounded to $.31/mile in Table 3-2.

Note that although insurance is normally regarded as an ownership cost, the insurance cost component of $762/year or $.076/mile that varies with miles driven is left in this $.307/mile figure. That is because 1) the incidence and associated costs of accidents are very dependent on the number of miles driven--insurance rates even vary somewhat with miles driven; 2) many auto accidents go unreported, or are uninsured, or result in costs below the deductible amount; 3) insurance seldom compensates the substantial time lost in settling claims and treating injuries; 4) even the reimbursed costs of motor vehicle accidents are a real added social cost that should somehow be included in comparisons of transit and automobile costs because transit travel is many times safer than automobile travel as measured by accident rates or costs per passenger mile; and 5) an insurance cost estimate of $.076/mile is well below the estimated total cost of accidents of $.12/mile and within the currently estimated range of $.037 to $.087/passenger mile for the safety benefits of transit compared with autos (Litman, op. cit.). If you disagree with this reasoning, just 1) subtract insurance costs of $.076 from total costs of $.306 to obtain $.230 or $.23/mile, and 2) remember to include separately the safety benefits of transit if they are relevant to your study.

(47) More specifically, $0.31/mile would represent a reduction of 63.7% in the annual AAA depreciation cost of $3,272 for 1997.

(48) *Microcomputer Evaluation of Highway User Benefits*, Final Report for NCHRP Project 7-12, October 31, 1993, p. A-48.

(49) Waters, W. *The Value of Time Savings for the Economic Evaluation of Highway Investments in British Columbia,* British Columbia Ministry of Transportation and Highways, Victoria, BC (March 1992) cited in Litman, op. cit., p. 7.

(50) Camph, D.H., *Dollars and Sense: The Economic Case for Public Transportation in America,* for The Campaign for Efficient Passenger Transportation, Washington, DC (July, 1997). Compared with the list in Table 3-4, Camph adds one type of benefit, for the macroeconomic effects of oil importation cost savings, and omits employer benefits and provider savings. Using averages of the ranges of estimates calculated by Camph, $17 billion or about 47% of the $36.2 billion in transit efficiency benefits came from item 7, congestion benefits; $8.4 billion from item 1, parking benefits; $3.5 billion from item 2; $1.6 billion each from items 3 & 4; $1.5 billion from item 8; $1.4 billion from item 9; and $1.2 billion from oil importation cost savings.

(51) Lewis, D. and O'Conner, M., *Economic Value of Affordable Mobility*, Paper 971367, Transportation Research Board annual meeting, January, 1997. The approach used by Lewis and O'Conner for estimating the mobility benefit is

called *consumer surplus.* This is the excess value created when the price of a commodity, here a transit trip, is reduced and the demand for the product increases accordingly. Consumer surplus is the sum of the value to users of the commodity in excess of what they would be willing to pay for the commodity. For example, as the price of a trip declines from $4 to $2, if demand increases from 100 to 200 trips, a consumer surplus of ($4-$2)/2 × 100 trips or $100 is created because all new riders except the last one would have been willing to ride at a higher cost than $2 per trip--an average of $4-$2/2 or $1 more. In theory, it would be possible to use consumer surplus for estimating individual transit improvement benefits. However, substantial information would be needed about the price elasticity of demand for transit (the percent change in trips divided by the percent change in prices), which averages -0.3 but varies with the starting price of the transit service and the income of the population served.

(52) Additional policies to promote equity for transit are espoused by the Victoria Transport Policy Institute (Litman, op. cit.), which references the following research results in support of the first two policies listed here: 1) *Least-Cost Planning: Principles, Applications and Issues,* US Department of Transportation, (July 1995), and 2) "Distance Based Vehicle Insurance as a TDM Strategy," *Transportation Quarterly* (Summer 1997).

5. COMPENDIUM OF PUBLIC TRANSPORTATION PRACTICES TO ADDRESS IMMOBILITY

This Compendium presents 53 brief summaries of best practices to address immobility. It supplements the 11 in-depth practices in the case studies of this research that are presented in Appendix A. The practices are organized according to the type of immobility problem they are trying to solve or the mobility needs of a particular clientele to whom they are directed. It is recognized that this typography is imprecise, because many of the practices overlap in their objectives.

COMPENDIUM ORGANIZATION

- Access to Jobs
- Filling Mobility Gaps
- Coordination with Health and Human Services
- Elderly Services
- Youth Services
- Transit Oriented Development
- Vehicle Programs

Access to Jobs is presented first because welfare reform is a "front-burner" issue throughout this research period, resulting in a wide range of very current practices focused on solutions to unemployment. On the other hand, there is an entire body of information on services for the frail elderly mandated by the Americans with Disabilities Act (ADA) that already exists. Therefore, rather than repeat existing research, this Compendium presents some non-ADA practices directed at the elderly. Many of the practices in Filling Mobility Gaps also benefit the elderly but are primarily ways of making existing public transportation more useable for the general public. Similarly, practices in the section on Coordination could also be placed in the Filling Mobility Gaps section, but are called out separately for their emphasis on collaborating with health and human service agencies. Youth Services illustrates several innovative public and private sector practices that respond to mobility problems of children when parents are working, and the Transit Oriented Development section describes some long-range solutions to immobility.

ACCESS TO JOBS

New demands on public transportation have occurred because of two societal changes, in particular:

- the movement of jobs from the central city to the suburbs, causing a mismatch between residential and employment locations; and
- the federal welfare reform measures passed by Congress in 1996, mandating increased participation in the workforce by many who live in rural or inner city areas far from the suburban jobs.

One result is the many public transportation programs targeted at improving access to jobs. This section highlights 27 of those programs, ranging from comprehensive, federally-funded practices to practices undertaken in individual communities across the country. It describes programs designed to take inner city workers to the suburbs; use of school buses as a pervasive transportation mode available in rural areas; special services to get people to job interviews and to shift work; and programs using vanpools.

Reverse Community Services

Bridges to Work

Bridges to Work is one of the most systematically organized employment partnerships. The design is based on collaborative planning with job training and placement organizations, transportation providers, community-based organizations, human services agencies, and regional planning institutions. The program, administered jointly by the nonprofit Public/Private Ventures (P/PV), and the U. S. Department of Housing and Urban Development (HUD), consists of:

- *Metropolitan Placement* to help inner-city residents locate job openings, particularly in the suburbs;
- *Targeted Commute* to connect inner-city residents to previously inaccessible employment locations; and
- *Support Services* to mitigate demands created by a commute to distant job locations, including extended child-care arrangements, a guaranteed ride home in an emergency, and conflict resolution with co-workers.

Total funding is $17 million over 4 years--January, 1997 through December, 2000. HUD is providing $8 million for operations with $3 million from the five competitively-selected communities: Baltimore, Chicago, Denver, Milwaukee, Philadelphia, and St. Louis. HUD and three foundations will contribute $6 million for monitoring, research and evaluation. To test the Bridges to Work design, in all the sites except Chicago, half of the applicants will receive the integrated services described above; the other half will receive only the normal services available in the community.

Each community has designed a program specific to its needs: (53)

Baltimore

Vanpools operated by a private company take residents from the East Baltimore Empowerment Zone, which includes more than 600 units of public housing, to the suburban Baltimore-Washington International Airport, which has nearly 1/3 of all jobs in the Baltimore region.

Chicago

PACE Suburban Bus Company provides express bus service and vanpools to the O'Hare Airport industrial complex and adjacent suburbs from Chicago's West Side and South Side, which includes 9,500 public housing units.

Denver

Participants in a section of Denver's Enterprise Zone and in Old Aurora use free monthly passes to ride express buses, circulator vans and vanpools operated by the Regional Transportation District to the Denver Technological Center, which has the fastest overall industrial and business development growth in the region.

Milwaukee

Near-direct bus or van services with strategic origin and destination sites are provided by private contractors to residents of Milwaukee's north, south, and central neighborhoods. The Washington and Waukesha County destinations are both high-growth areas and rich sources for difficult-to-fill, entry level jobs within reasonable commuting distances.

St. Louis

The public operator, the Bi-State Development Agency, uses fixed route and express buses, augmented by circulator vans provided by the American Red Cross, to take residents of north St. Louis and St. Louis County to jobs at the Spirit of St. Louis Airport and surrounding developments in west St. Louis.

Other "Reverse Commute" Services--Central City to Suburbs

SEPTAs Shuttle, Pennsylvania

Southeastern Pennsylvania Transportation Authority's Horsham Breeze Shuttle meets buses from downtown Philadelphia to connect to suburban employment centers with major employers, such as UPS and Prudential. Extended

hours of service are paid for by employers, and the county funds midday service. See Appendix A for the complete case study.

Accessible Services, Inc., Pennsylvania

Accessible Services, Inc., (ASI) is a private reverse commute service which operates in and around Philadelphia. The service is funded by the Federal Transit Administration's Regional Mobility Program Entrepreneurial Services Program (ESP). ASI began with one of the first ESP challenge grants in 1988. After initial failure, the program was substantially redesigned. ASI developed its own network of community based groups and institutions to identify low-skilled, unemployed individuals who were good candidates for continued employment. As of 1992, the program was operating successfully as a broker for the Job Relay System, contracting with various carriers, including a social service transportation system which uses federally funded paratransit vehicles, to provide reverse commute services. The cost per vehicle service hour allowed ASI to break even with five passengers per one-way trip. (54)

Wisconsin's JOB-RIDE Program

The Wisconsin Department of Transportation developed the JOB-RIDE Program to subsidize access to suburban jobs for inner city and minority residents in an attempt to reduce welfare dependency and to alleviate suburban employee shortages in Milwaukee. The program brings together employers and private organizations serving the unemployed. Initially, it funds private, non-profit organizations which provide job development, training, and placement services to obtain or provide transportation alternatives where conventional public transit would be inefficient. Between January 1989 and December 1990 JOB-RIDE filled 1,440 permanent and 598 temporary jobs. During its eight-year term, it provided more than 72,000 trips to work. (55)

Destination Jobs, Minnesota

In 1990, the City of Minneapolis funded Loring Nicollet-Bethlehem Community Centers, Inc. to operate a van to the suburbs in order to broaden employment opportunities for inner city individuals. This community-based agency linked with Preferred Products, Inc., an employer located in Chaska, a suburb of the metropolitan Twin Cities, which was having problems finding workers for its jobs. In the face of interest by other employers, the Eden Prairie Chamber of Commerce formed a Reverse Commute Committee to develop a more comprehensive transportation solution and to sponsor a Job Fair. One result is the Reserve-a-Ride Service instituted by Suburban Transit Authority, the public transit provider. Express buses pick up riders in the city and drop them at a suburban transit hub.

