

TCRP

REPORT 163

TRANSIT
COOPERATIVE
RESEARCH
PROGRAM

Strategy Guide to Enable and Promote the Use of Fixed-Route Transit by People with Disabilities

Sponsored by
the Federal
Transit Administration

TRANSPORTATION RESEARCH BOARD
OF THE NATIONAL ACADEMIES

TCRP OVERSIGHT AND PROJECT SELECTION COMMITTEE*

CHAIR

Sherry Little
Spartan Solutions LLC

MEMBERS

Michael Allegra
Utah Transit Authority
John Bartosiewicz
McDonald Transit Associates
Raul Bravo
Raul V. Bravo & Associates
John Catoe
The Catoe Group
Grace Crunican
San Francisco Bay Area Rapid Transit District
Carolyn Flowers
Charlotte Area Transit System
Angela Iannuzziello
AECOM
Paul Jablonski
San Diego Metropolitan Transit System
Ian Jarvis
South Coast British Columbia Transportation Authority
Ronald Kilcoyne
Lane Transit District
Ralph Larison
HERZOG
John Lewis
LYNX-Central Florida RTA
Jonathan H. McDonald
Atkins North America
Therese McMillan
FTA
E. Susan Meyer
Spokane Transit Authority
Bradford Miller
Pinellas Suncoast Transit Authority
Keith Parker
Metropolitan Atlanta Rapid Transit Authority
Richard Sarles
Washington Metropolitan Area Transit Authority
James Stem
United Transportation Union
Gary Thomas
Dallas Area Rapid Transit
Matthew O. Tucker
North County Transit District
Phillip Washington
Denver Regional Transit District
Patricia Weaver
University of Kansas

EX OFFICIO MEMBERS

Michael P. Melaniphy
APTA
Robert E. Skinner, Jr.
TRB
Frederick G. (Bud) Wright
AASHTO
Victor Mendez
FHWA

TDC EXECUTIVE DIRECTOR

Louis Sanders
APTA

SECRETARY

Christopher W. Jenks
TRB

* Membership as of February 2014.

TRANSPORTATION RESEARCH BOARD 2014 EXECUTIVE COMMITTEE*

OFFICERS

CHAIR: **Kirk T. Steudle**, Director, Michigan DOT, Lansing
VICE CHAIR: **Daniel Sperling**, Professor of Civil Engineering and Environmental Science and Policy; Director, Institute of Transportation Studies, University of California, Davis
EXECUTIVE DIRECTOR: **Robert E. Skinner, Jr.**, Transportation Research Board

MEMBERS

Victoria A. Arroyo, Executive Director, Georgetown Climate Center, and Visiting Professor, Georgetown University Law Center, Washington, DC
Scott E. Bennett, Director, Arkansas State Highway and Transportation Department, Little Rock
Deborah H. Butler, Executive Vice President, Planning, and CIO, Norfolk Southern Corporation, Norfolk, VA
James M. Crites, Executive Vice President of Operations, Dallas/Fort Worth International Airport, TX
Malcolm Dougherty, Director, California Department of Transportation, Sacramento
A. Stewart Fotheringham, Professor and Director, Centre for Geoinformatics, School of Geography and Geosciences, University of St. Andrews, Fife, United Kingdom
John S. Halikowski, Director, Arizona DOT, Phoenix
Michael W. Hancock, Secretary, Kentucky Transportation Cabinet, Frankfort
Susan Hanson, Distinguished University Professor Emerita, School of Geography, Clark University, Worcester, MA
Steve Heminger, Executive Director, Metropolitan Transportation Commission, Oakland, CA
Chris T. Hendrickson, Duquesne Light Professor of Engineering, Carnegie Mellon University, Pittsburgh, PA
Jeffrey D. Holt, Managing Director, Bank of Montreal Capital Markets, and Chairman, Utah Transportation Commission, Huntsville, Utah
Gary P. LaGrange, President and CEO, Port of New Orleans, LA
Michael P. Lewis, Director, Rhode Island DOT, Providence
Joan McDonald, Commissioner, New York State DOT, Albany
Abbas Mohaddes, President and CEO, Iteris, Inc., Santa Ana, CA
Donald A. Osterberg, Senior Vice President, Safety and Security, Schneider National, Inc., Green Bay, WI
Steve W. Palmer, Vice President of Transportation, Lowe's Companies, Inc., Mooresville, NC
Sandra Rosenbloom, Professor, University of Texas, Austin
Henry G. (Gerry) Schwartz, Jr., Chairman (retired), Jacobs/Sverdrup Civil, Inc., St. Louis, MO
Kumares C. Sinha, Olson Distinguished Professor of Civil Engineering, Purdue University, West Lafayette, IN
Gary C. Thomas, President and Executive Director, Dallas Area Rapid Transit, Dallas, TX
Paul Trombino III, Director, Iowa DOT, Ames
Phillip A. Washington, General Manager, Regional Transportation District, Denver, CO

EX OFFICIO MEMBERS

Thomas P. Bostick (Lt. General, U.S. Army), Chief of Engineers and Commanding General, U.S. Army Corps of Engineers, Washington, DC
Rebecca M. Brewster, President and COO, American Transportation Research Institute, Marietta, GA
Anne S. Ferro, Administrator, Federal Motor Carrier Safety Administration, U.S. DOT
David J. Friedman, Acting Administrator, National Highway Traffic Safety Administration, U.S. DOT
John T. Gray II, Senior Vice President, Policy and Economics, Association of American Railroads, Washington, DC
Michael P. Huerta, Administrator, Federal Aviation Administration, U.S. DOT
Paul N. Jaenichen, Sr., Acting Administrator, Maritime Administration, U.S. DOT
Therese W. McMillan, Acting Administrator, Federal Transit Administration, U.S. DOT
Michael P. Melaniphy, President and CEO, American Public Transportation Association, Washington, DC
Victor M. Mendez, Administrator, Federal Highway Administration, and Acting Deputy Secretary, U.S. DOT
Robert J. Papp (Adm., U.S. Coast Guard), Commandant, U.S. Coast Guard, U.S. Department of Homeland Security
Lucy Phillips Priddy, Research Civil Engineer, U.S. Army Corps of Engineers, Vicksburg, MS, and Chair, TRB Young Members Council
Cynthia L. Quarterman, Administrator, Pipeline and Hazardous Materials Safety Administration, U.S. DOT
Peter M. Rogoff, Acting Under Secretary for Policy, U.S. DOT
Craig A. Rutland, U.S. Air Force Pavement Engineer, Air Force Civil Engineer Center, Tyndall Air Force Base, FL
Joseph C. Szabo, Administrator, Federal Railroad Administration, U.S. DOT
Barry R. Wallerstein, Executive Officer, South Coast Air Quality Management District, Diamond Bar, CA
Gregory D. Winfree, Administrator, Research and Innovative Technology Administration, U.S. DOT
Frederick G. (Bud) Wright, Executive Director, American Association of State Highway and Transportation Officials, Washington, DC

* Membership as of February 2014.

TCRP REPORT 163

**Strategy Guide to Enable
and Promote the Use
of Fixed-Route Transit
by People with Disabilities**

**Russell Thatcher
Caroline Ferris**
TRANSYSTEMS CORP.
Boston, MA

IN ASSOCIATION WITH

**David Chia
Jim Purdy**
THE COLLABORATIVE
Boston, MA

**Buffy Ellis
Beth Hamby
Jason Quan**
KFH GROUP, INC.
Bethesda, MD

Marilyn Golden
DISABILITY RIGHTS EDUCATION & DEFENSE FUND (DREDF)
Berkeley, CA

Subscriber Categories
Public Transportation

Research sponsored by the Federal Transit Administration in cooperation with the Transit Development Corporation

TRANSPORTATION RESEARCH BOARD

WASHINGTON, D.C.
2013
www.TRB.org

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 Transportation 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 Academies, 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.

TCRP REPORT 163

Project B-40

ISSN 1073-4872

ISBN 978-0-309-28396-0

Library of Congress Control Number 2014936495

© 2013 National Academy of Sciences. All rights reserved.

COPYRIGHT INFORMATION

Authors herein are responsible for the authenticity of their materials and for obtaining written permissions from publishers or persons who own the copyright to any previously published or copyrighted material used herein.

Cooperative Research Programs (CRP) grants permission to reproduce material in this publication for classroom and not-for-profit purposes. Permission is given with the understanding that none of the material will be used to imply TRB, AASHTO, FAA, FHWA, FMCSA, FTA, or Transit Development Corporation endorsement of a particular product, method, or practice. It is expected that those reproducing the material in this document for educational and not-for-profit uses will give appropriate acknowledgment of the source of any reprinted or reproduced material. For other uses of the material, request permission from CRP.

NOTICE

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.

The members of the technical panel selected to monitor this project and to review this report were chosen for their special competencies and with regard for appropriate balance. The report was reviewed by the technical panel and accepted for publication according to procedures established and overseen by the Transportation Research Board and approved by the Governing Board of the National Research Council.

The opinions and conclusions expressed or implied in this report are those of the researchers who performed the research and are not necessarily those of the Transportation Research Board, the National Research Council, or the program sponsors.

The Transportation Research Board of the National Academies, the National Research Council, and the sponsors of the Transit Cooperative Research Program do not endorse products or manufacturers. Trade or manufacturers' names appear herein solely because they are considered essential to the object of the report.

Published reports of the

TRANSIT COOPERATIVE RESEARCH PROGRAM

are available from:

Transportation Research Board
Business Office
500 Fifth Street, NW
Washington, DC 20001

and can be ordered through the Internet at

<http://www.national-academies.org/trb/bookstore>

Printed in the United States of America

THE NATIONAL ACADEMIES

Advisers to the Nation on Science, Engineering, and Medicine

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. On 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. Ralph J. Cicerone 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. C. D. Mote, Jr., 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, on its own initiative, to identify issues of medical care, research, and education. Dr. Harvey V. Fineberg 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 purposes 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 Academies and the Institute of Medicine. Dr. Ralph J. Cicerone and Dr. C. D. Mote, Jr., are chair and vice chair, respectively, of the National Research Council.

The **Transportation Research Board** is one of six major divisions of the National Research Council. The mission of the Transportation Research Board is to provide leadership in transportation innovation and progress through research and information exchange, conducted within a setting that is objective, interdisciplinary, and multimodal. The Board's varied activities annually engage about 7,000 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. **www.TRB.org**

www.national-academies.org

COOPERATIVE RESEARCH PROGRAMS

CRP STAFF FOR TCRP REPORT 163

Christopher W. Jenks, *Director, Cooperative Research Programs*

Dianne S. Schwager, *Senior Program Officer*

Jeffrey L. Oser, *Senior Program Assistant*

Eileen P. Delaney, *Director of Publications*

Scott E. Hitchcock, *Editor*

TCRP PROJECT B-40 PANEL

Field of Service Configuration

Lauren L. Skiver, *Delaware Transit Corporation, Wilmington, DE (Chair)*

Rosemary B. Gerty, *Regional Transportation Authority, Chicago, IL*

Jay A. Goodwill, *University of South Florida, Tampa, FL*

Cynthia W. Lister, *Milligan & Co., Philadelphia, PA*

Crystal Lyons, *Crystal Fortune Lyons, LLC, Corpus Christi, TX*

Elaine R. McCloud, *McCloud Transportation & Associates, LLC, Odessa, FL*

Donna P. McNamee, *The Write Way Communications, Willoughby, OH*

Young H. Park, *Tri-County Metropolitan Transportation District, Portland, OR*

Frank N. Roth, *Washington Metropolitan Area Transit Authority, Washington, DC*

Debbie Ruggles, *Metropolitan Tulsa Transit Authority, Tulsa, OK*

Christopher G. White, *Ann Arbor Transportation Authority, Ann Arbor, MI*

Dawn Sweet, *FTA Liaison*

Jane Hardin, *CTAA Liaison*

Patricia Monahan, *National RTAP Liaison*



FOREWORD

By Dianne S. Schwager

Staff Officer

Transportation Research Board

TCRP Report 163: Strategy Guide to Enable and Promote the Use of Fixed-Route Transit by People with Disabilities is a comprehensive resource that provides useful information, practical steps, and logical strategies for public transit providers seeking to better serve people with disabilities with fixed-route bus and rail transit services. This *Strategy Guide* will benefit public transit agencies and local communities responsible for pedestrian infrastructure seeking to better provide transportation options for people with disabilities.

The *Strategy Guide*, which is composed of nine chapters and four appendices, will help transit agencies fulfill the primary goals of the Americans with Disabilities Act of 1990 (ADA) by making mainstream fixed-route bus and rail systems accessible to and usable by individuals with disabilities. While the research recognizes that some individuals with disabilities will not have an equal opportunity to benefit from fixed-route public transit services and will require complementary paratransit services for some or all trips, the focus of the *Strategy Guide* is to offer guidance on providing public services in the most integrated setting possible.

Following the Introduction, the *Strategy Guide* presents information on the current use of transit services—both fixed route and ADA complementary paratransit—by people with disabilities. It also presents the results of a nationwide survey of almost 2,000 people with disabilities that identified the main factors that affect their use of fixed-route transit services. This foundational information sets the stage for the critical steps and strategies that could be pursued by transit agencies seeking to better serve disabled people with fixed-route bus and rail transit services.

- **Steps.** Transit agencies can begin by gathering ridership data for people with disabilities and setting system-wide goals to ensure that the entire organization is working toward the same end of enabling and promoting greater use of fixed-route transit services by people with disabilities. The next critical step is ensuring that fixed-route transit services are accessible, usable, and reliable.
- **Strategies.** Five broad strategies are presented that may be individually or collectively pursued by transit agencies to enable and promote the use of fixed-route transit by people with disabilities. The strategies address (1) improved access to bus stops for all passengers; (2) marketing, public information, and travel training for people with disabilities; (3) fare incentives for using fixed-route transit rather than complementary paratransit; (4) more inclusive transit service designs for all riders; and (5) ADA paratransit eligibility determination.

The appendices to the *Strategy Guide* provide sample materials that transit agencies may wish to use related to conditional eligibility for ADA paratransit and evaluation methodologies.

In addition to this *Strategy Guide*, other products of the research include:

- ***A Final Research Report*** that includes a summary of the literature, description of the research methodology, copies of the survey instruments used, and detailed tabulations of the survey responses.
- ***Information Briefs*** that summarize key findings and findings of the research in the following five areas:
 - The overall strategy that is suggested,
 - Current use of fixed-route transit by persons with disabilities,
 - Bus stop and pedestrian infrastructure improvement efforts,
 - Fare incentive programs, and
 - ADA paratransit eligibility determination programs.

These additional research products are available online on the TRB website at <http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=3083>.



CONTENTS

1	Chapter 1 Introduction and Suggested Strategies
1	Goals of the ADA
2	ADA Implementation: Accessibility Improvements to Fixed-Route Transit
2	Increased Demand for Complementary Paratransit Services
3	1.1 Research Goals and Approach
4	1.2 Suggested Strategies for Enabling and Promoting the Use of Fixed-Route Transit by People with Disabilities
6	Chapter 2 Current Use of Transit Services by People with Disabilities
7	2.1 Current Fixed-Route Transit and ADA Paratransit Use
7	ADA Paratransit Ridership at Selected Transit Agencies
8	Fixed-Route Transit Ridership by Persons with Disabilities at Selected Transit Agencies
9	Relative Use of Each Mode
10	Findings and Conclusions
11	2.2 Input on Use of Transit Services from Persons with Disabilities
11	Interviews and National Survey
12	Interest in Using the Fixed-Route Transit Service
14	Factors That Affect Use of Fixed-Route Transit
18	Chapter 3 Getting Started: Understanding Current Use of Transit Services and Creating a System-wide Policy
18	3.1 Developing an Understanding of Current Use of Transit Services
18	Tracking Ridership
19	Community Input
20	3.2 Establishing a System-wide Accessibility Policy
23	Chapter 4 Operating Accessible and Usable Fixed-Route Transit Services
25	4.1 Accessible, Usable, and Reliable Vehicles and Equipment
25	ADA Requirements for Fixed-Route Transit Vehicle Accessibility
26	Maintenance of Accessibility Features on Fixed-Route Transit Vehicles
26	Transit Agency Efforts to Accommodate Riders with Mobility Devices and Rider Feedback
27	Trends in the Transit Industry and Mobility Device Manufacturers
27	Ensuring Accessibility
28	Transit Agency Approaches to Accommodating Riders with Mobility Devices

35	4.2 Stop Announcements and Route Identification
35	Tips for Transit Agencies on Both Stop Announcements and Route Identification
36	Tips for Transit Agencies on Stop Announcements
37	Tips for Transit Agencies on Route Identification
38	4.3 Employee Training
39	General Vehicle Maintenance Training
39	Vehicle Operator (Driver) Training
40	Stop Announcement Training
40	4.4 Service Monitoring
41	Transit Industry Practices
41	Highlighted Service Monitoring Efforts
44	Chapter 5 Accessible Bus Stops and Pedestrian Infrastructure
45	5.1 Background—The Bus Stop and Beyond
45	The Bus Stop
45	Beyond the Bus Stop
46	Common Problems
46	FTA’s S. 5310/Enhanced Mobility Program Now Funds Access for Fixed-Route Transit Improvements
46	5.2 Current Practices—Findings of the Research
46	The Perspective of Riders with Disabilities
47	From the Perspective of Transit Agencies
47	Bus Stop and Pedestrian Infrastructure Accessibility Studies and Improvement Programs
51	5.3 Strategies to Improve Bus Stops and Pedestrian Infrastructure Accessibility
51	Comprehensive Bus Stop Inventory and Assessment
57	Other Strategies Toward Bus Stop and Pedestrian Infrastructure Improvements
59	5.4 Outcomes, Costs, and Benefits
59	Maryland Transit Administration
60	Montgomery County, Maryland
60	Link Transit, Wenatchee, Washington
60	Intercity Transit, Olympia, Washington
61	TriMet, Portland, Oregon
63	Summary
63	5.5 Implementation Issues and Lessons Learned
64	Implementation Issues
64	Lessons Learned
65	Summary
66	5.6 Evaluation of Bus Stop and Connecting Pedestrian Infrastructure Improvements
66	Ridership Changes at Improved Stops by Riders with Disabilities
66	Ridership Changes at Improved Stops—All Riders
66	Ridership Changes at Improved Stops by Riders with Disabilities Contrasted with Change in ADA Paratransit Ridership within Catchment Area of Improved Stops
67	Cost Analysis
67	Evaluation Summary

69 Chapter 6 Marketing, Public Information, Trip Planning, and Travel Training

69	6.1 Marketing and Public Information
70	Current Practice
70	Information from Research Efforts
76	Conclusions
77	6.2 Trip Planning Services
78	Survey Results
78	Information from Mini Case Studies
83	Conclusions
83	6.3 Travel Training Services
83	Literature Review
86	Survey Results
87	Information from Case Studies
90	Conclusions

91 Chapter 7 Fare Incentive Programs

91	7.1 Types of Fare Incentive Programs
91	FTA Half Fare Requirement
92	Purposes of Fare Incentive Programs
92	7.2 Prior Research and Current Use of Fare Incentives
92	Prior Research
93	Current Use of Fare Incentives
94	7.3 Selected Fare Incentive Programs
95	Ann Arbor (MI) Transportation Authority
96	Arlington (VA) Transit
96	Fort Worth (TX) Transportation Authority
97	Hernando County (FL)
97	Massachusetts Bay Transportation Authority
98	San Mateo County (CA) Transit District
99	Utah Transit Authority
99	7.4 Outcomes and Analysis of Selected Fare Incentive Programs
102	7.5 Findings and Implementation Issues
102	Findings
102	Implementation Issues
103	7.6 Evaluating Fare Incentive Programs

105 Chapter 8 Alternative Transit Service Designs

105	8.1 Route Deviation Transit Service
107	Service Characteristics That Meet the Needs of People with Disabilities
107	Applicability and Implementation Considerations
107	8.2 Point Deviation Transit Service
109	Service Characteristics That Meet the Needs of People with Disabilities
109	Applicability and Implementation Considerations
109	8.3 Request Stop Transit Service
110	Service Characteristics That Meet the Needs of People with Disabilities
110	Applicability and Implementation Considerations
111	8.4 Community Bus Transit Service
113	Service Characteristics That Meet the Needs of People with Disabilities
113	Applicability and Implementation Considerations

113	8.5 Paratransit-to-Fixed-Route Feeder Service
113	Service Characteristics That Meet the Needs of People with Disabilities
113	Applicability and Implementation Considerations
115	8.6 General Public Demand Responsive Service
115	Service Characteristics That Meet the Needs of People with Disabilities
115	Applicability and Implementation Considerations
118	Chapter 9 ADA Paratransit Eligibility Determinations
118	9.1 ADA Paratransit Eligibility
119	Conditional and Trip Eligibility
120	Current Use of Conditional and Trip Eligibility
121	9.2 Common Processes for Determining ADA Paratransit Eligibility
123	9.3 Suggested Strategies
123	Important Considerations
125	Strategy Option 1—Emphasize Abilities and Travel Options Rather Than Limitations
127	Strategy Option 2—Grant Conditional Eligibility and Identify When Fixed-Route Transit Can Be Used
131	Strategy Option 3—Link the Process to Travel Training Efforts
133	Strategy Option 4—Apply Conditions of Eligibility to Trips Requested or Made By Riders
145	9.4 Outcomes, Costs, and Benefits
145	More Thorough Eligibility Determinations
150	Trip-by-Trip Eligibility Determination Outcomes, Costs, and Benefits
160	9.5 Implementation Issues, Lessons Learned
162	9.6 Evaluating Eligibility Efforts
162	Evaluating General Eligibility Determination Improvements
163	Evaluating Trip-by-Trip Eligibility Efforts
165	References
168	Appendix A Examples of ADA Paratransit Eligibility Conditions
172	Appendix B Task and Skills Lists for ADA Paratransit Eligibility
174	Appendix C Sample Conditional ADA Paratransit Eligibility Determination Letter (Courtesy Seattle Metro)
178	Appendix D Evaluation Methodologies

Note: Many of the photographs, figures, and tables in this report have been converted from color to grayscale for printing. The electronic version of the report (posted on the Web at www.trb.org) retains the color versions.

Introduction and Suggested Strategies

Goals of the ADA

The purposes and goals of the Americans with Disabilities Act of 1990 (ADA) are set out in the preamble of the law (Section 2). The eighth paragraph of the preamble states:

“The Nation’s proper goals regarding individuals with disabilities are to ensure equality of opportunity, full participation, independent living and economic self-sufficiency. . . .” (1)

In keeping with these goals, a main tenet of Title II of the ADA is to provide public services in the most integrated setting possible. Separate programs designed just for individuals with disabilities are permitted to achieve equal opportunity, but mainstream, integrated services are to be used to the maximum extent appropriate.

For public agencies that provide transportation services to the general public, the primary goal of the law is to make mainstream fixed-route bus and rail systems accessible to and usable by individuals with disabilities. The law recognizes, though, that some individuals with disabilities will not have an equal opportunity to benefit from public transit services even if bus and rail systems are fully accessible. To ensure equal opportunity for these individuals, the law requires that complementary paratransit service be provided.

To prevent complementary paratransit service from becoming the primary service for people with disabilities, eligibility for this service was defined in detail in the law and in the implementing regulations issued by the United States Department of Transportation (U.S.DOT). The U.S.DOT ADA regulations also require that public entities establish a process for determining eligibility for complementary paratransit service, and that this process “strictly limit ADA Paratransit Eligibility” to those individuals who meet the regulatory criteria. These provisions and requirements are intended to ensure that public transit is provided to individuals with disabilities using mainstream, integrated bus and rail systems to the maximum extent possible.

Increased use of fixed-route transit service benefits both people with disabilities and the transit industry. Unlike complementary paratransit, which typically requires trips to be reserved the prior day, fixed-route transit allows for spontaneous travel and is far more flexible in meeting immediate travel needs. It is also less costly, with fares typically half of what is charged for complementary paratransit—and sometimes even less with reduced or free fare incentive programs. For transit agencies, the cost differences are also significant. Trips can be provided on fixed-route transit at a fraction of the cost of complementary paratransit.

ADA Implementation: Accessibility Improvements to Fixed-Route Transit

Developing an appropriate balance between accessible mainline transit services and complementary paratransit services has been one of the most challenging aspects of ADA implementation. Significant improvements have been made in the accessibility of bus and rail transit systems. In a 2010 paper marking the 20th anniversary of the passage of the ADA, the Federal Transit Administration (FTA) noted the following achievements in fixed-route transit access (2):

- 98% accessibility of the nation's fixed-route bus fleet.
- Functional access to 648 of the 681 stations identified as "key stations" in the nation's oldest rail systems.
- Access to 84% of the nation's light rail stations and 100% access to new rail systems built since 1990.

Increased Demand for Complementary Paratransit Services

Despite these improvements, demand for complementary paratransit service has increased since the passage of the ADA. The 2010 FTA paper estimates that 15 million rides were provided on complementary paratransit services in 1991. This increased to 45 million rides by calendar year 2000. In 2008, it was estimated that 67 million rides were provided to individuals determined ADA paratransit eligible.

There are likely many reasons for the growth in demand for complementary paratransit service despite the increased accessibility of the nation's fixed-route transit systems.

- **First, as correctly envisioned by the ADA, some people with disabilities cannot use fixed-route transit even if it is fully accessible and even if the environment around stops and stations is accessible.** Some of the growth in demand reflects the fact that these individuals are discovering and using ADA paratransit. With the implementation of the ADA, they hopefully are also traveling more.
- **Second, a usable fixed-route transit system requires more than just accessible vehicles and major facilities.** Bus stops must also be accessible and riders with disabilities must be able to reach these stops and facilities. Some transit agencies have proactively begun to identify and upgrade older inaccessible bus stops, and are also working with cities and towns to improve pedestrian infrastructure. However, it is likely that the lack of accessible paths of travel to stops and stations still prevents many riders from using fixed-route transit services.
- **Third, while many people with disabilities may have the ability to use fixed-route transit services, at least for some of their trips, they may have very limited experience (or none at all) traveling by bus or train.** Prior to the passage of the ADA, some transit agencies opted not to provide accessible fixed-route transit service and instead provided only demand responsive service for persons with disabilities. In some areas, these demand responsive programs were in operation for decades. Even though it has been 23 years since the passage of the ADA, it is likely that making the transition from demand responsive service to fixed-route transit service is still difficult for many. To assist in this transition, some transit agencies have implemented travel training programs and others have provided fare incentives to encourage use of fixed-route transit services.
- **Fourth, implementing effective ADA paratransit eligibility determination processes has been a challenge in many areas.** Determining whether individuals with various types of disabilities and different levels of ability can, with a reasonable level of effort and risk, perform all of the tasks needed to use fixed-route transit services is difficult. Each applicant is

unique and there is no simple “checklist” that can be used to make accurate and thorough decisions. Given that many applicants can use fixed-route transit services only under certain conditions, decisions must be detailed enough to allow these conditions to be identified and assessed.

- **Finally, more needs to be done to provide positive experiences to riders with disabilities who use fixed-route buses and trains.** Vehicle operator training and consistent assistance with boarding, alighting, and securement appear to be ongoing issues. Properly accommodating all mobility aids in a safe and timely way also continues to be a challenge. Another issue for some riders with disabilities is the “attention” and perceived “disruption” to the service that results from inefficient or problematic boardings and securement. And more could probably be done to educate riders with disabilities about the increased accessibility and usability of fixed-route transit services. Without a concerted effort to provide public information and to reach out to riders with disabilities, past experiences and outdated perceptions are likely still keeping some from using buses and trains.

1.1 Research Goals and Approach

The goals of this research were to:

1. Develop a better understanding of the current use of fixed-route transit by persons with disabilities.
2. Develop a better understanding of the factors considered by persons with disabilities when using fixed-route transit versus ADA paratransit services.
3. Identify efforts currently being made by transit agencies to enable and promote increased use of fixed-route transit by persons with disabilities.
4. Develop a practitioner’s strategy guide to enable and promote the use of fixed-route transit service by people with disabilities.

To achieve these goals, the research team first conducted an extensive literature review. Applicable literature is cited throughout and a list of relevant references is included.

To further achieve the first goal, input was obtained from persons with disabilities. Thirty interviews were conducted with selected individuals with disabilities from across the country to begin to define the issues and help with the preparation of a broader survey. A survey of people with disabilities was then prepared and distributed nationwide with the assistance of several national disability organizations. A total of 1,927 responses were received and analyzed. Input received is summarized in Chapter 2. More detailed documentation of the interviews and survey is provided in the final report for this project, available on the TRB website (<http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=3083>). (3)

A nationwide survey of public transit agencies was also conducted to identify efforts currently being made to enable and promote use of fixed-route transit services. The survey was sent to all 674 transit agencies identified in the National Transit Database (NTD) as providing both fixed-route transit and ADA paratransit services. Complete responses were received from 163 transit agencies. Key results from this survey are included throughout this strategy guide. A copy of the survey and a detailed tabulation of responses are included in this project’s final report.

Five full and 32 mini case studies of successful implementation of programs and efforts to enable and promote increased use of fixed-route transit services were also conducted. Key findings from these case studies are included throughout this strategy guide. Full case study write-ups are included in the final report for this project.

1.2 Suggested Strategies for Enabling and Promoting the Use of Fixed-Route Transit by People with Disabilities

Chapters 3 through 9 have been prepared to serve as a strategy guide for enabling and promoting use of fixed-route transit by people with disabilities. The strategy detailed in these sections is illustrated in Figure 1-1. There are several important “first steps” and then several options that can be considered. The suggested strategy starts with the following:

- Developing an understanding of current use of transit services by people with disabilities and setting system-wide goals for accessibility;
- Gathering data on current fixed-route transit as well as ADA paratransit use to provide a baseline of information and help assess the success of future efforts; and
- Setting a system-wide policy and goals to ensure that the entire organization is working toward the same end of enabling and promoting greater use of fixed-route transit services by people with disabilities.

Suggested approaches for gathering ridership data and setting system-wide goals are provided in Chapter 3.

Another important “first step” in the strategy is to ensure that fixed-route transit services are accessible, usable, and reliable. This includes compliance with regulatory requirements

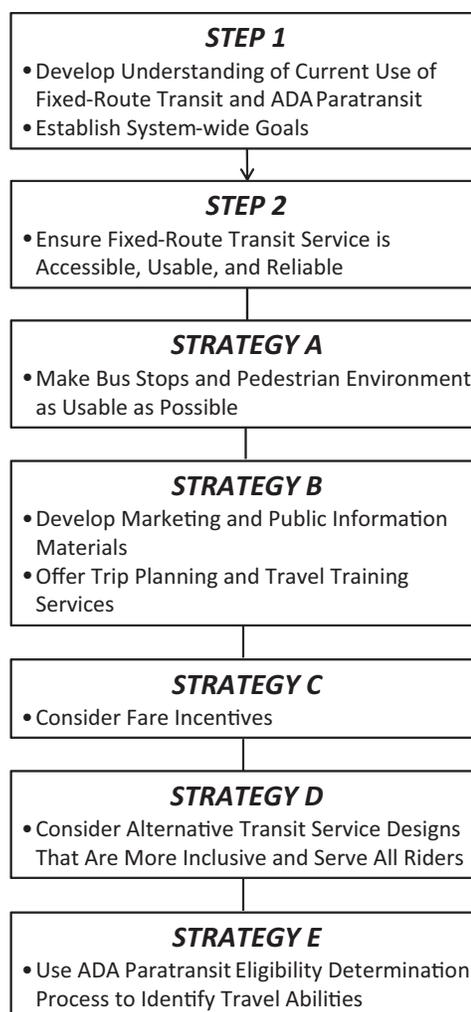


Figure 1-1. Suggested strategies.

for accessible fixed-route transit, such as buying accessible vehicles, ensuring access to new or altered fixed-route transit facilities, maintaining equipment in good working condition, providing backup service if there are in-service failures, announcing stops and identifying routes, and training employees to proficiency. Beyond these minimum regulatory requirements, the strategy also includes efforts to obtain the most usable equipment and programs to monitor the provision of service. Suggested strategies for ensuring that fixed-route transit services are accessible, usable, and reliable are included in Chapter 4.

Following these “first steps,” there are several types of efforts and programs that can be considered. One is to implement programs and efforts to enable people with disabilities to get to fixed-route transit stops and stations and board accessible vehicles. This includes making bus stops accessible and working with local, regional, and state agencies to make the pedestrian infrastructure in the area of stops accessible. Suggested strategies for improving bus stop accessibility and the pedestrian environment are provided in Chapter 5.

A second strategy option is to provide people with disabilities with information about using fixed-route transit services. This includes public information and marketing materials as well as trip planning services. It also includes providing travel training to those who are interested. Strategies for providing public information, trip planning, and travel training services are outlined in Chapter 6.

The third suggested strategy option is to encourage increased use of fixed-route transit through fare incentives. In particular, offering free fares on fixed-route transit services to people with disabilities can encourage them to use these services when they are able. Chapter 7 describes the experiences of several transit agencies that have implemented fare incentive programs and offers suggestions for implementing similar efforts.

Another possible part of the strategy is to consider alternative service designs that can meet the needs of all riders. This includes flex-route services, community bus services, paratransit-to-fixed-route feeder services, and general public dial-a-ride services. These more inclusive service designs can be used to supplement traditional fixed-route transit and complementary paratransit services. Chapter 8 discusses these alternative service designs and references a companion study and other useful resources that provide more detailed information.

Finally, increased use of fixed-route transit services can be encouraged and promoted by making thorough, accurate determinations of ADA paratransit eligibility. The eligibility determination process can be used to identify the abilities of riders to use fixed-route transit services. Conditions under which fixed-route transit can be used can be identified as part of the process. Determinations can also be made about individual trips—whether trips can be made by fixed-route transit or if complementary paratransit is needed. Strategies for using the ADA paratransit eligibility determination process in these ways are presented in Chapter 9.

While any one of the strategy options presented in Chapters 3 through 9 can be implemented, the research suggests that transit agencies can improve their success in encouraging fixed-route transit service by using and integrating multiple efforts. For example:

- Travel training efforts tend to be more effective when integrated with eligibility determination processes;
- Fare incentive programs also can be more cost effective, and the unintended consequences limited, if implemented along with more thorough eligibility determination processes; and
- Improvement to the pedestrian infrastructure can be more effective when priority stops are identified using information from travel training and eligibility determination processes.

Transit agencies are encouraged to consider all of the strategies presented and to adopt a holistic, complete approach for encouraging and facilitating use of fixed-route transit services.



CHAPTER 2

Current Use of Transit Services by People with Disabilities

Before presenting strategies for increasing the use of fixed-route transit services, it is important to consider current use of transit services by people with disabilities. It is also important to consider attitudes about fixed-route transit services and factors that are considered by people with disabilities when using fixed-route transit or ADA paratransit services.

Before presenting possible strategies, it is important to understand current use of fixed-route transit services by people with disabilities, as well as attitudes about fixed-route transit and factors considered when using public transit services.

Note that the ADA does not actually give people with disabilities a “choice” between using fixed-route transit and ADA paratransit services. People with disabilities are only eligible to use ADA paratransit services if, because of a disability, they are prevented from using fixed-route transit services. However, many people with disabilities who have been determined eligible for ADA paratransit services can use fixed-route transit for some trips. As a result, there are many factors that determine when they are functionally able to use fixed-route transit and when they are eligible for ADA paratransit service. For example, long distances to or from bus stops and transit stations, or inaccessible paths of travel to and from bus stops and transit stations may be factors that result in use of ADA paratransit.

In addition, most transit agencies do not enforce trip-by-trip eligibility. People with disabilities who may sometimes be able to use fixed-route transit services are provided with ADA paratransit service for any of the trips they choose to request. As a result, many other factors, such as the cost of each type of service or awareness of fixed-route transit options, are then considered by people with disabilities when deciding which type of service to use.

This information is vital to developing a more complete picture of the use of public transit by persons with disabilities. It can also begin to answer important questions such as:

- While ADA paratransit ridership has increased, how does it compare to use of fixed-route transit service by persons with disabilities?
- Has fixed-route transit ridership by persons with disabilities also been increasing in recent years or has it decreased as ADA paratransit ridership has increased?
- What are the main barriers to use of fixed-route transit services by persons with disabilities?

As part of this research, data was gathered from several transit agencies about current use of fixed-route transit and ADA paratransit services. This information is presented in Section 2.1.

A nationwide survey of people with disabilities was also conducted to gather information about the factors that determine use of fixed-route transit or ADA paratransit services. The survey also obtained information about attitudes toward use of each mode. This information is presented in Section 2.2.

2.1 Current Fixed-Route Transit and ADA Paratransit Use

Transit agencies track ADA paratransit ridership and include this information in NTD reports. However, the NTD does not request or contain data about use of fixed-route transit services by riders with disabilities.

Some transit agencies do, however, track ridership by fare type and have specific fare categories related to disability. This includes reduced fares, and in some cases, free fares, made available to riders with disabilities. This information can be used to get a sense of current use of fixed-route transit by people with disabilities. It is important to note, though, that actual reduced fare data are undercounted since some people with disabilities may not be aware of the reduced fares, may not have bothered to apply for reduced fares, or may choose to ride fixed-route transit services at the full fare.

To develop an understanding of the current use of transit services by people with disabilities, information on ADA paratransit ridership and fixed-route reduced fare ridership was collected from seven selected transit agencies. Agencies from different geographic regions and community sizes were selected. Ability to provide the required data was also considered in the selection. The seven transit agencies from which data was gathered were as follows:

- Ann Arbor Transportation Authority (AATA), Ann Arbor, MI.
- Chicago Transit Authority (CTA), Chicago, IL.
- Laketrans, Grand River, OH.
- Massachusetts Bay Transportation Authority (MBTA), Boston, MA.
- Pace Suburban Bus (Pace), Arlington Heights, IL.
- Tri-County Metropolitan Transit District (TriMet), Portland, OR.
- Utah Transit Authority (UTA), Salt Lake City, UT.

ADA Paratransit Ridership at Selected Transit Agencies

All seven transit agencies provide ADA paratransit as well as fixed-route transit services. ADA paratransit ridership was provided for the period from 2009 through 2011 and is presented in Table 2-1. Annual changes in ridership are also shown.

ADA paratransit ridership increased at four transit agencies and decreased at the other three from 2009 to 2010. Most increases or decreases were from 2% to 10%. Laketrans reported a 181% increase in ADA paratransit ridership from 2009 to 2010. According to a Laketrans manager, the reason for this jump was “because Laketrans made an effort to increase Laketrans ADA certifications.” From 2010 to 2011, ADA paratransit ridership decreased at six transit agencies and increased at one.

Table 2-1. ADA paratransit ridership at selected transit agencies, 2009 to 2011.

Transit Agency	Total ADA Paratransit Ridership			% Change	
	2009	2010	2011	2009–2010	2010–2011
AATA	156,498	141,276	136,986	-9.7%	-3.0%
CTA	2,241,903	2,176,960	2,133,888	-2.9%	-2.0%
Laketrans	3,242	9,110	8,458	181.0%	-7.2%
MBTA	2,029,242	2,218,920	2,494,130	9.3%	12.4%
Pace	558,778	596,854	587,475	6.8%	-1.6%
TriMet	1,046,207	1,069,704	1,064,349	2.2%	-0.5%
UTA	490,517	446,627	417,077	-8.9%	-6.6%

Fixed-Route Transit Ridership by Persons with Disabilities at Selected Transit Agencies

Each of the selected transit agencies reported offering reduced fares to certain fixed-route transit riders and all tracked ridership by persons paying a reduced fare. All seven transit agencies reported that eligibility criteria for reduced fares were consistent with the criteria contained in the U.S.DOT's requirement for half fares during off-peak hours (49 CFR Part 609). This includes riders with disabilities, persons over 65 years of age, and Medicare cardholders. The definition of disability for reduced fares is broader than that for ADA paratransit eligibility and so represents ridership by a broader group of persons with disabilities.

In some cases, transit agencies tracked reduced fare ridership by type of eligible rider. In other cases, estimates were developed to identify the percentage of reduced fare riders who were persons with disabilities. Following is a description of the reduced fare programs at each transit agency and how ridership by persons with disabilities was estimated.

AATA. Two reduced fare programs are provided. A program called "Fare Deal" offers reduced fares to persons with disabilities (based on the U.S.DOT definition), seniors aged 60 to 64, Medicare cardholders, and low-income riders. AATA also offers free fares on fixed-route transit to persons who are ADA paratransit eligible. AATA tracks free rides by persons who are ADA paratransit eligible. AATA does not separately count the various categories of Fare Deal riders. An AATA manager estimated that persons with disabilities constituted 5% of the Fare Deal ridership. AATA's fixed-route transit ridership of persons with disabilities was therefore estimated as 5% of the Fare Deal trips, plus free trips made by ADA paratransit eligible riders. This data was provided for 2009 through 2011.

CTA and Pace. Both reduced and free fare programs are provided by both CTA and Pace. Under a "People with Disabilities Ride Free Program," free fixed-route transit is provided to persons certified as having a disability and meeting low-income guidelines established by selected state and federal programs. CTA and Pace also offer reduced fares to persons with disabilities, persons 65 or older, Medicare cardholders, and students, all of which are not income based. Both agencies collected data in 2009 and 2010 for free rides provided under the "People with Disabilities Ride Free Program." Reduced fare rides by persons with disabilities were also tracked separately from other reduced fare rides in 2009 and 2010. Reduced fare data were not separated in 2011, so only data from 2009 and 2010 were used.

Laketran. Reduced fares on fixed-route transit are offered by Laketran to persons with disabilities (consistent with the U.S.DOT definition), students between 13 and 22 years of age, persons determined ADA paratransit eligible, and seniors who have "Golden Buckeye" or Medicare cards. Laketran tracks reduced fare rides by persons with disabilities and persons who are ADA paratransit eligible separately from other eligible groups. Data on reduced fare trips by persons with disabilities were provided for 2009 through 2011.

MBTA. Three different reduced fare programs are provided by the MBTA for persons with disabilities. Reduced fares are provided to persons who have a state "Transportation Access Pass" (consistent with U.S.DOT definition of disability). Free fares are offered to persons who are determined ADA paratransit eligible. Free fares are also offered to persons who are certified as having a vision disability by the Massachusetts Commission for the Blind. Reduced fares are also offered to other groups, including seniors and students. The MBTA tracks reduced and free fare trips made by persons with disabilities separately from these other groups. Data were provided for 2010 and 2011.

TriMet. TriMet provides reduced fares to "Honored Citizens," which include persons with disabilities (consistent with the U.S.DOT definition), persons 65 and older, Medicare cardholders, and persons determined ADA paratransit eligible. TriMet also provides free fixed-route service

Table 2-2. Fixed-route transit ridership by persons with disabilities at seven selected transit agencies, calendar years 2009 through 2011.

Transit Agency	Persons with Disabilities Fixed-Route Transit Ridership			% Persons with Disabilities Ridership of Total Ridership		
	2009	2010	2011	2009	2010	2011
AATA	131,263	144,754	153,038	2.2%	2.5%	2.5%
CTA	16,451,791	17,575,719	NA	3.2%	3.4%	NA
Laketran	18,748	19,899	22,494	5.7%	7.1%	7.4%
MBTA	NA	11,284,569	12,072,225	NA	3.0%	3.4%
Pace	940,971	1,183,205	NA	3.2%	4.0%	NA
TriMet	6,504,130	6,549,100	6,636,098	6.6%	6.6%	6.6%
UTA	2,488,250	2,631,200	2,684,743	7.1%	7.4%	7.0%

Note: Fixed-route ridership data for 2009 MBTA, 2011 CTA, and 2011 Pace not available.

to persons who are ADA paratransit eligible and who have purchased a monthly pass for the ADA paratransit service. TriMet estimated that trips by Honored Citizens are 9.39% of total fixed-route transit ridership. TriMet also estimated that 70% of Honored Citizens are persons with disabilities. Fixed-route ridership by persons with disabilities was therefore estimated to be 6.57% of total fixed-route transit ridership (70% of 9.39%). Data were provided for 2009 through 2011.

UTA. UTA provides reduced fares for persons with disabilities (consistent with U.S.DOT definition), seniors, and Medicare cardholders. UTA also provides free fixed-route transit service to persons determined ADA paratransit eligible. UTA does not track reduced fare rides by persons with disabilities separately from other eligible groups. UTA does, however, track the purchase of monthly reduced fare passes by eligible groups. This percentage was used to estimate total reduced fare rides by persons with disabilities. Data on reduced fare rides by persons with disabilities were provided for 2009 through 2011. UTA began tracking free rides on fixed-route transit by persons who are ADA paratransit eligible in 2011. The estimate of total fixed-route transit ridership by people with disabilities therefore does not include free rides taken by ADA paratransit eligible persons in 2009 and 2010. The effect of this omission is likely an underestimate of ridership of 5% or less. In 2011, free trips averaged about 10,000 per month, while reduced fare trips averaged over 210,000 per month.

Table 2-2 provides estimates of fixed-route transit ridership by persons with disabilities for the seven selected transit agencies, based on the above described estimates and assumptions, for calendar years 2009 through 2011. Ridership by persons with disabilities as a percent of total fixed-route transit ridership is also shown.

In absolute numbers, fixed-route transit ridership by persons with disabilities increased at all seven transit agencies. It also increased as a percentage of total ridership at four of the seven agencies.

Relative Use of Each Mode

To determine the relative use of fixed-route transit and ADA paratransit by persons with disabilities at each selected agency, the ratio of trips made on each mode was calculated. This information is provided in Table 2-3. A value of 1.00 means that for a specified year and a specified transit agency, the fixed-route transit ridership by persons with disabilities and the ADA paratransit ridership was equal. A value greater than 1.00 means that the fixed-route transit ridership by persons with disabilities was greater than the ADA paratransit ridership.

As shown, with the exception of AATA in 2009, the fixed-route transit ridership for persons with disabilities was greater than the ADA paratransit ridership for each agency for all years when the data were available. The ratios are smaller in AATA and Laketran, the smallest of the seven

Table 2-3. Ratio of fixed-route transit ridership by persons with disabilities to ADA paratransit ridership.

Transit Agency	2009	2010	2011
AATA	0.84	1.02	1.12
CTA	7.34	8.07	NA
Laketrans	5.78	2.18	2.66
MBTA	NA	5.09	4.84
Pace	1.68	1.98	NA
TriMet	6.22	6.12	6.23
UTA	5.07	5.89	6.44

Note: Fixed-route ridership data for 2009 MBTA, 2011 CTA, and 2011 Pace not available

transit agencies analyzed. One might expect this, as the level of fixed-route transit service—in terms of geographic coverage, days and hours, and headways—is typically less in smaller transit agencies. CTA, MBTA, TriMet, and UTA all have ratios close to or greater than 5.0. These four transit agencies have urban rail service with frequent headways and late evening service.

The ratio of fixed-route transit ridership to ADA paratransit ridership increased over time in four of the seven agencies—AATA, CTA, Pace, and UTA. This indicates that in these agencies, use of fixed-route transit services by persons with disabilities was increasing at a relatively faster rate than their use of ADA paratransit services. The ratio at TriMet was relatively stable, indicating about the same use of each mode for each year.

The ratio of fixed-route transit use to ADA paratransit use declined significantly at Laketrans and slightly at the MBTA—indicating a relatively greater growth in ADA paratransit use over the three years examined. In the case of Laketrans, the change in the ratio was due to a significant increase in ADA paratransit ridership in 2010. As noted previously, Laketrans managers indicated that they made an effort to increase ADA paratransit certifications in 2010 and ridership grew by 181% that year. In the case of the MBTA, ADA paratransit ridership also increased significantly from 2009 to 2011. During that period, the MBTA was one of the few large transit agencies that determined ADA paratransit eligibility based only on a paper application. From 2010 to 2011, ADA paratransit ridership increased by 12.4%. This increase was the main reason that the ratio of fixed-route transit ridership to ADA paratransit ridership decreased from 5.09 to 4.84.

At all of the transit agencies studied, ridership on fixed-route transit by persons with disabilities was equal to or greater than ridership on ADA paratransit. In some cases, fixed-route transit ridership was two to six times greater.

Findings and Conclusions

The analysis of current use of fixed-route transit and ADA paratransit indicates the following:

- At the transit agencies studied, ridership on fixed-route transit systems by persons with disabilities appears to be equal to or greater than ridership on ADA paratransit services.
- At many of the transit agencies studied, ridership on fixed-route transit services by persons with disabilities is several times higher than ridership on ADA paratransit service. Fixed-route transit ridership by persons with disabilities at many agencies is two to six times higher than ADA paratransit ridership.
- At four of the seven agencies studied, fixed-route transit ridership increased faster than ADA paratransit ridership in recent years. This suggests that people with disabilities are traveling more. It also suggests that many people with disabilities who are able to use fixed-route transit services appear to be doing so.

- Use of fixed-route transit services by riders with disabilities appears to be greater in the urban systems studied and lower in smaller city and rural systems. This is likely due to the general availability of fixed-route transit services in these areas.
- Similar to the growth in ADA paratransit ridership, fixed-route transit ridership by persons with disabilities appears also to be growing. This suggests a general increase in public transit use by people with disabilities, not just growing ADA paratransit ridership.
- Transit agencies typically gather some data on the use of fixed-route transit service by persons with disabilities. This information is typically gathered through counts of riders traveling at reduced fares. While this data likely undercounts the total number of trips by persons with disabilities, since some persons with disabilities elect to travel at full fare, it does provide some measure of fixed-route transit use.
- While the data are available, transit agencies typically do not report or analyze trends in use of fixed-route transit services by riders with disabilities. Doing this would give agencies a better understanding of the use of all types of public transit services by persons with disabilities.

2.2 Input on Use of Transit Services from Persons with Disabilities

To help direct the research and the development of strategies for enabling and promoting the use of fixed-route transit services, input was obtained from people with disabilities. Information about current as well as desired use of fixed-route transit and ADA paratransit was requested. Information about the factors that were considered when using various modes of transportation was also requested.

Interviews and National Survey

The research team first conducted telephone interviews with people with disabilities in selected cities across the country. The input obtained from these initial interviews was then used to design an online survey that was distributed to people with disabilities nationwide.

First, the research team identified communities and transit systems where initial telephone interviews would be conducted. Thirty transit riders with disabilities were interviewed about the key factors affecting their use of public transit. Interviewees were located in geographically diverse locales and included some people who use both fixed-route transit and ADA paratransit, as well as some who use one of those modes but not the other. Interviewees included people who use a variety of mobility assistance devices and some who use none. Interview responses were key in informing the research team how to develop the national survey.

Using the input from the interviews, an online survey of people with disabilities in the United States was developed. The survey focused on the modes of transportation used and on the factors considered when using fixed-route transit service, ADA paratransit, or other transportation options. A copy of the survey is provided in the final report for this project.

The survey was heavily promoted throughout the U.S. disability community by the Disability Rights Education & Defense Fund (DREDF) and other disability organizations, including, but not limited to, the American Council of the Blind (ACB), the National Council on Independent Living (NCIL), and the American Association of People with Disabilities (AAPD). The survey opened on April 20, 2012 and closed its primary data collection phase on May 14, 2012. As a web-based survey open to the public, all responses came from individuals self-identified with an interest in public transit.

The survey response was quite robust. Within two hours of the initial distribution of the web link to a number of mailing lists, 70 completed responses had been received. By the

time the primary data collection phase was closed, 1,927 U.S.-based responses were received, including responses from every U.S. state and territory. The response rate showed that efforts to reach the target audience appeared quite successful. Also, it confirmed that the disability community in the United States has a deep interest in the effectiveness of public transit to serve their needs.

The survey asked whether the respondent was completing the survey for him/herself, or on behalf of a family member, client, or other associate with a disability. Approximately two-thirds of those responding indicated they were doing so on their own behalf; approximately one-third were doing so on behalf of another party.

Survey responses also showed that respondents hailed from a variety of U.S. locales, including large cities (31%), small cities (26%), suburban areas (23%), small towns (12%), and rural areas (8%).

Survey respondents indicated a wide variety of disabling conditions, as shown in Figure 2-1. The most common disability reported was a mobility disability (38%), followed by blindness or vision impairment (23%), intellectual/cognitive disability (18%), psychiatric disability (10%), and “other” (8%). In what might have been erroneous responses from non-disabled associates, 3% of respondents indicated “I do not have a disability.”

Survey respondents also indicated a varied use of public transit services, as shown in Figure 2-2. Thirty-one percent (31%) of respondents (499) indicated that they use both the fixed-route transit service and ADA paratransit service. Twenty-four percent (24%) indicated they use ADA paratransit service but don’t use the fixed-route transit service (382). Twenty-six percent (26%) indicated they use the fixed-route transit service but not ADA paratransit service (426). And 19% indicated they don’t use either service (314).

The survey also gathered data on respondents’ frequency of public transit use, types of trips, and why they choose various transit modes. This detailed information is included in the final research report for this project.

Interest in Using the Fixed-Route Transit Service

Riders from every group reported their interest in using the fixed-route bus and/or train system, or using them more. For example, respondents who use only ADA paratransit were asked, “Would you like to use the fixed-route service for some of your trips?” As illustrated

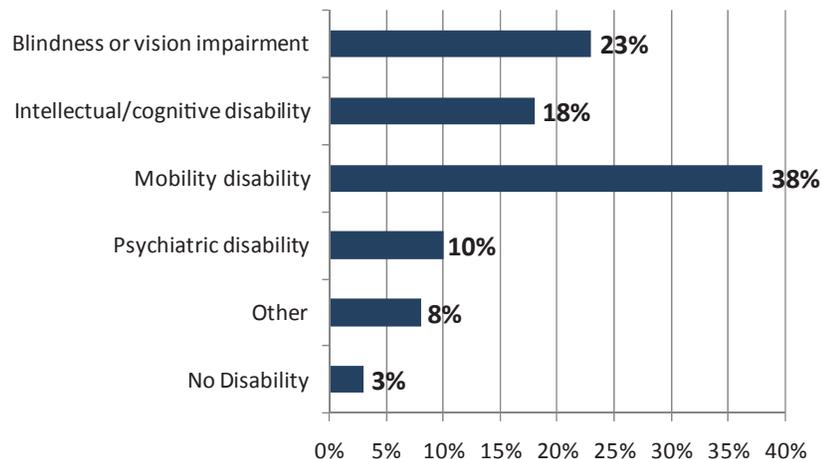


Figure 2-1. Survey responses by type of disability.

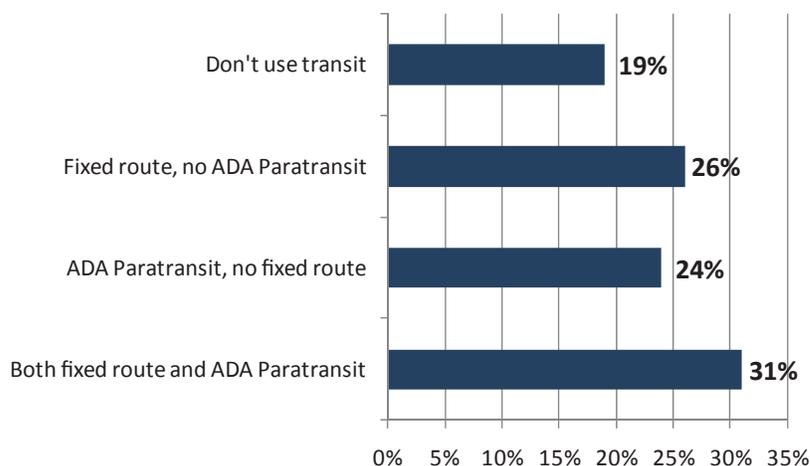


Figure 2-2. Current use of public transit services by survey respondents.

in Figure 2-3, while 48% of the 372 respondents in this group indicated “No,” 28% indicated “Yes,” while 24% indicated “Not sure.”

Respondents who use both the fixed-route transit and ADA paratransit systems were asked, “Would you like to use the fixed-route service more often than you use it now?” A strong 53% of respondents answered “Yes.” 20% responded “No,” and 26% indicated “Not sure,” as shown in Figure 2-4.

Respondents who use only the fixed-route transit service were similarly asked, “Would you like to use the fixed-route service more often than you use it now?” A majority of respondents, 57%, indicated “Yes,” 28% indicated “No,” and 16% indicated “Not sure,” as seen in Figure 2-5.

Finally, respondents who use neither the fixed-route transit service nor ADA paratransit were also asked, “Would you like to use the fixed-route service?” Thirty-nine percent of respondents

Would you like to use the fixed-route service for some of your trips?

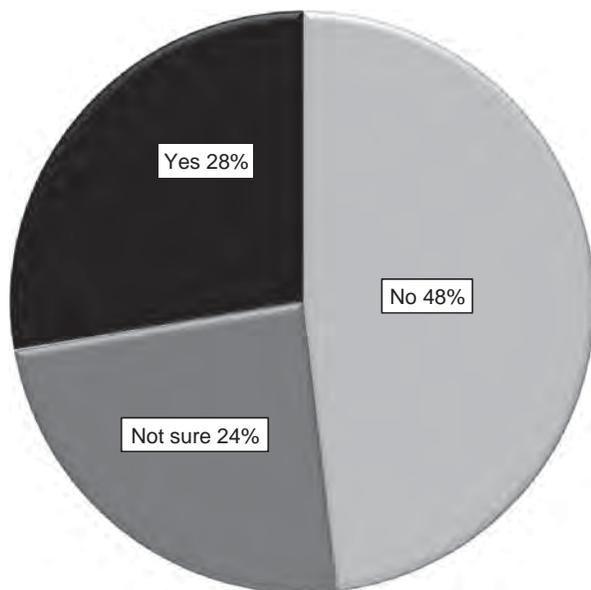


Figure 2-3. Desire to use fixed-route transit by respondents who currently only use ADA paratransit.

Would you like to use the fixed-route service more often than you do now?

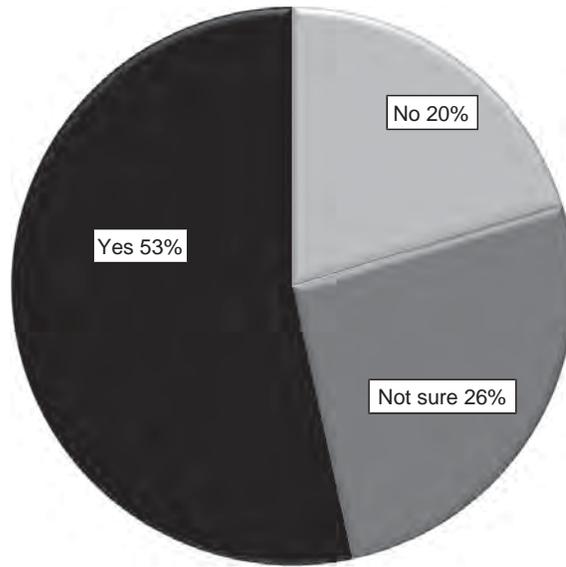


Figure 2-4. *Desire to use fixed-route transit more by respondents who currently use both modes.*

indicated “Yes,” 25% of respondents indicated “No,” and 36% of respondents indicated “Not sure” (see Figure 2-6).

Factors That Affect Use of Fixed-Route Transit

The last questions to all respondents were about what factors are the most important to them in deciding whether to use the fixed-route transit system, or another mode of transportation. Respondents were presented with a list of “factors that sometimes discourage or prevent people

Would you like to use the fixed-route service more often than you do now?

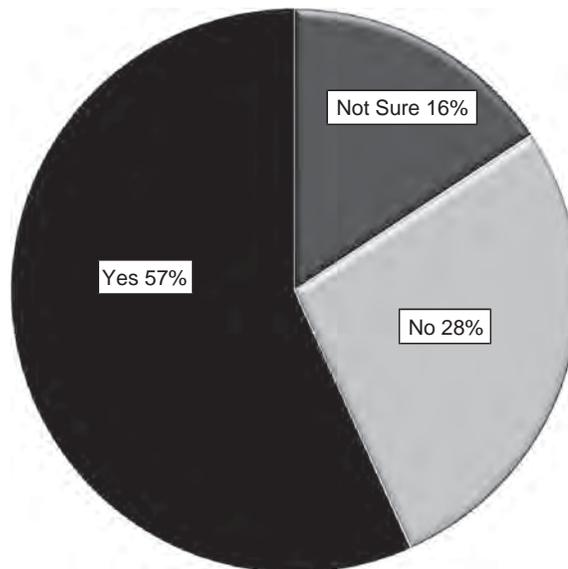


Figure 2-5. *Desire to use fixed-route transit more by respondents who currently only use fixed-route transit.*

Would you like to use the fixed-route service more often than you do now?

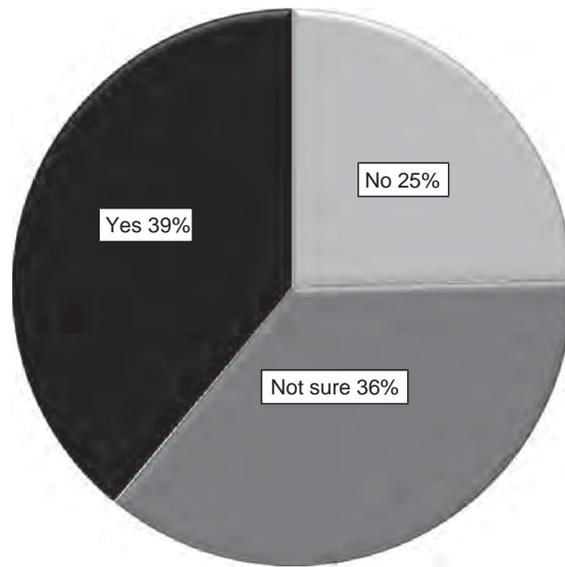


Figure 2-6. Desire to use fixed-route transit by respondents who currently do not use either fixed-route transit or ADA paratransit.

with disabilities from using fixed-route service as often as they would like.” They were asked, “On a scale of 1 to 5, with 1 being ‘not important’ and 5 being ‘very important,’ please indicate how important these factors are to you in deciding whether to use the fixed-route service.” The list of factors was as follows:

- Fixed-route service doesn’t run often enough.
- Fixed-route service doesn’t run at the hours I need to travel.
- Complex or multiple transfers on fixed-route service.
- Cost of the fixed-route service.
- I’m not sure how to use the fixed-route service.
- Negative past experiences using the fixed-route service.
- Poor fixed-route service quality.
- Problems with stop announcements.
- Concerns for my personal safety when using fixed-route service.
- Distances to or from stops/stations.
- Barriers in the pedestrian environment getting to and from stops/stations.
- Lack of information about potential barriers I may encounter getting to/from fixed-route stops/stations.
- Fixed-route service doesn’t accommodate my mobility aid as well as I would like.
- Poor fixed-route driver attitudes or assistance.
- Attitudes of other fixed-route passengers.

Figure 2-7 shows how these factors were rated in terms of importance. Respondents tended to rate the following factors as most important, in the following order:

- Barriers in the pedestrian environment getting to and from stops/stations (Highest-rated factor, rated as Very Important by 48% of respondents).
- Distances to or from stops/stations (47%).

Barriers in the pedestrian environment, distances to and from fixed-route transit stops/stations, and lack of information about potential barriers getting to and from stops/stations were three of the more important factors considered by people with disabilities when deciding whether or not to use fixed-route transit services.

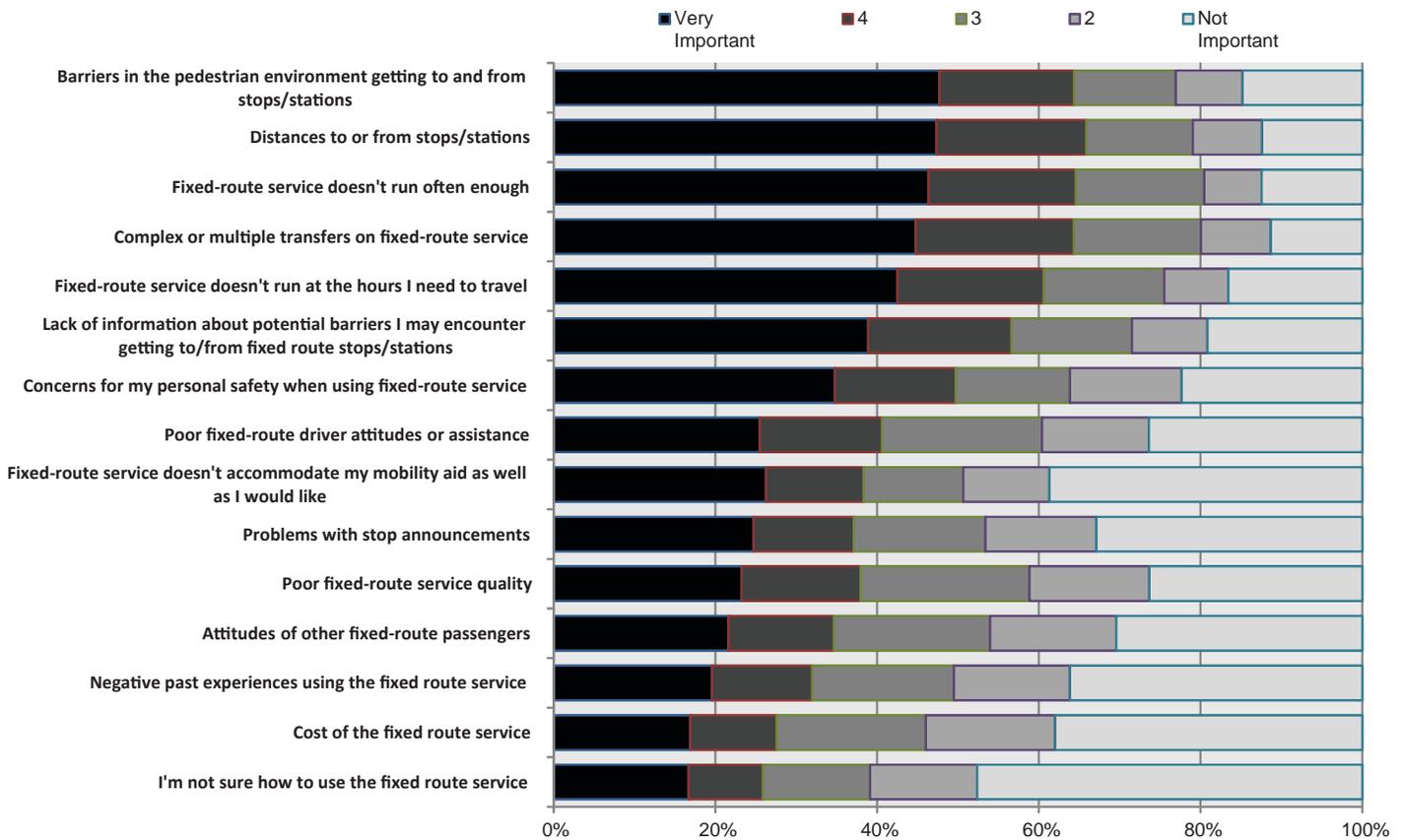


Figure 2-7. Importance of selected factors in decision to use fixed-route transit services—all respondents.

- Fixed-route service doesn't run often enough (46%).
- Complex or multiple transfers on fixed-route service (45%).
- Fixed-route service doesn't run at the hours I need to travel (43%).
- Lack of information about potential barriers I may encounter getting to/from fixed-route stops/stations (39%).
- Concerns for my personal safety when using fixed-route service (35%).

Subgroups of respondents, such as those who use only paratransit, only fixed-route transit, both, or neither, showed some variation in what factors are most important, but not a significant amount.

Respondent Comments—General Fixed-Route Transit Issues

Respondents also had the opportunity to submit individualized comments. Obstacles and concerns they described about using the fixed-route transit system include some factors faced by all public transit riders, but which might be obstacles of a higher order for certain people with disabilities, such as exposure to weather, a chaotic atmosphere aboard the bus, the lack of sidewalks in some locales, waiting periods that are too long, and distances that are too great to traverse.

And like all riders, the availability and level of fixed-route transit service provided is a key decision factor in whether or not to use this mode. Large numbers of persons with disabilities indicated that the frequency of fixed-route transit service and the days and hours of operation are key factors for them. As would be expected, this was particularly important to those who only use fixed-route and do not use ADA paratransit service. This suggests that improving

the general level of fixed-route transit service is an important factor in attracting riders with disabilities.

Comments about Factors Unique to People with Disabilities

Concerns were also expressed about factors unique to riders with disabilities, such as lack of disability access to bus stops, out-of-service elevators in train stations, web-based bus schedules that are not accessible to blind people using screen readers, concerns about whether the bus driver will properly secure their wheelchair, and the challenges of navigating across open spaces in a parking lot by people who are blind or have visual impairments. Some have had bad experiences in the past, such as the bus passing them by while they were waiting at a bus stop. Some riders who use service animals had bad experiences with the attitudes of other passengers. Some encountered difficulties because local buses have too few wheelchair spaces for the level of demand. Others experienced poor assistance from bus drivers or other transit staff. Some people with hidden disabilities had bad experiences when requesting accommodations because they don't "look disabled." Still others encountered negative attitudes when people without disabilities were asked to move from priority seating. Some people with low vision encountered train stations that were too dark, or had difficulties identifying the correct bus or train. And some people with multiple chemical sensitivities couldn't tolerate fragrance products utilized by the general public.

Interest in Using Fixed-Route Transit Services

Yet, a significant percentage of persons with disabilities are interested in using fixed-route transit services, or using them more often. And many survey respondents mentioned negative experiences with ADA paratransit services as a reason they use the fixed-route transit service instead. Fifty-seven percent of those who only use fixed-route transit now indicated they would like to use it more often. And 53% of individuals who use both fixed-route transit and ADA paratransit said they are interested in using fixed-route transit service more. Even 28% of those who said they only use ADA paratransit now expressed an interest in using fixed-route transit services.

A significant percentage of people with disabilities are interested in using fixed-route transit services, or using them more often.



CHAPTER 3

Getting Started: Understanding Current Use of Transit Services and Creating a System-wide Policy

Two suggested “first steps” in adopting a strategy to enable and promote use of fixed-route transit services by people with disabilities are as follows:

- Develop a good understanding of current use of transit services by people with disabilities and
- Establish a system-wide policy on accessibility.

3.1 Developing an Understanding of Current Use of Transit Services

Before developing a strategy to enable and promote increased use of fixed-route services, it is important to develop a good understanding of the current use of transit services by people with disabilities. Information should be gathered to answer the following questions:

Start by gathering fixed-route transit and ADA paratransit ridership information and getting input from riders with disabilities to develop an understanding of public transit use and key rider issues in your area.

1. What is the current ridership on fixed-route transit by people with disabilities?
2. What are the trends in fixed-route transit ridership by people with disabilities?
3. What is the current ridership on ADA paratransit?
4. What are the trends in ridership on ADA paratransit?
5. What are the factors that are considered by people with disabilities when using fixed-route transit versus ADA paratransit?
6. What are the barriers cited by people with disabilities to use of fixed-route transit services?

Fixed-route transit and ADA paratransit ridership information ideally should be developed through ongoing data collection efforts. Information about factors and barriers that affect use of fixed-route transit services ideally should be developed through input from the community.

Tracking Ridership

ADA paratransit ridership is typically tracked by transit agencies as part of NTD reporting. Fixed-route transit ridership by people with disabilities is often not tracked, but it is strongly suggested.

Track Reduced Fare Payments

One approach for identifying riders with disabilities using fixed-route transit services is through the types of fares paid. The number of riders paying reduced fares can be used to estimate ridership by people with disabilities. Because reduced fares are typically made available to people other than those with disabilities (seniors, Medicare cardholders, students, etc.), it is

important to develop approaches for tracking ridership by each group. If automated fare collection systems are used, fare mechanisms can be programmed to include the characteristics of each rider. If automated systems are not used, some approach for estimating the reduced fare ridership by each group will be needed. One option is to track the percentage of people approved for reduced fares in each group and to apply the percentage of people who qualify based on disability to the total reduced fare ridership. This approach is illustrated by the following example:

- Assume 10,000 people have been qualified for reduced fares.
- 5,000 of these individuals were qualified based on a disability.
- Total reduced fare ridership for a given month is 20,000 trips.
- The estimated reduced fare ridership by people with disabilities is therefore 10,000 trips (50% of the total).

To be able to track reduced fare ridership by group, it is helpful to do the following:

- Record and track the basis on which each person is qualified for reduced fares.
- Imbed information on type of rider in automatic fare collection mechanisms (if appropriate).
- Record riders by fare type, either through full data collection during boarding or by sampling.

Conduct On-board Rider Surveys

An alternative to using reduced fare ridership data would be to conduct periodic on-board rider surveys. Include a question on disability in these surveys. Apply survey results to total fixed-route transit ridership data to estimate ridership by people with disabilities.

Gathering information on ridership by people with disabilities on both fixed-route transit and ADA paratransit *prior* to the implementation of new strategies and programs can serve as an important baseline of information for evaluating the effectiveness of these efforts. Trends in ridership on each mode after implementation of programs and efforts can then be compared to baseline data to determine if people with disabilities are using fixed-route transit more and if the ratio of trips by fixed-route and by ADA paratransit has changed.

Consider setting goals not just on total fixed-route transit ridership, but on ridership by people with disabilities. Track this ridership each year and use it as part of the performance evaluation of services and managers.

Use Ridership Data to Set Goals

Information about fixed-route ridership by people with disabilities can also be used to set performance goals within the agency and to evaluate the performance of staff. For example, consider setting goals not just on total fixed-route transit ridership, but on ridership by people with disabilities. Track this ridership each year and use it as part of the performance evaluation of services and managers.

Community Input

It is also important to work with the community and riders with disabilities to identify factors that influence the use of each mode and barriers, both real and perceived, that may be keeping people from using fixed-route transit services. It is important to gather this input locally since types of barriers and issues will be different in each community. Input can be gathered through the following:

- Local advisory committees,
- Special public information meetings,
- Focus groups of people with disabilities,
- Periodic surveys of people with disabilities, and
- Online input pages on the transit agency website.

If input is gathered through advisory committee meetings or other forums, make sure staff from all departments, fixed-route as well as ADA paratransit, attend and participate. Also be sure to report back to the community on efforts being made or planned to address issues and ideas presented.

3.2 Establishing a System-wide Accessibility Policy

A second important “first step” is to develop a system-wide policy on accessibility and services for persons with disabilities. For strategies and programs to work, the support of all staff and all departments is needed. For example, marketing accessible fixed-route transit service and offering fare incentives is likely to be ineffective if equipment is not reliable and usable or if drivers are not offering appropriate assistance in a courteous manner. Similarly, travel training programs are likely to be less effective if people are not convinced that the fixed-route transit service is truly accessible and usable.

The Corpus Christi Regional Transportation Authority (CCRTA) in Corpus Christi, Texas, which is recognized for its efforts to provide accessible transit services, is one agency that has adopted a system-wide policy. A copy of the policy is provided on the following pages. The policy calls for all transit agency employees, within their regular duties and responsibilities, to establish a commitment to access for people with disabilities, people who are aging, and other people with access and functional needs. Key provisions of the policy are as follows:

- Full participation by people with disabilities in programs and services.
- Designation of an ADA Coordinator for the agency who reports directly to the chief executive officer (CEO).
- Creation of a Universal Access Team, with representatives from each department, which meets monthly to address accessibility issues.
- Development by the Universal Access Team, working in conjunction with the Regional Transportation Authority (RTA) Regional Committee on Accessible Transportation (RCAT) of guiding principles on accessibility.
- Initial and ongoing training and professional development for all staff on the issues of integration and elimination of barriers.
- Use of an Impact Statement tool for new as well as ongoing programs and services that assesses whether the proposed or ongoing program creates barriers for people with disabilities, or adversely impacts access or integration.
- Ongoing internal reviews of compliance with ADA requirements.

CORPUS CHRISTI REGIONAL TRANSPORTATION AUTHORITY BOARD POLICY ACCESSIBILITY POLICY

POLICY STATEMENT

To provide full participation and equality of opportunity for people with disabilities, people who are aging and other people with access and functional needs, the Corpus Christi Regional Transportation Authority (RTA) Board of Directors calls for all RTA departments, within their regular duties and responsibilities, to establish a commitment to access.

APPLICABILITY

This policy statement is broad, cross-cutting and designed for application to all actions of the RTA, including but not limited to the following:

- Policy Development
- Customer Service
- Service Provision and Operation (Directly Provided or Contracted)
- Employment
- Physical Environment
- Communications/Media/Website
- Public Involvement
- External Meetings and Agency Sponsored Events
- Fleet Characteristics
- Maintenance
- Safety/Security/Emergency Operations
- Procurements
- Staff Development and Training
- Construction and Engineering
- Route and Service Planning

IMPLEMENTATION

Effective implementation of the Accessibility Policy statement begins with the establishment of a Universal Access Team. Each RTA department will designate sufficient and appropriate team members to serve and meet monthly to ensure compliance with the policy. This team will help develop guiding principles in conjunction with the RTA Regional Committee on Accessible Transportation (RCAT). Meetings of the Universal Access Team will be coordinated through the designated RTA ADA Coordinator and report current activities and initiatives to the Chief Executive Officer (CEO).

Support for all RTA staff will include initial and ongoing training and professional development regarding integration and elimination of barriers for people with disabilities, people who are aging and other people with access and functional needs.

Additional tools available to all RTA staff will include the use of an Impact Statement (approved by the CEO) to ensure an effective outcome. The Impact Statement will provide for the review of programs, projects, and developing or ongoing RTA services that answer, at a minimum, the following questions:

- Are any barriers being created for people with disabilities, people who are aging and other people with access and functional needs?
- Is RTA enhancing access and integration for people with disabilities, people who are aging and other people with access and functional needs?
- Does the program, project, or service result in the most integrated setting appropriate for people with disabilities, people who are aging and other people with access and functional needs?
- Has RTA taken steps to reduce or eliminate any negative impacts?

POLICY REVIEW

Review of this policy will be done no less than annually or more frequently as needed. To complement the review, RTA staff through the Universal Access Team will establish procedures and conduct the following:

- Establish Review Baseline
- Conduct Internal Review of Regulatory Compliance to include an ongoing ADA Performance Monitoring Program for all modes of transportation
- Self-Evaluation Review and Update
- ADA Transition Plan Review and Update
- Establish Best Practices and Lessons Learned Components

Adopted July 6, 2011

Operating Accessible and Usable Fixed-Route Transit Services

Another important “first step” is to ensure that fixed-route transit services are accessible and usable by people with disabilities. The various strategies suggested in subsequent chapters will not work if the fixed-route transit system is not accessible. And it would be disingenuous to encourage people to attempt to use fixed-route transit services if these services are not really usable.

First and foremost, having an accessible fixed-route service means complying with the requirements of the ADA and the regulations issued by the U.S.DOT implementing the transportation requirements of the law. Regarding fixed-route transit facilities and vehicles used by public transit agencies, the law and regulations require that:

- All new transit facilities be constructed to be accessible—that is, they meet the accessibility standards included in the regulation.
- Any alterations to existing facilities be made so that the altered areas, as well as paths of travel to primary function areas, are accessible to the maximum extent feasible.
- All new vehicles purchased for use in fixed-route transit service be accessible.
- A good faith effort, which includes a nationwide search, be made to obtain accessible used fixed-route vehicles.
- All fixed-route vehicles that are remanufactured be made accessible.

Beyond making facilities and vehicles accessible, the regulations contain several “provision of service” requirements related to how facilities and vehicles are operated. These include requirements to:

- Keep accessibility equipment in good working condition and make prompt repairs to non-working equipment.
- Provide alternative transportation to persons with disabilities if fixed-route vehicles cannot be used because of broken lifts or ramps and the headway to the next accessible vehicle is more than 30 minutes.
- Use lifts, ramps, and securement systems to accommodate riders who use mobility devices and provide assistance with the use of this equipment.
- Announce stops on fixed-route services.
- Have a system in place to allow riders with disabilities to identify the fixed-route vehicle they need to use, or to allow drivers to identify riders seeking to use their vehicles.
- Provide accessible information and communications about transit services.
- Accommodate service animals and portable oxygen.
- Allow adequate time for persons with disabilities to board and alight from vehicles.
- Ensure that employees are trained to proficiency in the operation of accessible equipment, in assisting people with disabilities to use the service, and in treating people with disabilities in a respectful and courteous way.

Make sure that fixed-route transit services are accessible, meet all ADA requirements, and are usable by people with disabilities before implementing strategies to encourage greater use.

More detailed information about these and all of the ADA regulatory requirements are available on the Civil Rights and ADA page of the FTA website at http://www.fta.dot.gov/civil_rights.html.

A significant amount of technical assistance information for understanding and implementing ADA transportation requirements has also been developed by Easter Seals Project ACTION (ESPA). For a listing of available resources, go to <http://www.projectaction.org>.

The DREDF, with funding from FTA, developed a very helpful series of Topic Guides for understanding and implementing certain aspects of the transportation requirements of the ADA. A link to the Topic Guides is provided on the FTA webpage noted above. Direct access through DREDF is also available at <http://www.dredf.org/ADAatg>. Two particularly relevant Topic Guides to making fixed-route transit services accessible are “Equipment Maintenance” and “Stop Announcements and Route Identification.”

FTA is also working on an ADA Circular. Portions of the circular are scheduled to be released throughout 2013 and 2014. The circular will contain detailed information on requirements and implementation.

The regulations also contain several “general nondiscrimination” requirements. These include a general provision that “No agency shall discriminate against an individual with a disability in connection with the provision of transportation service.” It also includes specific requirements related to nondiscrimination, including:

- Not denying people with disabilities the right to use the services available to the general public, rather than special services that may be provided.
- Not requiring people with disabilities to travel with attendants.
- Providing priority seating, but not requiring people with disabilities to use the seats if they choose to sit elsewhere.

This chapter provides recommendations related to several requirements. Section 4.1 addresses keeping vehicles and accessibility equipment in good working condition. It also suggests some strategies that go above and beyond the minimum regulatory requirements to accommodate the greatest number of riders with various types of mobility devices and to maximize the usability of vehicles and equipment.

Section 4.2 offers suggestions for implementing the requirements to make stop announcements and to identify routes. These requirements continue to challenge many public transit agencies.

Section 4.3 provides suggestions for employee training, key to making fixed-route transit services accessible and usable. Effective implementation of policies and procedures, and proper use of accessibility equipment, depends on thorough employee training.

Finally, Section 4.4 discusses service monitoring. A strong and effective service monitoring program is critical to ensuring that policies and procedures are *actually implemented* and that fixed-route transit service is accessible and usable *in practice*.

4.1 Accessible, Usable, and Reliable Vehicles and Equipment

For people who use mobility devices, fixed-route transit must accommodate their devices so that they can effectively use the service. For these riders, accommodation is more than providing accessible transit information, calling out stops, and the various other activities that define accessible fixed-route transit service; it also means ensuring that the riders' mobility devices, including manual and power wheelchairs and scooters, can safely and reliably be accommodated on fixed-route transit vehicles.

ADA Requirements for Fixed-Route Transit Vehicle Accessibility

The ADA requirements spell out accessibility specifications for new and used fixed-route buses and new and remanufactured rail cars. 49 CFR Part 38 provides specifications that must be met to make a vehicle accessible. 49 CFR Part 37 provides the conditions under which vehicles must be purchased as accessible, or made accessible.

To provide boarding for riders using mobility devices, buses and vans can be equipped with a lift or ramp. The ADA requirements detail specifications for these as well. The regulations require that lifts and ramps accommodate a rider and mobility device that together weigh up to 600 pounds. This weight threshold corresponds to the ADA's original definition of a "common wheelchair"—a mobility device of three or four wheels that does not exceed 30 inches in width and 48 inches in length and does not weigh more than 600 pounds when occupied. The definition originated as a *design concept* but was applied as an *operational concept* as well.

Over the years since the ADA was enacted, many different types of larger wheelchairs and wheeled mobility devices were developed. The size and weight of Americans, on average, also increased. Transit agencies encountered riders and mobility devices that exceeded the minimum required design standards with increased frequency.

In October 2011, the original definition of a common wheelchair was changed through amendments to 49 CFR Parts 37 and 38. A wheelchair is now defined as "a mobility aid belonging to any class of three- or more-wheeled devices, usable indoors, designed or modified for and used by individuals with mobility impairments, whether operated manually or powered."

According to the amendments, the *operational role* of the "common wheelchair" is deleted. The amendments recognized that some transit agencies operate fixed-route transit vehicles that can accommodate a higher weight threshold, for example, up to 800 pounds. Transit agencies are now required to transport any rider and mobility device that exceed the common wheelchair definition if the vehicle and lift/ramp can physically accommodate them, unless doing so is inconsistent with legitimate safety requirements.

It is important to recognize that accessibility standards for vehicles and transit systems may be revised or updated periodically, based on technological or other changes. The U.S. Access Board develops the guidelines that are then adopted as legal standards by implementation agencies such as the U.S.DOT.

Additional accessibility features include the provision of securement areas and securement devices. Requirements for securement areas depend on the size of the vehicle. Those 22 feet or less must have at least one securement area, which can be either forward or rear facing. Those greater than 22 feet must have at least two securement areas, with one forward facing and the second either forward or rear facing.

Requirements for securement devices are also provided in the regulations, for example, a seat belt and shoulder harness must be provided for each securement location and these must be separate from the securement system for the mobility device.

Additionally, signage must be provided that states that the securement area is to be used by persons who use wheelchairs and mobility devices.

Maintenance of Accessibility Features on Fixed-Route Transit Vehicles

To ensure that accessible features and equipment are available for riders when needed, the ADA requires that transit agencies maintain those features in operable condition. This includes wheelchair lifts, ramps, kneeling mechanisms, automatic stop announcement annunciators, wheelchair securement devices on buses and vans as well as elevators and escalators, signage, fare payment equipment, public address systems, and other systems to facilitate communications with people with impaired vision or hearing.

For fixed-route transit service, daily maintenance checks—pre-trip inspections—ensure that bus lifts and ramps are operating properly before entering service. On a routine basis, lifts and ramps should also be tested with a full load rather than without any weight.