Riders who make reservations are then transported by a dial-a-ride shuttle bus to their place of employment. (56)

Accel Transportation, Illinois

Accel Transportation is looked upon as one of the most successful programs sponsored by the National Center for Neighborhood Enterprise (NCNE), a national non-profit organization. Accel is a transportation service owned and operated by a subsidiary of the LeClaire Courts Resident Management Corporation, which manages LeClaire Courts, a Chicago public housing project with 3,500 residents. The transportation system serves residents of LeClaire Courts who do not own cars and need transportation to jobs in other parts of the city. Accel has formed a partnership with the Chicago Institute for Economic Development to provide job training, child care and placement services with employers in suburban DuPage County whose facilities are not accessible by public transit. The transportation system operates five 20-passenger vans and serves nighttime shift workers as well as regular daytime employees. Accel carries about 150 riders.

Fares in 1992 were $6 a day and supplied 45-50% of the revenues. In addition to riders, participating employers and philanthropic organizations contribute to the fare revenue. Riders are primarily women and African Americans working as nurses' aides, in restaurants, or in hotels. They can earn $1.50-2 per hour more in these suburban jobs than at comparable jobs in the city. (57)

Route 1 "Carnegie" Corridor, New Jersey

The Route 1 "Carnegie" Corridor in Mercer County, New Jersey, is an employment concentration located near but not at a commuter rail station along a high speed line serving New York, Newark, and Philadelphia. The area, located 1.4 miles from the Princeton Junction commuter rail station, includes both residential and campus style office parks, which are part of the rapid office growth in Princeton.

The area's developer began the Carnegie Hall shuttle service to enhance the attractiveness of the Carnegie Center and originally paid all of the costs. The service was free to employers. As of 1992, employees rode the shuttle free while local residents paid. Service ran from 6 to 10 a.m. and from 3 to 6 p.m. on a 25-minute headway, meeting all outbound trains.

The Carnegie Hall shuttle service successfully serves multiple markets. The Carnegie Center also includes 550 medium density units which generate traditional suburban-to-center-city commuter rail ridership to New York and Philadelphia; this ridership accounts for nearly 60% of total daily ridership. A 1991 study by

Marchwinski and Fittante found that 75% of riders to Carnegie Center were reverse commuters who traveled an average of 28.5 miles. (58)

The Gateway Shuttle, California

The Multi-City Transportation Systems Management Agency (MTSMA), a joint powers agency of eight California cities in northern San Mateo County, secured a $196,900 grant from the Bay Area Air Quality Management District to consolidate six private shuttles operated by suburban employment sites into a system of three shuttles from the Bay Area Rapid Transit (BART) commuter rail and CalTrain. The existing private shuttles often overlapped shuttle schedules, experienced low productivity of less than six passengers per hour, and averaged about $4 per passenger trip.

The most successful of these shuttles is the Gateway Shuttle, a partnership between Genentech, a 2,000 employee biomedical firm, and Homart, a property management firm with a large suburban office complex housing 2,500 employees. Both sites are located east of the freeway and have no public transit service. The grant enabled MTSMA to consolidate the existing private shuttles, adding service from the Glen Park BART Station for Homart, and increasing headways to 20 minutes from BART and 30 minutes from CalTrain. Average monthly ridership on the two shuttles is now 5,100 passengers on the BART shuttle and 2,200 passengers on the CalTrain shuttle. Although the free shuttles were originally designed as a commute alternative strategy for all employees, the direct connection to BART provides convenient access to a significant suburban employment site for inner city workers in San Francisco and Oakland. (59)

School Buses for Welfare-to-Work Programs

School Buses for North Carolina's Work First Participants

The North Carolina Board of Education and the Department of Public Instruction passed a resolution in May, 1997 allowing adults in Work First, the state's welfare reform program, to ride school buses. Since 80-90% of the Work First purchased services in rural areas goes to transportation, the resolution was drafted to respond to this mobility challenge. In exchange for the ride, adult passengers must serve as bus monitors. Adults then disembark at the school to go to jobs or to transfer to another vehicle. Regional consultants provide technical assistance to local school boards and social service agencies to set up the school bus transportation program. (60)

Private Industry Council, East Tennessee

The East Tennessee Private Industry Council convinced the school board in rural Roane County to allow parents who are enrolled in training and education to ride school buses. The school board is paid $4.22 a day per person. The school board reserved the right to refuse someone with a violent history and prohibits adults on buses with small children. Because the transportation is education-related, insurance is not a problem. Partly because of such creative transportation solutions, the welfare rolls have dropped approximately 50% in East Tennessee. (61)

Glendale-Azalea School District and Skills Center Transportation, Oregon

See JOBLINKS programs below.

Chesterfield County Coordinating Council, South Carolina

See the case study in Appendix A.

Rachel's Bus Company. Illinois

This example is not one of using school bus service as transportation for welfare recipients, but rather as a source of jobs for people leaving the welfare roles. Rachel's Bus Company in Chicago, Illinois provides bus service under contracts with public and private schools. It employs 150 full and part time workers as drivers, mechanics and office workers. Drivers are recruited at welfare offices and job fairs. As high as 40% of the workforce have been welfare recipients. To provide transportation to their jobs at Rachel's Bus Company, three free shuttles start at 5 a.m. picking up employees and transporting them to headquarters. The shuttles return employees home about 5:30 p.m. Single parents are scheduled on routes to schools that their children attend to avoid the need for before and after school child care. (62)

Joblinks

Community Transportation Association of America (CTAA) administers JOBLINKS, a series of demonstration projects testing various means of providing transportation to disadvantaged individuals or those underserved by public transit, particularly welfare recipients transitioning to self-sufficiency. The motto of JOBLINKS, which is funded by the Federal Transit Administration, is "Connecting People to the Workplace." Summaries of three of the ten projects funded in 1995-96 are presented here. The remaining seven projects were in Fresno, California; Portland, Oregon; Blytheville, Arkansas, Seven Counties in Southeast Kentucky;

Cabarrus County, North Carolina; Sault Ste. Marie, Michigan; and Detroit, Michigan.

Glendale-Azalea School District and Skills Center Transportation, Oregon

About the same time two lumber mills in this rural area of southern Oregon closed in 1993, the Glendale-Azalea School District established a Skills Center. The Skills Center works in partnership with social service agencies to assist families with children having behavioral problems. When 600 workers were laid off from the lumber mills, the Skills Center established a transportation system to get these displaced parents to the Center for job re-training, to obtain their high school Graduate Equivalency Degree (GED), and to connect them to mental health, counseling, and unemployment assistance. Child care is also provided at the Skills Center.

The system is comprised of three components:

- Gas Vouchers: Assistance for those volunteering to provide carpools.
- School Buses: Adults are picked up at school bus stops along with pupils. The grant pays for mileage and driver time whenever the school bus must deviate off the route for a pickup. The school district covers about an 80-mile radius.
- Volunteer Drivers/Ridematching: Those living too far from a bus stop can get trips from volunteer drivers, who are paid 29 cents a mile. This program was merged with a program to provide medical trips paid for by the State. The school district has accepted financial responsibility for dispatching both medical and employment carpools.

In its first eight months of operation, 350 individuals, or 6% of the entire service area population, had received transportation assistance. A sample of 115 different riders found that 21% found employment and 9% completed their GEDs.(63)

Louisville Express Route Increases Job Access

The Kentuckiana Regional Planning and Development Agency (KIPDA) teamed with the Transit Authority of River City (TARC) in Louisville, Kentucky to develop a new express route from West Louisville, an area of high unemployment, to the Bluegrass Industrial Park on the suburban east side of the city. A 40-minute express bus ride replaces what had been a trip of two to three hours on other TARC routes. To publicize the new route, KIPDA worked with employers and a coalition of community-based organizations, which provide job training, employment assistance and homeless services. The project's goal is to prove the importance of transportation in helping people obtain and maintain employment. (64)

Southeast Arkansas Transportation

To facilitate access to programs and services, the Area Agency on Aging of Southeast Arkansas (AAASEA) began providing transportation for senior citizens in the 1970s. In 1993, the AAASEA created Southeast Arkansas Transportation (SEAT), the rural public transportation provider in Southeastern Arkansas, which serves 13 counties using 100 vehicles.

With the assistance of the JOBLINKs grant, SEAT was able to successfully demonstrate interlining of senior center and job training trips in rural Jefferson County. This interlining of trips has now been incorporated into SEAT operations on a systemwide basis. Jefferson County, with Pine Bluff as the County seat, has a population of 85,000 spread over 880 square miles. Many residents live in small communities that are 10-15 miles from services. The average annual income is $12,000, and approximately 60% have incomes below the poverty level. When Pine Bluff Transit (the public transit provider in the town of Pine Bluff) had to reduce services at the same time that the State Department of Human Services (DHS) was launching its job training program, SEAT began getting calls about transportation needs. With the cooperation of DHS staff in Jefferson County, SEAT began using its senior center vans to transport DHS clients to job training sites prior to 10 a.m. and after 2 p.m., when the vans were not in use by the senior center. DHS case workers referred clients to SEAT and paid the $3 round trip fare while the clients were in training. When these clients get jobs they often continue to ride SEAT to commute to work. Job training ridership has grown to about 30% of SEAT's monthly ridership. Four vans were made available only because SEAT was able to negotiate with the State Department of Corrections to have prisoners rehabilitate older vans at a very affordable rate.

At its peak, ridership was about 3,500 passenger trips each month. Operations are funded by federal dollars for rural transportation and by the federal Older Americans Act. Keys to the ongoing success of the project were the cooperation of DHS case workers in referring clients to SEAT, SEAT's willingness to put senior center vans in mixed use, and assistance with start-up costs and advertising provided by the JOBLINKs grant. At the end of the demonstration grant, AAASEA continued to operate one van for the welfare-to-work program, although the demand continues to be greater. (65) (66)

Services for Shift Work

PDRTAs 24-Hour Rural Commute Service, South Carolina

Pee Dee Regional Transportation Authority runs a 24-hour commute service linking residents in rural South Carolina with entry-level jobs in the tourist industry at Myrtle Beach. Service operates to meet day and night shifts and is

coordinated with the Marion County Department of Social Services. See Appendix A for the complete case study.

MAPTs 24-Hour Commuter Service, Ohio

Muskingum Authority of Public Transit (MAPT) is a small transit system with 11 vehicles serving Zanesville, Ohio, a town of 26,000. A major candle manufacturer with more than 500 employees, located about 12 miles outside of town in an industrial park, was having difficulty recruiting workers for its minimum wage positions. Since June 1995, MAPT has contracted with the candle factory to provide free transportation to its employees. The factory pays a per mile rate for service, assisted by a large state tax break. Transit service is provided to all three shifts on two different routes, averaging about 25 passengers per shift per day. The employee only has to show his or her badge to the driver to ride free. A recent on-board survey found that five existing passengers would have to go back on public assistance if the contract transportation service were not provided. (67)

NFTAs Late Night Service, New York

Niagara Frontier Transit Authority in Buffalo, New York operates a request-a-stop program after 9 p.m. To increase safety for night workers, riders can disembark anywhere along the route if the bus can safely stop. (68)

Services to Job Training and Job Interviews

Employment Transportation Services, Connecticut

Funded by the Connecticut Department of Transportation (ConnDOT), the City of Hartford established Employment Transportation Services (ETS), an agency responsible for planning paratransit services for job interviews and training and employment programs. Project staff believe that Hartford is one of the first cities with a strategic approach to the issue of unemployment, recognizing that transportation is only part of the problem. ETS has contracted for shared-ride taxis to take inner city residents to job interviews, physical exams, and other social services and for temporary vanpools.

ETS has initiated transportation services to fill a variety of reverse commute gaps, including summer employment and after-work training at Bradley airport. Both the job search and transitional transportation can be initiated by either a non-profit employment agency or an employer and will be provided within a 25 mile radius of the City in areas in which neither Connecticut Transit or the Greater Hartford Transit District operate. Individuals are given free rides to suburban job interviews or training. Once they are employed or accepted into a long term training program, they use the vanpool service for up to six months, provided there are at least four riders going to the same site.

In 1989, ETS make 24,000 one way trips, providing service to almost 900 people. Many of the riders had been unemployed for long periods, and one third of riders had been without a job for over a year. ETS also offers car-pool matching services for inner city residents and provides a van purchasing and leasing program which several employers have utilized. The private contractor provides drivers, operations staff and vehicle storage while City staff are responsible for administration, project development and supervision, and performance monitoring.

This service is part of a larger strategy planned by the Welfare to Work Transportation Access Group of the Capitol Region Council of Governments. The strategy includes improvements in fixed route bus service, new dial-a-ride services, vanpooling and guaranteed ride home programs. The transit operator already has expanded service and extended hours on key routes to employment sites. (69) (70)

Statewide Transportation Brokerage, Tennessee

Tennessee's Families First Welfare Program was implemented on September 1, 1996. The new law included a provision that the State of Tennessee must provide transportation to employment sites. Adults receiving welfare are responsible for selecting and utilizing appropriate transportation to get to a job training location, job interviews, and child care as necessary.

Individuals enrolled in job training have the option of receiving:

- $5 per day if they can transport themselves.
- A gas voucher, equivalent to $25 per week.
- Bus tokens.
- If none of the above enables a person to get to training, they can utilize the resources of the transportation broker.

With a short time frame for implementation, the State Department of Human Services decided to utilize the existing Job Training Partnership Act (JTPA) contractors as transportation brokers. The state is divided into 14 service delivery areas; there are 14 corresponding transportation brokerage operations. The transportation broker system makes use of any provider willing to participate: urban bus system, rural van services, taxis, senior programs, TennCare Medicaid transportation, and others. Over the first six months of implementation, only 200 trips could not be accommodated with the statewide brokerage system.

Preliminary program results indicate that 77% of job training participants took $5, 1% received gas vouchers, 10% received transit tokens, 8.5% rode on subsidized vans, and 3.6% utilized other transportation services. (71)

Job Oasis, Illinois

Job Oasis is a job center operated by Suburban Job-Link in Chicago, which helps people find and keep employment. Coaches work with participants on application and interviewing skills. Suburban Job-Link offers free transportation to Job Oasis and to job interviews. Those who become employed can then commute for about $2 a ride. Suburban Job-Link does not compete with Pace, the public transit operator, but instead develops employment routes which Pace can assume when ridership is established. As the nation's first effort to overcome both transportation and information barriers to employment, Suburban Job-Link and its Job Oasis were a model for development of the Bridges to Work program discussed earlier. (72)

Route Extensions

Route 1 Corridor Extension, Virginia

The Fairfax County Office of Transportation extended its Route 1 corridor bus route 2 1/2 miles to create direct access to job sites that were previously unreachable by public transit. The need for the route extension was revealed when the Fairfax County Department of Family Services in Northern Virginia plotted the residential location of clients, child care providers and potential employers on a regional map, using Geographic Information System computer software. The mapping was part of a detailed process of identifying resources to implement welfare reform. (73)

Carpools and Vanpools

Carpools consist of two or more individuals who share a ride in a private auto. Vanpools are 8-15 passenger vehicles that, typically, are owned and operated by an individual who charges other riders; leased by a group through a regional ridesharing program; or supplied and subsidized by an employer or a community-based organization. Most often the driver gets free transportation to and from work in the van in return for driving the rest of the group to the job site. Sometimes the driver is paid. Several of the practices discussed in this section use vanpools to augment their strategies to provide transportation to jobs. For example, the Bridges to Work programs in Baltimore, Chicago and Denver all incorporate vanpools. Employment Transportation Services in Connecticut, described earlier, has set up a van purchasing and leasing program for employers. In the example below, Fort Worth Transportation Authority considers vanpools as an extension of its fixed route system and subsidizes them accordingly.

Weed and Seed Program, Texas

The Fort Worth Transportation Authority (The T) organized the Weed and Seed Program to provide transportation to the airport for workers. The T first provided a van to a non-profit agency to transport potential workers to job interviews. A large carpool matching effort evolved, along with three subsidized vanpools. Before participating in the Weed and Seed transportation program, 70% of the workers were on unemployment. Employers are satisfied because the program provides them with good employees who come to work on time. Employers now enjoy an 86% retention rate for these new hires.

In addition, the T also operates a subsidized vanpool program consisting of 130 vans. Vanpooling is part of the area's Ozone Alert strategy for clean air. The underlying concept is that vanpoolers should be subsidized in the same way that bus riders are subsidized; this serves to extend vanpooling to transportation disadvantaged individuals who could not otherwise afford vanpools. The T saved $150,000 per year by converting bus routes into vanpools when Lockheed downsized its workforce. Guaranteed Ride Home, which assures participants of a ride home in the case of an emergency, has proved to be very effective in marketing The T's vanpool and carpool efforts. (74)

FILLING MOBILITY GAPS

The practices discussed in this section all build upon a basic transportation system. They are strategies to fill the gaps in that basic system by adding services that meet specific time or distance needs, or the particular needs of a target population. The practices include:

- **Feeders:** Demand responsive extensions of fixed route service, used where fixed route is not economical to provide
- **Flexroutes**: Deviations from a regular fixed route to accommodate riders who do not live near enough to a bus stop or to provide increased safety, particularly at night
- **Community-Based Transportation**: Services tailored to the needs of a particular group and operated by local government or non-profit organizations
- **Private Entrepreneurial:** Services tailored to specific needs and operated by the private sector
- **Extended Hours**: Service outside the commute period, particularly for night and weekend riders
- **Free Fares/Vouchers**: Subsidized services, usually for persons who are elderly, disabled or poor

Feeders

San Diego DART, California

The San Diego Transit Corporation operates DART, a dial-a-ride van system under contract with a family-owned business. Passengers call ahead for a pick-up and are transported to a transfer point, where they have no more than a 10-minute wait to connect to the fixed route bus. Riders can subscribe to the service or call one hour in advance of the trip. Over 30% of the riders are subscribers, although in the peak periods, subscribers make up the majority of ridership. Work trips, followed by school trips, are the most frequent reasons for use of DART. DART operates in suburban and rural areas of San Diego to provide transit coverage in communities where distance and ridership would not justify fixed route service. (75)

Flexroutes

OmniLink, Virginia

OmniLink is a bus service in suburban Virginia which will deviate from its fixed route within 1 1/2 miles of the bus' corridor. Riders can call 24-48 hours in advance to arrange for the bus to pick them up in their neighborhood, if they do not live near a OmniLink bus stop. Standing orders for repeat trips are also accepted. This flexible routing provides attractive public transportation to the predominantly upper middle class area located 25 miles southwest of Washington, D.C. OmniLink is operated by the Potomac and Rappahannock Transportation Commission (PRTC), which also provides OmniLink feeder buses to the Virginia Railway Express, as well as express buses, commuter rail, and ridematching services. PRTC has received funding to install technology that will allow it to take on-the-spot bus reservations and to plot the best routing. (76)