Pre-trip inspections are also the opportunity to check other accessibility equipment, such as wheelchair securement equipment and automatic stop announcement annunciators.

When there are problems, accessibility features and equipment must be repaired promptly, with reasonable efforts to accommodate individuals with disabilities who would otherwise use the inoperable accessibility feature.

Transit Agency Efforts to Accommodate Riders with Mobility Devices and Rider Feedback

Since the passage of the ADA, transit agencies have undertaken efforts to improve how they accommodate riders with mobility devices. More than 60% of transit agencies completing the project’s survey have made specific equipment improvements. These include:

- 38% of transit agencies provide riders with special straps they can permanently attach to their mobility device to improve on-board securement;
- 15% worked with riders with disabilities to redesign the securement area and securement systems in the vehicles;
- 18% worked with riders to improve the design of the lift or ramp; and
- 25% have made “other” equipment improvements.

The transit agencies believe that their equipment improvements have been effective, facilitating greater use of fixed-route transit by their riders with disabilities. Almost two-thirds rated their improvements as “effective” or “very effective.”

Feedback from people with disabilities through the study’s survey efforts indicates that concerns about fixed-route transit’s ability to accommodate individuals’ mobility aids are not among the most important factors affecting decisions to use fixed-route transit, compared to other more important factors such as barriers in the pedestrian environment affecting access to bus stops and transit stations. However, those respondents who use only ADA paratransit and not fixed-route transit expressed more concerns about this issue than those who use fixed-route transit and those who use both fixed-route transit and ADA paratransit.

These survey findings suggest that transit agencies might encourage greater fixed-route transit ridership by ADA eligible riders by clearly showing how their fixed-route transit vehicles accommodate mobility devices. This might be done, for example, through marketing and informational materials targeted to people with disabilities; through a short video posted on

the agency’s website; through “show and tell” presentations at locations frequented by people who use mobility devices; and through travel training that demonstrates how the fixed-route transit service can accommodate mobility devices. See Chapter 6 for suggestions on these types of efforts and programs.

Trends in the Transit Industry and Mobility Device Manufacturers

The accommodation of riders who use wheelchairs and other wheeled mobility devices is receiving greater attention as the types of mobility devices proliferate and as the size and weight of Americans, on average, increases. A Project ACTION report found that some improvements have been made in bus design to address issues associated with the farebox and other structures in the bus front that can impede wheelchair access. However, the trend toward low-floor buses with ramps rather than lifts can create space and maneuverability issues. (4) Large wheel-housings inside buses can restrict access to and from securement areas and make it more difficult to turn around inside buses. Additionally, when ramps are deployed to the street, rather than to a sidewalk with a curb, the angle is steep and cannot be independently managed by some riders. (4)

These and other related issues are being addressed in TCRP research through Project C-20, “Use of Mobility Devices on Paratransit Vehicles and Buses,” with research currently under review for publication.

Some mobility device manufacturers have responded to the needs of people who use wheelchairs and public transit with the provision of wheelchairs designed for use as a seat on a motor vehicle, including transit vehicles. These are known as *WC19-compliant* wheelchairs, built to specific safety standards for use on vehicles. However, these standards are voluntary and their adoption has been limited. (5)

Ensuring Accessibility

As noted above, the first step in ensuring accessibility is to meet the applicable ADA requirements for vehicles and equipment. But transit agencies can go further in ensuring that their equipment is usable for riders with mobility devices.

Specifications

Specifications for new vehicles and equipment should make clear the required accessibility features, rather than just stating that the vehicle must meet all ADA requirements in Part 38. Transit agencies might also consider whether they might exceed the ADA requirements for certain features. For example, a transit agency may find that specifying a longer ramp that minimizes slope may enable more riders with wheelchairs to use fixed-route transit rather than ADA paratransit.

Specifications for vehicles and facilities should include detailed accessibility requirements rather than just stating they should be ADA compliant. To make fixed-route transit as usable as possible, consider exceeding minimum ADA requirements.

Obtain Public Input

It is a good practice to seek input from riders with disabilities when determining the type of vehicle, or specific type of equipment, to procure. Some transit agencies have asked vehicle vendors to supply a “sample” bus or rail car that riders can test by actually boarding, maneuvering to the securement area, and using the securement system. Comments from riders can improve the design of vehicles and ultimately enable greater use of fixed-route transit.

Transit Agency Approaches to Accommodating Riders with Mobility Devices

Several approaches to the accommodation of riders who use mobility devices are highlighted below, addressing different aspects of fixed-route transit service accessibility.

Securement Areas on Fixed-Route Transit Vehicles

Requirements for securement areas depend on the size of the transit vehicle. Those 22 feet or less must have at least one securement area and those greater than 22 feet must have at least two securement areas. CCRTA in Corpus Christi, TX, has gone beyond the requirements and procures transit buses with three wheelchair securement areas.

Since 2008, each 35' and 40' transit coach purchased by CCRTA has been equipped with three wheelchair securement positions. This strategy was adopted to address demand that often exceeded supply for fixed-route transit service by riders who use wheelchairs—demand that can be attributed to successful CCRTA initiatives to increase utilization of fixed-route transit services by people with disabilities.

CCRTA's efforts to increase utilization of fixed-route transit services by people with disabilities began in 1999, when its ADA paratransit fares were increased; prior to this, paratransit fares were the same as fixed-route transit fares. CCRTA next began to focus on ADA paratransit eligibility and education/outreach on fixed-route services, including bus familiarization training and travel training. In 2006, more stringent eligibility certification requirements were implemented. In 2009, CCRTA began constructing accessibility improvements at bus stops.

As a result of increased utilization of fixed-route transit services by people with disabilities, vacant wheelchair securement areas were often unavailable in off-peak hours of service. The need for additional wheelchair capacity on fixed-route transit service came into focus when, during bus familiarization training, the trainer attempted to board a fixed-route bus with a new rider using a wheelchair, only to find the two securement positions already occupied.

The strategy to add a third securement position to new bus purchases was chosen following considerable input from and discussion with CCRTA's Committee on Accessible Transportation (an advisory board to the agency that includes perspectives of people with disabilities, human service agencies, and advocacy groups) as well as CCRTA's Operations, Maintenance, and Safety Departments.

Once the decision was made to pursue this strategy in 2008, the Maintenance Department approached the manufacturer of CCRTA buses (that were on order at that time), and worked with them to revise the interior seating configuration specifications. CCRTA also sent several operators to the manufacturing plant in California to offer input on the design, to maximize the ergonomics and operating effectiveness. The design ultimately accommodated the third position and 31 standard seats in a 40' bus—the same number of seats as CCRTA has previously procured with two securement positions. This was a lengthy process but resulted in specifications that CCRTA has continued to use with minor modifications. Two of the wheelchair positions are located on the roadside of the vehicle, while the third is on the curbside. The incremental cost to install the third securement position is approximately \$1,200 with standard securement devices. As of December 2012, 31 of CCRTA's 72 transit coaches accommodate three wheelchairs.

In 2010, CCRTA began procuring an upgraded securement system in its new vehicles. The new system uses three-point securement, with features that include, among others, a

remote release for the rear retractors and a stabilizing bumper designed to prevent tipping. Using this system, a wheelchair can be secured in about a minute and released in even less time. Upgrading to the new system costs an additional \$5,000 total for the three securement areas. The additional cost is considered by CCRTA as a worthwhile investment. While installation of three of the new securement systems in a bus reduces the seating capacity by two, due to the structure of the new system, which must be installed forward facing, the buses can still accommodate the same total number of passengers including standees.

The speed of using the upgraded system has proved to be very helpful in mitigating the one drawback experienced with the third securement position: an occasional need to “juggle” passengers using wheelchairs in situations when an oversized mobility device is secured on board and blocks the path for another wheelchair user between a securement position and the bus lift/ramp. In such cases, it can be necessary to deboard the passenger in the oversized chair to allow another wheelchair user to get to or from another securement area. CCRTA has not identified a straightforward solution, since boarding and deboarding order varies with each passenger’s individual trip. When a passenger using a wheelchair boards, the operator asks where they are headed and tries to place them strategically (e.g., the largest wheelchair positioned furthest back), but this is not always feasible.

Anecdotally, CCRTA continues to experience occasions when a fourth wheelchair user desires to board, although data are not currently tracked on such incidents. CCRTA feels, though, that a fourth securement position would not be viable within the dimensions of a 40’ transit coach with current exit door configuration.

Overall, CCRTA feels that the benefits of the third wheelchair securement position and upgrading to the new securement system have completely outweighed any occasional drawbacks and financial considerations. While some operators initially found the third position to be onerous, the investment in the securement system technology has significantly improved operations in this regard. More passengers who use wheelchairs can now reliably access fixed-route transit—and they are doing so, as evidenced by the wheelchair ridership increases. Fixed-route wheelchair boardings have quadrupled since 2006 (when CCRTA began tracking this data), from 27,475 in 2006 to 110,961 in 2012. Overall system ridership grew from 5,536,958 unlinked passenger trips in 2006 to 6,011,403 in 2011.

Securement Location

U.S.DOT requirements for the securement locations specify that they must be located as close to the accessible entrance as possible, with a clear floor area 30 inches wide by 48 inches long. Rather than have securement areas that are in one designated space, some transit agencies have procured vehicles with a flexible design. While such vehicles may be more commonly used in paratransit operations, they may also be used in fixed-route transit service.

Laketran, the regional transit authority serving Lake County in northeastern Ohio, has begun to use such vehicles in late night and weekend fixed-route transit service (as well as in demand responsive service). Laketran operates 77 cutaway vehicles, all of which have full-length securement tracking—the tracks in which the securement devices are anchored have been installed the full length of the vehicle (see Figures 4-1 and 4-2). Vehicle seats can fold up to expose the full length track, which allows Laketran operators to position the securements in an infinite number of locations. This ability not only greatly eases the challenge that can be posed by the variety of mobility devices on the market, but also allows passengers with mobility devices to sit in any

CCRTA in Corpus Christi, TX, has purchased buses with three securement areas and state-of-the-art securement systems since 2008. As a result of these and other efforts, they have seen lift boarding on the fixed-route transit service increase from 27,475 per year in 2006 (prior to the efforts) to 110,961 in 2012.



Figure 4-1. Laketran vehicle with full-length securement tracking, looking forward from the rear (photo courtesy of Laketran).

position they wish, unless another passenger already occupies the desired location. Laketran has put this into practice, allowing passengers this choice.

Laketran tested the vehicles with this securement design in late night and weekend fixed-route transit service in late 2012 and early 2013 with positive results. As of February 2013, Laketran is considering use of small cutaways on fixed routes during times and in areas with low demand. The advantages identified include fuel savings (11.8 miles per gallon for cutaways as compared to 5.6 miles per gallon for transit coaches), potential labor cost savings (depending



Figure 4-2. Laketran vehicle with full-length securement tracking, looking rearward from the front. (photo courtesy of Laketran).



Figure 4-3. Continuous track for anchoring passenger shoulder strap, UTA FLEX bus vehicles (photo courtesy of TranSystems).

on pay structure for fixed-route cutaway operators), and favorable public perception (in that the smaller vehicles are more efficient and less expensive to operate).

Laketrans has also identified some drawbacks with use of cutaway-type vehicles for fixed-route transit. The vehicles have lifts in the “rear” of the bus—behind the rear axle on the curb side of the vehicles. Unlike full-sized transit coaches, the driver cannot deploy a rear lift while seated; he or she must exit the vehicle and walk to the rear of the vehicle to operate the lift. In the cutaways used by Laketrans, the driver must exit on the street side rather than the curb side, which presents a safety hazard to the driver. Positioning the vehicle for rear lift deployment at fixed-route bus stops is also a challenge when passengers are waiting at the stop. Finally, the farebox in these vehicles is positioned behind the driver, which is not ideal for fixed-route transit service.

The Utah Transit Authority (UTA) in Salt Lake City uses a similar continuous front-to-back securement track system for vehicles used in deviated fixed-route service (FLEX Bus). One additional feature incorporated by UTA is a continuous track above the windows (see Figure 4-3) which allows for varied anchoring of the passenger shoulder belt, to match the position of the rider and wheelchair.

Improving Driver Access to the Securement Location

A driver’s ability to secure a passenger’s wheelchair is sometimes made difficult by space constraints. Limited space to reach behind the wheelchair to grasp the securement device can mean that drivers must reach around the passenger, which can be uncomfortable for both individuals. Golden Empire Transit District (GET) in Bakersfield, CA, solved this problem by modifying the panel that the wheelchair backs into. With the modified panel, which was designed by GET’s Maintenance Manager more than a decade ago, drivers can access the wheelchair tie-down points from the seat behind the wheelchair area (see Figure 4-4).

GET reports that drivers like the access from the rear. The change resulted in no added maintenance costs, and the barriers were reported to be very durable.

GET has considered adding padding to the bars for additional passenger protection in case of an accident, but GET has never had an injury claim involving the barriers (which have been in service for at least 10 years), and there would likely be higher maintenance costs in repairing foam that has been cut or picked at by seated passengers.



Figure 4-4. Modified “reach-through” panel behind securement area, designed by GET (photo courtesy of GET).

Securement System

The securement system includes a method to secure the mobility device in the vehicle and a passenger restraint system. The types of securement systems in fixed-route transit vehicles vary considerably, even while meeting the U.S.DOT requirements.

Many transit agencies have wheelchair marking programs and/or use special straps that improve securement of the mobility device on the vehicle. With a marking program, typically a transit staff member meets with the rider and together they determine the best locations on the mobility device for attaching the tie-down equipment. These locations are then “marked” so that drivers will know where on the mobility device to attach the tie-down equipment when the person is riding transit.

Special straps are also used to improve securement. These straps, called tether straps or sometimes Stokes straps (after a disability advocate who helped popularize the straps), may be affixed to the rider’s mobility device providing improved on-board securement (see Figure 4-5). Or the straps may be provided to the vehicle driver for his or her use in securing mobility devices on-board. The straps address the problem that many mobility devices lack clear attachment points, which can make it difficult for transit drivers to attach the tie-down equipment to the mobility device or to reach an appropriate part of the device for securement. As an alternative, the driver attaches the tie-downs to the strap.

Tether straps are inexpensive. Intercity Transit in Olympia, WA, which uses the straps, reported in 2013 that they purchase the straps for less than \$2 each. They then provide the straps to riders free of charge, so they can be permanently affixed to their wheelchairs.

Securement of Scooters

Another issue is the securement of scooters. Often, it is difficult to find a structural member of the scooter to which a securement strap can be attached.

Lane Transit District (LTD) in Eugene, OR, addressed this issue by designing an additional strap that goes across the footrest, or “floor” of scooters (see Figure 4-6). The strap is laid across the floor of the scooter and cinched tight. This supplemental securement system was developed



Figure 4-5. Tether strap attached to a wheelchair to assist with securement (photo courtesy of TranSystems).

in-house by LTD for use on its fixed-route transit vehicles. Note also in Figure 4-6 that LTD has installed hooks and cords on the wall of the vehicle to keep the wall-side seat belts and securement straps up off the floor, which makes them easier to reach.

Policies

The ADA requires that the wheelchair securement locations on vehicles have signage that indicates that they are for persons with disabilities who use wheelchairs. If flip-down seats are provided in these areas, and if ambulatory riders (including ambulatory riders with disabilities) are using the seats, drivers must ask that they move to make the securement areas available for riders using wheelchairs. This is different than the requirement for priority seating,



Figure 4-6. Supplemental strap used by LTD to secure scooters on fixed-route transit vehicles (photo courtesy of TranSystems).



© Metropolitan Transportation Authority. Used with Permission.

Figure 4-7. New York City Transit priority seating education card.

which says that drivers must ask people to move, but doesn't require drivers to make people move—although transit agencies can adopt stronger policies that require people to move from priority seating.

Experience shows that riders with strollers or luggage sometimes occupy the securement areas when needed by riders using wheelchairs. Some transit agencies have adopted policies to address this; see examples below.

Ensuring Availability of Priority Seats—New York City Transit Priority Seating Rule

New York City established a rule on use of priority seating, among the rules governing the conduct and safety of the public in the use of the facilities of the New York City Transit Authority and Manhattan and Bronx Surface Transit Operating Authority, encoded in New York Codes, Rules and Regulations. The rule states:

5. No person shall refuse or fail to relinquish a seat on a conveyance which has been designated as "PRIORITY SEATING," "WHEELCHAIR PRIORITY SEATING" or words of similar import, if requested to do so by or on behalf of a person with a disability, or occupying any location on a conveyance designated for use by persons using wheelchairs if such location is required to accommodate a person using a wheelchair. Further, passengers aboard buses equipped with wheelchair lift devices shall not conduct themselves in a manner which will impede the operation of such lifts, impede the securing of wheelchairs in the tie-down devices located on such buses or impede the exit of passengers using wheelchairs.¹

In essence, the rule prohibits passengers from impeding access to priority seating and wheelchair securement areas by people with disabilities, and empowers the transit agency to enforce this rule (rather than simply requesting that the seats be made available, as is the extent required by the ADA).

Violation of this rule can have potential criminal or civil consequences. The current fine schedule posted by the Transit Adjudication Bureau indicates a \$50 fine for "interference w/ wheelchair facilities/conveyances."²

New York City Transit educated customers about this rule through a priority seating campaign that began in June 2009, including posting car cards on board buses (Figure 4.7).³

Washington, D.C., Circulator Stroller Guidelines

The DC Circulator, a fixed-route bus service operated in downtown Washington, D.C., through a public/private partnership between the District of Columbia Department of Transportation, Washington Metropolitan Area Transit Authority and DC Surface Transit, Inc.,

¹21 NYCRR Part 1050, Section 1050.6, <http://www.mta.info/nyct/rules/rules.htm>, as accessed 10/23/12.

²Rules of Conduct and Fines, <http://www.mta.info/nyct/rules/TransitAdjudicationBureau/rules.htm>, as accessed 1/2/13.

³NYCT press release dated June 19, 2009, <http://www.mta.info/mta/news/releases/?en=090615-NYCT90>, as accessed 1/2/13

issued guidelines for boarding buses with strollers that clarify the use of accessible seating areas, with priority for people with disabilities, and set limits on the size of strollers allowed on board.

The DC Circulator website states:

“People using wheelchairs and motorized mobility aids have first priority for the accessible seating area. The second priority group includes persons with disabilities, seniors and people with walkers. Children in strollers are the third category of customers entitled to priority seating, but only if there are no higher priority customers on the bus.”

Children in strollers will still be accommodated. However, parents may be asked to fold the stroller and move to another seat should a higher priority customer board the bus. The stroller will fit if it is small and can be stored in the seating area without extending into the aisle.”⁴

Drivers are empowered with the discretion to “direct the passenger to move the stroller to a safe location or to fold the stroller.” The DC Circulator permits use of the ramp for stroller boarding, limits on-board stroller size to no larger than 48" long by 24" wide, and prohibits “play buggies.”

4.2 Stop Announcements and Route Identification

The ADA requires transit agencies to announce stops on the bus and the train, as well as to identify bus and train routes at stops that serve more than one route. Stop and route identification announcements have great value for many riders with disabilities. The lack of an effective stop announcement and route identification program can be a factor that prevents or discourages people with disabilities from using fixed-route transit.

On fixed-route transit systems, the ADA requires transit agencies to announce stops, at least, at:

- Transfer points with other fixed routes.
- Other major intersections and destination points.
- Intervals along a route sufficient to permit individuals who are blind or have vision impairments or other disabilities to be oriented to their location.
- Any requested stop.

These requirements apply to all forms of fixed-route bus and passenger rail service, including Amtrak and light, rapid, and commuter rail.

At stops that serve more than one route, the transit agency must provide a means by which an individual who is blind or has a vision impairment or other disability can identify the proper vehicle to enter, or be identified to the vehicle operator as a person seeking a ride on a particular route. As an example, the Chicago Transit Authority (CTA) is installing shelters with visual and audio “next bus” information—the audio button makes a ticking sound for riders with vision impairments so they can locate the bus. Route identification assists riders who may not be able to recognize the bus route or destination to know when the desired bus has arrived. This requirement applies both to buses and to all forms of passenger rail.

Tips for Transit Agencies on Both Stop Announcements and Route Identification

High-level management support is necessary for stop announcement and route identification efforts to be effective. Management support includes committing adequate resources and supporting a comprehensive training program, monitoring effort, and discipline/incentives program.

⁴<http://www.dccirculator.com/Home/RiderInformation/StrollersonBus.aspx>, as accessed 1/2/13.

High-level management support, labor union support, proactive monitoring, and progressive discipline programs are all vital to ensuring that stop announcements are made as required.

Support from any labor unions or other recognized employee associations is also a key to a successful program. A unified message to drivers from both management and labor is best.

Proactive monitoring and progressive discipline programs are also vital to the successful implementation of both on-board stop announcement and route identification policies. Monitoring should be combined with progressive discipline. The level of discipline needs to be on par with other safety violations, since it can be a safety risk if a rider with a cognitive disability, or who is blind or has a vision impairment, disembarks at a wrong stop.

Intentionally disabling the automated announcement or public address (PA) system equipment (except in cases of malfunction) should be elevated to the highest level of discipline.

Recognition and other incentives should also be considered when drivers achieve good performance. Programs such as employee of the month, pins and badges, public recognition, and financial incentives can be a useful component of an effective stop announcement and route identification program.

Some transit agencies have posted notices in all buses stating the ADA requirements to announce stops and routes, and providing contact information for reporting problems with stop and route announcements. This is a low-cost best practice that can engage the community in assisting the transit agency to improve its stop announcement and route identification program.

The thorough investigation of all complaints related to the use of accessible fixed-route transit service is an important part of monitoring and compliance for stop announcements and route identification. Transit agencies will ideally ensure that all rider complaints are recorded and investigated and provide timely responses to riders with information about the outcome of investigations. Transit agencies will also ideally then use information obtained from investigations to address any performance issues and improve service.

Tips for Transit Agencies on Stop Announcements

Rider involvement is vital to a successful stop announcement program. Riders can provide valuable input on many issues including what stops to announce, how to announce them, employee training, and monitoring via secret rider programs.

In developing stop announcements, transit agencies will first determine what stops should be announced on each route. Some of the ADA requirements make it clear which stops to include, such as the requirement to announce transfer points with other fixed routes. Other requirements must be applied locally, such as determining major intersections and destination points. Destination points include, for example, shopping centers, hospitals, and the end points of the bus or train route.

It is a best practice for transit agencies to work with the disability community to define the stops to announce on each bus route. Bus drivers should also be consulted.

Input from riders with disabilities and drivers is important for ensuring that stop announcements are appropriate, clear, and helpful.

Sometimes transit agencies implement the requirements for transfer points, major intersections, and destination points, yet neglect the requirement for orientation announcements. The ADA requires transit agencies to announce stops at “intervals along a route sufficient to permit individuals with disabilities . . . to be oriented to their location.” If there is a stretch along a route with no major intersection, destination point, or transfer point where a stop announcement is otherwise required, a stop announcement

may be needed for orientation. It is also common to underestimate how often such orientation announcements should be made. More frequent announcements provide better orientation than less frequent ones.

It is a best practice for a transit agency to develop consistent ways of making stop announcements, so that the information is clear and is not misunderstood. For example:

- First, naming the street the bus is on, and second, naming the cross street, or vice versa.
- Giving the street name only (such as Market and Taylor) or including street or avenue (such as “Market Street at Taylor Avenue”).
- Describing major landmarks, destinations, and transfer points.

Once these decisions are made, they will ideally be implemented consistently throughout the transit system.

Lists of stop announcements for each route need to be prepared to indicate what stops should be announced and detail how each required stop announcement should be made. Ideally, these lists should be developed with disability community and driver input and be readily available to all vehicle operators, especially extraboard drivers.

It is best that transit agencies have procedures on the timing of stop announcements and that drivers know when to announce stops (e.g., how long before the approaching stop) so that riders have time to indicate their wish to disembark.

Another key to successful stop announcements is the technology used to make them. Except on small vehicles (22 feet and under), a PA system is necessary for amplification of stop announcements and other passenger information.

Automated systems can help ensure that announcements are made, and made consistently. Even with automated technology, it is very important for transit agencies to ensure that drivers are prepared to make stop announcements themselves when the automated system is malfunctioning.

Stop announcements need adequate sound quality. It is recommended that transit agencies obtain advanced amplification technology that can sense ambient background noise and automatically adjust the volume.

Keeping the equipment for stop announcements in working order is vital. The PA and automated announcement systems should be included on pre-trip inspection forms, and checked during pre-trip inspections. The annunciators should be checked and monitored for synchronization with the stops. The checks should include the working condition of the PA system and a check to ensure the volume is at a proper level. The PA and automated announcement systems should also appear on preventive maintenance forms and should be inspected and tested regularly.

Tips for Transit Agencies on Route Identification

Conducting route identification properly requires an announcement any time passengers are waiting at a stop that serves more than one route. Policies need to direct drivers always to stop if there are waiting passengers, regardless of whether or not they signal for the bus. Vehicle operators need to come to a complete stop, open the door, and make a route announcement, unless it is automatic.

A good practice is to purchase vehicles with external route identification announcement systems. If automated external announcement technology is not being used, drivers need to call

out route information after pulling up to stops and opening the door, if there are any waiting passengers. The announcement should be loud enough for waiting passengers to hear.

Both the route and the destination need to be announced, so a rider with a disability can determine whether he or she is going in the correct direction. An external PA speaker is helpful to ensure that announcements are audible.

Even with automated external announcement systems, drivers must always be trained and ready to make route announcements themselves in the event of an equipment failure.

As with stop announcement equipment, external PA or automated route announcement technologies need to be maintained. Many of the practices suggested for stop announcement technology are suggested for route identification technology as well, such as including the devices on pre-trip and preventive maintenance checklists and exploring advanced technology to adjust the volume for ambient background noise.

4.3 Employee Training

Another critical aspect of making fixed-route transit systems fully usable for riders with disabilities is thorough and effective employee training.

High-level management support is necessary for ADA implementation efforts to be effective. Management support includes committing adequate resources and supporting a comprehensive training program, thorough monitoring effort, and a discipline/incentives program. Support from any labor unions or other recognized employee associations is also a key to a successful program. A unified message to drivers and other employees from both management and labor is best.

Including people with disabilities in employee training puts a human face to the importance of rider assistance, stop announcements, route identification, and equipment maintenance.

Transit agencies are encouraged to convene a broad-based interdepartmental working group to develop and implement thorough employee training, as well as policies for ADA implementation that include many different parts of the organization such as equipment procurement, maintenance, monitoring, public information, and marketing.

Training will ideally include detailed, written policies and procedures that address each of the ADA requirements. A lack of written policies on the part of transit agencies can contribute to inconsistent compliance. The policies need to be covered thoroughly in employee training. All important procedures should be part of the final detailed policy guidebook that is distributed to employees and made a part of training and retraining materials.

In addition to conveying ADA requirements and policies, training ought to stress the importance of the actual performance of each function (such as making stop announcements, cycling lifts and ramps, etc.).

Rider involvement is also vital. Riders with disabilities will ideally be involved in training. They can put a human face to the importance of passenger assistance, stop announcements, and other key aspects of fixed-route transit service for people with disabilities. Participation by people with disabilities can bring about discussion of both disability sensitivity and common problems for people with disabilities using transit. They can stress the serious safety issues involved. In the area of stop announcements, riders can provide valuable input on many issues including what stops to announce, how to announce them, and monitoring via secret rider programs.

General Vehicle Maintenance Training

Employee training efforts related to overall vehicle maintenance should include:

- Keeping equipment in working order, starting with preventive maintenance. Transit agencies should conduct periodic reviews of in-house or contractor compliance with required inspections and preventive maintenance procedures.
- Pre-trip inspections that include accessibility equipment such as automatic stop announcement annunciators, PA systems, wheelchair securement devices, and bus kneeling mechanisms. Inspections should also include checks that all of the necessary securement and restraint system components are on board and functioning. Inspections should check any other on-board technology for stop announcements and route identification, the stop request activators in the securement areas, and the vehicle signage, particularly the lighting for destination signs.
- Before pullouts, making immediate repairs or removing vehicles from service and assigning a spare bus with working equipment. Some transit agencies have found it effective to assign a mechanic to the pullout area during major pullouts in order to address problems quickly.
- Training for dispatchers and vehicle operators to handle failures at pullout and in service properly and arrange alternate transportation when appropriate (see more about training for vehicle operators below).
- Conducting an immediate maintenance check at the end of each bus run or shift of all accessibility equipment that is reported to fail in service, including lifts and ramps. Records should be maintained of instances in which failures are reported and no problems are found. If this becomes a pattern for a particular bus, more extensive diagnostics should be run on that lift or ramp. If it is shown to be a pattern for a particular driver, a “spotter” check of the performance of that driver should be scheduled.
- A system of regular and frequent maintenance checks of bus lifts and ramps. They must be carried out frequently enough to determine if the equipment is operative. Daily cycling of lifts/ramps at each pullout is a best practice.

Vehicle Operator (Driver) Training

Vehicle operators will ideally be trained to conduct pre-trip vehicle inspections themselves. Drivers should fully cycle lifts and ramps before pulling out at the beginning of their shifts. In addition to providing a check on the equipment’s working condition, pre-trip inspections by drivers ensure that drivers are familiar with how to work each piece of equipment before leaving the yard. This is particularly important when a bus fleet includes multiple models of lifts, ramps, securement systems, and PA systems.

Other important points of training include:

- Hands-on training in using the equipment, including demonstrating the ability to correctly operate it, and learning how to resolve common problems that can cause failures, such as deploying lifts and ramps where the ground is uneven.
- Using the equipment to simulate what it is like for a rider to board, be secured, ride, and disembark using the lift or ramp.
- Reporting immediately any malfunction in lifts, ramps, and other equipment.
- Thorough training in stop announcement procedures (see more below about stop announcement training).

Many training programs include a period of time when trainees ride with and learn from experienced driver trainers. Transit agencies should be sure

Make sure that drivers selected to be driver-trainers have an exemplary ADA compliance record so they reinforce the policies, requirements, and training goals.

that the experienced drivers assigned to any new vehicle operators are drivers who excel at performing their stop announcements and other ADA-related actions correctly. Teaming trainees with drivers who do not perform properly or who are not committed to following established policies and procedures can undermine prior training. Driver trainers should have a documented track record of exemplary performance.

Stop Announcement Training

Employee training for vehicle operators related to stop announcements will ideally include making the announcements properly as well as the following:

- When announcements are to be made (i.e., in advance of the stop, but not too far in advance).
- How to handle rider requests.
- How to use the PA system.
- How to use any automated system that may be available.
- What to do in case the automated system malfunctions or fails.

Another issue to cover regarding stop announcement training is that bus drivers sometimes think they needn't make stop announcements if they do not notice any riders with disabilities on the bus, or if they know all the riders and believe the riders do not need announcements. However, this is a misunderstanding of the ADA requirement. Stop announcements are important for many riders with hidden disabilities, and they are helpful to other riders as well. They should be made for any and all riders, as a feature of universal design.

Transit agencies should also train drivers to respond to riders who might complain about the presence of stop announcements.

4.4 Service Monitoring

Service monitoring is important for ensuring that policies and procedures are implemented in day-to-day operations and that fixed-route transit services are actually accessible and usable.

Service monitoring is important for ensuring that accessible fixed-route transit service is in fact being provided on a day-to-day basis and enabling riders with disabilities to effectively and safely use the service. Service monitoring includes the more formal, regular review of performance and operational reports and periodic planning studies as well as day-to-day observation, assessments, and monitoring. These latter efforts can be achieved through:

- Road supervision, where supervisors periodically check whether drivers are following procedures for serving riders with disabilities. This can be in the form of both observed and unobserved checks.
- Review of and response to rider feedback through the comment and complaint process.
- An active rider advisory board that includes riders with disabilities.
- A “mystery rider” program in which designated riders report on driver performance and ADA compliance issues, for example, checking to make sure drivers do not pass by a waiting rider using a wheelchair.
- Review of on-board camera video and audio, to check driver performance.

Several industry reports stress the importance of effective service monitoring, including the ADA Topic Guides that recommend monitoring to ensure that accessibility features on vehicles are in proper working order and that vehicle operators are making stop announcements as required. (6)

In Washington State, transit agencies can participate in a reciprocal service monitoring program, called the Guest Rider Program: a transit agency agrees to conduct observations of another agency's service with experienced operating staff in return for that agency conducting

observations of its own operations. (6) A similar reciprocal monitoring program operates in Ohio, called the Ghost Rider Program, with transit agencies arranging for service monitors from other agencies to conduct performance reviews. (7) Using staff of another transit agency to monitor service provides anonymity that is not always possible when an agency has its own staff monitor performance.

Transit Industry Practices

According to the project's survey of transit agencies, two-thirds of agencies (68%) assign road supervisors to conduct regular monitoring of the service, with specific checks of ADA accessibility requirements. Somewhat more than one-fourth of transit agencies (28%) have a mystery rider program (also called a secret rider, ghost rider, or secret shopper program), where designated persons take fixed-route transit trips and report on driver and service performance. According to the survey responses, transit agencies may use a rider with a disability, a contractor, or, according to one transit agency operating in a university town, students to function as the mystery riders.

Additionally, 39% of transit agencies reported "other efforts" for monitoring their service to ensure accessibility. Among these "other efforts" reported by transit agencies, one of the most frequently identified was an on-board video surveillance system to monitor drivers (and riders).

Transit agencies reported their monitoring efforts as "very effective" (17%) or "effective" (42%) in monitoring fixed-route transit service delivery to riders with disabilities.

Highlighted Service Monitoring Efforts

The service monitoring efforts of two transit agencies are highlighted below.

Nashville Metropolitan Transit Authority

The Nashville Metropolitan Transit Authority (MTA) has had a Quality Assurance Program (QAP) in place since the fall of 2011, through which MTA employees and board members monitor service.

MTA requires each administrative employee to ride a bus route at least once each month and then complete a web-based survey to report their observations of such items as:

- Politeness of the operator;
- Smoothness of operation of the vehicle;
- Safety habits of the operator;
- Missing, defaced, or damaged passenger amenities;
- ADA-required stop announcements (automated if operable; by driver if not);
- Passenger assistance by the operator for passengers with disabilities;
- Cleanliness of the vehicle;
- Schedules and passenger information flashes available and up to date; and
- Working condition of the vehicle (air conditioning, heat, etc.).

Many of MTA's employees connect to the web-based survey using their smartphones (using a browser shortcut placed on their phones), and fill out the survey while on the bus.

Responses are tracked and sent to the departments responsible for further investigation, correction of issues, and/or sharing of compliments. To date, MTA has found the QAP has been an effective source of feedback about the system and subsequent correction of problems.

The QAP was developed as an initiative to get its approximately 116 administrative employees more involved in the core of the MTA's business. A committee was convened with diverse representation of individuals from throughout the agency. The committee put together a survey that could be used by each employee when they rode the bus.

When the ride requirement was first implemented, management discovered that some of the administrative employees had never ridden a bus. To help some individuals overcome fear and plan their trips without getting lost, MTA provided bus familiarization training to staff.

What was initially a challenge for those staff new to riding transit has become routine, and many staff members look forward to their monthly ride. They also use the bus more often for lunch trips or trips to meetings. Many departments make it a group outing and try a different route each time. Overall, participating in the QAP has made many employees more empathetic to MTA passengers and has given them a better sense of how their job affects the overall operation.

To encourage and recognize QAP participation, MTA provides incentives. During the first month, giveaways were provided to all employees who completed their rides. To celebrate the first year anniversary of the program, a contest was conducted for the most rides taken in a month.

While at this time only administrative employees are required to participate in the QAP, MTA has also invited others in the organization to provide feedback using the survey after riding. In the spring of 2012, MTA invited its board members, who often ride the bus, to participate in the program. One board member has participated in the QAP survey on multiple occasions.

In August 2012, the program was opened to union employees as well, on an optional basis. Management knew that getting union personnel to participate would be a bigger challenge and worked hard to ensure the union employees would feel comfortable with the process and not feel as though they were spying or telling on their peers. In the last quarter of 2012, nine union employees participated in the QAP program. MTA continues to come up with incentives to encourage more union employees to participate, and is optimistic that all employees will wish to participate in the program. The intent is to eventually roll this program out to MTA passengers as well.

Washington Metropolitan Area Transit Authority

The Washington Metropolitan Area Transit Authority (WMATA) instituted two evaluation programs in 2012 that assess the quality of fixed-route transit service for people with disabilities: a "mystery rider" program and a MetroAccess Knowledge and Usage Study.

"Mystery Rider" Program. WMATA contracts with an outside firm that hires, trains, and supervises paid mystery riders. The mystery riders include people with visual impairments and wheelchair users. They monitor all aspects of fixed-route bus and rail operations (not just accessibility), including conditions at bus stops, functionality of equipment such as fare machines and customer service provided at rail stations.

Mystery rider assignments are based on a carefully calculated random sampling method to allow for system-wide coverage on varying days and times of the week. On average, rail stations are surveyed three times per quarter, while each bus route is surveyed annually, and the system's approximately 12,000 bus stops are randomly assessed. One method of evaluating customer service is through mystery riders being issued "dead" smart trip cards. When the card doesn't work, they ask for help and evaluate the helpfulness of responding WMATA staff.

Mystery riders use a mobile device such as a smartphone or tablet to submit feedback using an electronic form. Responses are automatically uploaded to a database.

Critical problems submitted by the mystery riders (such as a ramp that doesn't deploy or nonfunctioning automated next-stop information) automatically create an alert that is sent to the Office of Customer Research; this office then relays the alert to the appropriate operations division so that corrective actions can be taken as quickly as possible (repair, service adjustment, etc.).

The contractor prepares a quarterly report card from the data submitted. WMATA staff also are provided the ability to query the database of completed "rides" to review specific reports.

ADA Paratransit Knowledge and Usage Study. WMATA conducts a Knowledge and Usage study with riders of its ADA paratransit service, MetroAccess. One component of this study is a questionnaire for MetroAccess riders with conditional eligibility, which includes questions on knowledge and usage of fixed-route transit services, such as:

- How often do they use fixed-route transit?
- Has their fixed-route transit usage increased or decreased in past 12 months?
- Do they use the free pass (conditionally eligible MetroAccess riders are provided free passes for bus and rail)?
- If riders don't use the fixed-route transit system, why not?
- How much do they pay to ride the fixed-route transit system?
- Are they familiar with travel training? Have they used it, and, if so, have they changed their travel behavior?

Each quarter, 400 MetroAccess riders are surveyed by telephone, and approximately 120 of these have conditional eligibility. From the first two quarters of survey data, early findings suggest that many conditionally eligible individuals consistently self-select MetroAccess over fixed-route transit, and a lack of understanding of fixed-route transit services and information is common. For example, feedback indicated that few riders are aware of the availability of e-alerts on elevator outages. The feedback is being addressed by WMATA's travel training program. WMATA's Rider Accessibility bus/rail subcommittee is also looking at ways to improve outreach/education about fixed-route transit.



CHAPTER 5

Accessible Bus Stops and Pedestrian Infrastructure

Improving the accessibility of bus stops and the pedestrian infrastructure is an important strategy for enabling people with disabilities to use fixed-route transit. Transit agencies have addressed the accessibility of bus stops for some years; however, the need for accessibility extends beyond the bus stop and, increasingly, transit agencies are expanding their accessible bus stop programs to focus on improving pathways of travel to and from stops, facilitating travel to and from the accessible stops for people with disabilities.

Accessibility to the fixed-route system starts with bus stops, but also includes the pedestrian environment around stops.

This broader geographic scope, which includes the bus stop and immediate connecting sidewalks, including curb ramps and crosswalks, is referred to as the *pedestrian infrastructure*, *pedestrian environment*, *transit infrastructure*, and *path-of-travel infrastructure*. These various terms share a relationship with concepts underlying *walkable communities*, *livable communities* and *complete streets*, all of which feature design attention to creating communities that facilitate pedestrian travel with higher densities, mixed land uses, and street networks favorable to pedestrians as well as bicycles and transit. Every bus trip begins and ends with a pedestrian trip, thus the pedestrian infrastructure is integral to increasing fixed-route transit use by people both with and without disabilities.

This chapter provides background information on bus stop and pathway accessibility, including common problems. Information from the research project's survey efforts related to stop and infrastructure accessibility is summarized, and recent studies undertaken to assess and improve stop and infrastructure accessibility are highlighted, including those of several of the case study transit agencies. Strategies to improve stop and infrastructure accessibility are then provided, with details for conducting a field assessment of stops and connecting pathways.

This chapter also discusses the results, costs, and benefits of stop and pathway accessibility improvements and then describes techniques to evaluate such improvements.

Data and results of efforts of the following six transit agencies that participated in the research project as case studies provide valuable material for this section, including:

- Cary Transit, Town of Cary, North Carolina.
- Intercity Transit, Olympia, Washington.
- Link Transit, Wenatchee, Washington.
- RideOn, Montgomery County, Maryland.
- Sun Tran, City of Tucson, Arizona.
- TriMet, Portland, Oregon.

5.1 Background—The Bus Stop and Beyond

The Bus Stop

Accessibility requirements for bus stops are defined through the ADA Standards for Transportation Facilities (ADA Standards). Where constructed, bus stop boarding and alighting areas must have a firm and stable 5 × 8 foot surface for wheelchair lift or ramp deployment. The boarding and alighting area must also be connected to streets, sidewalks, or pedestrian paths by an accessible route.

Many transit agencies across the country have undertaken efforts to improve the accessibility of their bus stops, thus improving access to fixed-route transit service for riders with disabilities. Accessible and well-defined boarding and alighting areas not only benefit people using wheelchairs and other mobility devices, but riders with vision disabilities and other riders as well.

However, accessible connections to and from the stop are not always provided, often because the transit agency does not have authority over sidewalks or other parts of the rights-of-way where bus stops are located. But without an accessible pedestrian infrastructure linking accessible stops to and from riders' trip origins and destinations, riders with disabilities may have to use the roadway to access the stop or, in some cases, they may not be able to use the stop at all.

Beyond the Bus Stop

Since passage of the ADA, transit agencies across the country have made great strides in providing accessible public transit. Industry data show that 99.8% of transit buses are accessible; 85.1% of commuter rail cars are accessible; 98.7% of heavy rail vehicles are accessible; and 88.2% of light rail vehicles are accessible. (8) Additionally, transit facilities are increasingly accessible: there is functional access to 648 of the 681 stations identified as key stations in the nation's oldest rail systems, access to 84% of light rail stations, and 100% access to new rail stations built since 1990. (2)

Despite these notable achievements, accessibility gaps remain, particularly regarding access to and from fixed-route transit service. Incomplete sidewalks, difficult street crossings, lack of curb ramps, and obstacles in the pathway such as utility poles create barriers for riders with disabilities, limiting or preventing access to fixed-route transit service.