Community-Based Transportation

SANTA, Wyoming

The Shoshone and Arapahoe Nations Transportation Authority (SANTA), a community-based agency in Wyoming, provides midday service to the Central Wyoming College in Riverton. Although the College provides its own transportation service in the morning and late afternoon, SANTA increased its service by 360% when it introduced two new routes to fill this midday gap. (77)

EZ-Rider, North Carolina

The City of Charlotte, North Carolina underwrites the $300,000 cost of four fixed route vans in the north and west parts of town. The hourly service provides direct connections from inner city neighborhoods to destinations such as social service agencies, jobs, day care and grocery stores. EZ-Rider began in 1993 when the city was approached by community organizations and neighborhood groups whose members could not reach services by conventional transit. For example, a trip to a nearby grocery store on Charlotte's radial route bus system might require two transfers and significant backtracking. Without an auto, inner city residents were spending large amounts of time on conventional transit just for basic necessities, such as groceries. The YMCA was also experiencing a transportation obstacle in getting participants to their literacy program on the north side of town. EZ-Rider routes were designed by social service agencies and neighborhood groups to fill this mobility gap. The service, which costs 25 cents in fare, is underwritten by a half-cent sales tax and a $25 automobile tax. (78)

Nickerson Gardens, California

Nickerson Gardens Resident Management Corporation (NGRMC) is a non-profit organization managing a public housing project with over 5,000 tenants in South Central Los Angeles. With local assistance, the NGRMC organized the Nickerson Gardens Vanpool Program to provide residents with low-cost transportation to job training sites, interviews, child care facilities and employment sites. However, because participation was less than expected, the focus of the paratransit service was expanded to carry trips for medical, shopping, work, school, and other personal needs. The van system employs tenants as drivers, dispatchers, mechanics, supervisors and administrators, thus providing additional employment opportunities to residents of the public housing project.

This vanpool program has been successful in meeting several different objectives: (79)

1) improve the mobility of residents who have no automobile available, or provide them with access to reasonably convenient transit;

2) reduce vehicle trips for residents who own cars; and

3) provide jobs for Nickerson Gardens residents.

Private Entrepreneurial Services

Numero Uno Supermarket, California

The Metropolitan Transportation Authority's buses bring customers to the Numero Uno Supermarket in South Central Los Angeles, California, where they can shop and return home with their groceries on free shuttles operated by the market. This entrepreneurial service complements the public transit system and boosts sales at the market. See Appendix A for the complete case study.

Jitneys

Jitneys are private minibuses which are typically operated within or between communities by various entrepreneurs and not coordinated with public transit service. Depending on the locality, they may be regulated or licensed and the nature of the service may be restricted. Proponents claim jitneys can offer qualities which are lacking in public transit service. These include shorter waiting times, faster trip times, patrons' ability to flag vehicles at any street corner and get off at will, and the drivers' ability to communicate with and assist non-English speaking patrons. Private jitney service providers claim that all these factors serve to generate new customers for the jitneys and serve a market which is only marginally addressed by traditional bus service. Even if a certain overlap exists, jitney proponents claim that parallel and competitive jitney and public transit operations enhance personal mobility and are in the public interest. (80)

Opponents to jitney service contend that jitney operators choose to operate only in the profitable corridors and inevitably "skim" passengers from public transit. They also fear that because jitneys operate only during periods of peak demand, but not during off-peak hours and on weekends, the public transit operator is consequently required to operate "losing" routes and services, without offsetting revenue from peak period service and heavy demand corridors.

Miami, Florida

Private jitneys originated in pre-World War II days, when minority entrepreneurs began to serve residents of low income neighborhoods in Miami located beyond the reach of streetcars. Although the Florida State legislature enacted statutes prohibiting unlicensed jitneys, enforcement has been largely unsuccessful. A study conducted in 1992 found that Miami's jitneys carried approximately 43,000 to 49,000 weekday riders, equal to about one-quarter of ridership on Metrobus, the public transit system. An independent survey suggested that the Miami jitneys had developed a market of their own, rather than merely siphoning riders from the public bus system. (81) (82)

Atlantic City, New Jersey

Atlantic City's jitneys began in 1915 as a result of a transit strike and their success forced the trolley operator into bankruptcy. Today there are 170 13-passenger vans providing 24-hour service on three main arteries. The City regulates the jitneys and charges a franchise fee, which was $160,000 in 1993.

San Diego, California

Jitneys have been legally permitted in San Diego since 1979. San Diego Transit attempted to coordinate the jitneys and transit routes during the early 1980's when there was competition for passengers. However, since the demise of the military presence in San Diego, jitneys have developed their own niche markets and the two systems no longer compete.

New York City, New York

Jitneys in New York City first appeared in southeast Queens during the 1980 transit strike. There are now an estimated 2,400 to 5,000 jitneys, operating primarily in neighborhoods of immigrants from Jamaica, Puerto Rico, Haiti and other West Indies islands, where jitneys are commonplace. New York City Transit Authority (NYCTA) has combined increased bus service with strong enforcement against jitneys that operate illegally on bus routes, resulting in NYCTA ridership increases.

Extended Hours

New Jersey Transit

Adding evening and weekend services increases access to shopping, recreation, and shift employment. New Jersey Transit implemented a total of 15 extended hours bus services and two extended hours rail services. An example of extended rail service is the Main/Bergen County rail line which has extensive connections to transit and ferry service at the Hoboken terminal for New York City and Liberty State Park. Two additional trips were added on Saturday, six round trips were added to Sunday service, and two existing Saturday trips were extended to seven suburban stations. The Main/Bergen rail service had a farebox recovery of 74% after ten months of operations. An example of expanded evening bus service is additional evening runs to a community college in Middlesex County. The majority of these services have received favorable ridership responses. (83)

After Hours Program and Voucher Service, Florida

After Hours is a program of SpecTran, a subdivision of Palm Beach County Transportation Authority (CoTran) in West Palm Beach, Florida. Under a contract with Yellow Cab, riders who call 24 hours in advance can receive free rides between 6:30 and 11:30 p.m. if there are at least three people requesting service. Another evening program, Voucher Service, operates between 5:30 p.m. and midnight to supplement CoTran fixed route service which does not operate after 9:30 p.m. Passenger fares are subsidized using a county 6-cent gas tax. (84)

Ann Arbor Transportation Authority

Late night service from 10 p.m. to 6 a.m., called "Night Ride," is operated by the Ann Arbor Transportation Authority (AATA) through a contract with taxicabs. The taxi operator receives a per passenger rate plus the fare. The city's taxicab ordinance requiring metered fares and prohibiting shared rides exempts taxis providing mass transportation services. (85)

Free Fares/Vouchers

Logan Utah

In 1992, Logan, Utah implemented a fare-free transit program aimed at increasing the mobility of senior citizens, public school children, and university students at Utah State in Logan. Ridership started at 2,000 trips per day and climbed very quickly within the first year of operation to 3,700 trips per day.

Washington State

Washington State has been the nation's leader in implementing and supporting fare-free transit. Island County, the first totally fare-free system, began in 1987 and includes fixed route and commuter links to ferry service.

Link Transit in Chelan and Douglas counties of central Washington started a fare-free system in December 1991. The General Manager noted that transit is viewed as a public utility and as an important part of the community outreach to transit-dependent populations. System ridership has exceeded forecasts by three to four times with an average of 4,500 daily boardings. (86)

Sacramento, California

Sacramento Regional Transit District has implemented a discount pass program for persons receiving general assistance benefits within Sacramento

County, California in lieu of a $20 cash transportation stipend. Regional Transit provides the County with a $20 transit pass, a 55% discount over the normal pass price. General assistance recipients put a sticker on their welfare photo identification card to ride the bus. The 6-8,000 people on general assistance per month receive greatly expanded transportation opportunities, while Regional Transit receives $1.5-2 million a year in new revenue. A similar discount program is offered to students at the Sacramento state university. (87)

City Rides, Los Angeles

See the Elderly Services section.

Immediate Needs Transportation Program, Los Angeles

See the case study in Appendix A.

COORDINATION WITH HEALTH AND HUMAN SERVICES AGENCIES

Immobility is an indicator of other social issues that typically cannot be addressed by transportation alone. Public transportation practices bundled with other support services most effectively address immobility issues related to welfare-to-work, employment, and health care. This research uncovered a number of examples of how transportation agencies have worked with others to bundle services by building effective partnerships with health and human services agencies.

Medicaid Metropass, Florida

Metro-Dade Transit Agency in Miami avoids $10 million annually in paratransit costs through the Metropass program it created in partnership with the Florida Medicare administration. Medicare recipients pay $1 for an unlimited monthly pass, but give up paratransit, saving Medicare over $500,000 a month. See the case study in Appendix A.

Immediate Needs Transportation Program, California

The Metropolitan Transportation Authority underwrites both taxi vouchers and bus tokens, which are used by clients of 600 social service agencies in Los Angeles. Clients in the Immediate Needs Transportation Program use the assistance for trips to food banks and grocery stores, medical appointments, job training and job interviews, and for emergencies. See the case study in Appendix A.

Coordinating Council, South Carolina

The Chesterfield County Coordinating Council in South Carolina is increasing mobility for rural residents by layering a fixed route system on dial-a-ride routes and allowing adults to ride school buses. The 43 member agencies have also agreed to share their vehicles. See the case study in Appendix A.

OATS, INC., Missouri

Volunteers donate 76,000 hours annually, an equivalent of 36 employees, to provide transportation in 87 counties of rural Missouri. Besides federal transportation funds, OATS funding base includes the Area Agency on Aging, the Department of Mental Health, Social Services Block Grants, Medicaid, and contracts with hospitals, clinics, sheltered workshops, nursing homes, dialysis clinics, Head Start, arthritis programs, school districts and cities. See the case study in Appendix A.

County Transportation Systems Management, Michigan

County Transportation Systems Management (CTSM) is a membership-based organization developing a system of organizing, financing, delivering and evaluating transportation services in a manner that seeks to control costs while delivering high quality services. CTSM has focused in Wayne County, west of Detroit, Michigan, by working with employers, educational institutions, health care systems, and human service providers to identify mobility gaps and plan an integrated, consumer-focused system of transportation. It is in the early stages of implementing federal grants to use technology, particularly the Internet, as a coordination tool. CTSM does not provide service itself but relies on existing providers. CTSM considers itself "the problem solver," with coordination as the outcome. (88)

Rural Transit Enterprises Coordinated, Kentucky

Rural Transit Enterprises Coordinated (RTEC) serves an 11-county area in southeastern Kentucky, where 32.5% of the 266,000 people have incomes below the poverty level. RTEC, which started by providing transportation for seniors only, expanded to serve the general public in 1990. Funding sources include federal programs for rural transportation, Medicaid and Older Americans, and in-kind donations from cities and counties. As it has expanded, RTEC has obtained additional vehicles by leasing them from social service agencies that wanted to have RTEC provide transportation for clients. RTEC has found that linking people in rural communities to services requires a multi-county transportation service area. The primary need is for non-emergency medical trips, which often involve lengthy

trips to urban areas. RTEC also provides trips to jobs, job training, shopping centers, senior centers, and delivers meals to homebound seniors. In FY 1995, RTEC provided 186,195 passenger trips (4,879 by wheelchair users) using 45 vehicles at an average cost per trip of $5.12. (89)

Daniel Boone Development Council, Inc., Kentucky

Daniel Boone, a Community Action Agency, serves an eight-county area, also in southeastern Kentucky, and provides a variety of services: assistance with locating housing, weatherization, emergency services, job training and development, child care referral, shelters for homeless, and public transportation. Daniel Boone utilizes staff and facilities of Community Action Agencies in its service area to provide transportation, thereby avoiding duplication of costs and administration. The service area is mountainous and isolated from the rest of the State and the population is spread out in small communities. Total population of the transportation service area is 68,000. About 1/3 of the population has a disability, and 43% have incomes below the poverty level. The unemployment rate is about 15%. The specifics vary from county to county but, in general, transportation services are demand responsive and operate 8 a.m. to 4:30 p.m. Monday through Friday. Daniel Boone Transportation averages 6,800 passenger trips monthly with 55 vehicles in service, and a total annual operating cost of $42,000. About half of trips are for medical purposes. (90)

Volunteer Transportation Incorporated, Oregon

In the late 1970's, the Tri-County Metropolitan Transportation District (Tri-Met), in Portland, Oregon, created a non-profit agency called Volunteer Transportation Incorporated (VTI). This volunteer agency was eligible for special education dollars that Tri-Met itself could not access. VTI was also eligible to pursue federal transportation capital and operating funds separate from Tri-Met. Today, VTI has about 30 vans and station wagons, which it assigns to a network of 25 private, non-profit providers, such as the American Red Cross, Metropolitan Family Services, and Volunteers of America. The majority of VTI's operating funds come from Tri-Met. Because clients eligible for the Americans with Disabilities Act (ADA) use up most of the capacity on Tri-Met's own paratransit system, VTI's services assure that there is transportation for those who do not qualify for ADA but who do not have fixed route service available. In this way, Tri-Met has expanded service to a portion of the population without adding costly fixed route service. (91)

ELDERLY SERVICES

The Americans with Disabilities Act (ADA) passed in 1990 requires that surface transportation operators provide wheelchair-accessible, fixed route vehicles

and complementary paratransit services for individuals who cannot use fixed route services. Because there already is a body of information on ADA services available, this section of the Compendium focuses on non-ADA practices directed at the elderly. Practices described below (1) subsidize taxi rides for people on fixed incomes; (2) enlarge transportation options by teaching senior citizens confidence in riding fixed route transit; and (3) design routes to reduce walking distance to bus stops for a less mobile population. (Many of the practices in the sections on Filling Mobility Gaps and on Coordination also benefit the elderly.)

Subsidized Taxi Rides

City Ride, California

To supplement paratransit services for the elderly mandated by the ADA, a number of cities offer subsidized trips by taxi for persons who are elderly or disabled. The City of Los Angeles, California administers City Ride, a program of subsidized taxi scrip (vouchers) funded by a local sales tax. Eligible persons can register to receive one free book of sixty taxi scrip per quarter. In order to conserve resources, trips are limited to a maximum distance, and only eight scrip can be used per trip. The Los Angeles Department of Aging also receives 1600 books of scrip per quarter as a way of enhancing the resources available for senior programs. (92)

Immediate Needs Transportation Program, California

See the case study in Appendix A.

Travel Training

City of Fremont's Peer Training, California

AC Transit District and the Bay Area Rapid Transit District funded group travel training with peers as assistants. Conducted by the City of Fremont, California, the travel training empowered persons who are elderly or with disabilities to shift from paratransit to fixed routes for some of their trips, saving both the transit agencies and riders money. See Appendix A for the complete case study

Link Transit, Washington

Travel training teaches individuals to become more mobile in the community by training them to safely and independently use public transit. Travel training is available to all residents of Chelan and Douglas counties in Washington, who reside within the 3,500 square miles of Link's service area and have a physical or mental disability. Clients are referred and served on a first come, first served basis.

A Travel Trainer evaluates participants' mobility skills, needs, and potential so that a specific training plan can be developed for each person. The Travel Trainer first devises the route with the individual and points out bus stops, landmarks, and transfer points. They then begin riding the route together. Instruction is provided in whatever areas necessary for the person to travel safely and independently on the bus. When the person demonstrates the necessary skills, the Travel Trainer will observe the individual by following him or her on the route. If the individual passes this test, the training is completed and the person earns a certificate. If the individual exhibits some difficulty, the training is continued. Training completion skills include: bus recognition; bus boarding/deboarding; handling money/pass/transfers; landmark identification; properly exiting bus; street crossing techniques; emergency procedures; and bus behavior. (93)(94)

Kitsap Transit, Washington

The Kitsap Travel Training Program was developed based on feedback from senior centers, individual passengers, and from the realization that the percentage of seniors is increasing. Program planning began with the hiring of a Training Specialist in 1991. The first group of six trainers launched the program in the summer of 1992. As of 1995, a total of 14 different travel trainers had helped about 150 clients to become transit users. Countless others have been helped, less formally, by travel trainers who make contact with individuals on a casual basis when riding on a bus.

Service Routes

Madison County, Illinois

Service routes are fixed routes designed to reduce the distances that elderly persons and persons with disabilities must travel to get to and from bus stops. Typically, smaller vehicles are used, and vehicles will travel on neighborhood streets or into a mall or to hospital doorways to reduce walking distances. While routes are designed to better meet the needs of persons with disabilities and elderly persons, they are open to the public. Madison County Transit (MCT) has developed the service route concept further than most other systems in North America. It began implementation of service routes in 1989, and currently covers most of its service area with them. Service routes were developed as an alternative to fixed route services.

The service routes reversed the trend in declining ridership and have succeeded in attracting some of the demand from the paratransit service. Development of service routes required a new type of transit planning focused more on individual needs than general planning concepts such as use of population

densities. Routes and schedules, therefore, had to be very flexible to accommodate new needs as they were identified. Service routes were designed to get customers as close as possible to potential destinations. Other factors contributing to the success of the MCT service routes were use of low floor buses, good service coverage, extensive use of time transfers with connecting bus routes, close coordination between the fixed route and paratransit services, and travel training.

The cooperation of human service agencies in Madison County was also critical to the success of the system. Although skeptical at first, these agencies helped to travel train their clients to use the service routes. These agencies are currently strong supporters of the MCT system. Consumers surveyed were very favorable toward the service routes. Although some consumers resisted using the service routes rather than paratransit service, many others praised the service for its reliability and sense of independence it provides. (95)

YOUTH SERVICES

The need for transportation services aimed at youth has grown rapidly with the widespread entry of women into the workforce. In 1960, only 27% of married women with children had jobs outside the home, but by 1986 the number was 61%. At the same time, more women are relying on child care facilities, requiring transportation for children to and from these sites in addition to transportation to and from the women's jobs. In 1977, over 33% of young children with working mothers were cared for in their homes, but by 1988 that number had dropped to 28%. (96) The following are some examples of how both the private and the public sectors are responding with innovative approaches to youth services.

Kids on Wheels Shuttle Service, California

With so many women now in the workforce, the private sector has identified transportation of children as a new market that didn't exist in the 1950s and 60s when most women stayed home. Kids on Wheels is "a shuttle service just for kids" begun in the mid-1990s by a mother of two children who saw an unmet need. Based in Walnut Creek, California, this firm serves 14 generally affluent communities in an area of over 200 square miles. Kids are picked up and dropped off at school, daycare, and after-school and summer activities, such as sports, dance, art, religion, recreation, camps, karate, music, and swimming. The majority of the clients are individual families who register for pre-scheduled trips under an annual contract, although the company is expanding to meet demands for on-call, single trips. One-way trips cost $7.50-9.00. Discounts of $2.00 are given for round trips and discounts of 25% for more than one child in a family. Group rates are also available to churches, schools, organizations and government agencies.

The firm has recently been purchased by Unique Shuttle Services, Inc., which plans to expand into other nearby cities and, eventually, throughout the San Francisco Bay Area. A limited number of other such private companies already exist in some Bay Area communities. Kids on Wheels currently operates three 7-passenger Ford Windstar vans and five 25-passenger buses. Without any marketing program, there is a waiting list of 250 who have already paid the $26 registration fee. Scheduling, not lack of additional vehicles, is the inhibitor in meeting this demand. Since school and other activities start and end at a specific time, it is difficult to efficiently add more door-to-door pickups on a route without unreasonably increasing time spent on the bus.