To complicate matters, the barriers and their improvements vary in how they affect mobility by people with different disabilities. A rider who uses a wheelchair requires curb ramps to cross a street for accessing a bus stop, yet certain types of curb ramps (diagonal) are unsafe for an ambulatory rider with a vision impairment, channeling the rider using a white cane into the middle of—rather than across—the intersection. People who use wheelchairs and scooters require a wider path of travel than riders who are ambulatory. Cross-slopes that change very rapidly cause problems for wheelchair users. For ambulatory riders who use walkers, there may be problems with steep grades and steep cross-slopes, as well as uneven surfaces. Transit information display cases installed on a bus stop pole that are rotating circular tubes are designed so that a person using a wheelchair can move the tube to see all the information, but some people with limited vision cannot read the information clearly due to the curvature of the tube case.

These different types of barriers, their impacts on riders with disabilities, and the different improvement requirements make both the assessments of the pedestrian infrastructure and the subsequent improvement efforts complex.

Common Problems

Recent stop and pathway accessibility studies (9, 10, 11, 12, 13, 14, 15) have found that the more common problems relate to:

- Accessibility from both directions at the nearest street intersection—there may be a curb ramp on one side of the street but not on the other side.
- Lack of a compliant landing pad—the stop may have no pad at all or there may be a “functional” pad, but it is smaller than what the ADA requires.
- Sidewalks that do not connect with the bus stop—the sidewalk may connect with the landing pad or stop short of the bus stop.
- Sidewalks that are obstructed by public amenities and public utilities—utility poles, vendor boxes, public seating, and trash receptacles constrict the usable space of a sidewalk.
- Over-growth from adjacent shrubbery obstructs access along the sidewalk—there may be adequate sidewalk connections to and from the stop but the untrimmed shrubs reduce the usable sidewalk space for persons using a wheelchair, or present a hazard to a person with a vision disability.
- Physical conditions on sidewalks and landing pads where they exist—infrastructure that otherwise meets minimum accessibility standards may be rendered inaccessible by broken or uneven pavement. To be fully usable, sidewalks must be in a state of good repair.

FTA’s S. 5310/Enhanced Mobility Program Now Funds Access for Fixed-Route Transit Improvements

Recognizing the importance of improving access to fixed-route transit service for people with disabilities, FTA’s Section 5310 Program, as amended by MAP-21, adds a new eligible activity for funding—“public transportation projects that improve access to fixed-route transit service and decrease reliance by people with disabilities on complementary paratransit.” The objective of this is removal of barriers, including improving access to public rights-of-way as well as installing elevators in rail stations not required by the ADA to have elevators, so people with disabilities have better access to bus stops and rail stations. (16)

5.2 Current Practices—Findings of the Research

The research project investigated the role of bus stop accessibility and the pedestrian infrastructure on fixed-route transit ridership by people with disabilities as well as transit agency efforts to improve stops and access to and from stops. Recent stop and infrastructure studies are also highlighted.

The Perspective of Riders with Disabilities

As noted in Section 2.2, the survey of people with disabilities indicated that accessibility of the pedestrian environment to and from transit stops and stations was the most important factor in determining whether or not fixed-route transit could be used.

The project’s online survey of people with disabilities, with more than 1,900 responses (including respondents who use fixed-route transit only, fixed-route transit and ADA paratransit, only ADA paratransit, and non-transit users) found that barriers in the pedestrian environment affecting access to bus stops and transit stations was the most important factor of 15 that impact use (or potential use) of fixed-route transit service. Interestingly, for those respondents who use only fixed-route transit and not ADA paratransit service, barriers in the pedestrian environment was ranked fourth of the 15 factors, indicating that those individuals have often found alternative ways to get to and from the stops and stations that they use. However, for those respondents who use both fixed-route transit and ADA paratransit

service, the pedestrian environmental barriers were the most important factor and likely prevent their ability to use fixed-route transit more often.

From the Perspective of Transit Agencies

Study efforts also show that many transit agencies are addressing the accessibility of their stops as well as connecting sidewalks and pathways. According to the study's survey of transit agencies:

- 60% work with local jurisdictions to construct improvements at non-accessible bus stops.
- 58% reported that they had undertaken an inventory of their bus stops and identified those that were not accessible.
- 38% have programs to add bus pads and/or accessible connections to non-accessible bus stops.
- 8% noted efforts to improve access at rail stations beyond the minimum “key” and “new station” requirements.

Almost one-fifth of transit agencies reported “other efforts,” several of which are highlighted below:

- [We] respond to customer requests to add bus stops or amenities to increase accessibility.
- We are working to look beyond the bus stop to consider the entire path of travel, working with the city to make sidewalk connections.
- We are starting to replace our fixed-route bus stop round poles with square poles to inform those that are visually impaired that they are at a bus stop. We also take and consider recommendations from the community as to which bus stop needs to have additional accessibility.

Through various responses regarding “other efforts,” an interesting range of funding programs and sources have been used for bus stop and connecting sidewalk accessibility improvements: Community Development Block Grants (CDBG), American Recovery and Reinvestment Act (ARRA), FHWA Surface Transportation Program (STP) Transportation Enhancement Program, FTA New Freedom, private developer funds through city development conditions, private businesses proximate to bus stops, and local government funds.

The survey of transit agencies also asked the agencies for a subjective rating of the effectiveness of their efforts to improve the accessibility of stops and connecting sidewalks. Just over two-thirds (68%) gave themselves a “3” or “4” on a scale of 1 to 5, indicating moderate effectiveness. Few (8%) rated their efforts as very effective, a “5.”

These self-selected ratings may reflect the fact that few transit agencies appear to have comprehensive evaluations of their stop and connecting pathway improvements, so they cannot definitively assess effectiveness. Data providing boarding counts by stop for riders with disabilities, particularly those using mobility devices (through lift/ramp deployments), provide one level of assessment. However, if an objective of stop and pedestrian infrastructure improvements is to facilitate increased use of fixed-route transit rather than ADA paratransit, a comprehensive assessment could also look at impacts on ADA ridership. Evaluation is discussed in more detail in a following section of this chapter.

Bus Stop and Pedestrian Infrastructure Accessibility Studies and Improvement Programs

Transit agencies and communities conduct bus stop and pedestrian accessibility studies for various reasons. Often, the studies and subsequent improvement programs result from concerted and coordinated efforts of the stakeholders involved—the transit agency, the local government (or governments, where transit serves more than one jurisdiction), and often the transit agency's rider advisory group and disability community.

Use of CDBG Funds: Utah Transit Authority, Salt Lake City, Utah

In Salt Lake City, for example, the Utah Transit Authority (UTA) identified problems with the pedestrian infrastructure when the Authority began to implement conditional eligibility for its ADA paratransit program after the fixed-route transit system became fully accessible. UTA's disability advisory group identified inaccessible bus stops and impassable sidewalks as the most significant barriers to use of fixed-route transit by riders with disabilities. In reviewing stops, the Authority found that the problems were mostly access to the stop, such as the sidewalk or crosswalks, elements that were outside the control of UTA. As part of improvement plans, one of the agency's board members spearheaded an effort to use Community CDBG funds to improve the stops and adjacent sidewalks. (17)

Comprehensive Bus Stop Accessibility Study: Sun Tran, City of Tucson, Arizona

More recently, the City of Tucson, AZ, through a regional study that identified key sidewalk gaps and missing curb ramps and a subsequent ADA Bus Stop Accessibility Study, identified needed access improvements to the City's fixed-route transit service, Sun Tran. Based on summary data on all 2,200+ bus stops and connecting sidewalk segments collected through the study, improvements were prioritized in consultation with the disability advisory committee and an action plan for constructing improvements was created. More than 150 stops have been upgraded for improved accessibility as of early 2013, with most completed by Tucson though some were constructed by neighboring jurisdictions and private business. Figure 5-1 provides a sample *before* and *after* Sun Tran bus stop.

Low-Cost Bus Stop Pads: Link Transit, Wenatchee, Washington

Transit agencies in rural areas have also taken efforts to improve stop and infrastructure accessibility. Link Transit, serving 17 communities in Chelan and Douglas Counties in central Washington State, has made significant progress ensuring its fixed-route transit service is fully accessible to riders with disabilities, which has included accessibility improvements to the transit environment—bus stops and connecting pathways. The impetus for these efforts was, in part, the growing financial requirement for ADA paratransit, which was becoming financially unsustainable, consuming half the agency's budget.



Before: Inaccessible stop in Tucson in 2008 that presented safety issues for all riders.



After: Improved bus stop with level lift area, accessible curb cuts and extended concrete pad allowing passengers to safely alight from rear of bus onto level surface with stable footing.

Figure 5-1. Bus stop improvements, city of Tucson Sun Tran fixed-route transit system (photos courtesy of city of Tucson).



Figure 5-2. Link Transit: an improved rural bus stop using “rhino snot” (photo courtesy of Link Transit).

Accessibility improvements, however, have been a challenge given the large service area and lack of sidewalks as well as the many unimproved bus stops along rural routes. Among various improvements to ensure accessibility such as extra training for fixed-route transit drivers and extensive travel training, Link Transit identified high use stops and installed benches and shelters, used New Freedom funds to construct curb ramps at a major medical facility, and coordinated with local businesses such so that these private entities made accessibility improvements at their store fronts. Other businesses donated easements and electrical hook-ups to allow for installation of shelters and enhanced signage.

Along rural roads on which stops are often just a pole in the unpaved shoulder with limited space for improvements, Link Transit identified stops with higher than average usage and serving origin and destination locations of ADA paratransit riders who might benefit from accessibility improvements. For those stops at which there was space for improvements, the agency used a commercial material, informally known as “rhino snot,” a vinyl acetate-acrylic copolymer, marketed as a high-performance, environmentally safe, low-cost material, to stabilize the soil or ground. Link Transit uses the “rhino snot” to provide a flat, even, and solid surface at the bus stops to improve the safety and convenience of the waiting area and as the boarding and alighting pad for riders using mobility devices (Figure 5-2).

Improving Access and Pedestrian Safety: RideOn, Montgomery County, Maryland

Other reasons for stop and infrastructure improvement relate to pedestrian safety. In Montgomery County, Maryland, a large suburban county outside the nation’s capital, a bus stop and connecting pathway study was conducted as part of a countywide initiative to combat increasing numbers of pedestrian accidents and fatalities. Specific objectives of the study included assessing unsafe pedestrian connections to bus stops, unsafe stop and waiting locations, as well as identifying non-ADA-compliant stops for the county-operated RideOn transit service. With \$9.5 million of local money secured to fund improvements, and the study’s recommendations and prioritization for those improvements, the County has improved more than 2,500 stops as of 2012. Of the total 5,000+ stops, the majority are RideOn stops with another approximately 1,200 stops either shared with the regional provider, WMATA, or exclusive stops of the regional provider (Figure 5-3).



Figure 5-3. Bus stop improvements, Montgomery County, Maryland, RideOn, before and after bus stop (photos courtesy of KFH Group).

Transition Planning: Bellevue, Washington

Some communities have addressed the needs for pedestrian infrastructure improvements for better fixed-route transit access as part of their required Transition Plans. These plans, required under Title II of the ADA, apply to public entities with 50 or more employees. The Transition Plan is an action plan to remove structural barriers to people with disabilities, which results from a self-evaluation of structural and other barriers that prevent access to the public entity's programs and services. It identifies structural barriers and details the steps and timetable to complete the required modifications to ensure access.

In Bellevue, WA, the City's Transition Plan was the impetus for efforts to assess and plan improvements to its pedestrian infrastructure. While fixed-route transit was not the primary factor behind the City's efforts, proximity to fixed-route transit service was included in prioritizing improvements. Bellevue's efforts are notable for use of an innovative tool to collect data on sidewalks as part of the assessment of sidewalks and curb ramps: rather than use a more traditional survey method, the city tested and used an Ultra-Light Inertial Profiler mounted on a scooter. This device, with its displacement laser, distance measurement instrument, and gyroscope, captured highly accurate sidewalk information. One technician operated the scooter and a second rode a bicycle and used a handheld geographic positioning system (GPS) receiver to conduct the curb ramp inventory. Once collected, the data were processed, stored in the city's geographic information system (GIS) database, and assessed as to compliance. (18)

Town Land Development Ordinance: Cary, North Carolina

Improvements to stops and the pedestrian infrastructure can also be achieved through community development and redevelopment efforts. This approach is facilitated when the transit service is part of city or county government, which controls local development, but can also be achieved when the transit agency, as a separate entity, seeks participation and input to the development process. This can include ongoing participation as well as the publication of design guidelines for bus stops and their connecting sidewalks.

The Town of Cary actively uses its control of local development to improve its pedestrian infrastructure for a more walkable community, which benefits access to fixed-route transit. Among other specifications, the Town's Land Development Ordinance specifies requirements for sidewalks in residential and non-residential areas and addresses standards for public transit access and transit amenities at shopping centers and other similar land uses. Regarding transit access at shopping centers, this ordinance requires that bus stops be located "within close proximity" to one of the shopping center main entrances, minimizing walking distances for transit

users. Additionally, the Town’s public transit staff is specifically included during the review process for new development and redevelopment.

Bus Stop Specification Guidelines: Intercity Transit, Olympia, Washington

Intercity Transit, a municipal corporation, also pursues accessibility improvements through the local development process, as well as through other efforts. Transit staff actively participate in the local land-use review and development permitting process and requests sidewalks and ADA accessible bus stops as part of this process. The agency has developed and published *Bus Stop Specification Guidelines*, which address stop spacing, accessibility, stop and shelter design, and engineering guidelines. These *Guidelines* are posted online and provided to jurisdictions in the Intercity service area and to land developers. Additionally, Intercity has made stop improvements in response to requests from riders and, at times, improvements or stop re-locations in response to a request from the agency’s travel trainer.

5.3 Strategies to Improve Bus Stops and Pedestrian Infrastructure Accessibility

Improving the accessibility of stops and the pedestrian infrastructure is a process involving various strategies and actions and, often, different agencies. Bus stop improvements are the responsibility of the transit agency if the transit agency owns the land on which the stops are located, or if the agency is part of a local government (e.g., a city or county) that owns the land. Where the transit agency is a separate entity from the jurisdiction served (e.g., a transit authority or special district), improvements to the pedestrian environment are the responsibility of the local government. Successful improvement efforts typically involve cooperative efforts between the two.

There are several strategies transit agencies can use to approach bus stop improvements. The strategy that provides the greatest utility to the transit agency for a variety of applications—including indispensable data that can be used for individual trip planning, conditional ADA paratransit eligibility determination, travel training, service planning, facility needs assessment and prioritization, facility maintenance planning, and capital investment planning—is the development of a comprehensive bus stop inventory and assessment.

Comprehensive Bus Stop Inventory and Assessment

The foundation of a proactive bus stop improvement program is a comprehensive assessment of existing bus stops and their connecting pathways. This assessment will ideally evaluate the conditions at each bus stop and the immediate connections, using a field survey and trained surveyors. In urban areas, experience finds that an assessment will evaluate sidewalks up to the nearest intersection, since the ability to cross the street to access transit vehicles traveling in both directions is a critical element of a functionally accessible pedestrian environment.

In suburban or rural areas, there may be no sidewalk that connects to the bus stop; the stop may be located along the shoulder of the road. The ADA does not require that sidewalks be installed for bus stops in such areas. However, the assessment should look at features that affect the accessibility of the stop and potential improvements, such as the width of the shoulder, the rights-of-way, and, importantly, the road crossing environment. Since the closest intersection may be some distance away, given that suburban and rural roads do not have short blocks as do most cities, factors affecting the road crossing are important, such as the existence of a median and whether this is raised or grass.

A comprehensive assessment of existing bus stops and connecting pathways is the first step in implementing a proactive bus stop accessibility improvement program.

A suggested process for the assessment of stops and connecting pathways is described below, building on the case study findings and direct experience by members of the research team with stop and infrastructure improvement studies. Once the assessment is complete and improvements prioritized, the next steps would involve planning for construction of the improvements.

Transit agencies that follow this type of process will be well positioned to complete any bus stop planning requirements that might emerge under federal transit asset management requirements.

Step One: Preparation and Planning

The first step should involve preparing and planning for the bus stop survey. If the transit agency has already compiled an inventory of bus stop locations and/or amenities such as shelters, this can be used for planning the survey fieldwork. The fieldwork can in turn be used to update the initial inventory. Preparation also involves developing an intake form for data on each bus stop. Exhibit 5-1 shows the data elements that should be assessed for each stop.

Location	<ul style="list-style-type: none"> - Longitude and latitude coordinates—captured from GPS device - Nearest intersection <ul style="list-style-type: none"> ▪ on-street ▪ cross street ▪ adjacent property address (if not near an intersection) - Heading—direction of vehicle when stops at the stop <ul style="list-style-type: none"> ▪ north, south, east, west - Position—relative to the nearest intersection <ul style="list-style-type: none"> ▪ near-side, far-side, mid-block - Adjacent land use
Pole and Sign	<ul style="list-style-type: none"> - Bus stop pole - Bus stop sign*
Passenger Amenities	<ul style="list-style-type: none"> - Information case* - Shelter* - Bench - Trash receptacles - Bicycle racks
Accessibility	<ul style="list-style-type: none"> - Boarding and alighting area* - Sidewalk* - Curb ramps* - Obstructions*
Safety	<ul style="list-style-type: none"> - Proximity to controlled intersection - Lighting - Sight-lines - Marked crosswalk - Pedestrian crossing signal* - No parking zone - Proximity to potential safety hazards (e.g., steep drop-off, railroad tracks, etc.)
<p>* Data should be collected on these elements relative to adherence to the ADA Standards. For example, a sidewalk is subject to such ADA Standards requirements as width, running slope, cross slope, and changes in elevation.</p>	

Exhibit 5-1. Survey data.

Develop Annotated Data Dictionary. The transit agency should develop an annotated “data dictionary,” providing a list of data fields, a detailed description of each field, the data format and structure of the field, and the types of information to be collected. This is essentially a detailed outline for the survey instrument. Consult with the agency’s information technology (IT) or GIS staff when this data dictionary is developed, as the data should be compatible for input into some type of relational database (e.g., Microsoft Access, SQL, Oracle) for analysis.

Develop Survey Form. Once the data and data fields are defined, the survey form can be developed. As appropriate, create pick-lists/drop-down menus for responses to the survey questions and minimize the use of open-ended questions. This will expedite the field survey process.

Avoid creating questions for which the surveyor has to make a judgment call in the field, for example, providing a “yes” or “no” to a question regarding whether an item is ADA compliant or not. Structure the survey questions to the extent possible so that the surveyor documents absolute values. For example, to determine whether the size of the bus boarding and alighting areas (landing pad) is ADA compliant, the survey should require that the surveyor enter the dimensions of the landing pad, rather than simply entering “yes” or “no” regarding compliance. This method allows for greater data consistency and flexibility in who is used for the survey effort.

Survey Tools

A number of specific tools are recommended to collect the data in the field.

Mobile Device with GPS—A GPS device will allow for the capture of spatial location information such as the longitude and latitude coordinates of the stop. Furthermore, the device will allow surveyors to electronically enter the information without having to later transcribe it into a database and, because the information is entered once, it will minimize the risk of errors in the data.

Electronic Survey—So that the surveyors can input survey information into a mobile device, an electronic version of the survey needs to be created. This will usually involve purchasing third-party software that will facilitate the development of the electronic survey and the loading of the electronic survey onto the mobile device.

Inclinometer—Measurement of the running slope and cross slope of the bus stop landing pad, the sidewalk, and curb ramps are all part of an ADA bus stop evaluation. An inclinometer is a digital slope measurement tool that will make it simple to collect slope information. An inclinometer that allows the slope information to be collected in either degrees or percentages is suggested (Figure 5-4).

Measuring Wheel—A measuring wheel makes it easy to collect measurements regarding the dimensions of the landing pad, sidewalk width, shelter clearances, and the length of the no parking zone (Figure 5-5).

Digital Camera—When acquiring a digital camera to be used in the field, consider the following: it should be water resistant (doesn’t have to be waterproof); it should have the ability to date-stamp images; it should use readily available “AA” batteries rather than specialty batteries; and it does not need to be an expensive camera.



Figure 5-4. Inclinometer.



Figure 5-5. Measuring wheel.

Assess Available Resources

A critical part in preparing for a bus stop inventory effort is to identify the surveyor resources because the fieldwork is labor intensive and time consuming. On average, a trained surveyor can complete approximately 20 bus stops in an eight-hour period (typically also including travel time to the stops).

The field survey can be conducted using in-house agency staff or interns, or a private company can be contracted for the work.

- **Staff**—Using transit agency staff is a cost-effective method of conducting the field survey. However, since agency staff will have other roles and responsibilities, it may be difficult for staff to allocate adequate time to conduct the field survey in a timely manner.
- **Interns**—Using interns is also cost effective, particularly for a transit agency with limited staff and budget for the fieldwork, but there are considerations. The first is the time period needed to conduct the fieldwork. If longer than two months, college interns may not be a practical choice, since they are usually available only two to three months during their summer break. Interns available for a semester or longer may be more practical. In either case, interns will need to be properly trained before they are sent out into the field.
- **Contractor**—Use of a private company under contract for the survey effort is another option. With this option, experience shows that surveying bus stops will cost \$70 to \$90 per stop. While this is the more costly of the three options, use of a company with experience in bus stop and pedestrian accessibility assessment will allow the effort to be completed in a set and condensed time period and should help to ensure that the correct information is collected.

Step Two: Field Survey

Prepare Assignments. To maximize surveyors' time in the field and minimize the distances that need to be traveled between stops, create field survey assignments that group bus stops together for each surveyor. The use of GIS to help create the survey assignments will facilitate the identification of clusters of bus stop locations.

Conduct the Survey. Surveying a bus stop for ADA compliance and accessibility should not be limited to just the bus stop. For stops that are within 100 feet to an intersection, the sidewalk leading to the intersection should also be surveyed for ADA compliance. This 100-foot distance is not an ADA requirement, but represents a reasonable walking range based on experience of the research team.

At the intersection, the curb ramp connections, crosswalks, and pedestrian crossing signals should be surveyed. An important part of the survey is to take photos of each stop from multiple angles (i.e., approaching from both sides of the sidewalk, as well as focusing on any potential problems identified). The photos will provide verification of the data that was surveyed. The photos also serve as a good way to communicate and illustrate accessibility and other issues found at the bus stops. When taking photos of the stop, make sure there is a procedure in place to accurately correlate the photos with the correct stop.

Store Data in Database. It is good practice to store all of the bus stop data in a relational database. An Excel spreadsheet is not a database. Examples of a relational database are Microsoft Access, SQL database, and Oracle. It is best to work with either the GIS manager or IT staff to develop this database. Storing the data in a relational database will allow for analysis, reporting, asset management, and other applications.

Quality Assessment and Quality Control (QA/QC). Once the database is created, check the data as to accuracy and completeness, and make any revisions as needed. This may involve, for example, cross tabulations to assess reasonableness (e.g., data indicates the stop has a shelter but there is missing information on access to the shelter) and verification of the survey data by examining the photographs on a specified sample of stops.

Step Three: Analysis

Improvement Prioritization. Unless there are unlimited financial resources to make all of the necessary stop and connecting pathway improvements, it will be necessary to prioritize what improvements will be made, and when. A scoring scheme should be developed based upon local initiatives and priorities. Factors such as safety, usage (measured by on/off counts), accessibility, and land use are examples of criteria that can be used in the prioritization. Input from the transit agency's advisory committee, including riders with disabilities, should also be considered. Figure 5-6 depicts a prioritization scoring scheme developed for a study in Prince Georges County, MD.

Improvements can then be categorized as short term, medium term, and long term. Short-term improvements should target those bus stops with issues that can be resolved rather easily and inexpensively or have an immediate safety risk. Medium-term improvements would require making a more substantial financial investment at locations that will have the greatest impact. Long-term improvements would require a significant financial investment and will have the least amount of impact. Examples of short-term, medium-term, and long-term improvements are shown in Figure 5-7.

Improvement Costs. Estimating what it would cost to make the accessibility and safety improvements will help to determine the extent of the improvements that are needed. Figure 5-8 provides a general sense of the direct costs associated with bus stop improvements. Labor costs are additional for construction and will vary between communities; there will likely be other costs associated with the improvements, such as traffic mitigation during construction and right-of-way acquisition, which can be significant.

To maximize funding available for improvements, coordinate the improvements with the jurisdiction's local ADA and sidewalk programs (and, if the timing is appropriate, with adjacent land-use developments). By coordinating with other programs to make the improvements, some economies of scale can be achieved and costs potentially shared. For example, if there is a

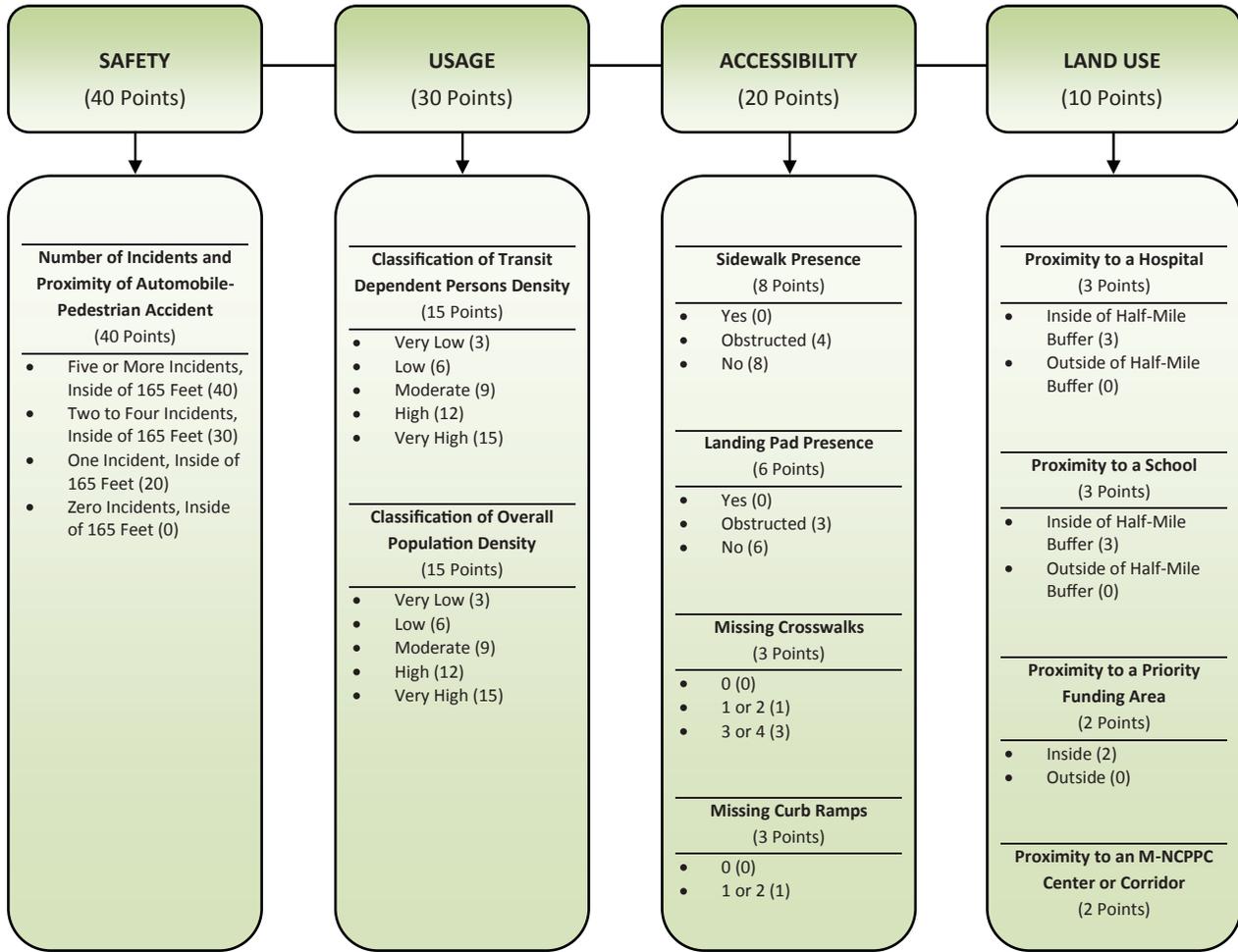


Figure 5-6. Example of a prioritization “scoring” system for bus stop assessment and improvement study, Prince Georges County, Maryland (M-NCPPC = Maryland-National Capital Park and Planning Commission).

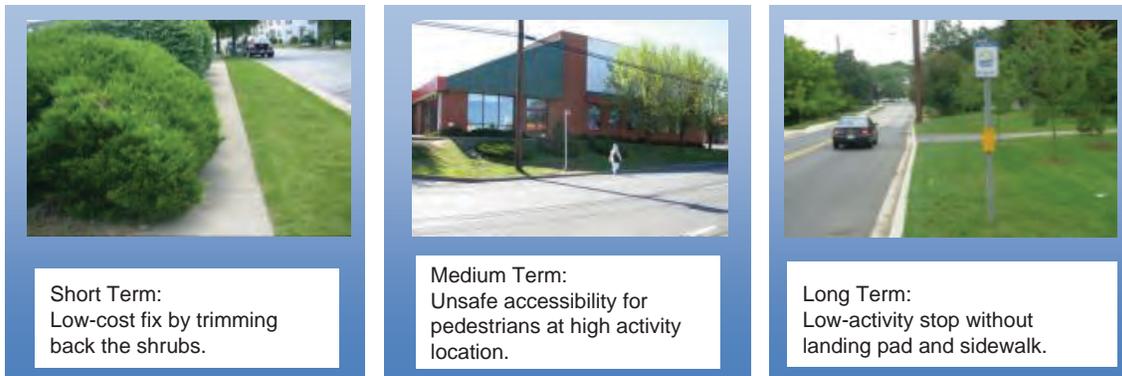


Figure 5-7. Examples of short-term, medium-term, and long-term improvements (photos courtesy of KFH Group).



Figure 5-8. Sample direct costs related to bus stop accessibility improvements (photos courtesy of KFH Group).

planned sidewalk extension that is being installed past an existing stop, coordinate the installation of a landing pad with the sidewalk installation. In this example, there will be some cost savings since the labor, equipment, and materials will already be on site.

Other Strategies Toward Bus Stop and Pedestrian Infrastructure Improvements

In addition to conducting a comprehensive bus stop assessment, transit agencies can also improve bus stop accessibility on a smaller scale through a variety of approaches, such as:

- **Develop bus stop design guidelines.** To help ensure that new sidewalk construction and bus stop improvements are fully accessible, transit agencies can develop their own design

guidelines that meet (or exceed) ADA requirements and encourage placement of amenities in a way that does not impede access. These standards can be shared with the local jurisdictions and those planning any developments along existing or planned bus stops.

- **Participate in the development review process.** Transit agencies that review and comment upon proposed land-use developments in their service area may be able to affect the installation of an accessible bus stop as part of the development.
- **When planning new fixed routes, choose bus stop locations to maximize accessibility.** Each time a transit agency develops a new fixed-route, or modifies the routing of an existing route, there is an opportunity to select bus stop locations that are accessible, or would require minimal improvements to make accessible.
- **Consult with transit riders.** People with disabilities who are fixed-route transit riders provide perhaps the most important perspective of all when it comes to the usability of a bus stop and its connecting pedestrian pathways, particularly for any stops that are questionable as to their functional accessibility. Although it may not be feasible to involve riders in assessing a large volume of bus stops, any complaints received from riders on stop accessibility should be assessed and programmed for improvement if possible. On an ongoing basis, consulting with the transit agency's accessibility advisory committee on bus stop issues is recommended.
- **Consult with transit staff.** It can also be highly beneficial to include the perspective of multiple functions of the transit agency, particularly for problem solving on a day-to-day basis. A member of the research team worked at Pierce Transit in the late 1990s as a planner responsible for the bus stop program and coordinated efforts with a bus stop working group composed of representatives of planning, operations, safety training, customer service, and marketing. Each bus stop complaint or request that was received from the public (or a driver) was shared with the group for investigation and input. The group convened to discuss more complex problems and reach consensus on the best solution, which might involve relocating the stop. In many cases, the perspective of a driver or safety trainer was invaluable in finding a solution, since these individuals know what the traffic conditions are like, where the bus can safely stop, how congested the sidewalks may be at certain times of the day, etc. The agency's travel trainer was also frequently consulted.
- **Consult with travel trainers and paratransit eligibility specialists.** In cases in which riders' conditional eligibility for ADA paratransit depends on their ability to get to and from the bus stop, the eligibility specialists' assessment of the paths of travel for the individual riders they work with can be used to determine bus stop and sidewalk improvement needs.
- **Ongoing monitoring and maintenance.** Even perfectly accessible sidewalks and bus stops can deteriorate over time. Once a transit agency establishes a bus stop inventory, conditions at each stop need to be periodically monitored. This can be as simple as investigating complaints submitted by riders and drivers and updating the bus stop database accordingly, or as involved as conducting another round of field visits to each stop in the system or along a specific route or major corridor. In any case, damaged amenities and pavement should be repaired as soon as possible, particularly when the damage is hazardous or presents accessibility barriers.
- **Include tactile or technology elements to help riders with vision disabilities identify bus stop locations.** While most transit riders will be able to find a bus stop with visual signage, those with vision disabilities need to rely on other cues. Even with mobility training and travel training, a bus stop sign pole may be easily confused with another type of pole if it is not a distinctive shape or size, or have some other non-visual distinguishing feature. One approach to address this is to work with local jurisdictions to adopt an ordinance that calls for bus stop poles to be a unique shape (e.g., square) and prohibits other poles for roadway signage from using this unique design. Figure 5-9 shows a bus stop at Lane Transit District in Eugene, OR. The pole is square, the unique shape called for in local ordinances. Other



Figure 5-9. Lane Transit district bus stop with unique square pole (photo courtesy of TranSystems).

strategies that can be employed to help riders with vision disabilities find the bus stop include tactile signage (with Braille and/or raised lettering), tactile sidewalk surface at the boarding location, and Remote Infrared Audible Signage System (RIAS) technology.

5.4 Outcomes, Costs, and Benefits

Based on the literature search conducted for this study, limited data exists that documents outcomes, costs, and benefits associated with accessibility improvements to stops and connecting pathways. To supplement the information in the literature, the research team worked with several transit agencies to collect and develop outcome, cost, and benefit data. Following is data from the literature as well as the case studies.

Maryland Transit Administration

In one case, the Maryland Transit Administration (MTA) focused on financial factors, studying the costs to make bus stop improvements and comparing these to the costs for the agency's ADA paratransit program. The MTA improved selected bus stops, some with "simple" improvements, costing on average \$7,000 per stop, and others with "enhanced" improvements, at \$58,000 per stop. The latter improvements included "minor" fixing of the adjacent sidewalks of the stops, among other changes. Using the fully allocated cost of \$76.64 per ADA paratransit trip, the MTA's study calculated an annual cost to the MTA of \$38,000 for an everyday ADA paratransit rider. If that rider could transition to fixed-route transit, according to the study, the MTA would recover the stop improvement costs in 10 weeks for the simple improvements and in 18 months for the enhanced improvements. (19, 20)

Montgomery County, Maryland

Montgomery County’s assessment of its improvement efforts looked to pedestrian safety results, since improved safety was a primary objective of its efforts. According to County data from 2011 and compared to 2000, pedestrian collisions decreased by 4% and pedestrian fatalities by 39%.

Costs for improvements are tracked by Montgomery County through a robust and creative database, developed as a “wiki,” a web application that allows designated users to add, modify and delete content in a collaborative way. Called a “geo-wiki” by the County, this site has streamlined the County’s process of updating the bus stop database, coordinating improvements (e.g., with the bus shelter franchisee), generating and tracking work orders for improvements (e.g., with the construction contractor), surveying stops, and monitoring stop improvement activities.

As of the end of calendar year 2012, the improvements were about 70% completed, costing \$7.4 M, with an average cost per improved stop of \$2,931. The geo-wiki summarizes the improvements through the end of 2012 with construction of:

- 1,583 ADA-compliant stops;
- 2,230 ADA-compliant pads;
- 72,414.5 feet (13.7 miles) of sidewalk linking stops to adjacent sidewalks and pathways;
- 735 intersections with ramps installed; and
- 61 new medians, providing, for example, pedestrian refuge islands or traffic calming.

Link Transit, Wenatchee, Washington

Link Transit’s efforts to improve its fixed-route transit accessibility for riders with disabilities, of which the stop and infrastructure improvements were only a part, resulted in a shift of trips from ADA paratransit to fixed-route transit, with trips on ADA paratransit decreasing 41% from 2002 to 2010 and trips on fixed-route transit increasing 106% during this time period.

With its limited funds, Link Transit focused on cost-effective improvements for stops and infrastructure, leveraging private business dollars, grant funding, and use of the low-cost “rhino snot.” Using this material, costs for the rural stop improvements averaged \$50-\$75 for materials and one to two hours of labor per stop. Cost for the “rhino snot” depended on the location’s soil but it was no more than \$25 for the 8 ft × 8 ft (larger than ADA requirements) pad typically installed. The largest cost was for the concrete blocks used for slope retainage.

Intercity Transit, Olympia, Washington

The results of Intercity Transit’s stop and infrastructure improvements were analyzed with the assistance of the agency’s staff.

Looking at the 24 stops improved in 2010, ridership on fixed-route transit was compared for the *year before* and *year after* the improvements. At those 24 improved stops, total boardings increased by 14%, as compared to a system-wide increase of 5%. More telling is that lift deployments at these stops increased by 37% compared to 16% system-wide, indicating that the stop improvements are very likely a factor in the increased use by riders using wheelchairs and other mobility devices.

Figure 5-10 shows an example of improvements to one of Intercity’s bus stops, with before and after photos. Improvements constructed at this stop included using a 6 inch curbed landing pad with a ramp to the shoulder, since there are no sidewalks along this road. The stop was “functional” and now is “accessible.”



Figure 5-10. Intercity Transit: before and after construction of a curb-height concrete pad spanning culvert, with ramp to shoulder (photos courtesy of Intercity Transit).

At Intercity, the increase in lift deployments represented 467 trips at the 24 improved stops. Providing those trips on fixed-route transit rather than Intercity's ADA paratransit service in 2011, the transit agency saved \$17,996, based on the 2011 net difference between the trip cost of ADA paratransit versus fixed-route transit. Each trip on fixed-route transit that is shifted from ADA paratransit represents a net saving to the transit agency of \$38.54 (2011 dollars).

At Intercity, ridership and lift deployments were also assessed for the years before and after bus stop improvements constructed in 2005. While stop level data were not available at that time, the increase shown in Intercity's lift boardings system-wide following the improvements is significant (36%) and higher than in other years and could be attributed, at least in part, to the stop improvements.

TriMet, Portland, Oregon

TriMet conducted a comprehensive assessment of the results of bus stop and infrastructure improvements constructed along a high-ridership corridor in 2009. Significantly, this assessment looked not only at changes in fixed-route transit use by riders with disabilities at improved stops, but also ridership changes on ADA paratransit within a ¼-mile radius of the improved stops. The improvements, undertaken in partnership with the Oregon Department of Transportation, were substantial, with more than \$0.5 million spent to upgrade 17 bus stops, with repair and construction of incomplete and damaged sidewalks, and the addition of ten bus shelters and concrete pad at the stops. Figure 5-11 shows the *before* and *after* photos of one of the 17 stops.



Figure 5-11. TriMet's bus stop improvements along Tualatin Valley Highway, "before" and "after" (photos courtesy of TriMet).

The fixed-route transit data for the 17 improved stops shows that lift deployments nearly doubled after the improvements (increasing by 96% from fall 2008 to fall 2009, and continued to climb, with a 112% increase from 2008 to 2011).

A comprehensive assessment by TriMet found that ADA paratransit ridership by conditionally eligible riders decreased by 12% in areas where bus stop access had been improved.

Assessing ADA paratransit ridership in the ¼-mile radius of the improved stops, the data show that ridership by conditionally eligible riders decreased 12%, comparing the year before the improvements to 2011. Data for fully eligible riders, however, showed a different pattern, with essentially no change over the same time period (a 0.5% decrease). It is conditionally eligible riders who will most benefit from stop and infrastructure accessibility improvements, as these are the riders who are able to use fixed-route transit in some cases.

Regarding costs, if one assumes that the new lift/ramp trips at the 17 bus stops can be attributed to the improvements, and that without the improvements those trips would be on TriMet's ADA paratransit service, then TriMet is saving nearly \$60,000 per year by accommodating additional lift/ramp-using riders on fixed-route transit as a result of the improvements installed in 2009 (using the FY 2012 operating cost per ADA paratransit trip of \$29.87⁵).

⁵ Source: <http://trimet.org/pdfs/publications/trimetridership.pdf>, as accessed 12/7/12, p. 3, "Operating Cost/Boarding Ride" for LIFT/Cab.

While the analyses do not definitively prove the new lift/ramp-using riders at the improved stops would have otherwise used ADA paratransit, the data are powerful nonetheless. Improvements to bus stops and their connecting pedestrian infrastructure do induce additional fixed-route transit use by riders with mobility devices. Also important to recognize is that there may be new fixed-route transit ridership by others with disabilities that is not captured in the data because the disabilities of those riders do not require a lift or ramp deployment.

Summary

While there is limited documentation showing the specific results of stop and pedestrian infrastructure improvements for riders with disabilities, data collected for the research project shows that ridership on fixed-route transit service by those requiring a lift or ramp does increase following bus stop and connecting infrastructure accessibility improvements.

Moreover, given that the available data measure ridership impacts just for those riders with disabilities needing a lift or ramp, accessibility improvements, particularly to connecting sidewalks and pathways, likely benefit the wider disability community—those individuals who can board without a lift/ramp, including, for example, those with vision disabilities and those who need a stable, even surface to walk. Furthermore, the infrastructure improvements benefit all transit riders as well as non-transit riders who are pedestrians using the improved infrastructure.

Available data also show large differences in costs for stop and infrastructure improvements (see Table 5-1), which is not surprising given the major variations in what can be involved to render a stop and connecting sidewalk accessible. Such an improvement might involve the relatively low cost for repairs to an existing connecting sidewalk, for example, to the major costs required by TriMet and the Maryland Transit Administration (MTA) for accessibility improvements. Several of the TriMet stop improvements required extensive work to mitigate safety concerns related to the presence of an active freight line parallel to the roadway. The MTA’s “enhanced” stops included, among other costs, trenching to provide electricity for lighted shelters. (21)

5.5 Implementation Issues and Lessons Learned

This project’s case study transit agencies shared noteworthy implementation issues based on their experience as well as on the “lessons” they learned.

Table 5-1. Cost data for bus stop and connecting pedestrian infrastructure improvements.