Most of the trained drivers are mothers who work part-time, split shifts. Shifts are generally from 6:30-9 a.m., 11:30 a.m.-1:30 p.m., and 2:30-6:30 p.m. Parent drivers are given free transportation for one child and a 50% discount for their additional children. Musical tapes, hand-held games, toys and books are provided on the bus, and snack plans are available. Children range from preschool through elementary school in age. A new service with a different name is being created for junior high and high school ages. (97)

Bus Pass Program for Students, Alabama

Public bus drivers in Decatur, Alabama noticed a lot of school-age kids hanging out on street corners during school hours. The bus drivers' concern began an effort by the transit system's staff to find a way to solve the problem. Research by the Community Action Agency of North Central Alabama, Inc. (CAA) showed that many students from this predominantly low-income, minority area had no transportation to school. In most cases, parents didn't have a car or money for public bus fare. The result was a free bus pass program for students whose families meet prerequisites based primarily on income level. Funding from the U.S. Housing & Urban Development Community Block Grant program is received by the City of Decatur, which then turns over a portion to CAA to operate the program. Before the program, students had a 45% higher absenteeism and three times the dropout rate than students from other areas of the city. School attendance rates have shown a 23% increase since implementation of the program. (98)

Before-and-After School Transportation, Kansas

An inner-city district within the Kansas City Public School system is establishing before-and-after school care at 10 elementary schools for 1,800 children. To get children to the sites before school, the Kansas Department of Social and Rehabilitation Services will fund taxi cab services, transportation contractors, and parents who transport others' children. In the evening, the state will fund the school district to operate four new routes from the school child care sites to homes. The Boys and Girls Club of Greater Kansas City will provide child

care, and Head Start will fund evening meals for children in the after-school program. (99)

Child Care at Transit Stations, California

Transit stations present a logical location for daycare centers. Working parents can conveniently drop their children off rather than making an additional trip to the child care location. This accessibility is especially important since many in-home child care providers are located in low density neighborhoods which may not have a convenient level of transit service. The Transit Tots West Child Care Center and depot at the new Chatsworth Metrolink Station is a joint venture of the Los Angeles County Metropolitan Transportation Authority and the City of Los Angeles. More than five years in the planning, the center opened on April 20, 1996 and is operated by Children's Discovery Centers of America, Inc., which runs more than 200 child care centers nationwide. The center has capacity for 90 children and occupies 5,500 square feet at the depot, with three classrooms and an outdoor play area. Transit Tots West is open to the public for infant and preschool care, but priority is given first to mass transit users and second to parents who carpool. The Chatsworth Center is part of a 14-acre station site that is planned for future development, to include a park, offices, shops, theaters, and apartment housing. (100)

TRANSIT ORIENTED DEVELOPMENT

A key finding of this research is that public transportation agencies can provide leadership in economic development, thereby reducing the costs of immobility. A number of transit agencies are involved in long-term land use changes that can have a more permanent impact on economic development. Below are examples of transit as part of a larger economic development strategy.

Fruitvale BART Transit Village, California

The Bay Area Rapid Transit District will revitalize a rail station in a low-income neighborhood in Oakland, California. Its partner, the Spanish Speaking Unity Council, will address immobility by creating a Transit Village at the hub, which features a mix of social services, retail, and residential uses. See the case study in Appendix A.

Blue Line TeleVillage, California

The Metropolitan Transportation Authority's Blue Line TeleVillage contains a Telework Center, a computer lab with Internet access, a video conference center, and interactive kiosks. Residents and employees in Compton, California can access

many services without the need to travel. The TeleVillage will be part of a one-stop training center for welfare recipients. See the case study in Appendix A.

Neighborhood Travel Center, Texas

A community based Neighborhood Travel Center in Corpus Christi, Texas, was opened in February 1992 in a small neighborhood shopping district. The Regional Transit Authority, working with Project for Open Spaces, a national organization focusing on renewing public places as attractive and useful community assets, has sought to spruce-up the site with improved pedestrian facilities, landscaping and public art to attract riders and serve as a small business incubator. (101)

Broadway Manchester Transit Center, California

Joint development by transit authorities has been primarily around rail stations. The Los Angeles County Metropolitan Transportation Authority has allocated funds to plan a Transit Center focused on bus transit in the Broadway-Manchester neighborhood of South Central Los Angeles. The Transit Center will be at the Harbor Transitway, adjacent to a freeway. Preliminary plans call for improved public access to the Transitway, retail development, public services, and a child care center. Employment opportunities for local residents is also a goal. The site is already part of a redevelopment area. (102)

VEHICLE PROGRAMS

The focus of this research has been on public transportation systems, as defined in the Research Problem Statement. This has been interpreted broadly to include publicly operated rail, bus, and light rail systems; school bus systems; social service agency transportation; paratransit; jitneys; private bus systems; and taxicabs.

The definition of public transportation could be broadened even further to include vehicle programs which receive public funding. Two examples of public transportation agencies which also provide vehicle programs, the Ventura County Transportation Commission and the Bay Area Rapid Transit District, are cited below.

State and county social service agencies and community-based organizations involved in welfare reform have also been devising vehicle programs to assist this population. Because sometimes a car is the best solution for a transportation problem, the following includes a sample of vehicle programs that attempt to overcome the insurance and maintenance obstacles for low-income owners. These

programs are aimed at providing mobility to welfare recipients until they become established in the work force.

Ventura County, California

The County will offer low-interest car loans, guaranteed by the county and financed by the public credit union. Aging fleet cars will be donated by local businesses and reconditioned by volunteer mechanics. Dealerships will donate free repairs.

Ventura County Transportation Commission is also designing a Smart Car-Sharing program for those who have no transit available or where transit would take more than one hour one-way to work. In this case, people with a driver's license and a clean driving record can "rent" a new car to go to their destination. The car may then be picked up and used by another person before it is returned for the trip home. Car-sharers will be charged for mileage or may be assessed a weekly fee. A Guaranteed Ride Home program will serve as a back-up if there is a glitch in the car-sharing schedule.

Bay Area Rapid Transit District (BART), California

BART intends to place rental cars for patrons' use at two of its suburban stations and to place compressed natural gas Hondas at its newest station. Patrons will pay a fee to use the cars to travel from these suburban stations to suburban job sites. The cars could then be available for a fee as pool cars during the day at employment sites, eliminating the need for companies to invest in a corporate fleet. Drivers need licenses, proof of insurance and a clean driving record.

Wheels-To-Work, North Carolina

Operable cars are sold to persons transitioning off welfare through the Wheels-To-Work program, a partnership of Forsyth County commissioners, the Department of Social Services, Goodwill Industries of Northwest North Carolina, the Winston-Salem Transit Authority, a local auto dealer, and an insurance agency. Although the Winston-Salem Transit Authority does coordinate carpooling and vanpooling in the area, it is supportive of Wheels-To-Work, because only those who do not have access to bus routes to get to work are eligible for the program. The auto dealer repairs surplus county vehicles, and Goodwill pays the first year's insurance, repairs, taxes, license, and title fees. Participants can own the car after the first year by reimbursing Goodwill, which uses the money to fix up another car for the program.

Fairfax, Virginia

State money is being used to help former welfare recipients make down payments on used cars, and have the cars inspected and enrolled in routine maintenance programs.

Virginia's Southwestern Counties

The welfare department bought used government vehicles and leased them to job seekers for about $100 per month, including regular maintenance.

Fond du Lac County, Wisconsin

As part of Wisconsin's Work-Not-Welfare demonstration program, low-interest "job access loans" are made to buy cars or make repairs on existing cars.

Maryland and Texas

These states offer "Wheels to Work" programs that make donated vehicles available at low cost (usually about $500), and individuals and companies that donate cars receive a charitable tax deduction.

Contra Costa County, California

Contra Costa County in Northern California has developed a Welfare-to-Work Transportation Action Plan, which includes these additional ideas for vehicle programs. The County's Social Service Department is exploring policy changes and funding sources to implement the programs.

- Loans or Grants to Remove Barriers to Driving. To enable participants enrolled in the County's welfare program, or those at risk of becoming a welfare recipient, to obtain a drivers' license and/or legally operate a car they own, this project would utilize State diversion funds (for those not yet receiving welfare) or the County's Transportation Supportive Services funds (for welfare participants) as follows: loan or grant funds to absent parents to pay child support payments that are in arrears; loan funds to participants so that they may pay off outstanding tickets; and provide funds for emergency car repairs needed to get a vehicle in running condition.
- Low Cost Car Repair and Insurance Resources. Local school, college, and Regional Occupational Programs (ROP) auto shops will be contacted to offer reasonable and/or discounted rates on car diagnostic services, repair, and maintenance to welfare participants with vehicles. Insurance companies and

insurance pools (such as those for municipalities and transit providers) will be surveyed to obtain the lowest possible rates for participants.

- Subsidize Emergency Roadside Service Membership. Welfare recipients may have a vehicle which is unreliable. This program would subsidize welfare participants' membership in roadside service provider clubs or organizations in order to obtain emergency roadside assistance and other benefits such as vehicle diagnostic services. State welfare funds could be used for this purpose.

- Loaner Cars. This project would make loaner cars available for welfare participants to use for transportation to job interviews, to agencies such as the Department of Motor Vehicles to get necessary licenses, etc. Public agencies' vehicles or community-based organizations with a pool of vehicles might be tapped for this purpose.

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6. IMPLEMENTATION AND DISSEMINATION PLANS

This chapter restates the eight key findings as integral to the implementation of this research. It then describes what strategies should be adopted internally by an organization in order to implement the key findings. A dissemination plan follows, which outlines the audiences for this report and the suggested media and mechanisms for distribution.

IMPLEMENTATION PLAN

The key research findings presented in Chapter 2 outlined factors important to the successful use of public transportation to reduce the economic, social and human costs of personal immobility. These key findings are the cornerstone of an Implementation Plan to move this research into practice. The eight findings are capsulized below. Refer to Chapter 2 for details.

1. Retaining basic public transportation services;
2. Providing community-wide economic benefits;
3. Forming nontraditional partnerships;
4. Blending an array of human and monetary resources;
5. Bundling transportation and support services;
6. Linking with economic development efforts;
7. Planning regionally; and
8. Capitalizing on simple ideas and programs.

As identified in the findings above, coordination with organizations across other strata of society will be needed to enhance options for personal mobility. This chapter describes what an organization can do within its own cultural environment to go forward with implementation. The transportation organizations visited in the case studies had certain strategies in common that have led to their success, which can be replicated by others. These strategies can be summarized in the following checklist for success:

Checklist for Success

1. Exert leadership.
2. Win internal support from the staff and the policy-makers.
3. Adopt a mobility management mission.
4. Build community support.

1. Exert leadership.

Things happen when a leader takes charge. Leaders experiment; leaders challenge the status quo; leaders inspire others with their vision. The vision of an MTA Board member to use telemobility in planning development at Los Angeles light rail stations led to the Blue Line TeleVillage. In Miami, starting the Medicaid Metropass Program required energy and commitment to combat bureaucracy. The Medicaid Program Administrator was not particularly encouraged by the Florida Agency for Health Administration; instead she took it upon herself to work through obstacles in order to implement the program. Her cohort in the Metropass Program, the MDTA Deputy Director, summarized a leader's bias toward action by defining the difference between an administrator and a manager: "An administrator tells you what you cannot do--what the rules are. A manager rewrites the rules to get things done."

Note that the checklist pertains to the internal environment of an organization. There are many external barriers that an organization may face which may be largely out of its control. Some examples are land use decisions, federal funding levels, the political environment in the region, the local economy, and government regulations.

However, even these external barriers can be influenced by leadership. When her community objected to a large parking structure at the Fruitvale BART station in Oakland, the Chief Executive Officer of the Spanish Speaking Unity Council led a planning process to change that land use decision into one supporting a Transit Village. She also overcame the conventional viewpoint in the political environment, which held that infill development in the inner city is infeasible, by putting together a strong funding package to support the development. Another example of combating external barriers is legislation that the Chesterfield County Coordinating Council (CCCC) intends to introduce in South Carolina. The CCCC wants to demonstrate that changing state law to allow adult riders on school buses in rural areas can increase mobility while continuing to safeguard schoolchildren.

Leaders are needed at many levels of society to solve the difficult issues of immobility that have been presented in this research. As these examples demonstrate, the collaborative efforts needed to tackle problems of immobility point to a role for social services agencies, community-based organizations, local governments, and employers, as well as transportation organizations. Public transit cannot tackle immobility alone.

Nonetheless, mobility is the *mission* of transportation organizations. It is proper that transportation organizations be among the first to exert leadership in addressing immobility. If transportation organizations do not take on this role, they may be preempted by others with their own agendas. For example, welfare

reform is a burning issue at the time of this research. It is possible that money could be diverted from mainline transit services to new services directed at welfare recipients entering the job market, instead of integrating those new services into the existing system. Transit agencies need to seize the initiative in their realm of expertise to insure that the best alternatives are implemented. If they fail to exert leadership in addressing immobility, the problems of immobility will worsen, and transportation organizations will have failed in their mission.

2. Win internal support from staff and policy-makers.

A leader, by definition, needs followers. If the leader fails to build support within the organization, the innovation will languish or even be sabotaged. In the case of the Blue Line TeleVillage, some within MTA saw trip reduction through use of the Internet, a goal of the TeleVillage, as a conflict with the agency's mission of increasing transit ridership. Because the project was not implemented with operating funds, the internal resistance was overcome. However, as consequence of the lack of involvement by the operations division, inadequate fiber and connection points for the TeleVillage were laid during construction of the rail line. Although the TeleVillage now operates using ISDN lines, it is not the optimum solution that would have been possible with full agency support.

The culture of any organization hoping to solve immobility problems must nurture an environment in which the key findings can be implemented. This means encouraging staff to exercise leadership by taking the initiative and being creative. It means preventing bureaucracy and hierarchy from stifling innovation. At MDTA leadership for the Metropass came from a transit planner. Her supervisor gave her and her idea the support within the organization to develop the pilot program and expand it. At SEPTA, the Horsham Breeze was successfully implemented because the organization was flexible enough to respond with creative approaches to funding and service. In both these instances, the staff and policy-makers were supportive of experimentation.

3. Adopt a mobility management mission.

The definition of mobility management is "an institutional state of mind that emphasizes moving people instead of the mode of transportation." (103) For instance, with Immediate Needs, MTA moves people in a program designed to meet the community's transportation needs rather than attempting to fit those needs into its traditional bus and rail system. Its Blue Line TeleVillage is another example of creating mobility through nontraditional means--in this case, through technology. This type of flexibility will be required as transit agencies design services for those affected by the welfare-to-work reforms.

Mobility managers recognize the customers' needs and design services to respond to them. Numero Uno's free shoppers' shuttle is an excellent private-sector

example of this niche marketing. PDRTA and OATS are two public-sector models of such an entrepreneurial approach. They seek out opportunities and present a menu of service delivery options to the potential customer. Theirs is the opposite of an institutional state of mind that offers a single product with a "one size fits all" approach.

Effective mobility management requires viewing the passenger transportation system as a whole. Specifically, mobility management means brokering, facilitating, encouraging, coordinating, and managing both nontraditional and traditional services to expand the array of transportation services to diverse consumer groups. (104) This is an inclusionary definition which envisions responsibility from many partners to assist public transportation in accomplishing its mission of mobility.

4. Build community support.

Three of the key findings are dependent on this strategy for successful implementation. Organizations cannot form nontraditional partnerships (Finding 3), bundle transportation and support services (Finding 5), and plan regionally (Finding 7) in the absence of community support.

MTA's Immediate Needs Transportation Program and OATS, Inc. are shining examples of building community support using two very different approaches in two extremely different settings--one in the largest county in the nation and the other in a very rural state. As a large bureaucracy, MTA chose not to implement Immediate Needs directly. Rather, MTA built community support for its program *through* respected community-based organizations as brokers. The 600 social service agencies that are participants, along with a waiting list to be accepted into the program, attest to the success of MTA's strategy. OATS has built community support by delegating important functions of the operation to County Committees. An annual 76,000 hours of volunteer work has resulted from the sense of ownership that OATS has thereby created in the 87 counties it serves.

Building community support takes energy and visibility on the part of transit staff. It means not only attending community meetings but also setting up such meetings. In designing increased access to jobs and health care, it means stepping outside the transportation field and learning other industries' terminology and key players. But the rewards can be a wider constituency of support for transit, an enhanced image of transit, availability of new funding sources and human resources, and, consequently, more participation in society by those now afflicted by immobility.

DISSEMINATION PLAN

The results of this research are particularly timely because they coincide with rapid changes occurring in welfare and health care delivery. For this reason, dissemination should be enlarged beyond the traditional transportation audiences to practitioners in the social services and health care fields as well.

The Methodology Guide is a product of the research which has permanent applicability for transportation professionals. It describes methods to quantify the benefits and costs of immobility, as illustrated by specific examples in the case studies. Thus, it is a tool to measure the implications of additions or reductions in service upon the larger community.

Audiences

Primary audiences for distribution include:

Federal agencies

- Welfare to Work task force, U.S. Department of Transportation
- Intergovernmental Affairs, U.S. Department of Health and Human Services
- Office of Community Planning and Development, U.S. Department of Housing and Urban Development
- Employment and Training Administration, U.S. Department of Labor

State and County agencies that correspond to the federal agencies listed above

Public transit

- Public transit agencies' staff and governing boards
- Divisions of public transit within state departments of transportation
- APTA and CTAA, and corresponding organizations at the state level
- Private contractors
- Consultants and university researchers specializing in public transportation

Secondary audiences for distribution include:

National organizations of government officials and their corresponding state organizations, such as:

- National Governors' Association
- National Association of Regional Councils
- U. S. Conference of Mayors
- National League of Cities
- International City Managers Association
- National Association of Counties

National organizations of social welfare and health care professionals

Civil rights organizations

Empowerment Zones/Enterprise Communities

Organizational Responsibility

Disseminating the results of the research is a role for TRB and APTA, as the cooperating organizations that make up TCRP, as well as for CTAA. Reaching the secondary audiences will require working together with many other organizations. This is precisely the type of coordination called for in the federal welfare reform legislation, the Work Opportunity and Personal Responsibility Act. The mechanisms for coordination being established now for welfare reform at every government level will be a good avenue for dissemination.

Content and Mechanisms

1. *Mass media distribution* Because of the timeliness of this report, mechanisms to distribute the information through mass media should be emphasized. Therefore, the information should be condensed for targeted audiences.

Press Releases

A series of one-page, camera-ready stories with pictures should be prepared, each highlighting the strongest case studies according to topic areas. Articles should be sent to newspapers-wire services and to trade and professional magazines representing the primary and secondary audiences listed earlier. Because the report shows transit's proactive response to issues that are very current, mass distribution can enhance the public's perception of transit's value and role in society.

- *Access to Health Care:* One article each on MDTA's Metropass Program and MTA's Immediate Needs Transportation Program
- *Welfare-to-Work:* One article each on SEPTA's Horsham Breeze and PDRTA's 24-Hour Reverse Commute Service
- *Elderly Transportation*: One article each on the City of Fremont's Travel Training Program and OATS
- *Livable Communities:* One article each on the Fruitvale BART Transit Village and MTA's Blue Line TeleVillage; Numero Uno Market Shoppers' Shuttle is also a candidate for this category, particularly for distribution to magazines aimed at retailers

Internet sites

The same press releases could be installed on Internet sites aimed at the primary and secondary audiences who deal with these various topic areas.