Transit Agency	Number of Stops/Connecting Infrastructure Improvements	Year Improvements Constructed	Cost	Average Cost per Improved Stop
Intercity, Olympia, WA	24	2010	\$164,606	\$6,859
Maryland Transit Administration, Baltimore, MD	26 “simple” improvements (e.g., minor sidewalk repair)	2005–2006	\$183,000	\$7,000
	14 “enhanced” improvements (e.g., lighted shelter)	2005–2006	\$813,000	\$58,000
RideOn, Montgomery County, MD	2,510	2006–2012	\$7,356,879	\$2,931
TriMet, Portland, OR	17	2009	\$512,167	\$30,127

Implementation Issues

As reported by the case study transit agencies, implementation issues include:

- **For multi-jurisdictional transit services, good working relationships between the transit agency and its jurisdictions are important and can facilitate leveraging of additional funding for the improvement projects.** TriMet reports that, when feasible, improvements are constructed and installed as part of a larger project such as adjacent land-use development or street projects. This is facilitated as TriMet participates in the jurisdictional site review process. Intercity Transit works with the cities it serves when stops are improved, and often a city will participate with additional pedestrian infrastructure improvements, such as a curb bulb-out for a stop located near a street corner and share funding through an interagency agreement.
- **When contracting out stop improvements, the work should be enough to encourage cost-effective, competitive contracting.** Intercity Transit’s experience finds that “enough” is at least 15 to 20 stops for improvement for each bidding opportunity.
- **Constructing improvements can be facilitated if the local jurisdiction handles the engineering and construction.** For example, Montgomery County uses its in-house engineering staff to design improvements that require engineering analysis rather than contracting out this work. TriMet contracts directly with the City of Portland to construct pedestrian sidewalk improvements in that city without a need for detailed engineering or design services. For work in other jurisdictions that TriMet serves, the transit agency has used a contractor to construct improvements but has been able to fast-track much of the permitting via in-kind staff support from the jurisdictions, which constitutes part of the local match of the project.
- **Ownership of the rights-of-way can be an issue.** The City of Tucson tries to place stops at ¼-mile intervals, but finds it difficult to maintain this spacing and also install ADA-compliant stops when planned stop placement abuts private property. Montgomery County has not tackled stop improvements that require purchase of ROW from private property owners: cost estimates show that ROW purchase alone is an estimated \$15,000 per stop.
- **Community involvement, including through the transit agency’s advisory group, has been useful in identifying and prioritizing stops for improvement as well as sidewalk improvements, as reported by several of the case study transit agencies.** The Town of Cary, for example, has a popular annual sidewalk request program in which citizens’ requests contribute to prioritization for sidewalk improvement funding, along with proximity to transit, which is another factor in funding decisions.

Lessons Learned

Collective “lessons learned” from the stop and pedestrian infrastructure improvements implemented by the case study transit agencies include both those at the policy and planning level as well as on-the-ground implementation tips.

- Building good relationships with neighboring jurisdictions and intra-jurisdictional departments (e.g., the traffic engineering department) as well as educating them is very useful to facilitate implementation of improvements. Such efforts support coordinated planning and construction of improvements as well as cost-sharing.
- Recognition at the policy level that riders’ transit experience begins before they get on the bus is very important to garnering support for making bus stop improvements. Having the transit agency’s top leadership on board is essential.
- Going into the grant cycle application process with a game plan in mind—with improvement needs identified and prioritized through a systematic process—is important for successfully obtaining funding. The intent of pursuing improvements needs to have a basis and criteria for why each stop has been chosen.

- The inclusion of transit-related design standards for development and redevelopment can help support improved access to public transit for residential projects and retail/commercial activity centers.
- Transit agencies should advocate strongly the importance of constructing sidewalks to bus stops. Regional planning targets, new or sustained transit service, and targeted bus stop investments should be used to encourage jurisdictions and developers to partner with the transit agency in constructing sidewalk improvements that connect with transit.
- Don't let the scale of the problem keep efforts from being started. It may not be possible to identify the funding to make all bus stops accessible, but don't let that be a reason for not getting started at some level. Make as many improvements as funding allows each year and work toward accessibility over time.
- Target improvements where they are most needed and will yield the maximum benefit. With limited funds, improvements should be made at those stop locations with larger numbers of riders and with riders with disabilities and, as appropriate, where the improvements demonstrate to the broader community that the transit agency is investing in the pedestrian infrastructure. Such improvements benefit not just transit riders but also all citizens who walk about in the community.
- Establish realistic expectations: have a plan but realize that not everything will go according to that plan. Anticipate adjustments and refinements in design.
- Involve all stakeholders from the beginning and keep them informed along the way. This will make it easier to get them up to speed on any issues that arise.
- Establish and maintain clear and frequent lines of communications, especially with adjacent businesses during construction phase.
- Be aware of future development projects that can affect an existing non-compliant bus stop, or one that is already compliant. Have the developer, as part of the development or redevelopment project, do the necessary ADA improvements to the bus stop or make sure a compliant stop remains so when the developer's work is done.
- When an improvement is needed at a roadway intersection for safer pedestrian accessibility, all four corners of the intersection should be improved if funding permits. This allows pedestrians and bus riders to access nearby activity centers from various directions.
- Addressing the need for graffiti-prevention on new concrete pads is strongly recommended at the pre-bid meeting with construction contractors, as well as being written into the contract.
- Using a curbed landing/shelter pad, where there is no sidewalk available, is best done with two accessible ramps on either side of the pad. This will prevent erosion on the side without a ramp and decreases safety concerns of having a 6 inch curb suddenly appear in front of pedestrians, bike riders, or vehicles.
- When making a stop improvement, use the opportunity to make other improvements that benefit all riders. For example, the City of Tucson tries to provide a larger than ADA-required pad—up to 30 feet long—so riders deboarding from the rear door find a firm stable surface rather than loose gravel.

Get started at whatever scale you can. Make bus stop and infrastructure improvements as plans and funding allow. It isn't necessary to identify funding for the entire system before making at least some improvements. Prioritize and work toward accessibility over time.

Summary

The case study transit agencies generally share the importance of cooperation and collaboration with neighboring jurisdictions and with their own intra-jurisdictional departments for planning and constructing bus stops and connecting infrastructure improvements. Significantly, such collaboration may also result in sharing costs for the improvements. It is also clear that input from the community and the agency's advisory group is important, particularly for prioritizing stops for improvement. Other issues and lessons learned are more specific to each transit agency's experience.

An overarching “lesson learned” from one of the transit agencies—Link Transit—captures the role of stop and connecting infrastructure accessibility improvements to the broader objective of increasing fixed-route transit accessibility for riders with disabilities.

Efforts to provide more accessible fixed-route transit service and to enable riders with disabilities to use that service must be holistic: the physical infrastructure—the bus stops and sidewalks—is only part of providing truly accessible service. The design and convenience of the service, the equipment used, pricing, agency staff attitudes, the attitudes of the larger transit-riding public, as well as the infrastructure are all critical factors in encouraging and enabling riders with disabilities to use fixed-route transit.

5.6 Evaluation of Bus Stop and Connecting Pedestrian Infrastructure Improvements

Several evaluation strategies are possible, from the less to the more involved, depending on data availability, and are listed below. Details are provided in Appendix D.

Ridership Changes at Improved Stops by Riders with Disabilities

This is a straightforward assessment, which looks at the change in number of lift/ramp deployments at the improved stops for a time period before the improvements to a similar time period after; a one-year time period is suggested. This change is then compared to the change in number of lift/ramp boarding system-wide.

If the stop and infrastructure improvements induce new fixed-route transit ridership by individuals using wheelchairs and scooters, there would be a greater increase shown at those improved stops than shown system-wide.

It is important to note that the assessment strategy focuses on riders who use mobility devices and who require a lift or ramp to board, rather than all riders with disabilities, given that stop by stop data collection practices by transit agencies typically track lift/ramp usage and do not collect stop level data on all riders with disabilities.

Ridership Changes at Improved Stops—All Riders

Because stop and pedestrian infrastructure improvements benefit all riders and not just those needing the lift/ramp to board, a transit agency can also evaluate if there is a change in total boardings at the improved stops for a time period before the improvements to a similar time period after; again, a one-year time period is suggested. This change is then compared to the change in boardings system-wide.

If the stop and infrastructure improvements induce new ridership, there would be a greater increase shown at the improved stops than shown system-wide.

Ridership Changes at Improved Stops by Riders with Disabilities Contrasted with Change in ADA Paratransit Ridership within Catchment Area of Improved Stops

This evaluation strategy, used by TriMet to assess its 2009 improvements to 17 bus stops along a high-ridership corridor, is more involved and requires an assessment of both changes

in fixed-route transit ridership at the improved stops as well as changes in ADA paratransit ridership within a ¼-mile radius of the improved stops.

The assessment looks at the change in number of lift/ramp deployments at the improved stops for a time period before the improvements to a similar time period after: a one-year time period is suggested. It also looks at any changes in ADA paratransit ridership in the vicinity of the improved stops over the same time period, focusing on riders who have conditional eligibility, as those are the riders who are able to use fixed-route transit in certain cases, and on that ridership within a defined ¼-mile distance around the improved stops.

If the assessment finds both an increase in lift/ramp deployments at the improved stops and a decrease in ADA paratransit ridership by conditionally eligible riders within the catchment area of the improved stops, the transit agency can reasonably conclude that the improvements are very likely deferring ADA paratransit costs and are likely an important contributing factor in the decreased ADA ridership.

Cost Analysis

An evaluation of stop and pedestrian infrastructure improvements can look at cost impacts, with two strategies suggested.

ADA Paratransit Costs Deferred with New Trips on Fixed-Route Transit by Riders with Disabilities

This evaluation strategy assumes that new trips on fixed-route transit at the improved stops/ infrastructure by riders with disabilities (measured by lift/ramp deployments) would have otherwise been taken on ADA paratransit. The calculation involves determining the net cost of an ADA paratransit trip and multiplying this by the new trips on fixed-route transit using the lift/ramp to determine the “savings” to the transit agency.

“Break-Even” Number of Trips by Riders Who Use Wheelchairs/Scooters to Recover Cost for Stop/Infrastructure Improvements

At a certain number of trips by riders who use wheelchairs/scooters at an improved bus stop, the cost of the improvements will equal the cost of providing that same number of trips by ADA paratransit, and the costs can be considered “recovered.” This assessment can be done for an individual stop that has been improved or for all the stops improved.

Evaluation Summary

Data on the ridership impacts of the bus stop and pedestrian infrastructure improvements are limited; however, available data show that improvements do induce new fixed-route transit use at the improved stops by riders with disabilities needing a lift/ramp to board and they also induce new fixed-route transit use by all riders.

Data from Intercity Transit in Olympia, Washington, show that ridership by riders using wheelchair/scooters and needing a lift/ramp to board increased more than twice the rate shown for lift/ramp deployments system-wide: lift deployments at the improved stops increased by 37% compared to 16% system-wide, measuring before and after the improvements. Additionally, total boardings at the improved stops increased almost three times the rate shown system-wide: 14% at the improved stops as compared to a system-wide increase of 5%.

Data from TriMet in Portland, Oregon, show that not only do lift/ramp deployments increase at improved stops, but ADA paratransit ridership within a ¼-mile radius of the improved stops shows a decrease by conditionally eligible riders over the same before-and-after time periods. TriMet’s data show that fixed-route transit lift deployments nearly doubled after the

improvements, measuring the year before and after the improvements, increasing 96%. Assessing ADA paratransit ridership in the ¼-mile radius of the improved stops, ridership by conditional riders decreased 12%, measuring before and after the improvements. Data for fully eligible riders, however, showed a different pattern, with essentially no change over the same time period (a 0.5% decrease).

The extent to which stop improvements defer or save costs for ADA paratransit vary according to the ridership increase at the improved stops and the operating costs for ADA paratransit, and build on an assumption that the new trips requiring the ramp/lift at the improved stops would have otherwise been ADA paratransit trips. At TriMet, for example, if the new lift/ramp trips at the improved stops would have been trips on the ADA paratransit service without the bus stop improvements, the transit agency is saving nearly \$60,000 per year.

Finally, the research shows a large range in the costs to improve the accessibility of bus stops and the pedestrian infrastructure, with available data showing average costs per improved stop ranging from \$3,000 to \$58,000. The extent of required accessibility improvements also has a large range. At the lower-cost end, a stop may only need a short connection bridging the sidewalk and curb over a grassy pedestrian buffer. At the costly end, a stop may need design and engineering work and construction to deal with significant land-use issues to provide a level boarding area and to install sidewalk connections to the closest intersection. Adding a shelter and other such amenities will further increase costs.

Marketing, Public Information, Trip Planning, and Travel Training

Previous chapters of this strategy guide have addressed important prerequisites to achieving the goal of increasing the use of fixed-route transit services by people with disabilities: understanding current use of transit by persons with disabilities; setting system-wide policy and goals; making the fixed-route transit service reliably accessible and usable; and addressing access at bus stops and in the pedestrian infrastructure. This chapter focuses on providing riders with the information they need to use the service.

This information ranges from broad awareness to the particular needs of each individual. It includes:

- Providing readily available information about the fixed-route transit system: fares, accessibility features, and individual routes.
- Reaching out to people with disabilities and persuading them of the advantages of using the fixed-route transit services.
- Providing trip-specific information for planning a trip.
- When needed, providing individual instruction on how to use the service.

6.1 Marketing and Public Information

Information needed to enable and encourage use of fixed-route transit can be divided into two types. Public information is the information any rider needs to use the system, as well as information that any person with a disability would need. Marketing goes beyond this: it appeals to each potential rider to persuade them to use the fixed-route transit service.

Targeted Marketing. This type of public information is often called “targeted marketing.” It may take two forms: first, *information* on how to ride, focusing on how to board accessible vehicles, pay the fare, etc., and second, targeted *outreach* to individuals who may never have been fixed-route transit riders, some of whom may be current riders of ADA paratransit.

Marketing to First-Time Riders. Of particular interest is the individual who has never ridden a bus or rail transit. This target group includes people with disabilities and an aging population whose vision, hearing, and/or mobility are declining. From a marketing perspective, it makes good sense to encourage fixed-route transit use by seniors who do not meet the definition of individuals with disabilities so that the habit of using fixed-route transit is established before they have a basis for seeking eligibility for ADA paratransit. Thus, most of the efforts documented here involve transit agencies reaching out to seniors as well as people of any age who have disabilities.

Broadly distributed public information can be thought of as “whole-sale” and the information targeted to individuals or small groups as “retail.”

Promoting Accessible Fixed-Route Transit. A starting point for public information and marketing is to make the target population aware that accessible fixed-route transit services exist and may be an option for trips that the individual wants to make. In some cases, individuals may believe that the fixed-route transit services are simply not accessible because that may have been true at some point in the past. Therefore, the starting point is to make the target population aware of the accessibility features on the fixed-route transit services and the assistance that drivers provide.

Current Practice

The survey described earlier in this report provided an overview of public information and targeted marketing efforts of the 133 transit systems that responded to the questions about public information. Of these systems, 86 (65%) have developed general marketing material to educate the public, including riders with disabilities, about the accessibility of their fixed-route transit services. Material targeted directly to people with disabilities was developed by 46 of the systems (35%), and all but six of these systems also have general marketing material. In 58 of the systems (44%) the material provides detailed information on how to use the accessibility features, and in 51 systems (38%) the information communicates the benefits of using fixed-route transit services to persons with disabilities. Only 17 of the responding systems (13%) had not developed marketing or public information that addresses fixed-route transit system accessibility.

65% of the transit agencies that responded to the study survey have general marketing material about their accessible fixed route services; 38% communicate the benefits of using fixed-route transit to people with disabilities.

Information from Research Efforts

Broadly Distributed Public Information: Transit Websites, Public Media Outlets

Easily available “How to Ride” information is the basis of all efforts to promote fixed-route transit to the target group. Even when a transit system uses outreach to potential fixed-route transit riders, this information is needed to reinforce presentations and travel training.

The Internet has over a relatively short span of time to become the main interface with the public. However, many people, particularly older individuals do not use the Internet; therefore, printed material and customer service call-takers need to provide the same information. In many, but not all, cases examined, the transit system’s website has a page labeled “Accessibility” that showcases the accessibility features of fixed-route transit services, as well as providing information on ADA paratransit. The same is true of printed materials available through transit systems’ customer service departments.

Public information usually includes simple pages on the transit system’s website, giving the basics of how to ride, sometimes with the addition of streaming video. Almost without exception, this information begins with a simple statement of the benefits of fixed-route transit use: (1) low cost (particularly where reduced fares are available for seniors and individuals with disabilities) and (2) greater independence.

At the more elaborate end of the spectrum, systems like San Francisco Muni have prepared and updated a detailed Rider Guide with good graphics and an overall “look and feel” that helps to “sell” the idea of riding accessible fixed-route transit. Figure 6-1 shows the information online at the Muni website.

In general, the how-to-ride accessible fixed-route transit and travel training information on a system’s website is part of an overall website design that has its own budget, and covers topics

Paratransit



Outreach (VTA Paratransit)
800.400.3440

Please note that San Francisco Paratransit does not serve any Bay Area airports. Rediwheels serves the San Francisco International Airport, and East Bay Paratransit serves the Oakland International Airport.

Travel Training

Free Travel Training is available for individuals who would like to improve their transit skills or gain more experience using the Muni system.

Below is a description of the program:

Group Orientation for Travel Training is a regularly scheduled, drop-in information session open to all seniors and

persons with disabilities. At these meetings you can:

- Learn how Muni serves customers with disabilities and offers an independent way to travel;
- Learn how and where to get Muni information in accessible formats to help plan trips;
- Meet other persons with disabilities and seniors who use the Muni fixed-route system. Hear their experiences about using Muni and share your transportation questions with them;
- Practice boarding an accessible Muni vehicle;
- Sign up for free individualized travel training sessions.

If needed, transportation to the first group orientation will be provided.

Those unable to attend group training can request to meet with a certified Travel Trainer individually.

Individualized Travel Training is an opportunity to receive one-on-one

instruction with a qualified Travel Trainer. The trainers are experienced Muni riders and many are persons who are disabled. During this travel training you will:

- Meet personally with a Travel Trainer and plan a training program to meet travel goals;
- Practice riding Muni while accompanied by a Travel Trainer;
- Have a follow-up training session on the Muni system with a Travel Trainer nearby monitoring your travel;
- Learn how and where to obtain schedule and route information;
- Gain the experience needed to comfortably and safely use Muni

- Opportunity to travel with friends;
- A way to set a schedule for travel without hours or days of pre-planning;
- An inexpensive way to travel throughout the city and to make connections with other Bay Area transportation systems;
- A system whose drivers have had sensitivity and special safety training to help them meet the needs of seniors and persons with disabilities.

Call 415.351.7063 for more information on travel training.

Advantages

Using the buses, trolleys and light rail of the Muni fixed-route system provides many advantages:

- Independence;
- Flexibility to travel when you want ;

[muni access guide] muni access guide [61]

Figure 6-1. San Francisco Muni Access Guide page on travel training and benefits of using fixed-route transit service (courtesy of San Francisco Muni).

from fares and schedules to complementary paratransit service. A simple web page describing the benefits and how-to-ride information is sufficient to provide this function, but in itself is unlikely to “close the sale” with the target audience. That is, it is necessary but not sufficient to reach individuals who would not choose fixed-route transit on their own.

Lane Transit in Eugene, Oregon, created a brand called *EZ Access* that is advertised on its website and uses the customer service staff associated with their paratransit program to arrange travel training for interested individuals who call or make contact through the website. *EZ Access* is a coordinated approach that includes both fixed-route transit and ADA paratransit solutions suited to the capabilities of each individual.

Intercity Transit in Olympia, Washington, places articles describing the benefits and offering travel training in publications seen by the target audience: for example, the newsletters distributed by the city’s Senior Action Network (see Figure 6-2).

The Utah Transit Authority (UTA) in Salt Lake City, Utah has developed a brochure that communicates the benefits of using its 100% accessible fixed-route bus fleet and its accessible

February 2013
The Thurston-Mason Senior News
Page 19



Senior Action NETWORK
THURSTON • MASON • LEWIS
Businesses, Speakers and Educational Videos for Seniors
www.senior-action.net
360-943-9698

www.senior-action.net

The Senior Action Network is committed to providing a networking forum to promote the exchange of ideas, information, and opportunities for business development; to enhance healthy independent and secure lives for senior citizens; and to volunteer goods, services or labor toward a senior-related charitable cause or community outreach event.

For information on monthly meetings, call Bruce Barnford at 360-943-9698 or Rick Crawford, President, at the Senior News, 360-586-3590.

Information and Education: Wednesday, February 20th at the Olympia Senior Center in room 101 from 10:15-11:30 am. Come join us for an educational presentation about **"On the Move with Intercity Transit - Accessible Transportation Options for Seniors."** Speaker will be Emily Bergkamp from Intercity Transit/Dial-a-Lift.

Plus listen live on Tuesday morning, February 19th on 1240 am KGY radio at around 8:15 AM.

SAN members are available in the lobby on the third Wednesday of each month from 10:00-11:30am to help you find needed community resources.

SAN February Topic: Explore a Variety of Transportation Options on Intercity Transit!

by Emily Bergkamp, Dial-A-Lift Manager, Intercity Transit™.

Author Robert Louis Stevenson once wrote "I travel not to go anywhere, but to go. I travel for travel's sake." The great affair is to move." If your goal is to get moving this year, hop aboard Intercity Transit and enjoy all your community has to offer on public transit. Whether you're going out on the town, to the doctor or simply visiting a friend, we have a variety of options to meet your travel needs. As an independent senior, we're confident you'll find Intercity Transit's regular bus service convenient and easy to use. Say goodbye to pre-scheduling transportation. In many areas buses run every 15 to 30 minutes along major corridors - you can be as spontaneous as you like. All buses lower to the ground or "kneel" for easy boarding and have ramps if you use a walker, wheelchair or scooter. When you step inside, you'll enter a clean bus, be greeted by a courteous driver, and have access to priority seating near the front. A reader board inside the bus clearly displays upcoming stops. Buses also have audio stop announcements so you don't miss your destination. Rest assured your safety is our first priority, with expert drivers at the helm and the added security of on-board cameras.

If you haven't been on a bus in a while, or are a first time rider, try our FREE Travel Training service and learn the ropes of riding the bus. Participate in individualized coaching sessions as unique as you are, customized to meet your needs. You'll learn how to plan your trip using the easiest and safest routes, read and understand transit maps and schedules, get to and from bus stops safely, pay fares, purchase passes and more. Our Travel Trainers are also available to do group presentations and field trips at your senior housing or assisted living location. Contact our Travel Training program today at 360-705-5879 to kick start your adventures.

For those needing more assistance during their travels, Intercity Transit offers Dial-A-Lift, a specialized service reserved for people with disabilities preventing them from using our regular buses. Individuals apply for Dial-A-Lift certification for all or some of their trips. Once certified, clients can book trips up to 5 days to 1 day ahead of travel. For more information about eligibility for Dial-A-Lift, please contact our Eligibility Coordinator at 360-705-5896.

If you are a senior 65 years and older, you are entitled to reduced fares on Intercity Transit and other regional transit systems, making travel easy on your pocketbook. Possession of a Reduced Fare Permit is required to receive reduced fares. To request an application for a Reduced Fare Permit, call our Customer Service department at 360-786-1881. On our regular buses, reduced one-way fares are \$2.50, day passes are \$1.00 and monthly passes are \$15.00. Starting February 17, regular fares will increase to one-way fares of \$1.25, and day passes of \$2.50 for all passengers under the age of 65 as well as Dial-A-Lift passengers.

More information about Intercity Transit's routes and services is always at your fingertips - give Customer Service a call at 360-786-1881 or find us on-line at www.intercitytransit.com. Lastly, wherever your journeys take you, remember, Intercity Transit can get you where you need to go. We look forward to seeing you soon!



"Local senior Selma enjoys the independence of traveling on Intercity Transit"



HURRY, FINAL INVENTORY! UP TO 3 MONTHS FREE!

***For A Limited Time Only**

Spacious (over 1,200 SF) 2 bedroom, 2 bath, single level homes with attached garages, full size washer-dryer, large kitchens (with islands), and tons of storage. Full community center for family gatherings, and on-site event planner for extensive community activity options.

Call Now 360-339-8000

Learn more at www.yaegerparkvillas.com

322 Lachman Lane SW Olympia, WA 98502



Figure 6-2. Article targeted at seniors in the Intercity Transit service area (reprinted courtesy of The Thurston-Mason Senior News).

New freedom and independence for paratransit riders.
 UTA's fixed-route buses are now 100% accessible. Every bus in UTA's fleet now has a lift or low floor ramp to make it easier to get on and off. We invite you to try this new service FREE until September 1, 2002!

It's easy.
 You can ride regular buses and TRAX anytime. No advance scheduling. No penalties for changing your schedule at the last minute. You can ride UTA's regular buses and TRAX as often as you like. FREE! And, of course, your personal care attendant can still travel with you free, too. UTA's

friendly drivers are ready, willing and trained to make riding an enjoyable experience for you.

Try it today.
 Once you try regular bus service a few times, we think you'll appreciate this safe and more convenient way of getting where you need to go.

Your eligibility for paratransit services won't be affected.
 Remember, your Freedom Access Pass cannot be used as fare payment on our paratransit service.

Tell us about your experiences or any questions you might have while using this pass. We can share your suggestions and work to improve our safe, accessible public transit services for all of our customers. Fill out the enclosed card or contact Kathy Farnsworth at 287-4659.

Figure 6-3. UTA brochure on benefits of using fixed-route transit service (courtesy of Utah Transit Authority).

TRAX light rail system (see Figure 6-3). The brochure was developed as part of UTA's Freedom Access program, which provides fare free fixed-route service to persons who are ADA paratransit eligible.

Targeted Outreach: Presentations, Guides, Brochures

Targeted outreach is more of a "retail" concept in which the transit system meets with prospective riders one on one or in small groups at locations such as senior centers, centers for independent living, schools, and medical centers. In this kind of face-to-face setting, the transit system representative establishes a relationship with potential riders and can more effectively communicate the benefits of fixed-route transit ridership. Often, a transit system's goal for this kind of one-to-one or small group presentation is signing up potential riders for travel training. In many transit systems, the outreach presentation includes distributing passes for reduced fare or even free trips, which is an immediate demonstration of a benefit. It is also common to bring a bus to a group presentation and use it for introductory travel training (which can be followed up with more intensive travel training on a one-to-one basis.)

Transit system outreach is essentially sales. The representatives get to know the institutions and individuals in their territory. In a large system such as the Washington Metropolitan Area Transit Authority (WMATA), with several representatives doing outreach, they each have a specific target audience, e.g., people with vision impairments, people with auditory disabilities, people with cognitive disabilities, individuals in the geriatric population, or disabled veterans at VA hospitals. WMATA's outreach representatives are also the travel trainers for their target audience, maintaining the personal contact, reinforcing the presentation of benefits, and providing a "lifeline" whenever a customer needs additional encouragement or refresher training. In this model, travel training includes trip planning for the initial trip, and one-on-one trip planning can be provided as the customer becomes familiar with riding fixed-route transit and wishes to add new itineraries.

A similar type of retail approach used by Laketran in Painesville, OH, is to use the public schools to target young people with cognitive disabilities (generally high school-age students with Individualized Education Programs). Laketran also provides information on how to use the fixed-route bus system to the general school population in grades 4 through 12 (see Figure 6-4).

Outreach can be active, with representatives making repeated contacts with organizations and institutions in the community as well as seeking out new opportunities for outreach.

The screenshot shows the Laketran website's 'Travel Training' page. At the top, there is a navigation menu with links: SCHEDULES & MAPS, FARES & PASSES, DIAL-A-RIDE, HOW TO RIDE, ABOUT, MEDIA CENTER, and CONTACT. Below the menu, the page title is 'Travel Training'. A sidebar on the left contains links: How to Ride, Trip Planner, Travel Training, Educational Programs, Professional Programs, Transition Students and IEPs, Bikes on Buses, and Seniors on the Go. The main content area features a photo of a woman and three children standing in front of a bus. The bus has a sign that reads '1001 Football Preview Day with Moto X Racing Cycle Bike Night y - Demo Derby countyfair.org' and a wheelchair accessibility symbol. Below the photo, the text states: 'Laketran's Travel Training Program provides quality personalized one-on-one instruction for any individual who would like to use the public transportation system. Group orientation sessions are also available. Please read the Travel Training Brochure.' The page then lists several sections: 'What Is Travel Training?', 'Who Is Eligible For Travel Training?', 'What Is The Travel Training Process?', and 'Who Benefits From The Travel Training Program?'. Each section contains a brief description and a list of bullet points detailing the program's benefits and eligibility requirements.

Figure 6-4. Laketran website page on benefits of travel training (courtesy of Laketran).

Alternatively, the transit system can rely on existing relationships with these organizations and get them to recruit new individuals to receive information and training. The Southeastern Pennsylvania Transportation Authority (SEPTA) has used this model as a way to make the most of limited training staff; its Center for Accessible Travel is a training facility with mock-ups of a transit bus and rail platforms; its extensive use of wall graphics helps create a realistic training environment and also makes the training experience a popular activity that encourages community organizations to arrange field trips to the facility.

Communicating the Benefits of Fixed-Route Transit Use

An important way to promote use of the fixed-route transit system is to communicate its benefits to riders. The most extensive material on this subject is from Easter Seals Project ACTION (ESPA). Some transit agencies have brief sections of their Rider's Guide or webpage with material on the subject; a few have other innovative ways to reach potential riders.

ESPA's "Stories of Changed Lives: The Personal Impact of Transportation Access" is an example of communicating the benefits of the fixed-route transit system. (22) As its byline states, "10 Americans with disabilities share their stories of success." For example, Kathy Browne's story involves a wheelchair user with a service animal, moving beyond ADA paratransit to use the Orange County, California, bus system to increase her education and become less dependent on her husband and government social programs, allowing her husband to work full time, and significantly changing her life. Kathy states, "Using public transportation can be one of the first steps to opening up this great adventure called life."

The Project ACTION publication entitled "You Can Really Go Places" includes:

Q: How can travel training help me?

A: People with disabilities who take advantage of travel training gain the freedom to choose what kind of transportation they wish to take and when, and fixed-route service often costs less than paratransit and taxis. Training also makes travel more spontaneous and flexible, because trips no longer need to be scheduled in advance, as is the case with ADA Paratransit, medivans, family, or friends. (23)

Two other approaches to communicating the benefits of riding the fixed-route transit system have been tried in Olympia, Washington. One appeared in the Thurston-Mason Senior News (see Figure 6-2). The article was written by Emily Bergkamp, Dial-A-Lift Manager of Intercity Transit. It comprehensively promotes the benefits of using the fixed-route transit system. After beginning with the description of all the places one can go, it continues:

Say goodbye to pre-scheduling transportation. In many areas buses run every 15 to 30 minutes along major corridors—you can be as spontaneous as you like. All buses lower to the ground or "kneel" for easy boarding and have ramps if you use a walker, wheelchair or scooter. When you step inside, you'll enter a clean bus, be greeted by a courteous driver, and have access to priority seating at the front. A reader board inside the bus clearly displays upcoming stops. Buses also have audio stop announcements so you don't miss your destination. Rest assured your safety is our first priority, with expert drivers at the helm and the added security of on-board cameras.

The article then promotes travel training and includes information about reduced fare programs.

The other is a brochure from Intercity Transit entitled "Bus Riding Made Easy." (24) Under the heading *Did you know?* the brochure lauds the benefits of the fixed-route transit system, stating:

- *All Inner-city Transit buses:*
 - *have automated audio and video announcements for every stop;*
 - *have security cameras and audio recorders;*
 - *"kneel" to help stepping on and off;*
 - *are wheelchair accessible; and*
 - *have bicycle racks.*

- *Most of our buses are low-floor (no steps) and easy to board.*
- *Some of our buses have air conditioning, reading lights, and luggage racks.*
- *Buses operate on a convenient and reliable schedule to all major area destinations. Buses run every 15 to 30 minutes along major corridors.*
- *We have helpful and friendly employees. A recent rider survey showed a 91% “satisfied” or “very satisfied” customer satisfaction rating.*
- *Our drivers are trained to assist seniors and persons with disabilities.*
- *Intercity Transit connects to Mason, Grays Harbor, Pierce, and King Counties.*

The brochure also includes a brief testimonial from a former car driver who had to give up her car three years ago, but reaches three volunteer jobs a week, goes out to lunch, and goes to the airport on the transit system.

Other transit agencies promote use of the fixed-route transit system on their websites. One example is the San Francisco Muni in its Access Guide. (25) Muni includes a list of the benefits of riding the fixed-route transit system under the heading “Advantages,” stating:

Using the buses, trolleys and light rail of the Muni fixed-route system provides many advantages:

- *Independence;*
- *Flexibility to travel when you want;*
- *Opportunity to travel with friends;*
- *A way to set a schedule for travel without hours or days of pre-planning;*
- *An inexpensive way to travel throughout the city and to make connections with other Bay Area transportation systems;*
- *A system whose drivers have had sensitivity and special safety training to help them meet the needs of seniors and persons with disabilities.*

Many transit agencies also promote travel training, which includes implicit or explicit promotion of using the fixed-route transit system (see Figure 6-4). More information on travel training is provided in Section 6.3.

Working Through the Paratransit Eligibility Process

A target audience that has great promise for potential fixed-route transit ridership is the population that is seeking to use ADA paratransit or that is already paratransit eligible but capable of using fixed-route transit service for some trips (i.e., conditionally ADA paratransit eligible). WMATA identifies individuals renewing their eligibility who have this potential and has been able to train many individuals to use fixed-route transit; this involves providing both trip planning and travel training for candidates.

In Fort Worth, Texas, applicants for *Mobility-Impaired Transportation Service (MITS)* paratransit are given information and a half-price fare card during evaluation if they are capable of riding fixed-route transit service; this path to fixed-route transit use is provided both for individuals who are found not to be eligible or conditionally eligible and is followed up by contact from a travel trainer. Eligibility denial letters also are accompanied by information on the benefits of fixed-route transit use.

Travel training cannot be required and participation in travel training cannot be a factor in determining ADA paratransit eligibility. However, these approaches have been successful in getting individuals to participate in travel training.

Conclusions

Wholesale public information aimed at potential fixed-route transit riders is a necessary but not sufficient method of communicating benefits and “how-to-ride” information. To be effective,

this basic information needs to be accompanied by one-to-one or small group contact by a representative who can “sell” the benefits of fixed-route transit and provide a seamless entry into travel training. Although it is not essential for the outreach representative to also provide the travel training, this is the most common approach among the agencies contacted. Relationship building with community organizations and institutions strengthens the targeted outreach and makes it more efficient by leveraging the transit agency’s efforts with those of the community organization. Finally, the ADA paratransit eligibility process is an opportunity to provide information on benefits and travel training to applicants who receive conditional eligibility or who are found to be not qualified for paratransit at the time of the eligibility evaluation.

Relationship building with community organizations strengthens targeted outreach by leveraging the transit agency’s efforts with those of the community organizations.

6.2 Trip Planning Services

Trip planners are online utilities that did not exist until the early 2000s. A big benefit of trip planners is that they greatly expand the ability of all transit riders to use fixed-route transit services for more than a few habitual trips, such as home to work. This is an important step in increasing the independence of people with disabilities who may only ride fixed-route transit for some trips. However, the issues faced by many individuals in the target population include: the need to consider barriers to mobility in trip planning; and the ability of many individuals to use these fairly complex tools.

One significant aspect of trip planning is that the rider can call a customer service representative to use the trip planner for them, which is something that is worth highlighting in the transit system’s public information and marketing. In addition, transit system (or planning agency) representatives in many places can use GIS databases that are not generally available to the public and can help riders with specific information about the accessibility of sidewalks and bus stops that form part of the door-to-door trip.

As described earlier in this strategy guide, research indicates that people often lack information about places that they do not travel to frequently. Providing access to this information is an important factor in increasing use of fixed-route transit services. In addition, for less frequent destinations, the potential existence of physical barriers discourages the use of fixed-route transit service. Therefore, it is very helpful to provide trip planning service that includes information about potential barriers.

Online trip planners are available for most large transit systems and some medium sized ones (and for some smaller systems that are adjacent to large systems). The first trip planners were text based; in recent years (i.e., since 2011), map-based trip planners have become more available. Developing and maintaining trip planners is a relatively expensive undertaking because of the need for regular updating, but their availability clearly encourages more transit use by people of all abilities.

As noted in Section 2.2, a lack of information about potential barriers getting to and from transit stops and stations was one of the most important factors noted by people with disabilities in deciding whether or not to use fixed-route transit services.

Some trip planners give the rider an option to limit searches to “accessible trips.” In practice, this means that trips with a rail component are limited to stations with accessible boarding; specific path-of-travel considerations are included in only a small number of trip planners. Google Transit is available for all large and many medium sized systems, now in many countries; however, Google has so far declined to take on the complex problem of determining if a trip is truly accessible, so it is primarily up to each transit system to address the path-of-travel challenge for people with disabilities.

Table 6-1. Types of accessibility information provided through trip planning services.

Types of Accessibility Information Provided	By Phone	Online	Both	Total
Walking distance to/from bus stops/rail stations	25	18	25	68
Accessibility of pathways to/from bus stops/rail stations	17	3	7	27
Accessibility of bus stops	38	5	9	52
Accessibility of rail stations	7	1	8	16
Elevator/escalator outage information	7	2	5	14

Survey Results

The survey described earlier in this report provided an overview of the availability of trip planners at the 136 transit systems that responded to questions related to this type of service. Of these systems, 80 (59%) offer an online trip planner. Google Transit was used in 44 of these 80 transit systems (55%), either by itself or in combination with other software. Seven systems (9%) had proprietary trip planners. Eight transit systems (10%) used Trapeze or HASTUS, specialized transit software packages. The other 21 systems indicated that they used another trip planner or were not sure what they used.

A total of 125 transit systems responded to questions about the provision of accessibility information through their trip planning services. Eighty-two systems (66%) indicated that one or more type of accessibility information is provided. Forty-three (34%) responded that accessibility information is not provided.

Table 6-1 shows the specific types of accessibility information provided and whether this information is provided by phone, online, or both. Sixty-eight transit systems indicated that they provide information on walking distances to and from stops/stations—25 by phone, 18 online, and 25 both by phone and online. Twenty-seven transit systems provide information on the accessibility of pathways to and from stops/stations—17 by phone, three online, and seven by both. Fifty-two systems provide information on the accessibility of bus stops—38 by phone, five online, and nine by both. Sixteen systems provide information on the accessibility of rails stations—seven by phone, one online, and eight by both. And 14 systems provide information about elevator and/or escalator outages—seven by phone, two online, and five by both.

Information from Mini Case Studies

Four mini case studies were conducted to gather more information about trip planning services. Information is presented below for the Chicago’s Regional Transportation Authority, Long Beach (CA) Transit, TriMet (Portland, OR), and the Washington Area Metropolitan Transit Authority (WMATA).

Chicago RTA’s Goroo Trip Planner

The Regional Transportation Authority of Northeastern Illinois (RTA) introduced a new online trip planner in 2009, initially known as “goroo.” It was re-branded “RTA Trip Planner” in 2012 and currently covers the CTA, Pace, and Metra fixed-route transit services provided throughout the six-county RTA service area, which includes the city of Chicago. The trip planner development was done with a grant from FTA. One goal of the grant was to develop a multi-modal trip planner that included pedestrian and bicycle modes as well as transit.

The RTA Trip Planner gets approximately 8,500 web hits per day. The trip planner can also be used to find bicycle, walking, and driving paths to transit routes. A capability added in late 2012 offers real-time transit tracker status information for CTA and Metra rail services relative to particular stops. Currently, about 51% of the hits are for use of the trip planner; hits for real-time transit tracking are rapidly increasing (approximately 15% growth from 2011 to 2012). Many visits are primarily for or include downloading detailed schedules for CTA, Pace, and Metra fixed-route transit services.

Path-of-Travel Issues. The RTA Trip Planner does have an “accessible trip” checkbox, which limits rail trips to accessible stations; all buses in the region are lift/ramp equipped. CTA has approximately 12,000 bus stops in the city of Chicago; Pace, which serves the surrounding suburbs with bus service, has approximately 12,000 posted stops as well as a large number of flag stops. The City of Chicago has installed more than 45,000 accessible curb ramps since 2007 in response to a lawsuit, and its sidewalks and bus stops are generally “accessible” in the broadest sense (i.e., curb ramps are generally available). On the other hand, some of the suburban and outlying areas served by Pace often lack sidewalks and, therefore, path-of-travel accessibility is very limited in those areas. Metra stations in the suburbs are similarly not always well-served by paths of travel that people using wheelchairs can negotiate.

In part because of the difficulty of incorporating path-of-travel accessibility data into the RTA Trip Planner, RTA staff is experimentally utilizing the Regional Transportation Authority Mapping and Statistics (RTAMS) GIS system to enable travel trainers to identify accessible paths of travel for customers who have applied for travel training. This is basically a way of displaying bus stops in relation to a customer’s home address and destination addresses along with information such as aerial and street-level views that allow the travel trainers to identify routes to and from fixed-route transit services.

Costs and Benefits. The goroo/RTA Trip Planner requires at least one full-time staff person to maintain its currency, primarily by adding schedule updates, of which there were 73 in 2012. There is also ongoing work in developing features such as improvements in user interface and functionality.

It is difficult to estimate the effect of the goroo/RTA Trip Planner system on encouraging fixed-route transit use by people with disabilities. A Volpe Center evaluation report included the following finding, based on a user survey:

“goroo may be effective at encouraging transit use (at least for the trip in question) among users who are unsure what mode to take—and even among users who had reported knowing they would not take transit.” (26)

This suggests that users from the disability community, including people with ADA paratransit eligibility who have some experience with using accessible fixed-route transit for specific trips, may be encouraged to use the trip planner to investigate fixed-route trip itineraries that they have not used before. Over time, this would expand their use of fixed-route transit service.

CTA, Pace, and Metra do not have data on wheelchair boardings or data specifically on fixed-route transit ridership by people with disabilities. Rollout of the new Ventra fare payment system during 2013 and 2014 may improve data capture by fare category and be beneficial for future reporting.

In general, the effectiveness of any trip planner that lacks stop-specific path-of-travel information depends on the urban environment being generally accessible for people using mobility devices; as noted above, this is true to a greater extent in the city of Chicago, and not true in many of the suburban areas served by Pace.

If a trip planner can be thought of as providing “wholesale” information simultaneously to a large number of users, then one alternative approach to providing specific current path-of-travel information at this wholesale level is to instead take a “retail” approach in which travel trainers work with individual customers to plan frequently made trips with the path-of-travel information available in a GIS database like RTAMS.

Non-accessible Bus Stop Information: Long Beach Transit, Long Beach, CA

Long Beach Transit (LBT) is operated by the City of Long Beach, CA. It offers both the Google Transit and the trip planner of the Los Angeles County Metropolitan Transportation Authority (LACMTA). The approach used by LBT to address path-of-travel issues in trip planning is, first, to work with the city’s public works department to make nearly all bus stops accessible to people using mobility devices, and second, to provide frequently updated information on the few exceptions, which are due in nearly all cases to temporary disruptions due to construction.

LBT has a “stops group” that meets regularly on accessibility of stops and paths. The group coordinates with the city’s public works department and monitors complaints for bus stop issues. LBT’s website lists specific stops that are not accessible and updates this information often (there were only seven non-accessible stops in the bus system as of September 2012). Customer service is staffed by eight line operators and staff at the transit hub; all are trained to help customers with trip planning. These personnel are equipped with the latest information about stop accessibility.

Costs and Benefits. The costs of the effort by the stops group are considered by LBT to be part of the more general and important goal of actually making the city accessible; the information made available for trip planning purposes has no extra cost, and making the information on the small number of inaccessible locations available to the public and LBT’s customer service representatives has a high ratio of benefits to costs. The real expense, which serves a higher goal, is to achieve and maintain accessibility in the built environment.

Open Source Bus Stop and Path-of-Travel Information: TriMet, Portland, OR

The Tri-County Metropolitan Transportation District of Oregon (TriMet) has a trip planner that includes path-of-travel and bus stop accessibility data. The trip planner is also noteworthy in that it was developed by TriMet with OpenPlans (a New York-based nonprofit software developer) in an open source software format that is adaptable for use by other transit systems. In 2012, the University of South Florida was also using it on a demonstration basis.

TriMet’s trip planner provides information about the accessibility of bus stops as well as aerial and street-level photographs of stops.

The TriMet trip planner is especially noteworthy in that it permits the user to “drill down” to a list of attributes for each bus stop (e.g., curb ramp, pads for lift deployment, slope of approaching routes) and to see both aerial and street-level photos of each bus stop. It also provides a vertical profile of the trip overlaid on the map view of the trip (see Figure 6-5 for sample page). Using all of the available information requires some sophistication on the part of the user, but for people who use mobility devices, this information and the vertical profile provided of the trip to the bus stop are very important.

Costs and Benefits. The Open Trip Planner (OTP) project was initially funded through the Metro 2009–2011 Regional Travel Options (RTO) grant of \$70,000. Because it uses Open Street Map and open source software, replicating the trip planner can be done much more economically in systems that wish to adopt it; by July 2011, OTP was running in Portland, New York City, and Tampa, and in eight other transit systems around the world.

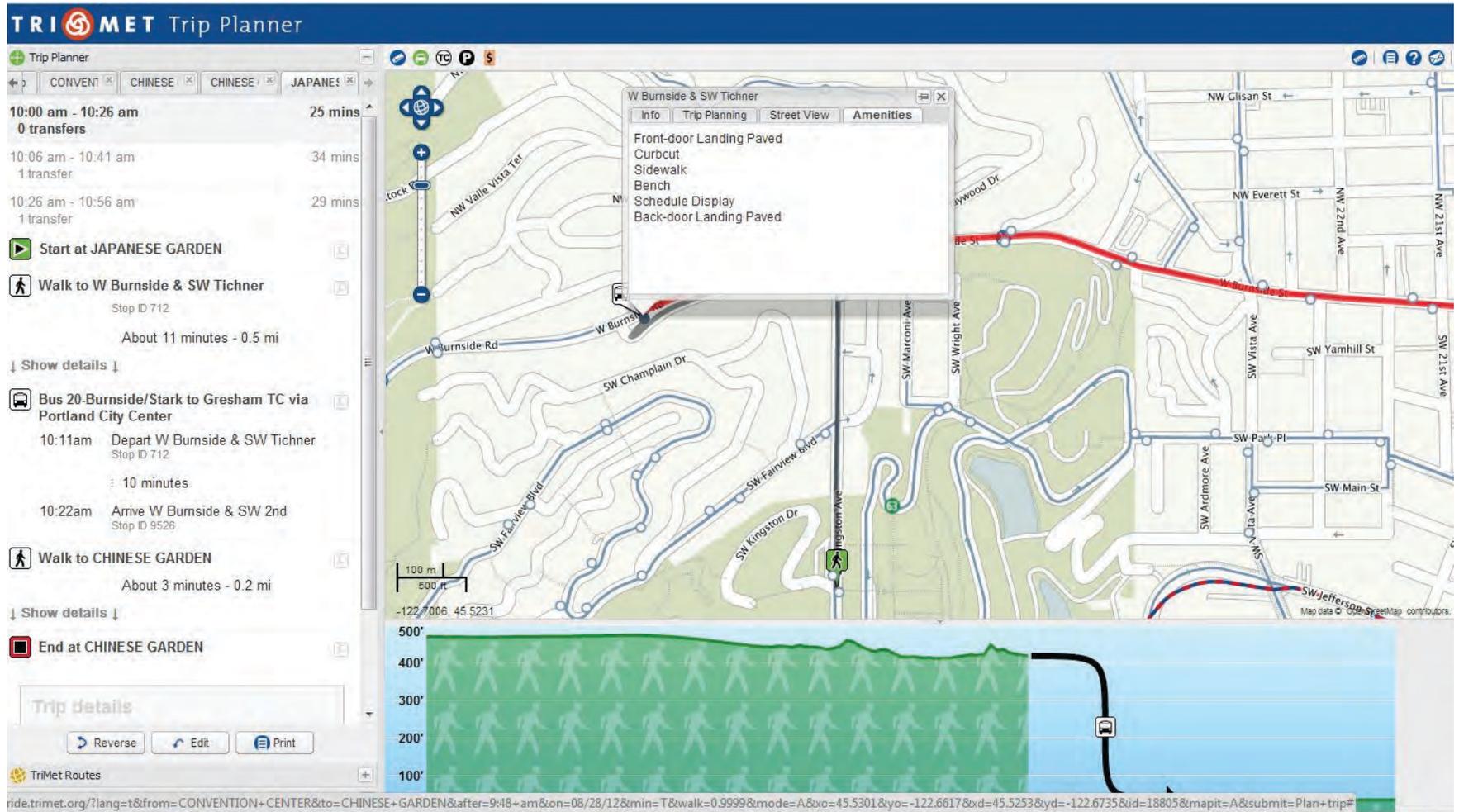


Figure 6-5. TriMet trip planner result showing walking profile and bus stop characteristics (aerial and street-level photos of the bus stop are also available by clicking on the map) (screenprint courtesy of TriMet).

To keep the trip planner up to date, TriMet updates schedule and route changes as they occur and coordinates with the municipal jurisdictions to identify barriers to accessible paths of travel. TriMet recently expanded the trip planner to three adjacent counties in the service area, which took approximately three months and cost \$12,000 for all three counties.

Analysis during the development of the trip planner shows that the algorithm outperformed TriMet's older text trip planner and Google Transit in finding bike-to-transit trips of shorter duration; the same advantage would apply to walk-to-transit trips. Statistics provided by TriMet show a reduced use trend for the earlier text trip planner, while the OTP map and mobile device trip planners were together increasing in use, e.g., from 145,000 planned trips in October 2011 to 163,000 in October 2012.

There is no way to isolate the benefit of the trip planner in encouraging fixed-route transit trips by people who use mobility devices, particularly because Portland has been actively working for years to improve the physical paths of travel through the city. But based on TriMet's data on bus boardings on all fixed-route bus lines, there has clearly been an upward trend in the percentage of boardings by people using wheelchairs, both over the longer term and since 2011 when the mapped trip planner was rolled out.

GIS Database: Washington Metropolitan Area Transit Authority, Washington, D.C.

In addition to targeted marketing and travel training to encourage customers to use fixed-route transit services throughout the WMATA service area, WMATA's bus planning group has focused on making accessibility improvements to bus stops and the paths of travel to them. As of early 2013, the planning group was testing a GIS database. It includes accessibility information for all existing bus stops (about 12,500), including:

- Photos of each stop from three angles;
- Presence of pad, shelter; and
- Accessible route at the bus stop intersection.

This information is available to both the customer service and the MetroAccess (ADA paratransit) eligibility departments to reply to specific customer inquiries. Information about deficiencies is also collected through these channels and passed back to bus planning and WMATA's jurisdictions for accessibility improvements.

The aim of this effort is in part to incorporate the data in the mapping layer of the Trapeze paratransit software used by MetroAccess to be able to identify fixed-route transit trips that can serve eligible paratransit customers. Making the GIS data available to the general public through the WMATA trip planner is a longer-term goal.

Another initiative being undertaken by WMATA is providing in-kind services to a project sponsored by Columbia Lighthouse, a local agency serving people with vision disabilities, in which a smartphone app gives customers with low vision detailed audio directions from the rail platform or bus stop to destinations on the street (e.g., "walk 45 feet and turn right to reach the elevator").

Costs and Benefits. WMATA indicated that incorporating path-of-travel information into a GIS system is very labor intensive. Staff from WMATA's GIS, design, and other groups have been working on the system, with an estimated combined level of effort of approximately four full-time equivalents (FTEs). It is not clear whether this information can be connected to a customer-friendly interface, but even before the information becomes public, WMATA's travel trainers have used the database for use in assisting individuals in planning fixed-route transit trips. It is also being used by planners in WMATA and in the service area jurisdictions to identify and prioritize improvements to path of travel and location of bus shelters.

Conclusions

Trip planners are expensive to develop and to maintain as conditions change. This is particularly so if the objective is to include path-of-travel information that is important to people with disabilities. Transit systems that are large enough to have a Google Maps trip planner may not find it sufficiently beneficial to introduce their own trip planner and to incorporate path-of-travel information, which Google has not done. Transit systems that wish to undertake development of a trip planner may wish to consider starting with TriMet's Open Street Map software, which is in the public domain. However, a smaller transit system may want to consider the approach used by LBT, a relatively small system with good sidewalk and curb ramp infrastructure, to identify any physical barriers within its service area and publish this information on its website. The other approach is to provide path-of-travel information through the customer service or travel training staff based on detailed GIS information that identifies barriers and is part of an area-wide planning and capital improvement program.

6.3 Travel Training Services

Travel training has been recognized in the transit industry and the disability community as an effective way to encourage fixed-route transit ridership as well as a cost-effective way to reduce ADA paratransit costs.

Literature Review

Review of the literature identified numerous studies and project descriptions of the use of travel training for persons with disabilities who use ADA paratransit; the objective of travel training is to enable these paratransit riders to utilize accessible fixed-route transit services at least part of the time

A study by ESPA used a roundtable to identify issues (27); travel training beginning in elementary school and involving parents was supported by 90% of the roundtable members, as were initiatives to increase public awareness of travel options and to provide wayfinding information. ESPA also published *Helping Schools Meet the Transportation Needs of Students with Disabilities* (28); the need for travel training was second in a list of six key challenges. **The National Dialogue, Transportation and Research Forum on Accessible Community Transportation** was sponsored jointly by Project ACTION and FTA (29); travel training was one of seven key areas of discussion. An article in the American Planning Association journal *Transportation Planning* is an overview of issues and approaches for seniors (30); it describes travel training at locations in Florida and Illinois. A TRB monograph identified the relative lack of travel training for adults with autism. (31)

Two sources describe a cost–benefit model comparing the costs of travel training with the resulting savings when patrons switch from complementary paratransit to fixed-route transit services. One paper describes a simple quantitative model. (32) A paper presented at the Transportation Research Board's 89th Annual Meeting applies this model to data from three cities in the Pacific Northwest and concludes that there are substantial net benefits, ranging from roughly 1.5 to 4 times the cost of the program, as shown in the summary below. (33)

Travel training programs in Portland, OR, and Phoenix, AZ, are highlighted in a *Metro Magazine* article. (34) A 2008 article discusses the range of approaches and funding trends in the field of travel training. (35) A presentation from an American Public Transportation Association conference discusses a series of 10 workshops developed by a nonprofit rehabilitation

Example of Cost-Benefit Analysis of Travel Training (33)

Three cities receiving travel training services from Paratransit, Inc. were studied. The specific calculations included:

- Cost of vehicles and equipment to provide travel training services (a)
- Cost of travel training personnel (b)
- Cost of supplies, equipment and occupancy (c)
- Projected savings to the public transportation provider (funder) (x)
- Projected trainee taxes paid to support local transit agency (y)
- Cost avoidance (difference in cost of ADA paratransit trip minus fixed-route trip) (z)

Results:

City	Benefit /Cost Ratio	Net Benefits
1	\$389,561 / \$187,739 = 2.07	\$201,822
2	\$1,101,817 / \$760,517 = 1.45	\$341,300
3	\$589,000 / \$148,082 = 3.98	\$440,918

agency in southwest Connecticut that was described as a successful effort to enable paratransit riders to use fixed-route transit service at six regional transit systems. (36) A Project ACTION study surveys programs in Boulder, CO, Charlotte, NC, Ann Arbor, MI, and Palm Beach, FL; providing individual instruction specific to the rider's needs is emphasized. (37) An APTA presentation documents a training program in Fairfax County, VA, that includes use of a specially equipped bus that provides both real-world practice and a mobile classroom. (38) Another APTA presentation summarizes best practices in programs in Indiana. (39)

Research using before and after surveys of participants in Walnut Creek, CA, is documented in a TRB Annual Meeting paper (40); the paper concludes that significant changes in attitudes and travel behavior resulted from the program. A similar study of changes in attitudes and travel behavior after training in Alameda County, CA, is documented in a *Transportation Research Record: Journal of the Transportation Research Board* paper. (41)

Two reports surveyed transit systems to identify travel training success stories. A report sponsored by U.S.DOT highlighted low-cost practices and technologies used by transit systems to aid persons with disabilities to use fixed-route transit services in the areas of trip planning, finding the correct vehicle, and entering and alighting vehicles. (42) A TCRP synthesis documented two instances of transit systems (Regional Transportation Commission (RTC) in Reno, NV, and Intercity Transit in Olympia, WA) that had quantified their savings through travel training programs that shifted paratransit trips to fixed-route bus service. (43)

In addition to the above reports, additional research is being conducted. TCRP Project B-41 is examining travel training programs for older adults. The project is titled "How to Create, Implement, Sustain and Evaluate Travel Training for Older Adults: A Handbook," and the handbook is scheduled to be published in 2014.

Two case studies were also conducted by ESPA in 2000 to document the benefits of travel training services. The case studies were conducted as part of a project looking at innovative practices in paratransit services. (44) Information from these case studies is provided below.

King County Metro, Seattle, WA, Case Study

To facilitate use of the fixed-route transit system by persons with disabilities, King County (WA) Metro implemented several different travel training programs to address the needs of persons with various disabilities. This included one-on-one “destination training” for persons with cognitive disabilities, and individual and group system “orientation training” for seniors and persons with physical disabilities who had never used the system.

Metro contracted for individual destination and system orientation training and paid the contractor for successfully completed individual trainings. This encouraged the contractor to carefully assess people for the potential to learn to use the fixed-route transit system. Individual, one-on-one “destination training” was successfully provided to about 160 persons a year. The contract called for a reimbursement of \$915 per successful training (in 2000 dollars). This price included the cost of assessing participants’ travel potential, the training itself, and a six-month assessment report of participants’ fixed-route travel.

Group “orientation training” involved two or three partial days of instruction, often in cooperation with local senior centers and schools. On the first day, participants were given several hours of classroom training that covered all issues associated with using the bus service. This included reading route maps and schedules, figuring out fares, planning a trip, and understanding important bus service policies. At the end of the first day, participants planned an actual trip to be taken on the second day. The group then met and traveled to a bus stop, boarded and rode the bus to a selected location, spent time on this outing, and then returned on the bus. If necessary, a second trip was taken. This group training was provided primarily to Special Education classes at schools and to various senior centers and programs. The contractor provided about 25 group trainings a year. Typically, each group had about 8–10 participants. In 2000, 240 people participated in this type of training. Metro paid \$544 for each group orientation training completed by the contractor.

Instruction in using accessible buses was also provided. A bus was taken to the local VA hospital once a month, and individuals who were interested in learning how lifts and securement systems work would meet the bus at that site. Metro also provided paratransit service to those who needed lift training. Metro paid the contractor \$333 for each lift training conducted.

Finally, the contractor made presentations on fixed-route transit and other Metro services to community groups and agencies. About 15 of these “outreaches,” attended by about 400 people, were conducted each year. Metro paid the contractor \$338 for each completed “outreach” presentation.

For riders with vision disabilities or who are deaf-blind, the contractor subcontracted with the local Lighthouse for the Blind and Community Services for the Deaf and Blind. These agencies provide specialized training. Metro provided free bus identification kits for people who are blind or deaf-blind to help them use the fixed-route transit system.

An analysis of the cost effectiveness of the various travel training efforts was completed by Metro. The analysis showed that Metro spent \$161,580 on training in 2000 and estimated that this saved \$417,000 in annual paratransit costs for a one-year net savings of \$255,420. When riders continue to use the fixed-route transit system in following years, the savings are even greater.

A detailed analysis of travel training efforts by King County Metro in 2000 showed that travel training programs cost \$161,580 and savings from use of fixed-route transit rather than ADA paratransit totaled \$417,000, for a net savings of \$255,420.

Lane Transit District, Eugene, OR, Case Study

Lane Transit District of Eugene, OR, contracted in 2000 with Alternative Work Concepts, Inc. (AWC), a local nonprofit agency that provided job training and placement for persons with disabilities, for travel training and “transit host” services. LTD provided a total of \$8,500 for

each of three years for travel training. AWC had provided travel training instruction for many years as part of its job placement service, but this funding enabled LTD to make additional referrals for training. The LTD paratransit contractor identified riders who made frequent trips and who they thought might be interested in learning to ride the fixed-route transit system. These persons were contacted and referred to AWC if they expressed an interest in training.

LTD and AWC developed a variety of travel training services:

- One-on-one “destination training” for individuals who need to learn a particular trip.
- “Destination retraining” for individuals who move or need to get to a new destination.
- General “orientation training” for persons who had never used fixed-route buses and who needed general instruction in trip planning and using lifts, ramps, securement systems and other access features.
- Referral of individuals with vision disabilities to local agencies that had Orientation and Mobility Specialists on staff.

About 25 to 30 riders were trained or retrained each year. LTD also provided free bus passes to local agency staff or other individuals/volunteers who accompany persons with disabilities riding on the fixed-route transit system.

Transit Host Program. Making transfers between bus routes was a significant issue in LTD’s fixed-route “pulse” system to and from a large downtown transit center. To address this issue, LTD implemented a “transit host” service in which two employees of AWC were located at the Eugene Transit Center. These “transit hosts” had a daily list of all riders who were traveling through the transit center and who needed assistance. The transit hosts met these riders as they arrived and help them get to the next bus to complete their trips. Together, the two transit hosts provided assistance to about 25 riders each day.

When not meeting and assisting specific riders, the transit hosts provided information and assistance to other riders at the transit center. LTD reimbursed AWC \$30,000 a year for this service, which was viewed not just as a service for riders with disabilities, but also as a general customer relations and assistance activity.

LTD and AWC noted that having the transit hosts allowed them to successfully travel train many more people. They estimated that about 75% of all people being referred for travel training could not use the system independently without the assistance provided by the transit hosts.

Lift Training. For persons who were not familiar with using the accessibility features of its buses, LTD provided individual instruction in boarding and exiting buses. LTD had 12 bus operators/trainers who were available to provide this training before or after their regular work shifts or between shifts if they worked a split shift. Training was coordinated by the LTD Marketing staff. In FY 2001, LTD provided 24 individual lift-training sessions.

Results. Although aggregate benefits of LTD’s travel training were not quantified in this case study, it was apparent that the training enabled trainees to make repeated trips on the fixed-route transit system instead of complementary paratransit, providing a substantial margin of savings for each ride taken and more than offsetting the cost of the training.

Survey Results

The survey described earlier in this report provided an overview of the travel training programs offered by the transit systems that responded (see Table 6-2).

Approximately 60% of the survey respondents said that they provide both one-on-one travel training and group instruction; over 50% work with their local school systems in training

Table 6-2. Summary of survey responses for travel training programs.

Service Area Population	Number	Provide/Support One-One Training	Provide/Support Group Instruction	Support School System Training	Have Undertaken Other Efforts	Do Not Provide/Support Training
All Respondents	127	63.0%	59.1%	52.8%	26.0%	19.7%
1 million+	19	73.7%	73.7%	52.6%	47.4%	21.1%
100,000 to 1 million	70	65.7%	60.0%	57.1%	24.3%	17.1%
under 100,000	38	52.6%	50.0%	44.7%	18.4%	23.7%

student on the use of public transportation. About 20% of the respondents did not provide or support travel training.

The percent of systems providing one-on-one training was 74% for systems with a service area population over one million and 66% for service area populations between 100,000 and one million. All of the largest systems that responded also use group instruction, while a slightly lower percentage (60%) of the mid-sized systems used group instruction as well as one-on-one training. Approximately 53% of smaller systems with service area populations under 100,000 provide one-on-one training and 50% of these systems provide group instruction.

Approximately 53% of the largest systems work with local schools to provide training on the use of public transit. Of the mid-size systems, 57% work with local schools; for the smaller transit systems, 45%.

Information from Case Studies

Additional information about travel training services in Olympia, WA, and Washington D.C., was collected to supplement the information gathered from the literature and the survey. This information is provided below.

Intercity Transit, Olympia, WA

Intercity Transit coordinates its travel training efforts with its determinations of ADA paratransit eligibility. A travel trainer conducts most of the functional assessments that may be needed to determine eligibility. In this way, the applicant is introduced to travel training as part of the eligibility determination process, including use of the individual's mobility device on fixed-route transit, site evaluations/barrier assessments, and path-of-travel navigation. Travel training is not required (as noted above, it cannot be a factor in making ADA paratransit eligibility determinations), but this coordination of programs encourages people to use the service if desired and appropriate.

Referral for a functional assessment isn't the only introduction to travel training. Some Dial-A-Lift (ADA paratransit) riders self-refer out of desire for greater independence and spontaneity, and many individuals participate in travel training without any affiliation with Dial-A-Lift. Social service agencies and school transition programs also make referrals for riders and students.

Intercity Transit's travel training services vary with the needs of the individual and include training to ride transit with a mobility device, specific origin-to-destination trip planning and training, and orientation to all aspects of bus travel. When individual riders' needs change, continued assistance is available.

Approximately 100 customers participate in travel training each year, with an estimated 1,200 to 1,500 individuals trained total since the program began in 2000.

In 2012, Intercity Transit's Travel Training Program trained approximately 96 riders (including 68 Dial-A-Lift riders) and conducted 242 travel training trips, 65 barrier assessments, and multiple group field trips.

Intercity Transit employs one full-time, experienced travel trainer. At the time of this case study, the full-time travel trainer was out on medical leave. To provide travel training services during his/her absence, two part-time travel training interns were selected from the operator ranks.

Travel Training Internships. The internship positions are filled from among Intercity Transit's operator staff, through Intercity Transit's innovative internship program. Under this program, operators can apply for several types of internships in the agency. A travel training internship is for two years, and is very popular among operators. Intercity Transit has found its fixed-route drivers make excellent travel trainers, with their inherent customer service orientation and expert understanding of the fixed-route system. The internship program gives operators an opportunity to learn new skills and take on new responsibilities.

This approach to cross-training is developing a pool of individuals in the agency who can provide travel training on a part-time basis, which has proved invaluable when the full-time travel trainer became temporarily unable to do training due to health reasons. The one drawback to using operator interns is that the scheduling needs of the fixed-route system have priority over those of the travel training program. At times the driver interns have not been available to meet all of the travel training needs.

At the time of this writing, Intercity Transit's board approved a pilot program to start February 18, 2013. The pilot will gauge the effectiveness of 2 FTE travel training coordinators in increasing community awareness of travel training, proactively travel train Dial-A-Lift riders to reduce paratransit trips and grow the number of travel training participants served overall. The travel training pilot provides a FTE dedicated intern in an additional travel training position.

Travel Training Marketing. Many individuals choose to participate in travel training on their own accord. Intercity Transit markets the program well, including a stand-alone brochure called "Bus Riding Made Easy," full pages in the agency's Dial-A-Lift and Accessible Services brochures and website, as well as articles in the Dial-A-Lift customer newsletter and local newspapers (see Figure 6-2).

Costs and Benefits. Intercity Transit's Dial-A-Lift Manager provided examples of the estimated financial impact/paratransit cost reduction for four riders who were successfully travel trained in 2012. The estimates take into account the number of hours of travel training (at \$36.66 per hour), the estimated number of trips that are now being taken using fixed-route transit, and the reduction in paratransit costs for these trips. Intercity Transit's average net cost per trip on Dial-A-Ride was \$42.20, and average net cost per trip on fixed-route transit is \$2.90, so the average cost per trip savings by using fixed-route transit instead of Dial-A-Lift is \$39.30.

The estimated annual savings for these particular riders ranged from \$5,514 (for an individual making four trips per week on fixed-route transit) to \$26,484 (for an individual making 14 trips per week on fixed-route transit).

Beginning in 2013, Intercity Transit began to track the number of individual trips evaluated for eligibility. The agency has been tracking the number of Dial-A-Lift riders referred for travel training and estimated the number of trips that these customers are now taking on fixed-route transit to be approximately 17,000 a year. This resulted in an estimated annual cost savings of \$668,100. Subtracting out \$83,324 in travel training costs, the net cost savings to Intercity Transit in 2012 was \$584,776. Viewed another way, only

Intercity Transit's travel training efforts in 2012 cost \$83,324 and saved an estimated \$668,100 from trips taken on fixed-route transit rather than ADA paratransit. Net savings in 2012 was estimated to be \$584,776.

2,120 trips transitioned to fixed-route transit per year are needed to recover the \$83,324 in travel training costs; this is equivalent to about four daily riders.

It is important to note that the estimate of cost savings reflects only those individuals who voluntarily choose to participate in travel training when applying for the Dial-A-Lift program. Many Dial-A-Lift riders and other individuals have referred themselves to travel training separate from the eligibility determination process; to date, Intercity Transit has not tracked ridership by these individuals.

WMATA, Washington, D.C.

WMATA has been successful in encouraging MetroAccess (ADA paratransit) customers to try fixed-route transit service. This is done both individually and with agencies that pay the paratransit fare for their clients and employees. The result of going from the MetroAccess fare (twice the base fare) to the reduced fare for people with disabilities and seniors (half the base fare) is a 75% reduction in fare for the rider.

WMATA's targeted outreach and travel training has four tiers:

- WMATA employs four full-time travel trainers who also do their own outreach.
 - Orientation and mobility (O&M) professional who works with individuals with visual disabilities.
 - Travel trainer specializing in geriatric populations.
 - Travel trainer specializing in individuals with cognitive disabilities.
 - Travel trainer who specializes in people with hearing disabilities.
- WMATA uses the above personnel in identifying current MetroAccess customers who can use fixed-route transit service for some of their trips.
- WMATA partners with Centers for Independent Living (CILs) in Maryland, Virginia, and D.C. to provide travel training to their communities, with two professionals doing outreach and training in each community funded by a FTA New Freedom grant, and continuing beyond the grant to self-funding.
- WMATA works with disability organizations and schools, which already provide life training to their clients, to add travel training by providing a grant and trainer training.
 - One example is Columbia Lighthouse where WMATA trained a number of new O&M professionals to include travel training in their repertoire. WMATA also provides outreach to schools with Free Appropriate Public Education programs.
 - A new certification program trains special education teachers at participating schools in travel training and provides individual certification backed by a WMATA-administered examination.

The same personnel do a combination of outreach and travel training, which varies widely based on the target population: roughly 50/50 for geriatric populations; 10% outreach/90% training for customers who are blind or have vision impairments (who are largely referred by organizations like Columbia Lighthouse); 30% outreach for people with cognitive disabilities; 60% outreach for people with hearing disabilities.

Taking the weighted average for the four outreach/training staff members, plus about 15% of the Director of Eligibility Certification to whom they report, the overall level of staff effort is 1.65 FTE for outreach and 2.5 FTE for actual travel training.

Costs and Benefits. In 2012, WMATA travel trained 350 people. WMATA began to track the costs and benefits of travel training; a preliminary estimate for the first quarter of 2013 was that 20 individuals were trained and that the net savings in providing fixed-route transit service

rather than ADA paratransit for the trips taken by these riders in the first three months of 2013 was about \$11,000.

Tracking ADA paratransit ridership and costs also provides an indication of the success of efforts to enable and promote the use of fixed-route transit services. In 2012 paratransit cost was reduced by 11% and a similar savings is anticipated in 2013. These reductions in costs were achieved by the combination of all programs and efforts at WMATA, including travel training, bus stop and pedestrian infrastructure improvements, fare incentives, more thorough ADA paratransit eligibility determinations, and other efforts.

Conclusions

Travel training may be provided to potential riders in small groups or one-on-one. In either type of training, there is an opportunity to tailor instruction to specific issues and needs, which increases the odds that individuals will use fixed-route transit services, both initially and over the longer run. One-on-one training also affords an opportunity for the trainer to work with the rider to help plan commonly made trips. In many systems, the training is reinforced by “bus buddies,” who are often volunteers to give the new rider a sense of security. In addition, programs in the schools for students both with and without disabilities help to create positive attitudes about the use of fixed-route transit that affect lifetime travel habits.

Well designed and implemented travel training programs are almost always cost-effective and can be scaled to fit available resources.

Like any program aimed at changing individual habits, a transit system will ideally follow up the initial training of riders to assess their ongoing use of fixed-route transit services—both for data collection and as a means to reinforce the new travel habits.

Travel training is almost always very cost effective because it encourages potential ADA paratransit riders to use fixed-route transit services that are much less expensive to provide. This is well documented in numerous case studies and is shown in the quantitative model cited in the literature.

Fare Incentive Programs

This chapter discusses fare incentive programs: another possible strategy for encouraging use of fixed-route transit services by persons with disabilities. As will be presented, fare incentives can lead to increased use of fixed-route transit. The challenge for transit agencies is to design programs that will attract new riders, particularly those riders who may now be using ADA paratransit service.

Different types of fare incentive programs, and their purposes, are first discussed. Prior research on fare incentive programs and current use of fare incentives by transit agencies across the country are then summarized. Fare incentive programs implemented by seven selected transit agencies are then described, including outcomes, costs, and benefits. Issues to consider when implementing fare incentive programs are also noted. Finally, there is a discussion of evaluation methods that can be used to determine the success of fare incentive programs.

7.1 Types of Fare Incentive Programs

As used in this strategy guide, a fare incentive program is considered a set of policies that allows persons with disabilities to ride fixed-route transit service for a lower fare than the fare for the general public.

There are a variety of fare incentive programs for persons with disabilities commonly in use by transit systems. As a condition of receiving funding, all FTA grantees are required to charge no more than half the peak fare during non-peak service hours on fixed-route transit service. Other common fare incentive programs include:

- Half fare (or less) during all fixed-route transit service hours.
- No fare (free) for individuals certified as ADA paratransit eligible.
- No fare for individuals certified for ADA paratransit, with other qualifications (e.g., receiving travel training).

FTA Half Fare Requirement

U.S.DOT regulations (49 CFR Part 609) require that transit systems that receive Urbanized Area Formula Funding (“Section 5307 funding”) from FTA must charge fares that are no more than half the peak fares to elderly and persons with disabilities during the off peak. Section 609.3 defines elderly and “handicapped persons” (persons with a disability) as:

“individuals who, by reason of illness, injury, age, congenital malfunction, or other permanent or temporary incapacity or disability, including those who are nonambulatory wheelchair-bound and those with semi-ambulatory capabilities, are unable without special facilities or special planning or design to utilize mass transportation facilities and services as effectively as persons who are not so affected.”

The elderly includes all individuals who are at least 65 years old, but a transit system may set a lower age. The definition for persons with a disability is broader than the definition used to establish eligibility for ADA complementary paratransit. As a result, any individual who is certified to use ADA paratransit could apply and qualify to pay no greater than half fare on fixed-route transit services during off-peak hours.

Purposes of Fare Incentive Programs

A main purpose of the FTA half-fare requirement is to make fixed-route transit services more financially accessible to seniors and persons with disabilities. Many seniors and persons with disabilities have limited incomes. Many seniors and persons with disabilities also do not have access to private automobiles and rely on public transit services for mobility. Providing affordable transit services can help ensure that these individuals are able to remain mobile and active participants in the community.

A second purpose of fare incentive programs is to encourage riders to use more cost-efficient fixed-route transit services when possible. Other transit options that may be provided, such as ADA paratransit, are often more costly to provide than fixed-route transit service on a per passenger trip basis. According to the 2011 National Transit Database, the average operating cost per unlinked bus trip was \$3.60 (\$1.80 and \$3.20, respectively, for heavy and light rail trips). In contrast, the average operating cost per demand responsive trip—of which ADA paratransit comprises the greatest portion—was \$32.70. As a result, transit systems have a great financial incentive to have persons with disabilities use fixed-route transit rather than ADA paratransit when they can.

Fare incentive programs make public transit services more affordable and encourage fixed-route transit use.

Providing affordable fixed-route transit service also benefits riders. Nearly all transit systems charge a higher fare for ADA paratransit than the fixed-route transit fare for the general public. U.S.DOT regulations allow the paratransit fare to be as great as two times the fixed-route transit fare (for a comparable trip, accounting for origin–destination and time of day). An increasing portion of transit systems are setting their paratransit fare at the maximum level to try to capture more revenue to pay for the services (and even with the maximum allowable fares, the resulting revenue represented only 7.8% of operating costs in 2011). As a result, a typical difference in fare for a person with a disability between a paratransit trip and a fixed-route trip may be a factor of four. For example, if the local bus fare is \$2, the reduced fare on the bus may be \$1, while the paratransit fare may be as high as \$4.

7.2 Prior Research and Current Use of Fare Incentives

Prior Research

Information about fare incentive programs, including effectiveness and implementation issues, is provided in several studies. *TCRP Report 9: Transit Operations for Individuals with Disabilities* identified fare incentives as effective in attracting persons with disability to use fixed-route transit services. (45) One case study, in the Greater Bridgeport Transit District, credited a free fare program for ADA paratransit eligible riders, together with a travel training program and extensive outreach efforts, with significant increases in fixed-route transit ridership by persons with disabilities. The case study also documented increases in applications for ADA paratransit eligibility and recommended that thorough eligibility determination processes be implemented in conjunction with fare incentive programs

A study performed for Metropolitan Transportation Commission (MTC) in California surveyed the policies of the transit systems in the San Francisco Bay Area concerning fare incentives to

use fixed-route transit service. (46) Like *TCRP Report 9*, the study noted the following implementation issue: “some transit agencies in large urban areas have found that this type of incentive may increase demand for ADA eligibility, with individuals interested in free use of fixed-route transit service and not solely ADA paratransit certification. . . . Combining fare incentives with a rigorous eligibility process reduces the risk of unintended consequences from the fare incentives.”

A study performed for Valley Metro in Phoenix, AZ, included information about peer systems that provide free fixed-route transit service to persons with disabilities. (47) The study reported the following:

- Boston reported that 300 people had been granted passes for free fixed-route transit service after successfully completing travel training. They indicated that free fares were helpful in encouraging current riders to participate in training. They also reported that 80% of training graduates either used paratransit less often or had switched to only using the fixed-route transit service.
- Ft. Lauderdale reported that, since the program was implemented in 1996, 111 paratransit riders had opted to get free fixed-route transit service and no longer use paratransit.
- Los Angeles estimated that the free fare program had resulted in a paratransit cost savings of about \$5M per year (about a 10% reduction). They also noted, though, that they were receiving more applications for ADA paratransit eligibility as a result of the free fare benefit.
- Salt Lake City reported a 6% reduction in paratransit ridership attributed to a combination of the free fare program and stricter eligibility determinations.

Current Use of Fare Incentives

In the survey conducted for this research, there were three questions relating to fare incentive programs. The first question asked if the transit agency offered reduced or free fares to fixed-route transit riders with disabilities. The survey then asked the transit agency to rate the effectiveness of its reduced fare programs in encouraging greater fixed-route transit use. Finally, the transit agency was asked to indicate if it had offered free fares in the past, but had elected to discontinue the program.

Table 7-1 shows responses to the first question about types of fare incentive programs. Of the 124 transit agencies that responded, 36 indicated that they had free fare programs. Fifteen agencies (12%) reported only free fare programs for riders with disabilities, and another 21 agencies (17%) noted that they offered both reduced fares (for some riders with disabilities) and free fares for others (typically persons determined ADA paratransit eligible). Eighty-two transit agencies indicated that they extended the reduced fare required by FTA to all operating hours. Only five agencies indicated that they only offered reduced fares during off-peak hours—the minimum FTA requirement.

Transit agencies that reported having free fare programs were asked to rate the effectiveness of the programs on a 1 to 5 scale, with “1” being not effective and “5” being very effective. Thirty-one of the 36 respondents that indicated having free fare programs provided an effective rating for these programs. The programs were reported to be very effective. Seventeen

Table 7-1. Survey respondents’ use of reduced or free fare programs.

Fare Programs Offered for Riders with Disabilities Using Fixed-Route Service	Total	% of Responses
Both reduced and free fares	21	17%
Reduced fare during off-peak hours only	5	4%
Reduced fares during all operating hours	82	66%
Free fare	15	12%
Not Sure	1	1%
<i>Total</i>	124	100%

(46%) of respondents said the programs were very effective (“5”); another 13 (36%) rated the effectiveness as a “4”; and four (11%) rated the effectiveness as a “3.” Only five respondents (14%) rated the programs as less than a “3” in terms of effectiveness in encouraging use of fixed-route transit services. Five survey respondents indicated that they had implemented free fare programs in the past, but had decided to discontinue the programs.

7.3 Selected Fare Incentive Programs

Using the survey responses, the research team contacted several transit agencies that had free fare programs and indicated that these programs were effective. An effort was made to contact transit agencies in various parts of the country, as well as agencies in large, medium and small communities. The transit agencies were asked if they would be willing to provide data for the study. The research team also discussed the types of data needed to ensure that the agencies selected had the necessary information. Seven transit agencies were selected for study, including:

- Ann Arbor (MI) Transportation Authority,
- Arlington (VA) Transit,
- Fort Worth Transportation Authority,
- Hernando County (FL),
- Massachusetts Bay Transportation Authority (Boston Metropolitan area),
- San Mateo County (CA) Transit District, and
- Utah Transit Authority.

Information collected from each transit agency included:

- Description of the incentive program and potential full benefits, e.g., if free fare, can personal care attendant and/or companion also ride for free?
- Whether the fare program evolved from a previous version.
- Ridership on fixed-route transit traceable to incentive program.
- Estimated ridership diverted from ADA complementary paratransit due to incentive program.
- Estimated cost to establish and maintain incentive program: staff time, software, lost revenue on fixed-route transit.
- Any unintended consequences of the incentive program (positive or negative).
- If any unintended negative consequences, any efforts by transit agency to mitigate.
- Whether this incentive program is transferrable to other transit agencies—or are there special circumstances or history that makes it unique for this transit agency.

Particular attention was given to the impacts of fare incentive programs on requests for eligibility for ADA paratransit. Many transit agencies that offer free fares link eligibility for this benefit to eligibility for ADA paratransit services. Some agencies have reported that this link has resulted in an increased number of applications for ADA paratransit eligibility. To study this issue, information about the number of applications for ADA paratransit eligibility (or certifications completed) was requested from each selected system. The number of applications (or certifications) before and after the implementation of free fares was requested from each transit agency.

All seven transit agencies have established definitions for reduced fares on fixed-route services that are consistent with FTA standards. All seven agencies have also established processes to determine the eligibility of persons with disabilities for the reduced fares. Table 7-2 summarizes the fare policies of the seven selected transit agencies.

Following are descriptions of the fare incentive programs at each transit agency. Information about program costs and general outcomes is also provided as are data on the number of requests for ADA paratransit eligibility is also included.

Table 7-2. Transit agencies providing data on fixed-route transit fare incentive programs.

Transit Agency	FR Fare (local, no discount)	Reduced FR Fare	ADA Paratransit Fare	Who Is Eligible for FR Free Fare	Personal Care Attendant (PCA), Companion Fares	Year Free FR Fare Started
Ann Arbor Transportation Authority (AATA)	\$1.50	\$0.75	\$3.00	all registrants for ADA paratransit (also riders 65 and older)	PCAs and companions pay own fare	2009
Arlington Transit (ART)	\$1.50	\$0.75	\$3.00	all registrants for ADA paratransit	PCAs and companions pay own fare (in practice, ride for free)	FY 2011
Fort Worth Transportation Authority (the T)	\$1.75	\$0.85	\$3.25	all registrants for ADA paratransit	PCAs ride for free; companions pay own fare	1996
Hernando County (The Bus)	\$1.25	\$0.60	\$2.50	all registrants for ADA paratransit	PCAs ride for free; companions pay own fare	FY 2006
Massachusetts Bay Transportation Authority (MBTA)	\$1.50 bus \$2.00 rail	\$0.40 bus \$0.60 rail	\$2.00 (increase to \$4.00 in FY 2013)	registrants for ADA paratransit for at least one year	PCAs ride free, companions pay own fare	2008
San Mateo County Transit District (SamTrans)	\$2.00	\$1.00	\$3.75	all registrants for ADA paratransit	PCAs ride for free; companions pay own fare	early 2000s
Utah Transit Authority (UTA)	\$2.25	\$1.10	\$3.00	all registrants for ADA paratransit	PCAs ride free, companions pay own fare	2002

Note: FR = fixed route.

Ann Arbor (MI) Transportation Authority

The AATA provides bus service for the urbanized area of Washtenaw County, MI, which includes the cities of Ann Arbor and Ypsilanti. It operates 27 fixed routes, along with park and ride shuttles, vanpools, and subscription service. AATA's "A Ride" paratransit provides service to individuals who are eligible for ADA complementary paratransit. AATA also contracts with local taxi companies to provide rides to senior citizens (in a limited service area) and rides to the general public on nights and holidays when the fixed-route buses are not running. Fixed-route transit ridership over the three recent fiscal years (2010–2012) averaged 6.02 million trips, with steady increases. ADA paratransit ridership during that period averaged 139,000 trips.

AATA began its policy of free fare for paratransit riders in May 2009 (final five months of FY 2009). Any individual certified for ADA paratransit is eligible for free fixed-route transit trips. AATA also provides free trips to anyone 65 years and older. PCAs and companions have to pay their own fare.

Table 7-3. Applications for AATA paratransit (A-Ride), 2005–2012.

Fiscal Year	Applications
2005	359
2006	444
2007	476
2008	495
2009*	558
2010	784
2011	888
2012	899

*Free fares begin in May 2009

AATA has not tracked its direct costs for maintaining its free fare policy. An AATA manager did note a strong correlation in the increase in applications for A-Ride since the policy began. For FYs 2005–2008, there was an average of 444 applications per year. For the next four years (FYs 2009–2012), there was an average of 782 applications per year. Comparing the two four-year periods, the average annual increase was 76%. As shown in Table 7-3, the largest jump was between FY 2009 and FY 2010, with FY 2010 the first full year of the free fare program. The A-Ride application states that “Applicants may be required to participate in an in-person evaluation for eligibility in order to complete their application. . . .” However, because of the lack of staff time, in practice, AATA conducts only one to two in-person assessments each month. Eligibility for ADA paratransit is based on information provided in an application form.

Arlington (VA) Transit

Arlington Transit (ART) is a bus transit system operated by Arlington County, VA. ART’s 13 fixed routes provide cross-town service, feed WMATA’s Metrorail stations and supplement WMATA’s bus service in Arlington County. ART also operates Specialized Transit for Arlington Residents (STAR), a demand responsive service that supplements WMATA’s MetroAccess ADA paratransit service. STAR service is limited to residents of Arlington County. Fixed-route transit ridership over five fiscal years (2008–2012) averaged 1.87 million trips. ADA paratransit ridership during that period averaged 79,932 trips.

The County does not conduct its own eligibility determinations for ADA paratransit. WMATA performs eligibility determinations for the entire service region. The eligibility process used by WMATA includes in-person interviews and functional assessments.