Brochures

Colorful, illustrated brochures succinctly presenting the key findings and highlights of the case studies could be developed for distribution at conferences and at meetings with elected officials and government staff. Because of their brevity, these same brochures would be the most likely to be read by transit board members.

2. *Traditional methods* In addition, to these mass distribution mechanisms, traditional methods should also be employed:

Executive Summary

Copies of the Executive Summary should be made available at conferences of TRB, APTA, CTAA and other transportation organizations.

Presentation Materials

Slides and overhead materials on the key findings should be developed for use in presentations not only at transportation meetings but also at meetings of health care and social welfare professionals.

Methodology Guide

The Methodology Guide could be available to order as a manual separate from the full report.

3. *Products as outgrowths of the research* Other dissemination mechanisms could be developed, using the research as a foundation, but requiring additional resources to develop:

Videos

Agencies that participated in the case studies could be featured in a video, with key players discussing how their practices were developed and illustrating how they are being implemented today.

Roundtable

Managers of successful practices could be brought together to exchange ideas with others wishing to emulate their services.

Training film

The roundtable described above could be filmed for wider distribution.

CHAPTER REFERENCES

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APPENDIX A

CASE STUDIES

Appendix A contained in the research agency's final report is not published herein. It is available on the World Wide Web as TCRP Web Document 7 (www4.nas.edu/trb/crp.nsf).

APPENDIX B

UNPUBLISHED MATERIAL

Appendix B ("Literature Search: Who Are the Transportation Disadvantaged?") contained in the research agency's final report is not published herein. For a limited time, loan copies are available on request to TCRP, Transportation Research Board, Box 289, Washington, DC 20055.

APPENDIX C
GLOSSARY OF TERMS

ADA paratransit eligible: 1) Persons, who, as a result of their disabilities, cannot independently board, ride, or disembark from accessible vehicles without the assistance of another person, excluding the driver; 2) individuals who have a specific impairment-related condition that prevents them from getting to or from a boarding or disembarking location; 3) persons with a disability who can use an accessible vehicle, but for whom any desired trip cannot be made because the fixed-route they need to use is not yet accessible.

Captive transit rider: A person who does not have a private vehicle available or cannot drive (for any reason) and who must use transit to make the desired trip.

Captive rider: A person limited by circumstances to use of one mode of transportation.

Central city: The largest city in each metropolitan statistical area (MSA/CMSA) is designated by the U.S. Census Bureau as the central city. Additional cities qualify if specified requirements are met concerning population size and commuting patterns.

Economic cost: A measure of what must be given up in order to obtain something by way of purchase, exchange or production. Economists usually employ the concept of opportunity costs in describing economic costs. (See opportunity costs)

Empowerment Zones/Enterprise Communities (EZ/EC): 1993 Federal legislation authorized the Secretaries of HUD and Agriculture to designate communities to receive significant tax incentives and block grants for job creation and community development. Six empowerment zones (EZ), two supplemental empowerment zones, and 65 enterprise communities (EC) have been designated.

Externalities: Externalities are variously known as external effects, external economies and diseconomies, and spillovers. Externalities arise, in economist terms, because of the non-existence of markets; i.e., there are no markets in clear air, peace and quiet and so on.

Households: Commonly refers to occupied dwelling units. Specifically, a household includes all persons who occupy a group of rooms or a single room which constitutes a housing unit. A housing unit is a group of rooms or a single room occupied as separate living quarters; occupants live and eat separately from other persons in the building and have direct access from outside the building or through a common hall.

Immobility: The inability to make a desired trip due to lack of access to an automobile; and lack of available, affordable and accessible public transportation or other transportation alternative between the desired origin and destination.

Latent travel demand: The number of trips that would probably be made by people who do not now travel because of inconvenience, unawareness, inaccessibility, or unavailability of present modes or the inability to use them.

Metropolitan Statistical Area (MSA): As defined by the U.S. Office of Management and Budget, an MSA must include at least a) one city with 50,000 or more inhabitants, or b) a Census Bureau-defined urbanized area (of at least 50,000 inhabitants) and a total metropolitan population of at least 100,000 (75,000 in New England).

Model: A mathematical or conceptual presentation of relationships and actions within a system. It is used for analysis of the system or its evaluation under various conditions; examples include land use, economic, socioeconomic, and transportation.

Model, demand: A model that relates the amount of travel to the level and price of the transportation service and the socioeconomic characteristics of the potential traveler.

National Personal Transportation Survey (NPTS): In 1969, the U.S. Department of Transportation initiated an effort to collect detailed data on personal travel. The survey was conducted again in 1977, 1983, and 1990. The primary objective of the survey was to collect trip-based data on the nature and characteristics of personal travel.

Opportunity cost: The opportunity cost of an action is the value of the foregone alternative action. Opportunity cost can only arise in a world where the resources to meet wants are limited so that all wants cannot be satisfied.

Personal cost: The personal or private is the opportunity cost to one individual. It is the value to the individual of the foregone alternative action.

Person trip: A trip by one person in any mode of transportation. A person trip is counted regardless of whether the person is a driver or a passenger.

Poverty level: An index based on a range of income thresholds adjusted by family unit size and number of children under 18 years old. Sample 1995 poverty thresholds include $7,929 for a single person under 65; $15,455 a family of four with two related children under 18; and $33,465 for a family unit of 9 with two related children under 18.

Region: A geographical area which according to specified criteria possesses some degree of homogeneity.

Rural: As defined by the Bureau of the Census, the urban population includes all people living in urbanized areas or in places with 2,500 or more inhabitants located outside urbanized areas. By Census definition, the rural population consists of everyone else.

Social cost: The social cost is the opportunity cost to society (i.e., to all individuals in society) rather than just to one firm or individual. One of the major reasons why social costs are different from the observed private costs is due to existence of externalities or external costs (see externalities). In technical terms, the social costs of a given output is defined as the sum of money which is just adequate when paid as compensation to restore to their original utility levels all who lose as a result of the production of the output.

Suburban: A loosely defined term, not defined by the U.S. Bureau of the Census, it is typically meant to suggest the location of any land outside of a regional central business district, generally at least five or more radial miles away.

Transit dependent: Having to rely on transit service instead of the private automobile to meet one's travel needs.

Transportation disabled: In general terms, individuals who have difficulty using fixed-route public transportation. (See ADA paratransit eligible)

Transportation disadvantaged: (Low mobility group, mobility disadvantaged) people whose range of alternatives is limited, especially in the availability of relatively easy-to-use and inexpensive alternatives for trip making. Examples include the young, the elderly, the poor, the disabled, and those who do not have automobiles.

Travel or sample day: Refers to NPTS questionnaire, where the respondent was asked to report all trips of any length by any mode of travel during a 24-hour period.

Urban: Comprising all territory, population, and housing units in urbanized areas and in places of 2,500 or more person outside urbanized areas.

Urbanized area: As defined by the Bureau of Census, a population concentration of at least 50,000 inhabitants, generally consisting of a central city and the surrounding, closely settled, contiguous territory.

The **Transportation Research Board** is a unit of the National Research Council, which serves the National Academy of Sciences and the National Academy of Engineering. The Board's mission is to promote innovation and progress in transportation by stimulating and conducting research, facilitating the dissemination of information, and encouraging the implementation of research results. The Board's varied activities annually draw on approximately 4,000 engineers, scientists, and other transportation researchers and practitioners from the public and private sectors and academia, all of whom contribute their expertise in the public interest. The program is supported by state transportation departments, federal agencies including the component administrations of the U.S. Department of Transportation, and other organizations and individuals interested in the development of transportation.

The National Academy of Sciences is a private, nonprofit, self-perpetuating society of distinguished scholars engaged in scientific and engineering research, dedicated to the furtherance of science and technology and to their use for the general welfare. Upon the authority of the charter granted to it by the Congress in 1863, the Academy has a mandate that requires it to advise the federal government on scientific and technical matters. Dr. Bruce M. Alberts is president of the National Academy of Sciences.

The National Academy of Engineering was established in 1964, under the charter of the National Academy of Sciences, as a parallel organization of outstanding engineers. It is autonomous in its administration and in the selection of its members, sharing with the National Academy of Sciences the responsibility for advising the federal government. The National Academy of Engineering also sponsors engineering programs aimed at meeting national needs, encourages education and research, and recognizes the superior achievements of engineers. Dr. William A. Wulf is president of the National Academy of Engineering.

The Institute of Medicine was established in 1970 by the National Academy of Sciences to secure the services of eminent members of appropriate professions in the examination of policy matters pertaining to the health of the public. The Institute acts under the responsibility given to the National Academy of Sciences by its congressional charter to be an adviser to the federal government and, upon its own initiative, to identify issues of medical care, research, and education. Dr. Kenneth I. Shine is president of the Institute of Medicine.

The National Research Council was organized by the National Academy of Sciences in 1916 to associate the broad community of science and technology with the Academy's purpose of furthering knowledge and advising the federal government. Functioning in accordance with general policies determined by the Academy, the Council has become the principal operating agency of both the National Academy of Sciences and the National Academy of Engineering in providing services to the government, the public, and the scientific and engineering communities. The Council is administered jointly by both the Academies and the Institute of Medicine. Dr. Bruce M. Alberts and Dr. William A. Wulf are chairman and vice chairman, respectively, of the National Research Council.

Abbreviations used without definitions in TRB publications:

AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
IEEE	Institute of Electrical and Electronics Engineers
ITE	Institute of Transportation Engineers
NCHRP	National Cooperative Highway Research Program
NCTRP	National Cooperative Transit Research and Development Program
NHTSA	National Highway Traffic Safety Administration
SAE	Society of Automotive Engineers
TCRP	Transit Cooperative Research Program
TRB	Transportation Research Board
U.S.DOT	United States Department of Transportation