Individuals certified for ADA complementary paratransit service may ride ART buses for free. ART’s fare policy states that accompanying PCAs and companions pay the regular bus fare. An ART transit manager noted, however, that in practice, the ART drivers generally let accompanying attendants and companions ride for free.

The cost to implement this program was minimal, according to an ART manager. The increase in persons with disabilities riding the buses meant it was increasingly important for drivers to have regular training in passenger sensitivity and use of the accessibility equipment (15–20% of the free ridership used a wheelchair).

As presented in Table 7-4, there was not a notable increase in applications by Arlington County residents for certification for ADA paratransit in response to the start of the free fixed-route transit program in FY 2011. Based on the available data, applications for MetroAccess from Arlington County did increase in FY 2012, but the number was still lower than in either FY 2008 or FY 2009.

Table 7-4. Applications for ADA paratransit eligibility from Arlington County residents, 2008–2012.

Fiscal Year	Applications
2008	640*
2009	590*
2010	458
2011	430*
2012	525

*Estimate: data from some months not available.

Fort Worth (TX) Transportation Authority

The Fort Worth Transportation Authority (the T) provides fixed-route bus and commuter rail service for the City of Fort Worth and adjoining Tarrant County, Texas. It also owns and operates Trinity Railway Express commuter rail service jointly with Dallas Area Rapid Transit. In FY 2011, the T provided over 6.6 million passenger trips on its buses. The T’s ADA complementary paratransit service, Mobility-Impaired Transportation Service (MITS) provided 395 thousand trips in FY 2011.

The “MITS+1” free fixed-route transit program began in 1996 as an incentive for riders to receive travel training, which the T began to offer in 1989. All individuals who are certified for ADA paratransit may ride fixed-route transit for free. PCAs also ride for free on the fixed-route

transit system. The process used to determine ADA paratransit eligibility includes in-person interviews and functional assessments.

MITs+1 ridership in FY 1996 was 32,868. MITs+1 annual ridership increased from 1996 to 2001. After decreasing for three years, it has increased every year from 2004 to 2012. In FY 2012, there were 331,612 free fixed-route trips via the MITs+1 program.

The costs to manage and operate the MITs+1 program are minimal. The ID card for MITs+1 is the same ID card that an individual uses to ride the paratransit service.

Looking at the trends in certifications for MITs service (Table 7-5), there was a dip from 2003 to 2005, then a rise in 2006 to 2002 levels (there was a fare increase for MITs in 2003). Since 2006, the number of MITs certifications has been fairly stable.

Hernando County (FL)

Hernando County, FL, is on the Gulf Coast of Florida, two counties north of Hillsborough (Tampa) and Pinellas (St. Petersburg) Counties. Hernando operates THE Bus, three fixed bus routes that run on weekdays only. It also operates paratransit service for both ADA certified riders and other clientele. Fixed-route transit ridership over the three most recent fiscal years (2010–2012) averaged 70,998 trips. ADA paratransit ridership during that period averaged 17,798 trips.

The program to allow free fixed-route transit service began in FY 2006. All individuals who are certified for ADA paratransit may ride fixed-route transit for free. PCAs also ride for free on the fixed-route transit system. In the program's first year, Hernando County recorded 3,494 free trips by ADA paratransit riders. This made up 2.2% of the total fixed-route transit ridership. The portion of free fixed-route trips by ADA paratransit riders has grown significantly since the first year. From FY 2006 to 2008, the proportion was 3.7%; from FY 2009 to 2012, 9.5%.

Hernando County's assessment process for ADA paratransit includes an in-person interview. The County was not able to provide data on the number of assessments that it has conducted.

Massachusetts Bay Transportation Authority

The MBTA provides fixed-route bus, light rail, commuter rail, and commuter ferry service for Eastern Massachusetts, with service concentrated in the Boston metropolitan area. The MBTA provided over 400 million passenger trips in FY 2012, with an average weekday ridership of over 1.3 million. The MBTA also provides ADA complementary paratransit service, known as "THE RIDE." In FY 2012, it provided 2.6 million paratransit trips.

In early 2008, the MBTA began the "RIDE Charlie Card" program. This program allows individuals who have been certified for THE RIDE to use their ID card as a pass to ride the fixed-route transit system for free. PCAs may also ride for free. Participants initially included RIDE passengers whom the MBTA identified as frequent paratransit users and who had been certified for ADA paratransit for at least one year. Later in 2008, the MBTA expanded the program to include any RIDE passenger who had been certified for at least one year and requested to participate. As of early 2013, there were about 1,600 individuals in the RIDE Charlie Card program. The MBTA was not allowing further participants while it studied the effects of the program.

While the MBTA can tally exact counts of ridership via the use of RIDE Charlie Cards, it does not hold the data permanently. As a result, trip counts were only available for FY 2012 and eight months of FY 2013. This is also true for half-fare ridership on the fixed-route service, as well

Table 7-5. Fort Worth paratransit (MITs) certifications, 2000–2012.

Fiscal Year	MITs Certifications
2000	1,768
2001	1,465
2002	1,539
2003	1,377
2004	1,238
2005	1,355
2006	1,514
2007	1,470
2008	1,500
2009	1,537
2010	1,663
2011	1,529
2012	1,575

as ridership for individuals who are blind or have a visual impairment, who are also eligible to ride the fixed-route transit system for free.

In FY 2012, the RIDE Charlie Card ridership was 11.9% of RIDE paratransit ridership. The RIDE Charlie Card ridership grew in the first 8 months of FY 2013 to reach 17.1% of RIDE ridership, which decreased (this decrease is largely attributable to the fare increase from \$2 to \$4).

According to an MBTA manager, there was minimal cost in implementing the program. The MBTA had to provide participants with the Charlie Card ID (passengers do not use the card to pay for their RIDE trips; the MBTA has a debit account system for RIDE fares). There is concern of fraud, as individuals are able to give their ID card to others to use the free service. The MBTA can deactivate a card if it is reported to be lost or stolen, but there is no easy way to detect intentional misuse of the card.

Table 7-6. Determinations for MBTA paratransit.

Fiscal Year	Determinations
2010	10,948
2011	15,711
2012	17,631
2013 (5 months)	6,097

As seen in Table 7-6, determinations for RIDE service increased significantly (by 61%) from FY 2010 to FY 2012. Prior to December 2012, eligibility for RIDE was determined based solely on a paper application. In December 2012, the MBTA implemented a new eligibility process that included in-person interviews and functional assessments of all applicants. As shown in Table 7-6, the number of persons determined eligible for RIDE services decreased in the first part of FY 2013. A total of 6,097 persons were determined eligible for RIDE in the first five months of FY 2013. Annualizing this figure suggests that about 14,633 people will be determined eligible in FY 2013, about a 17% reduction compared to FY 2012. The MBTA managers attributed the decrease in determinations in FY 2013 to the implementation of the new in-person eligibility process.

San Mateo County (CA) Transit District

The San Mateo County Transit District provides SamTrans bus service for San Mateo County, CA, and partners with San Francisco and Santa Clara County in Caltrain commuter rail service on the San Francisco Peninsula. SamTrans “Redi-Wheels” paratransit provides service to individuals who are eligible for ADA complementary paratransit. Fixed-route transit ridership over the three most recent fiscal years (2010–2012) averaged 13.27 million trips. ADA paratransit ridership during that period averaged 295,000 trips.

SamTrans began a policy of low fare for paratransit riders in the late 1990s: both to encourage use of the fixed-route transit and to “soften the burden” of Redi-Wheels fare increases (five increases from 1998 to 2010) for individuals who could use the fixed-route transit service. In 1998, the Redi-Wheels fare was 50 cents. The fixed-route transit fare for certified paratransit users was 25 cents (less than half fare). Initially, this fare applied only to off-peak service. The policy was later broadened to all travel at all times, and the fare was reduced to zero. PCAs also ride for free.

SamTrans has tracked free fixed-route transit trips by Redi-Wheels customers only since April 2012; these counts are based on drivers’ keying in trips on fareboxes. SamTrans plans to have electronic counts (based on swipes of ID cards) but the technology has not yet been put in place. The SamTrans manager was not able to estimate the proportion of free trips that were diverted from Redi-Wheels, as opposed to additional trips that the program generated.

All applicants who apply for Redi-Wheels service are required to participate in in-person interviews and functional assessments. The number of applications for Redi-Wheels has not changed much since 2003, with the exception of a decrease in FY 2007, as shown in Table 7-7.

Although the number of applications has not increased, the SamTrans manager noted that, as the free-ride privilege has become better known, more applicants for paratransit eligibility have indicated that they are applying just to be eligible for the free fixed-route transit fare. He said

Table 7-7. Applications for Redi-Wheels paratransit.

Fiscal Year	Average Applications Per Month
2003	246
2004	250
2005	292
2006	229
2007	178
2008	257
2009	246
2010	225
2011	233
2012	237
2013	232

that this has required the SamTrans eligibility evaluator to be more vigilant about assessing an applicant's ability to use fixed-route transit service some or all of the time. He also noted that the potential use of fraudulent forms of paratransit ID (e.g., "using a photocopy of an ID card, an expired card, or some other form of ID that will pass operator scrutiny") was a concern.

Utah Transit Authority

UTA provides fixed-route bus, light rail, and commuter rail service for six counties and 1,400 square miles, with service concentrated in the Salt Lake City metropolitan area. Collectively, UTA provides over 35 million passenger trips annually on its fixed-route transit services. UTA also provides ADA complementary paratransit service. In 2011, it provided 385,000 ADA paratransit trips.

Individuals certified for ADA paratransit may use their ID card to ride free on fixed-route bus and light rail service (with the exception of express and Park City routes). The free fare program has been branded as the "Freedom Access Pass." PCAs also ride for free.

The Freedom Access Pass began in summer 2002. At that time, all UTA bus and rail vehicles were accessible and UTA wanted to encourage paratransit users to try using fixed-route transit service. UTA also offered travel training to all paratransit users. Riders who expressed an interest in fixed-route transit received a small blue medallion that included the phrase "UTA Freedom Access Pass." This medallion allowed the rider to use fixed-route bus and light rail service for free. However, UTA came to suspect that reports of "lost" medallions were signs of misuse and abuse of the program. UTA replaced the medallions and now adds the phrase "Freedom Access Pass" to ADA paratransit eligible rider photo IDs.

UTA did not consistently track ridership of the Freedom Access Pass until 2011. It began to install electronic chips into the ID cards of new and recertifying ADA paratransit riders in 2009. Since 2011, riders in the program used their ID cards to "tap on and tap off" similar to riders paying with an electronic fare card. In calendar year 2011, the Freedom Access Pass ridership was 122,479 passenger trips. In calendar year 2012, ridership was 184,226 passenger trips, an increase of 50%. The 2012 and 2013 Freedom Access ridership composed about 0.5% of all fixed-route transit ridership. Compared to the UTA's paratransit ridership, Freedom Access ridership was over 40%.

All persons applying for ADA paratransit participate in in-person interviews and functional assessments. The number of ADA paratransit eligibility determinations rose slightly (about 3%) from 2002 to 2003, and then varied, with a slight upward trend through 2007 (see Table 7-8). Eligibility determinations since 2007 have trended downward each year.

Table 7-8. Eligibility determinations for UTA paratransit.

Fiscal Year	Determinations
2002	3,882
2003	4,004
2004	4,224
2005	4,020
2006	4,216
2007	4,379
2008	4,142
2009	3,697
2010	3,697
2011	3,490
2012	3,469

7.4 Outcomes and Analysis of Selected Fare Incentive Programs

Table 7-9 provides a summary of key data and analysis for the seven transit systems examined. Data is presented for different time periods for each system, and the time periods are indicated in the table. The varying time periods result from the different dates of implementation of the fare incentive programs, as well as different dates when the systems began collecting free fare ridership data, or periods of time for which prior data was available. Table 7-9 presents total fixed-route transit ridership, free fare fixed-route transit ridership, and ADA paratransit ridership. It then shows free fare ridership as a percentage of total fixed-route transit ridership, and the ratio of free fare fixed-route transit ridership to ADA paratransit ridership.

Table 7-9. Summary comparison of fare incentive programs.

Transit Agency	Time Period	Average Annual Passenger Trips			% Free FR of All FR	Free FR/ ADA Paratransit
		All Fixed Route	Free Fixed Route	ADA Paratransit		
Ann Arbor Transportation Authority	5 months + 3 years (5 mos. FY09, FY10-FY12)	5,919,636	101,147	169,534	1.71%	0.60
Arlington Transit	2 years (FY11, FY12)	2,355,564	9,818	78,592	0.42%	0.12
Fort Worth Transportation Authority	6 years (FY07-FY12)	6,595,301	229,690	384,454	3.48%	0.60
Hernando County	6 years (FY07-FY12)	106,174	7,652	17,981	7.21%	0.43
Massachusetts Bay Transportation Authority	1 year + 8 months (FY12, 8 mos. FY13)	392.48 million	942,742	2,401,573	0.24%	0.39
San Mateo County Transit District	13 months (3 mos. FY12, 10 mos. FY13)	12,454,013	244,253	266,650	1.96%	0.92
Utah Transit Authority	2 years + 5 months (FY11, FY12, 5 mos. FY13)	38,254,061	157,625	419,390	0.41%	0.38

The ratios of free fare to total fixed-route ridership and free fare to ADA paratransit ridership vary, with a number of factors affecting the values, such as:

- Absolute ridership levels (MBTA and UTA, the two largest system examined, have the lowest proportion of free fixed-route to total fixed-route transit ratios).
- Length that fare incentive program has been in place (e.g., it is likely that the free fixed-route transit ridership for ART will increase).
- Perceived ease of accessibility of the fixed-route transit system by persons with disabilities.

Table 7-10 presents potential benefit–cost calculations for each transit system. The estimates of lost income include the revenue not realized by not charging riders on the fixed-route transit service. This amount is the reduced fixed-route transit fare, rather than the full fare, since any paratransit rider would qualify for the reduced fare. This calculation for each transit system also includes the added ongoing cost for 0.5 FTE staff person; while none of the transit systems attributed additional staff costs for managing the fare incentive program, we have added this cost as a conservative estimate of program management.

These two program costs are compared to the net cost of paratransit service, i.e., the average cost per trip minus the paratransit fare. The column showing “annual break-even diverted trips” shows the number of trips that would need to be taken by ADA paratransit riders on the fixed-route transit service, rather than on ADA paratransit, to offset the estimated costs of the program. This analysis assumes no marginal operating cost for accommodating additional free fare trips on the fixed-route transit system.

In all of the fare incentive programs studied, the actual number of free-fare trips by riders with disabilities far exceeded the break-even number for determining cost-effectiveness.

As presented in Table 7-10, the actual number of free fixed-route transit trips taken far exceeds the break-even number for all seven transit systems. A transit agency may speculate that many of the free trips taken are not actually diverted from paratransit, but instead are either:

- New trips that the riders would otherwise not be taking on paratransit (no net gain for the transit system).
- Trips that the riders would be taking and are willing to pay the reduced fare if they had to (actual fare revenue loss for the transit system).

Table 7-10. Sample benefit-cost “break-even” of free fare programs.

Transit Agency	Fixed-Route Reduced Fare	Net Paratransit \$/Trip (cost – fare)	Annual Ongoing Costs (assume 0.5 FTE)	Annual Break-even Diverted Trips	Actual Annual Free Fare Trips
Ann Arbor Transportation Authority	\$0.75	\$23.52	\$45,000	1,976	101,147
Arlington Transit	\$0.75	\$29.31	\$50,000	1,751	9,818
Fort Worth Transportation Authority	\$0.85	\$30.75	\$45,000	1,505	229,690
Hernando County	\$0.60	\$23.23	\$35,000	1,547	7,652
Massachusetts Bay Transportation Authority	\$0.60	\$39.79	\$50,000	1,276	942,742
San Mateo County Transit District	\$1.00	\$42.25	\$50,000	1,212	244,253
Utah Transit Authority	\$1.10	\$35.24	\$45,000	1,318	157,625

Even if this is true, the ratios of the actual free fare trips to the break-even values are so large (4.9:1 for Hernando County to over 100:1 for four of the other seven transit systems) that it requires only a small portion of the free fare trips to be trips that are diverted from paratransit to make the program cost effective.

Table 7-11 presents potential benefits in a slightly different way. It shows the savings that would be realized in each of the seven selected systems assuming different percentages of trips diverted from ADA paratransit. Cost savings are shown for the following assumptions: that only 25% of the total free fare trips represent trips diverted from ADA paratransit to fixed-route transit; that 33% of the total free fare trips are trips diverted from ADA paratransit; and that 50% of the total free fare trips represent trips diverted from ADA paratransit.

Table 7-11. Sample cost savings for three levels of trip diversion.

Transit Agency	Annual Break-even Diverted Trips	Actual Annual Free Fare Trips	Savings for Levels of Actual Trip Diversion from ADA Paratransit to FR		
			25%	33%	50%
Ann Arbor Transportation Authority	1,976	101,147	\$530,786	\$715,035	\$1,106,565
Arlington Transit	1,751	9,818	\$20,092	\$42,524	\$90,192
Fort Worth Transportation Authority	1,505	229,690	\$1,671,933	\$2,221,352	\$3,388,866
Hernando County	1,547	7,652	\$8,283	\$22,136	\$51,574
Massachusetts Bay Transportation Authority	1,276	942,742	\$9,186,508	\$12,142,193	\$18,423,023
San Mateo County Transit District	1,212	244,253	\$2,468,864	\$3,274,899	\$4,987,723
Utah Transit Authority	1,318	157,625	\$1,300,333	\$1,730,838	\$2,645,662

As shown, significant savings are realized by each of the systems even if conservative estimates of the percentage of trips diverted are assumed. If it is assumed that only 25% of free fare trips were trips previously made by ADA paratransit, savings range from \$8,283 per year for the smallest system (Hernando County), to over \$9 million for the largest systems (MBTA). Savings between \$51,574 per year and over \$18 million per year are estimated if it is assumed that 50% of the total free fare trips are trips diverted from ADA paratransit.

7.5 Findings and Implementation Issues

Findings

Based on interviews with managers from the seven selected transit agencies studied, and analysis of the data they provided, one can make the following findings:

- There is a great financial incentive for a transit agency to adopt a free fare policy for paratransit riders, given potential savings from fewer paratransit trips provided versus the relatively small revenue losses on the fixed-route transit system and the ongoing costs to operate a free fare program.
 - Policies vary on whether an accompanying PCA may also ride for free. None of the agencies had a policy that let a companion ride for free.
 - The cost of implementing and managing a fare incentive program appears to be small. Managers at the selected transit agencies were specifically asked about the costs to establish and maintain their programs. Five indicated “minimal” or “negligible” costs. The other two stated that they did not track these costs separately from other administrative and management costs.
 - While some of the free fare trips may not be truly diverted from paratransit trips, only a small number of diverted trips are needed to offset the costs of the program.
 - Even if it is assumed that only 25% of the total free fare trips are trips diverted from ADA paratransit, the analysis suggested savings ranging from \$8,283 per year for the smallest systems, to over \$9 million per year for the largest system.
 - At transit agencies that used in-person interviews and functional assessments to determine ADA paratransit eligibility, free fare programs did not appear to have a significant impact on the number of applications or determinations. However, at agencies where only paper applications were used to determine ADA paratransit eligibility, linking free fares to this eligibility appears to result in significantly higher numbers of applications. To better ensure that individuals who can use the fixed-route transit service do not apply for ADA paratransit eligibility just to receive the free fare benefit, transit agencies will ideally consider including in-person interviews and functional assessments in the eligibility determination process before fare incentive programs are implemented.

Even if it is assumed that only 25% of the total free fare trips are trips diverted from ADA paratransit, the analysis suggested savings ranging from \$8,283 per year for the smallest systems, to over \$9 million per year for the largest system.

To better ensure that individuals who can use the fixed-route transit service do not apply for ADA paratransit eligibility just to receive the free fare benefit, transit systems will ideally consider including in-person interviews and functional assessments in the eligibility determination process before fare incentive programs are implemented.

Implementation Issues

While managers from all seven transit agencies believed that their programs were readily transferable and could be easily adopted by other transit agencies, they noted several implementation issues that should be considered.

- An AATA manager observed that when the free fare program started, AATA began to receive A-Ride applications from people who regularly used fixed-route transit services.

He stated that these riders “were often quite explicit” that they were applying for A-Ride to receive free fixed-route transit service. AATA worked with human service agencies to assist their clients in understanding the requirements for receiving eligibility for A-Ride service.

- Similarly, a SamTrans manager noted that, as the free-ride privilege has become better known, more applicants for paratransit eligibility have indicated that they are applying just to be eligible for the free fixed-route transit fare. He said that this has required the SamTrans eligibility evaluator to be more vigilant about assessing an applicant’s inability to use regular bus service some or all of the time. UTA managers also stated that the key step in a free fare program is performing proper eligibility determination for ADA paratransit riders.
- An ART manager viewed the proper training of the fixed-route transit bus drivers in passenger sensitivity and use of the lift/ramp and securement system as key to success, given the high proportion of the free fare riders who use wheelchairs.
- A SamTrans manager stated that transit agencies “will have to be vigilant about abuse of the paratransit ID. High-tech fareboxes and readable paratransit ID cards will certainly help deter abuse.” When UTA started to receive an increase in reported “lost” medallions (which allowed paratransit riders to ride fixed-route service for free), it suspected this was a sign of misuse of the program. UTA has since changed the program so that the paratransit ID cards also act as a fare card. An MBTA manager also cited a concern about fraud. Individuals can give their ID card to others to use for free service. The MBTA can deactivate a card if it is reported to be lost or stolen, but there is no easy way to detect intentional misuse of the card.
- Several managers believe that many of the free trips taken by ADA paratransit riders are not diverted from paratransit service, but are simply new trips taken on fixed-route transit by people with disabilities. This, however, should not add significant cost. As shown in Table 7-9, the free fixed-route transit trips make up a small proportion of total fixed-route transit ridership. There is little added operating cost for serving these trips and a relatively small loss of revenue. And more people with disabilities are using the fixed-route transit service.
- Managers at all of the transit agencies are evaluating the effectiveness of their programs and are considering policy changes. For example, the MBTA manager said that her agency is looking at the possibility of limiting the number of free trips; she noted that New York City Transit has a limit of four free round trips per day.

7.6 Evaluating Fare Incentive Programs

A detailed methodology that considers the various outcomes, costs, and benefits of fare incentive programs is provided in Appendix D. The methodology considers the full range of possible outcomes, including new fixed-route transit trips generated as a result of the reduced fares, trips switched from half fare to free fare on the fixed-route transit systems, and trips diverted from ADA paratransit to fixed-route transit. The experience gained from this study indicates, though, that it is very difficult to determine these various outcomes and that transit agencies typically do not have the type of information needed to complete an elaborate and comprehensive evaluation. Still, the potential methodology is included in Appendix D to benefit future researchers who may want to conduct more detailed analysis of fare incentive programs.

This section provides a simplified methodology for assessing program effectiveness. It is based on a “break-even” analysis that determines the likelihood that the benefits of the program will at least equal the costs.

Several types of data are needed to do this “break-even” analysis. These are shown below.

Table 7-12. Data needed to do “break-even” analysis.

Data Element	Symbol
Cost of additional paratransit assessments	C1
Cost of additional program management, oversight	C2
Cost of material, e.g., ID cards, fare cards per additional certified paratransit rider	C3
Cost of enlarged travel training program per additional rider trained	C4
Cost per ADA paratransit trip	C5
Increased fixed-route transit operating costs from increased free fare ridership	C6
Count of free fixed-route transit trips	T1
Count of reduced fare trips	T2
Reduced fare	F1
Paratransit fare	F2
Estimate of additional paratransit applications attributable to fare incentive program	P1
Estimate of additional rider in travel training program	P2
Break-even trips	T

It would also be valuable to track the following information, if a transit agency is not already collecting it:

- Paratransit applications.
- Count of ADA paratransit trips: total and by individual riders, and by key destinations.
- Count of reduced fare (not free) fixed-route transit trips.

For a given time period, the net financial benefit (or cost) of a fare incentive program can be computed. The “break-even” savings is the amount of savings from the fare incentive program needed to offset the costs and lost revenues of the program.

$$\text{Break-even savings} = (\text{Program costs}) + (\text{Revenue loss due to program}) + (\text{Increased fixed-route transit costs})$$

Broken down into the cost elements listed above, the formula would be:

$$\begin{aligned} & (\text{Break-even trips}) \times (\text{Cost per ADA paratransit trip} - \text{Paratransit fare}) \\ & = (\text{Cost of additional paratransit assessments} + \text{Cost of additional program management, oversight}) + (\text{Cost of material} \times \text{Estimate of additional paratransit applications attributable to fare incentive program}) \\ & \quad + (\text{Cost of enlarged travel training program per additional rider trained} \times \text{Estimate of additional riders in travel training program}) \\ & \quad + (\text{Count of free fixed-route trips} \times \text{Reduced fare}) \\ & \quad + (\text{Increased fixed-route costs from increased ridership by ADA riders}) \end{aligned}$$

If we replace the words with the symbols, we have the following equation:

$$T \times (C5 - F2) = (C1 + C2 + (C3 \times P1) + (C4 \times P2)) + (T1 \times F1) + (C6)$$

To derive the number of trips that need to be diverted from ADA paratransit to fixed-route transit to “break-even,” we divide both sides of the equation by (C5 – F2):

$$T = [(C1 + C2 + (C3 \times P1) + (C4 \times P2)) + (T1 \times F1) + (C6)] \div (C5 - F2)$$

Alternative Transit Service Designs

Another approach for providing transit services for people with disabilities is to use alternative service designs that can meet the needs of all riders. Rather than providing traditional fixed-route transit with ADA complementary paratransit, service designs that can meet the needs of all riders can be considered. Examples of more inclusive service designs are:

- Route deviation services,
- Point deviation services,
- Request stop services,
- Paratransit-to-fixed-route feeder services, and
- General public demand responsive services.

In addition, community bus services, a form of fixed-route transit, can also help serve more riders with disabilities. While ADA paratransit is required in areas where community buses are operated, less ADA paratransit service is often required if more people with disabilities can use the “user-friendly” community buses.

Each of these alternative service designs has characteristics that can meet the needs of people with disabilities. Each also allows people with disabilities to be served on the same vehicles as the rest of the public. This provides for a more integrated and inclusive service.

This chapter provides a brief description of several alternative service designs. The characteristics of each design that better meet the needs of persons with disabilities are noted. Possible applications of each design, as well as implementation considerations are also presented.

More detailed information about these alternative service designs is also presented in a companion document titled *Accessible Transportation Services for All (ATFA)*, which was prepared by the Federal Transit Administration. (48)

8.1 Route Deviation Transit Service

Under this service design, vehicles operate along established routes that typically have designated stops. Between designated stops, vehicles can go off-route to pick up or drop off riders. A service area is established along the route within which off-route pickups and drop-offs can be made. For example, vehicles may deviate up to three-quarters of a mile off of the designated route. Figure 8-1 illustrates the route deviation concept.

Riders are typically asked to call in advance to request off-route pickups. For example, riders might be asked to call one or two hours before their desired pickup time.

In some transit systems, deviations can be requested by any rider. In other systems, deviations are only accepted from certain riders, such as persons with disabilities. Systems that

Information about alternative service designs is provided in the following reports:

Koffman, D., *TCRP Synthesis 53: Operational Experiences With Flexible Transit Services*, Transportation Research Board of the National Academies, Washington D.C., 2004. (49)

Weiner, R., *TCRP Synthesis 76: Integration of Paratransit and Fixed-Route Transit Services*, Transportation Research Board of the National Academies, Washington, D.C., 2008. (50)

Volinski, J. M., Connor, M., McLaughlin, J., Kopp, C., Ryus, P., Pittman, D., *TCRP Report 116, Guidebook for Evaluating, Selecting, and Implementing Suburban Transit Services*, Transportation Research Board of the National Academies, Washington D.C., 2006. (51)

Becker, A. and Teal, R. "Next-Generation General Public Demand Responsive Transportation," Presented at the 90th Annual Meeting of the Transportation Research Board, Washington, D.C., 2011. (52)

accept deviations from all riders are considered to be “demand responsive” services by FTA, and ADA paratransit is not required as a complement to these services. (53) If deviations are only accepted from certain riders, such as riders with disabilities, FTA considers the service to be “fixed route” and ADA paratransit is required.

If operated as demand responsive service (deviations for anyone), the requirements in Section 37.77 of the U.S.DOT ADA regulations must be met. When viewed in its entirety, service to riders with disabilities must be equal in the following areas:

- Response time (advance reservation requirements for deviations should be comparable to the typical headway to be equal to the response time experienced by riders who catch the bus at designated stops).
- Fares (fares for riders who request deviations must be the same as fares for riders who catch the bus at designated stops).
- Geographic transit service area (the area in which deviations are made must be the same for all riders who request deviations).
- Hours and days of transit service (deviations must be allowed at all times that riders are served at designated stops).

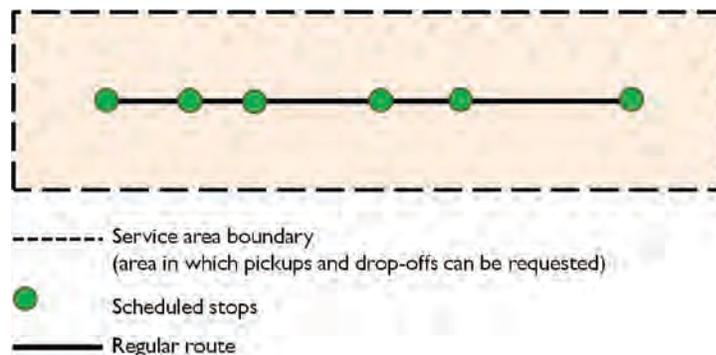


Figure 8-1. Route deviation service.

- Restrictions or priorities based on trip purpose (deviations must be allowed for all trip purposes).
- Constraints on capacity (deviation requests should not be constrained since there are no constraints for riders who can use the transit service at designated stops).
- Availability of information and reservation capability [information should be made available, in accessible formats when needed, and reservations for deviations should be available via telecommunications device for the deaf (TDD) or relay service].

Service Characteristics That Meet the Needs of People with Disabilities

By deviating off-route, this design makes it possible for riders who may have difficulty getting to or from designated bus stops to use the service. As noted in Chapter 2, distances to and from bus stops and barriers encountered in getting to and from bus stops are two of the most important factors that limit use of fixed-route transit service by people with disabilities.

Applicability and Implementation Considerations

While route deviation transit services have been used in a variety of settings, following are some general observations about situations where this design might be applicable:

- Longer routes with longer distances between stops that can better accommodate off-route deviations within the established schedule.
- Routes with longer headways that include recovery time to accommodate off-route deviations.
- Routes that serve trips that are not time-sensitive. For example, route deviation may not be applicable on routes that are making tightly scheduled connections to other modes.
- In transit systems or areas where operating both traditional fixed-route transit and ADA paratransit is not economically viable.
- Routes with relatively low ridership. This could include routes with lower ridership throughout the day, or routes with relatively low ridership at certain times of the day. For example, a route could transition from traditional fixed-route to route deviation during the evening hours.

Some important implementation considerations include:

- To be effective, riders need to know that deviations are possible. Information about the availability of deviations, and how to request deviations, should be included in route schedules and other public information.
- Riders who are boarding at designated stops also need to be informed that vehicles may go off-route and that arrival times at designated stops might vary. This can help to manage rider expectations and avoid misunderstandings if vehicles run slightly off schedule.
- It is helpful if staff designated to handle and schedule deviation requests has some experience with demand response type operations. For this reason, some transit agencies use paratransit operations staff, rather than fixed-route transit dispatchers, to take and schedule deviation requests.

8.2 Point Deviation Transit Service

Point deviation transit services operate within a designated area rather than on a specific route. Within the defined area, basic demand responsive service is provided. Riders typically call in advance to request pickups and drop-offs at any locations within the service area.

The Utah Transit Authority (UTA) in Salt Lake City operated 16 routes with deviations (called FLEX Routes) in 2012. All FLEX Routes are identified by the letter “F” before each route number, for example Route F94. Every FLEX Route printed schedule includes the following statements:

“Time points are approximate and may vary due to traffic conditions or deviation requests”

“Because the F94 is on a fixed-route schedule that can deviate off of route, the time points on this schedule are approximate. The bus can run 10–15 minutes after the listed time points throughout the day. The bus will never bypass a time point before it is scheduled to.”

Similar information is included in online descriptions of the FLEX Routes.

In addition to this advance reservation service, a limited number of locations are identified and designated where service is provided on a set schedule without advance reservations. For example, vehicles may stop at a designated shopping center every hour on the hour and at a designated apartment complex every hour on the half-hour. Riders can board and disembark at these designated locations without making advance reservations. Figure 8-2 illustrates the point deviation design concept.

Point deviation transit services can be made available to the general public rather than just specific groups. One option is to ask general public riders to board and disembark at the designated stops that are served on a set schedule. Extra pickups and drop-offs at these designated locations can be accommodated without adding much extra time to the schedule. Or, both types of service—prescheduled and immediate service at designated stops—can be open to the general public.

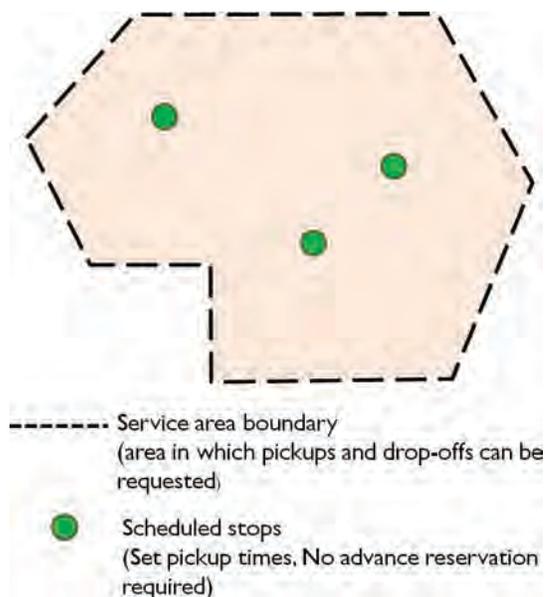


Figure 8-2. Point deviation transit service.

Two advantages of point deviation transit services are:

- Regularly scheduled stops at designation locations can help to organize demand around trips to and from these locations by advertising the times that service is provided to these places.
- Having designated, scheduled stops can allow this portion of the service to be opened to the public without significant impact on vehicle schedules.

Service Characteristics That Meet the Needs of People with Disabilities

Since point deviation services operate partly as general demand responsive services, they are able to effectively serve persons with disabilities. Riders can call in advance and request curb-to-curb or door-to-door services (depending on the policy of the particular service).

If point deviation transit services are made available to the general public—either in total or just at designated, scheduled stops—they allow riders to be served in a more integrated way.

Applicability and Implementation Considerations

For point deviation transit services to be effective, the designated stops selected for service on a set schedule need to be locations that are high attractors or generators of service. If a general public demand responsive service is operated, pickup and drop-off data can be analyzed to determine if there are locations that can be designated for regular service.

The number of locations designated for regular service should still allow for effective pre-scheduled service at other locations. The research suggests that transit agencies that use point deviation typically designate a limited number of high-traffic locations for regular, scheduled service. (49)

Communicating the concept of a service that has scheduled stops but no set route can be a challenge. Developing good public information is a key implementation issue.

Most state-of-the-art paratransit software systems can be customized to work with point deviation services. Designated stops simply need to be prescheduled and “anchored” at the times that service is advertised at each location.

8.3 Request Stop Transit Service

Two types of request stop service have been used by transit agencies. One is built more on a fixed-route design and one is more demand responsive in nature.

Request stop transit services built on fixed routes use two types of stops—those that are always served along the advertised route, and those that are off-route and only served if there is a request. Riders can either catch the bus at regular stops along the advertised route, or can call in advance to request a pickup at one of the designated off-route locations. Route and schedule information depicts each type of stop and explains that an advance request is needed for service at off-route locations. Figure 8-3 illustrates a request stop service based on a fixed route.

Request stop transit services built more around a demand responsive design designate pickup and drop-off locations throughout the service area. Riders call in advance and request trips between two designated stops. Schedules are generated for each tour based on the requests received. Typically, a comprehensive network of designated pickup and drop-off locations is identified so that walking distances to stops throughout the service area are minimized. Pickups and drop-offs can be limited only to designated stop locations. Or, pickups and

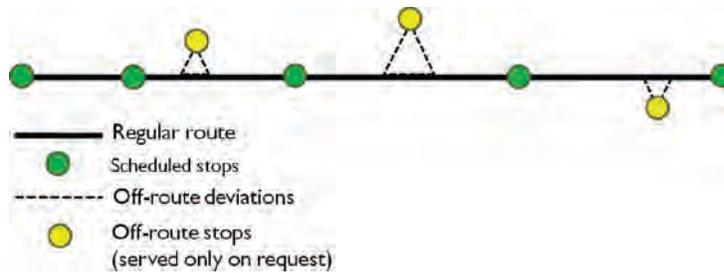


Figure 8-3. Request stop transit service built on a fixed-route design.

drop-offs at other, non-designated locations can be allowed for some or all riders. The request stop design based on a demand responsive model is shown in Figure 8-4.

Service Characteristics That Meet the Needs of People with Disabilities

Request stop transit services built on a fixed-route design allows for a limited number of off-route pickups on request. This can help to minimize walking distances to and from stops for people with disabilities.

With designated pickup and drop-off locations spread throughout the service area, request stop services built on a demand responsive design minimize walking distances to an even greater degree.

Both types of transit services are typically open to the general public, rather than limited to only certain riders. This allows people with disabilities to be served in a more integrated way.

Applicability and Implementation Considerations

Fixed-route based request stop transit services might be appropriate where there are off-route locations that need to be served at certain times, but not throughout the full range of operating

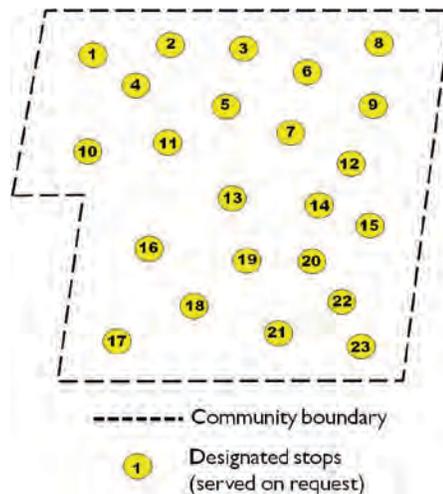


Figure 8-4. Request stop transit service based on a demand responsive design.

hours. For example, it might include places that employ people with disabilities that only need to be served on a couple of runs in the morning and a couple of runs in the afternoon.

Fixed-route based request stop transit services might also be appropriate if there are “secondary” locations that need to be served, but which are not as important as the “primary” locations selected for development of routes.

Request stop transit services based on a demand responsive design are applicable in areas where locations that need to be served are more spread out and not concentrated along a particular corridor or corridors. These types of transit services might also be appropriate in communities with narrower streets where service using smaller vehicles is more appropriate, or desired by the community.

As with other types of flexibly-routed transit services, good public information is important. It can be a challenge to explain to the public how to request transit service at off-route locations. It is also important to let all riders know that vehicles may sometimes travel off-route for a short distance. Request stop transit services based on a demand responsive design can be particularly challenging to describe and explain.

8.4 Community Bus Transit Service

Community bus transit services are basically local fixed routes. They are different from regional fixed-route services, though, in their design and objectives. Community bus routes travel more circuitous routes on neighborhood and secondary streets and have as a main objective providing service that is closer to the riders. Convenience and minimizing walking distance are the main objectives. Minimizing travel times is not as important.

Community bus transit services can be operated by transit agencies, or can be operated by local communities with support from transit agencies. A common approach is for transit agencies to provide vehicles, limited operating support, planning and administrative support and to have local communities fund part of the operation.

Community bus transit services can be designed to serve local neighborhoods. They can also be designed to connect to regional bus routes and complement the regional bus network.

Broward County Transit (BCT) in Ft. Lauderdale has developed an entire network of local community bus services. Twenty different community bus transit services have been implemented throughout Broward County (see Figure 8-5). Some services have only one route. Others have networks of up to five routes that service the local area. Eighteen of the services are operated by the local communities with limited assistance from BCT. Two are provided by companies under contract to BCT.

BCT’s objectives for community buses were two-fold. First, the community buses were designed to provide better local service to all residents, including the large senior population. Second, community buses were developed to allow BCT to streamline its regional bus network. Prior to the implementation of these local services, BCT’s regional bus routes tried to serve local as well as regional needs. Diverting routes off of the grid of major arterial streets made regional travel times unattractive. Where community buses have been implemented, BCT has been able to streamline regional routes and use local community buses to feed into the regional transit network.

In 2012, a total of 2,370,943 unlinked passenger trips were provided on BCT community bus transit services. The average productivity was 14.8 trips per vehicle-revenue-hour. Total cost per trip, revenue-hour, and revenue-mile were \$2.95, \$43.71, and \$3.10 respectively.

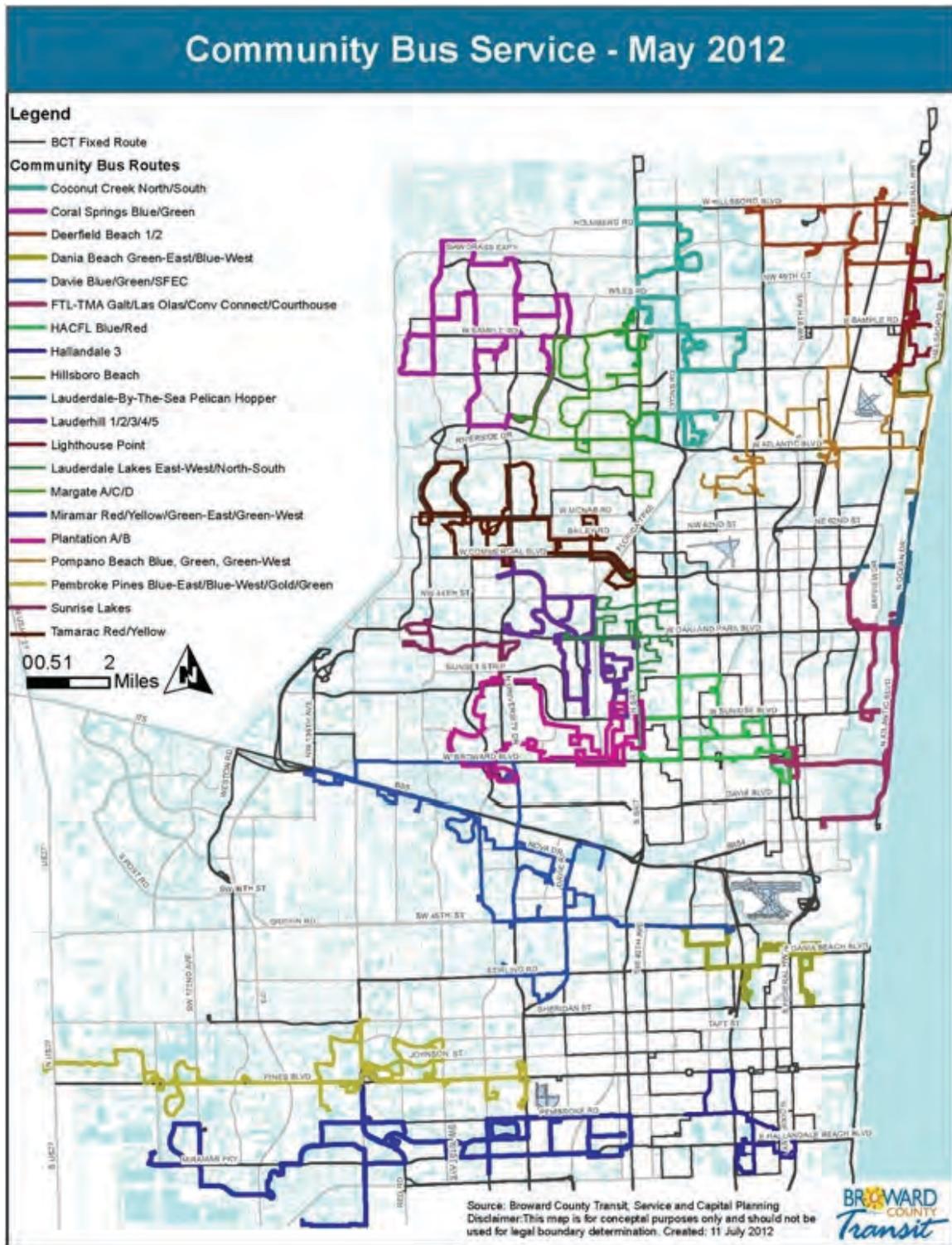


Figure 8-5. Map of community bus routes in Broward County (courtesy of Broward County Transit).

Service Characteristics That Meet the Needs of People with Disabilities

Compared to traditional fixed-route transit services, community buses provide better coverage throughout the service area. Routes are designed to travel on neighborhood streets to minimize the walking distance to and from stops. This is a major benefit to riders with disabilities as well as other groups, such as seniors. As noted in Chapter 2, long walking distances to and from bus stops is one of the most important factors that can limit use of fixed-route services by people with disabilities.

Because community buses are open to the general public, people with disabilities are also served in a more integrated way.

Applicability and Implementation Considerations

Community bus services are applicable in a wide variety of settings. The transit service design can be tailored to the needs of the local community. Single routes, linear or circular, can be used. Or small networks of routes can be developed. Transit services can incorporate other features such as route deviation or stop request.

Community bus services can be particularly effective where there is a high proportion of potential transit riders. This includes persons with disabilities, seniors, and persons without access to private automobiles.

The effectiveness of community bus services can be improved by designing routes that are close to residences as well as destinations.

8.5 Paratransit-to-Fixed-Route Feeder Service

Paratransit-to-fixed-route feeder service uses both modes to serve riders. Paratransit vehicles pick riders up and take them to fixed-route bus stops or stations, or meet them at bus stops and stations and take them to their final destination.

Service Characteristics That Meet the Needs of People with Disabilities

Feeder service enables people with disabilities to use the fixed-route transit service even though there may be barriers that would otherwise prevent them from getting to or from stops and stations. Feeder service also enables use of fixed-route transit when the distances to and from stops and stations are farther than riders can manage.

Applicability and Implementation Considerations

Feeder service can be used in ADA paratransit operations as an alternative to direct origin-to-destination service. Feeder service can also be used more broadly as a general public service. For example, demand responsive vehicles may be used to connect to the fixed-route transit system in communities or areas that are not in close proximity to bus routes or rail lines.

Combining feeder service with route deviation service has some advantages. For example, the UTA in Salt Lake City uses ADA paratransit vehicles to take people to stops on their FLEX Routes. The FLEX Route buses can then deviate off-route to take riders to their final destinations. This way, fixed-route transit service is enabled even if there are barriers at both ends of the trip, and the difficulties of a “double-feeder” trip are avoided.

Important Feeder Service Considerations

Following are important operational issues and considerations if feeder service is used in ADA paratransit operations as an alternative to direct, origin-to-destination service:

- Feeder service is an operational choice that transit agencies may consider for specific trips. Feeder service is not a type of eligibility. Applicants for ADA paratransit eligibility should not be determined “feeder-only” eligible. Doing so would mean that the only service options provided to these riders would be complementary paratransit feeder service at both ends of a fixed-route transit trip. This is both operationally infeasible and would result in unreasonable total travel times for many trips.
- Instead, a good practice is for transit agencies to evaluate individual riders and trip requests to determine if feeder service is appropriate. Important considerations in evaluating riders and trips include:
 - *Riders’ functional abilities:* Riders must have the functional ability to independently complete the fixed-route portion of the trip (including transfers).
 - The total length of the trip: Providing feeder service for very short trips can result in total travel times that could become a capacity constraint. Feeder trips are typically not considered for trips shorter than five to seven miles.
 - *Proximity of the fixed-route alighting stop to the destination:* To avoid having to provide complementary paratransit connections at both ends, one end of the trip should be near a fixed-route stop and accessible for riders. Typically, feeder service is only arranged if riders are able to get to the fixed-route service independently at one end (commonly the destination). Because it is so operationally difficult, “double feeder” is typically not realistic except for very long trips (over 15 to 20 miles).
 - *The headways of the fixed-route transit service:* Attempting feeder service to a route that runs infrequently could become a problem if the connection is not made on time.
 - *Fares:* Charging fares for both the paratransit and the fixed-route portions of trips will make feeder an unattractive option to riders. Since paratransit is really being provided to enable use of fixed-route transit, it is recommended that the paratransit fare be waived and a fare only collected for the fixed-route portion of the trip. In Pittsburgh, where feeder service is used and only the fixed-route transit fare is charged, the service has come to be known as the “free van to the bus service.”
 - *Amenities at the transfer point:* If riders may have to wait at the stop, it may be important that the stop have a bench and/or shelter. Access to a telephone (or staff who can make a call) may also be important if there is a connection issue and the complementary paratransit dispatch center needs to be contacted.
 - *Special scheduling of feeder trips:* To avoid excessively long travel times, a good practice is to consider shorter on-time windows for feeder trips. For example, the drop-off window might be shortened to five to ten minutes rather than 30 minutes so riders do not have long wait times at stops for connection to the fixed-route transit service. Some transit agencies have schedulers manually adjust the schedules for feeder trips to shorten the connections.

- *Guaranteed ride*: A good practice is to have a policy of providing a direct trip as a backup when connections are missed.
- *Total travel time*: The total travel time for the trip should be considered before feeder service is used as an option to direct, origin-to-destination service. The total travel time for both the feeder and fixed-route transit portions of the trip should be comparable to the travel time for the same trip made without feeder on the fixed-route system.

8.6 General Public Demand Responsive Service

Many transit agencies provide general public demand responsive service. A recent survey of public transit agencies conducted for FTA's *ATFA* project found that 26% of respondents indicated that they operated some form of general public demand responsive service. (48)

Vehicles provide door-to-door or curb-to-curb service within a defined service area. Riders call to request service. Advance reservation requirements, as well as other service policies, vary from system to system.

Service Characteristics That Meet the Needs of People with Disabilities

Because demand responsive service is provided to and from the curb or door, it meets the needs of all riders, including people with disabilities. It is open to all riders, which allows riders with disabilities to be served in a more integrated way.

Applicability and Implementation Considerations

General public demand responsive service is often used in more rural areas, where traditional fixed-route transit complemented by ADA paratransit may not be appropriate or economically feasible. If no fixed-route transit service is provided, only general public demand responsive service, then ADA paratransit does not have to be provided.

The requirements to provide ADA paratransit can also be met by offering general public demand responsive service. Vehicles used to provide service to persons who are ADA paratransit eligible can also be used to transport general public riders. If used in this way, the service must meet all ADA paratransit requirements when transporting riders who are ADA paratransit eligible. If not all trip requests can be accommodated, riders who are ADA paratransit eligible must be given priority so that the service they receive is not constrained.

General public demand responsive service can also be used to supplement traditional fixed-route transit and ADA paratransit services. All three types of services can be offered in some communities where there is the demand.

SamTrans, which provides transit service to residents in San Mateo County, CA, provides ADA paratransit service using two different demand responsive programs. On the eastern side of the county (bayside), where most of the population is concentrated, SamTrans operates a traditional ADA paratransit service called *Redi-Wheels*. This service is provided only to persons who have been determined

ADA paratransit eligible. On the western side of the county (coastside), which has a lower population density and only two fixed routes, SamTrans operates a general public demand responsive service called RediCoast. This service provides origin-to-destination service for ADA paratransit eligible individuals as well as general public riders. Figure 8-6 shows the Redi-Wheels and RediCoast service areas.



Figure 8-6. Redi-Wheels and RediCoast service areas.

The general public demand response RediCoast serves two purposes:

- To provide ADA paratransit in the northern portions of the coastline where fixed-route transit service is operated, and
- To provide some additional transportation to the general public beyond the limited fixed routes that are operated in the area.



Figure 8-7. RediCoast vehicle and passenger (photo courtesy of TranSystems).

The RediCoast service is partly funded with Federal Section 5311 rural transportation assistance. Section 5311 funding pays half of the operating costs of services in the rural portions of the service area.

While RediCoast service is available to anyone who calls, residents can apply for ADA paratransit eligibility. ADA paratransit eligibility is displayed during the trip reservations process so operations staff can ensure that all requests by those who are ADA paratransit eligible are scheduled within an hour of the requested time.

RediCoast operates throughout the entire coastline area. Service is available to anyone for any trip purpose. Hours of operation are Monday through Friday from 6:30 a.m. to 8 p.m., and weekends and holidays from 8 a.m. to 5 p.m.

Other operating policies are similar to the Redi-Wheels service:

- Fares are \$3.75 per trip.
- A reduced fare of \$1.75 is available to low-income riders.
- Trips are available on a “next-day” basis (riders can call up to 5 p.m. on the day before service to request a ride).
- Trips can be requested up to seven days in advance.
- Door-to-door service is provided up to 50 feet from the vehicle (as long as the vehicle remains in sight of the driver).

A total of 12 vehicles are used to provide the RediCoast service. All are lift-equipped, body-on-chassis minibuses.

A total of 29,487 one-way passenger trips were provided in FY 2012. This included 25,044 trips for persons determined ADA paratransit eligible and 4,443 trips by general public riders. There were no trip denials in FY 2012. The service had enough capacity to meet all requests, from general public riders as well as those registered as ADA paratransit eligible.



CHAPTER 9

ADA Paratransit Eligibility Determinations

A final strategy for enabling and promoting use of fixed-route transit services is implementing an ADA paratransit eligibility determination process that assists persons with disabilities with identifying abilities to travel independently, identifies travel options, and supports other programs and efforts. The components of this strategy include:

- Developing an eligibility process that stresses abilities rather than limitations.
- Developing a process that accurately and thoroughly identifies conditions under which use of fixed-route transit is appropriate and reasonable.
- Using the process to identify specific trips that can be made by fixed-route transit.
- Linking the process to travel training and other support programs.

This section first provides background information on ADA paratransit eligibility and eligibility determinations. Common processes and the state-of-the-art practice in making eligibility determinations are then discussed. Recommended approaches for implementing each of the above noted strategy components are then presented.

As part of the research, information was collected from transit agencies identified as having exemplary eligibility processes. This included Seattle (WA) Metro, Access Transportation Systems, Inc. (ACCESS) in Pittsburgh, PA, Intercity Transit in Olympia, WA, SamTrans in San Carlos, CA, and the Utah Transit Authority (UTA) in Salt Lake City, UT. Information from these transit agencies is used in this section to provide examples of processes and approaches that have been implemented successfully.

9.1 ADA Paratransit Eligibility

Public entities that operate fixed-route transit services are required by the ADA to also provide complementary paratransit service. Complementary paratransit is intended to be a “safety net” for persons who, because of their disabilities, are prevented from using fixed-route transit services.

Transit agencies that provide complementary paratransit must also have a process for determining who is “ADA paratransit eligible.” The U.S.DOT regulations implementing the ADA provide specific criteria that define ADA paratransit eligibility and require that transit agencies use these criteria to make determinations. In essence, the regulatory criteria indicate that the following are considered ADA paratransit eligible:

- Persons who, because of a disability, are not able to use fully accessible fixed-route transit systems. This includes persons who may not be able to “navigate” fixed-route transit services even if they are fully accessible.

- Persons who, because of a disability, cannot use fixed-route transit because the bus route or transit station they want to use is not yet accessible, or they cannot board or alight at the stop they want to use.
- Persons who cannot get to or from stops or stations because barriers in the environment, in combination with their disability, “prevent” them from getting to or from the transit stop or station.

A wealth of information is available to assist transit agencies with interpreting and applying these regulatory criteria for eligibility. The following documents, each funded by FTA, were issued to assist the industry with thorough and accurate ADA paratransit eligibility determinations.

Resources for Understanding and Determining ADA Paratransit Eligibility

Weiner, R., *TCRP Synthesis 30: ADA Paratransit Eligibility Certification Practices*, TRB, National Research Council, Washington, D.C., 1998. (54)

TranSystems Corp., *Determining ADA Paratransit Eligibility: An Approach, Guidance and Training Materials*, Easter Seals Project ACTION, Washington, D.C., 2003. (55)

Disability Rights Education and Defense Fund (DREDF), *Topic Guides on ADA Transportation: Eligibility for ADA Paratransit*, Federal Transit Administration, Washington, D.C., 2010. (56)

Conditional and Trip Eligibility

The U.S.DOT ADA regulations not only identify the criteria under which *individuals* are ADA paratransit eligible, but note that certain *trips* may be eligible while other trips are not. Section 37.123(b) of the regulations states “*If an individual meets the eligibility criteria . . . with respect to some trips but not others, the individual shall be ADA paratransit eligible only for those trips for which he or she meets the criteria.*”

This notion of trip as well as individual eligibility has given rise to different types of ADA paratransit eligibility. Common types of eligibility granted to individuals include:

- *Unconditional eligibility (a/k/a All Trips eligibility)*—granted to persons who are not able to use fixed-route transit services under any conditions.
- *Conditional eligibility (a/k/a Limited or Some Trips eligibility)*—granted to persons who are able to use fixed-route transit services some of the time under certain conditions.
- *Temporary eligibility (a/k/a Transitional eligibility)*—granted to persons whose disability or health condition is expected to last less than the standard term of eligibility. Temporary eligibility can be either unconditional or conditional.

Unconditional and temporary eligibility are relatively straightforward. Conditional eligibility is more involved. There are many different types of physical, environmental, and transit system barriers that may affect travel by persons with disabilities. In addition, individual functional ability may vary from day to day or from trip to trip. Types of travel issues that apply to conditional eligibility include:

- *Path-of-travel* issues (presence of sidewalks, curb ramps, slopes and cross-slopes, uneven or unstable surfaces, detectable and safe paths of travel).

- *Street crossing* issues (width of streets, intersection design, amount of traffic, lack of or type of traffic controls).
- *Distances* to and from stops and stations.
- *Weather* conditions (snow, ice, rain, heat, humidity, cold, smog).
- *Fixed-route transit system accessibility* (bus routes, bus stops, transit stations).
- *Fixed-route transit system’s amenities* (benches, shelters, and stops and stations).
- *Complexity of trips* (single routes, transfers, complex stations).
- *Times of trips* (peak-hour crowding, day/night levels of light).
- *Individual travel abilities* (good days/bad days, familiar versus unfamiliar trips or areas).

Abilities to use fixed-route transit could be affected by each of these issues. Moreover, many persons may be affected by several of these issues. For example, persons who use manual wheelchairs are likely to be impacted, at a minimum, by physical barriers in the environment (e.g., a lack of sidewalks, a lack of curb ramps, or steep slopes), severe weather conditions (e.g., snow or ice), distances to and from bus stops or rail stations, and the accessibility of bus routes, stops, and rail stations. Persons with vision disabilities might be affected by paths of travel that are not detectable or safe, intersections and street crossing issues, levels of light, and types of trips (familiar versus unfamiliar).

Current Use of Conditional and Trip Eligibility

Because of this complexity, the use of conditional eligibility and the extent to which it is applied varies. The 2012 survey of transit agencies conducted as part of this research found that the majority of agencies apply the concept of conditional eligibility. Survey respondents were asked “Are some applicants found eligible for only certain trips (aka “conditional” ADA paratransit eligibility)?” Responses are shown in Figure 9-1. Of the 141 transit agencies that provided a response, 63% indicated that some applicants were granted conditional eligibility. Thirty percent of respondents reported not using conditional eligibility, meaning that applicants were simply found either unconditionally eligible or not eligible. Seven percent of respondents were not sure.

While the majority of transit agencies apply the general concept of conditional eligibility, the thoroughness and specificity varies. Some agencies apply only certain conditions or generalize



Figure 9-1. Reported use of conditional eligibility (n = 141).

Table 9-1. Reported use of trip-by-trip eligibility.

Use of Trip Eligibility	# of Respondents	% of Respondents
Use for some limited conditions (e.g., seasonal eligibility)	31	38%
Use for many different types of conditions	27	33%
Do not use trip eligibility	17	21%
Not sure	7	8%
Totals	82	100%

the conditions (e.g., winter eligibility or summer eligibility). Fewer still apply conditions of eligibility to trip requests made by eligible riders. Conditional eligibility may be granted, but trips are not screened against these conditions and riders can schedule trips regardless of the conditions set.

A TCRP synthesis study in 1998, which gathered information from 30 transit agencies, reported that “less than half” applied conditions of eligibility to rider trip requests. (54) The study also noted that “most” agencies that reported applying conditions to trip requests only applied certain, easy to determine conditions, such as eligibility for extreme weather seasons (e.g., winter or summer eligibility).

The 2012 survey conducted as part of this research found little change between 1998 and 2012. The survey asked transit agencies, “For riders granted conditional eligibility, do you apply the conditions to trips that they request (i.e., make “trip-by-trip” decisions in operations)? Eighty-two of the 89 agencies that indicated using conditional eligibility provided a response. Thirty-one (38%) indicated that they do trip eligibility for certain limited conditions. Twenty-seven (33%) indicated that they do trip eligibility for many different types of conditions. Seventeen (21%) indicated that they did not make trip eligibility decisions. And seven (8%) were not sure.

Applying the concept of conditional eligibility is an important first step in using the eligibility determination process as a way to enable and promote use of fixed-route transit services. If applicants are able to use fixed-route transit services some of the time, granting them conditional eligibility recognizes their abilities and communicates the message that fixed-route transit service is an appropriate travel option under certain conditions.

However, thoroughly applying conditional eligibility and making decisions on trip eligibility remains a significant challenge for transit agencies. Doing so requires an eligibility process that captures detailed information about travel abilities. It also requires an organized process for communicating and applying determination outcomes. A few transit agencies have, however, been successful in making trip eligibility determinations. The results and benefits at those agencies, as explained below, have been significant.

9.2 Common Processes for Determining ADA Paratransit Eligibility

The research determined that there are three basic sources of information that can be used to make ADA paratransit eligibility determinations. These are:

- *Information provided by applicants.* This can be in the form of a paper application, responses to questions in an interview, or both.
- *Information provided by professionals familiar with applicants.* This can involve asking applicants to obtain information from professionals on a form developed by the transit agency as

part of paper applications. Agencies can also accept information in other forms that applicants may already have from professionals. Or, it can be obtained by transit agencies through direct contact with professionals identified by applicants.

- *Assessments of functional abilities.* Transit agencies may ask applicants to participate in assessments designed to determine functional abilities specific to the use of fixed-route transit services.

The 2012 survey of transit agencies conducted as part of this research asked about the use of each of these sources of information. Responses from 127 agencies that answered this question are summarized in Table 9-2. Note that many agencies reported using several different sources of information, so the total responses exceed the number of agencies responding. Most transit agencies (85%) indicated that they have a paper application form. The agencies that did not use paper applications obtained information from applicants through in-person interviews. Most agencies (70%) also indicated obtaining information from professionals familiar with applicants to verify the existence of a disability and to get information about specific functional abilities.

Just under half of all respondents (48%) indicated the use of in-person interviews. Twenty-seven percent said interviews were conducted with all applicants, while 21% said interviews were conducted with only some applicants.

Thirty-seven percent of respondents indicated that in-person functional assessments were used—with 13% saying all applicants participate in assessments and 24% using assessments only some of the time.

Ten percent of respondents noted using “other” information. Types of other information noted were telephone follow up with applicants, “actual community assessments,” and information obtained from family members or friends who might be part of the in-person interview.

Fifty-one respondents, or 40%, indicated that they only use paper applications and/or information from professionals. Sixty percent of respondents use in-person interviews or functional assessments to some degree. Forty respondents, or 31%, use both in-person interviews and functional assessments.

Respondents were also asked to subjectively rate, on a scale of “1” to “5,” with “1” being “Not Effective” and “5” being “Very Effective,” the effectiveness of the sources of information

Table 9-2. Types of information used to make ADA paratransit eligibility determinations.

Sources of Information	Total	% of Total Respondents
Paper applications completed by applicants or others on their behalf	115	85%
Information from professionals familiar with applicants	95	70%
In-person interviews of all applicants	37	27%
In-person interviews of some applicants	28	21%
In-person functional assessments of all applicants	18	13%
In-person functional assessments of some applicants	33	24%
Other	13	10%
Total Respondents	127	

and process used. Effectiveness ratings varied by the type of information used. Respondents who indicated only using paper applications and/or information from professionals rated their processes, on average, as moderately effective (3.3). Transit agencies that included some level of in-person interviews or assessments had an average rating of 4.0. And agencies that combined all sources—paper applications, information from professionals, in-person interviews, and functional assessments had an average rating of 4.2.

9.3 Suggested Strategies

The research identified several strategies that have been used successfully to enable and promote the use of fixed-route transit services. This section provides a description of these strategies. Six different strategies, in order of level of complexity, are presented. Information gathered from case studies on each approach is included.

Important Considerations

The following issues will ideally be carefully considered if any of the suggested strategies are pursued.

Accessibility and Usability of the Fixed-Route Transit System

It is important to ensure that fixed-route transit services are accessible and usable by persons with disabilities before the ADA paratransit eligibility process is used to direct people to these services. It would be disingenuous at best to suggest through the eligibility determination process that people with disabilities should be using fixed-route transit services if those services are not truly accessible and usable by riders with disabilities.

Minimum efforts that should be taken to ensure that fixed-route transit services are accessible are detailed in Chapter 4 of this report. Transit agencies need to ensure that:

- Buses and rail cars that are advertised as accessible meet ADA design standards.
- Stations and bus stops that are advertised as accessible meet ADA design standards.
- Lifts, ramps, elevators and other accessibility features are maintained and in good working condition.
- On-board stop announcements and external route identification announcements are being made.
- Employees are trained to proficiency to safely operate accessibility equipment, to provide appropriate assistance to riders with disabilities, and to serve riders with disabilities in a respectful and courteous manner.
- Transit service to persons with disabilities is monitored to ensure that policies and procedures are being followed.

If these minimum requirements are not being met, the eligibility process could inappropriately conclude that applicants can use fixed-route transit when, in fact, the services are not really accessible and usable.

Transit agencies will also have greater success encouraging use of fixed-route transit services through the eligibility determination process if other efforts beyond the minimum requirements are made. If agencies are proactive in making bus stops more accessible, additional opportunities to use fixed-route transit will be identified by the eligibility process. If fare

It would be disingenuous at best to suggest through the eligibility determination process that people with disabilities should be using fixed-route transit services if those services are not truly accessible and usable by riders with disabilities.

incentives are provided, riders with disabilities will be more willing to use fixed-route transit. If good public information on accessible transit services is provided, and trip planning and travel training services are offered, riders with disabilities will be better able to transition to fixed-route transit. All five transit agencies that were identified as having successfully used the ADA paratransit eligibility process to enable and promote fixed-route transit use, and were included as case studies on eligibility for this research, are recognized as having accessible fixed-route transit services. All five also:

- Offer free fares on fixed-route transit for persons who are ADA paratransit eligible;
- Have public information targeted at promoting the accessibility of the fixed-route transit system; and
- Either provide travel training directly, or work with other local agencies to provide this service.

Suggested approaches for being proactive in each of these areas are detailed in Chapters 5, 6 and 7.

Community Involvement and Support

Persons with disabilities, disability service organizations, and other stakeholders will ideally be involved in the development and implementation of any changes to the ADA paratransit eligibility process, or in the use of the process to enable and promote greater fixed-route transit use. This is particularly important if changes will be made to the way that ADA paratransit eligibility is determined, if conditions of eligibility will be identified for the first time, or if conditions of eligibility will begin being used to make determinations of the eligibility of specific trips.

Meaningful and effective community involvement is important for developing appropriate strategies, and for gaining public support for their implementation.

Community involvement is important for several reasons. First, it is required by the U.S.DOT ADA regulations. Section 37.137 (c) of 49 CFR Part 37 requires that transit agencies have an ongoing mechanism for involving persons with disabilities in the development of accessible services. Beyond regulatory compliance, community involvement provides an opportunity to communicate the goals of any programs or strategies that are pursued. It can be helpful to explain that changes in the eligibility process are being made to better understand travel abilities and to promote the most appropriate travel options for riders.

Community involvement also allows important concerns to be identified and addressed. ACCESS in Pittsburgh, PA, one of the first transit agencies to implement trip-by-trip eligibility, identified through an extensive public input process that riders wanted to be able to use paratransit service even if trips could be made on fixed-route transit. It was therefore agreed that these trips would still be provided as non-ADA trips at a higher fare. If trips were found able to be made by fixed-route transit, riders would have the option to still book the trips at twice the ADA paratransit fare (called, locally, the “convenience fare”). ACCESS and the Port Authority of Allegheny County agreed to provide convenience fare trips as long as financially possible. The community agreed to review the amount of the convenience fare if it was overused and became unsustainable. Since it was introduced in 2003, ACCESS reports that convenience fares have remained steady at about only 5% of total trips. While not a large percentage of the ridership, ACCESS reports that this option to choose, developed with community input, has been a major part of community acceptance of the implementation of conditional and trip-by-trip eligibility.

Community involvement also allows important concerns to be identified and addressed. ACCESS in Pittsburgh, PA, one of the first transit agencies to implement trip-by-trip eligibility, identified through an extensive public input process that riders wanted to be able to use paratransit service even if trips could be made on fixed-route transit. It was therefore agreed that these trips would still be provided as non-ADA trips at a higher fare. If trips were found able to be made by fixed-route transit, riders would have the option to still book the trips at twice the ADA paratransit fare (called, locally, the “convenience fare”). ACCESS and the Port Authority of Allegheny County agreed to provide convenience fare trips as long as financially possible. The community agreed to review the amount of the convenience fare if it was overused and became unsustainable. Since it was introduced in 2003, ACCESS reports that convenience fares have remained steady at about only 5% of total trips. While not a large percentage of the ridership, ACCESS reports that this option to choose, developed with community input, has been a major part of community acceptance of the implementation of conditional and trip-by-trip eligibility.

To be effective, input needs to be obtained from all segments of the community, including current and potential riders with disabilities, disability organizations and representative disability membership organizations. All points of view are important to include in the discussion of process change—particularly those who are likely to be skeptical or who may at first oppose change. As many different methods as possible and practical should be used to gather people

together in small and large groups to present the concepts and goals and to answer questions in an open and honest method. Focus groups, open houses and forums, the establishment of special work groups, large and small community meetings with questions and answer sessions, formal presentations and networking with human service agencies are all tools which have been used effectively in other locations. Clear, concise public information materials are an important part of the education process.

To be meaningful, input and involvement will ideally begin early. The community should be involved in discussing possible options and selecting a desired approach, rather than being asked to support an approach that has already been determined. The goal of the process is to have the community view the implementation of a new process or strategy as a collective effort rather than just a transit agency initiative.

For helpful guidance on developing effective and meaningful public involvement, see:

TCRP Research Results Digest 107: Developing Partnerships Between Transportation Agencies and the Disability and Underrepresented Communities, Transportation Research Board of the National Academies, Washington, D.C., 2013. (57)

Strategy Option 1—Emphasize Abilities and Travel Options Rather Than Limitations

Develop an eligibility determination process that stresses ability rather than disability. Instead of screening people for eligibility based on lack of abilities to use fixed-route transit services, focus the process on identifying the abilities of applicants and linking them to the most appropriate transit services. Some ways to do this include:

- *Process Goals*—Adopt process goals and develop a mission statement that reflect this approach. Possible goals could be to **identify appropriate transportation options for individuals who inquire about accessible services, and identify abilities of applicants to use fixed-route transit services**. These goals communicate a very different message than a goal to “determine if applicants qualify for ADA paratransit service.” Make these new goals known to staff and to the public.
- *Public information*—Develop public information about the full range of accessible transportation services, rather than information that is limited to describing ADA complementary paratransit or ADA paratransit eligibility. Include information about ADA complementary paratransit as one accessible transportation option.

Seattle Metro has developed a packet of material titled “Access to Metro: Public Transportation for All of Us” that is sent to anyone who inquires about ADA paratransit eligibility. The packet includes information about using accessible fixed-route transit services, the agency’s taxi script program, travel instruction, as well as ADA paratransit. Once people review this information, they can pursue ADA paratransit eligibility if it is an appropriate option for them. Or, they can contact Metro for more information on other accessible transportation options.

- *Process name*—Instead of labeling the process as the “ADA paratransit eligibility process,” consider a name that better reflects the broader goals.

TriMet in Portland, OR, refers to their process as a “transportation assessment” and has named the facility where interviews and in-person assessments are conducted the Transportation Assessment Center.

- *Frame questions to stress abilities*—Consider how questions are phrased in application forms and in-person interviews. Instead of starting with “Why can’t you use the bus?” start by asking if they currently use the bus or have in the past. If not, ask why they don’t use the bus. If yes, ask about the conditions that make it possible to use the bus for those trips. This will solicit the same type of information about barriers that prevent fixed-route transit use, but requests this information in a way that stresses abilities rather than limitations. [Note that use of the bus for some trips does not mean a person is not eligible. It may be an indication that they are conditionally eligible.]
- *Letters of determination*—For applicants found conditionally eligible, inform them that the review determined that they are “able to use fixed-route transit except when the following conditions exist . . .” rather than that they are “eligible for paratransit when . . .”

As part of this different focus, collect information about all travel options and make this information available as part of the eligibility determination process. If applicants are determined able to use fixed-route transit some of the time, provide them with information about accessible fixed-route transit and discuss ways that the service has been made more accessible and usable. As appropriate, also have information on other transportation options available. This might include information about social service transportation, community bus services, or taxi subsidy programs that might be available in the area. Transit agencies should be careful, though, to not present this other information in a way that steers people away from pursuing ADA paratransit eligibility.

ACCESS in Pittsburgh, PA, provides information about major accessible transportation programs and services, as appropriate, during applicant interviews. Information is provided about accessible fixed-route transit services, the Pennsylvania 65+ Shared-Ride program, and other sponsored transportation services. Information obtained as part of the ADA paratransit application process is used to qualify individuals for these other programs when appropriate. Individuals are provided eligibility for multiple programs if they qualify. Information is also provided about travel training services. ACCESS works with local organizations that provide travel training and makes referrals as appropriate.

Seattle Metro has created a Transportation Resource Center at the facility where interviews and assessments are conducted. It includes information about accessible fixed-route transit services, local community bus services, taxi subsidy programs, social service transportation programs, travel training services, and volunteer driver programs. This information is shared with applicants as appropriate (Figure 9-2).



Figure 9-2. Seattle Metro Transportation Resource Center (courtesy of TranSystems).

Strategy Option 2—Grant Conditional Eligibility and Identify When Fixed-Route Transit Can Be Used

If not currently done, consider granting conditional eligibility as one of the outcomes of the determination process. Research and national experience suggests that about a third of all applicants for ADA paratransit eligibility are able to use fixed-route transit services some of the time. For these applicants, identify their independent travel abilities. Make this part of determinations by identifying the specific conditions under which they are able to use the fixed-route transit system. Even if conditions are not applied to trip requests, communicating abilities may encourage some riders to use fixed-route transit services when they are able. As noted earlier in this section, only 63% of transit agencies grant conditional ADA paratransit eligibility, and many of those only identify broad conditions such as “winter eligibility” or “summer eligibility.”

Implementing this strategy may require changes to the current eligibility determination process. Making detailed determinations that identify when fixed-route transit services can be used is often not possible if the process relies mainly on a paper application. It is very difficult to gather information about all types of functional abilities needed to use fixed-route transit service, for all types of disabilities and health conditions, in a standardized paper application.

To be able to thoroughly and accurately identify abilities to use fixed-route transit service, more detailed information may need to be gathered from professionals familiar with applicants. In-person interviews and functional assessments may also have to be included in the process.

TCRP Synthesis 30 found that, at transit agencies that relied on paper applications, 93% or more of all applicants were granted unconditionally eligible status. (54) About 11% of applicants were found conditionally eligible, but conditions tended to be incomplete and general. Transit agencies that utilized in-person interviews and assessments found 57% to 75% of applicants unconditionally eligible, 21% to 37% conditionally eligible, and did a better job of thoroughly identifying appropriate conditions.

Public Input

Before making significant changes to the eligibility determination process and making conditional eligibility part of the outcomes, thorough public participation is strongly suggested. It is best that the concept of conditional eligibility be explained and changes to the process discussed.

Gather Useful Information from Professionals Who are Familiar with Applicants

It is a best practice to seek information from a wide variety of professionals and not be prescriptive in the types of professionals from whom information will be accepted (e.g., only licensed physicians). Orientation and Mobility Specialists, therapists, clinical social workers, job coaches, registered nurses, independent living specialists, and many other professionals might be able to provide the best information about relevant functional abilities.

Many transit agencies identify appropriate professionals through applications and/or interviews. Follow-up is then done with these professionals to gather specific information pertinent to each applicant.

Implement In-Person Interviews and Functional Assessments

Many transit agencies that have successfully implemented conditional eligibility also include in-person interviews and functional assessments in the determination process. In-person interviews allow eligibility staff to ask more specific questions that are relevant to each applicant. Properly designed assessments can provide independent and objective measures of specific functions related to the use of fixed-route transit. This can be important if applicants have never used fixed-route transit and therefore may not be sure of their abilities to use these services.

Easter Seals Project ACTION has developed detailed guidance on using in-person interviews and functional assessments to make ADA paratransit eligibility determinations. Their report titled *Determining ADA Paratransit Eligibility: An Approach, Guidance and Training Materials* is available at no cost. (55)

Transit agencies should also consider training on developing and using in-person interviews and functional assessments. The National Transit Institute (NTI) offers a free two-day course titled “Comprehensive ADA Paratransit Eligibility Determinations.” Information about the course is available at www.ntionline.com.

ACCESS in Pittsburgh, PA, requires all applicants to first submit a paper application. All applicants are also asked to participate in in-person interviews, which are conducted by ACCESS staff. Physical and cognitive assessments are conducted as needed. If physical functional assessments are appropriate, they are conducted by physical therapists provided to ACCESS under a contract with Easter Seals of Western Pennsylvania. The assessments are performed at the same location immediately following interviews. Whenever possible, physical assessments are conducted in the real environment. Therapists take applicants on a walk along a designated route in downtown Pittsburgh (see Figure 9-3).

Applicants with cognitive disabilities are asked, as appropriate, to participate in a cognitive functional assessment. ACCESS uses the Functional Assessment of Cognitive Transportation Skills (FACTS) tool, as appropriate, for applicants with intellectual disabilities.⁶ ACCESS also uses the Mini Mental Status Exam (MMSE) for applicants with certain other types of cognitive disabilities. FACTS and the MMSE are both administered by ACCESS staff (see Figure 9-4).

⁶The FACTS assessment was developed by Easter Seals Project ACTION and, as of the preparation of this report, was the only tool for specifically assessing transportation skills that has been validated through a rigorous scientific process.

Applicants with low vision, but who are not legally blind, are asked to participate in physical functional assessments. Their abilities to travel the walking course are noted. Applicants who are legally blind are not asked to participate in functional assessments. Eligibility decisions for these applicants is made based on information in the application forms, documentation of disability provided by applicants or identified professionals, and follow-up information obtained from professionals as needed.

Determinations for applicants with psychiatric or seizure disabilities is also based on information from applicants (the application form and interview) together with verification and follow-up information from identified professionals. These applicants are not asked to participate in functional assessments unless they also have physical or cognitive disabilities.



Figure 9-3. *Physical functional assessment, Pittsburgh, PA (photo courtesy of ACCESS).*



Figure 9-4. *FACTS test being administered by ACCESS staff (photo courtesy of TranSystems).*

Be Specific in Identifying When Fixed-Route Transit Services Can Be Used

To be meaningful, determinations of eligibility need to identify the specific conditions when fixed-route transit services can and cannot be used. For example, if an applicant is able to travel up to three blocks to get to or from bus stops or rail stations, the determination should say that she is eligible for ADA paratransit service “when you must go more than three blocks to get to or from bus stops or rail stations,” rather than “when bus stops or rail stations are too far away.” Similarly, for an applicant who is able to cross streets that have pedestrian signals, but cannot cross uncontrolled intersections, the determination should indicate he is eligible for ADA paratransit “when you must cross intersections without traffic lights and pedestrian controls,” rather than “when there are intersections you are not able to cross.”

Appendix A contains lists of eligibility conditions that have been developed by Metro in Seattle, WA, and ACCESS in Pittsburgh, PA.

Be Thorough and Accurate in Identifying Abilities and Setting Conditions of Eligibility

If conditional eligibility is granted as one of the outcomes of the eligibility determination process, it is important to identify all conditions that prevent use of fixed-route transit service. Not including an applicable condition unfairly and inappropriately limits an applicant’s right to paratransit. For example, a person who uses a powered wheelchair might be granted eligibility “when snowy or icy conditions prevent travel to and from bus stops or rail stations.” But the transit agency may fail to include conditions when there are no sidewalks or when the bus stops or rail stations are not accessible. Only noting winter weather as the sole condition implies that the person is able to travel anywhere on fixed-route transit as long as there is no snow or ice. This would obviously not be the case.

If conditional eligibility is granted, it is important that all conditions that prevent use of fixed-route transit service be identified and included in the determination. Leaving out applicable conditions inappropriately limits people’s right to paratransit service.

Two helpful tools that have been developed to ensure complete and thorough determinations of eligibility are the Task List and Skills List presented in Appendix B. These lists were prepared by NTI for use in its training on ADA paratransit eligibility. The Task List identifies all of the things that riders must be able to do to use fixed-route transit services. The Skills List identifies the physical, cognitive, and sensory skills that persons must have to perform the identified tasks. When making determinations of eligibility, it is a best practice to use these lists to be sure that all applicable issues have been considered.

Identify General Conditions as Well as Specific Trips

For riders who are determined conditionally eligible, a general list of conditions under which fixed-route transit service cannot be used, and when they are eligible for ADA paratransit should be identified. These conditions are not related to specific trips, but define general functional ability. So, for example, conditions of eligibility related to endurance and walking distance should determine the maximum reasonable walking distance, not whether the applicant can get to the bus stop nearest their homes. The maximum reasonable walking distance is then considered and applied to specific trips that are requested.

In addition to these general conditions, it may also be possible to identify specific trips that applicants indicate can be made by fixed-route transit. Information about current use of fixed-route transit might be obtained in application forms or in-person interviews. For example, an applicant with an intellectual disability might have as a general condition of eligibility that she is eligible for ADA paratransit “for any trips she has not been successfully travel trained to make on the fixed-route transit system.” During the interview, it may be learned that she has been successfully travel trained to make the trips to and from her place of employment. In addition to listing the general condition of eligibility in her determination letter, the specific trip she is able to make on the fixed-route transit system can also be listed. Note that in this example, it

would be important to determine the agency that provided the training and confirm with the agency that the applicant had successfully completed training.

It is also important to note that listing specific trips that can be made by fixed-route transit in determination letters should be supplemental to the identification of general conditions of eligibility. Eligibility should not be solely tied to specific trips that can or cannot be made by fixed-route transit, since the places that applicants may travel will change during the term of eligibility. General conditions that can be applied to future, unknown trips should always be listed. Specific trips can then supplement these general conditions.

Effectively Communicate Conditions of Eligibility

ADA paratransit eligibility is complex. The concepts of individual and trip eligibility, and unconditional, conditional, and temporary eligibility can be difficult to understand. Make an effort to craft determination letters that are understandable. This is particularly important when sending letters to persons determined conditionally eligible. A sample conditional eligibility letter developed by Seattle Metro is provided in Appendix C.

Even with the most carefully crafted letters, some riders may be confused when they receive letters that tell them they are conditionally eligible and provide a list of conditions that define when they are able to use the fixed-route transit system and when they are eligible for ADA paratransit. Consider spending the time to call these riders to go through and explain the letters.

Seattle Metro and **ACCESS** in Pittsburgh both have transit agency staff call riders who have been determined conditionally eligible. The specific conditions of eligibility are explained. Questions that riders have about their eligibility are answered.

Strategy Option 3—Link the Process to Travel Training Efforts

As noted in Section 6.3, providing travel training to persons with disabilities can be a very effective strategy for encouraging and facilitating the use of fixed-route transit. The research indicated that the ADA paratransit eligibility determination process can be used to increase the effectiveness of travel training programs. Following are several strategies that have been used successfully.

Explain and Offer Travel Training

Many transit agencies provide information about travel training as part of the eligibility determination process. This is sometimes done by including information about travel training in application packets. Agencies that conduct in-person interviews often discuss travel training services with applicants as appropriate.

Identify Potential as Well as Current Abilities

As noted earlier, current abilities to use fixed-route transit service independently must be used to make ADA paratransit eligibility determinations. Potential to learn to use the fixed-route transit system cannot be cited as a reason for denying ADA paratransit eligibility. And travel training cannot be required.

It is a good practice, however, to ask applicants if they have successfully completed travel training to use fixed-route transit services. If so, the specific trips that they have learned to make can then be identified and made part of the determination (see Strategy Option 2).

Travel training can be suggested and encouraged, but cannot be required. Determinations of eligibility must reflect actual abilities, not potential abilities with training.

It is also a good practice to use the ADA paratransit eligibility determination process to identify potential to learn to use the fixed-route transit system and to suggest and offer travel training. The FACTS assessment tool developed by Easter Seals Project ACTION was specifically designed to do this for applicants with intellectual disabilities.

The eligibility determination process might also identify some applicants who have the current ability, but little or no experience actually using fixed-route transit services. In these cases, participation in travel training might help make them more comfortable using bus or rail services.

All five transit agencies that were the subjects of case studies regarding eligibility determination—ACCESS in Pittsburgh, PA, Seattle Metro, Intercity Transit in Olympia, WA, UTA in Salt Lake City, UT, and SamTrans in San Carlos, CA—use the ADA paratransit eligibility determination process to identify applicants who might benefit from travel training services. These applicants are granted temporary eligibility (typically from six months to one year) and travel training is recommended. Information about travel training services is also provided. If applicants pursue travel training, the results of training efforts are considered when temporary eligibility expires and are used to set longer-term eligibility. If applicants decide not to pursue travel training, a longer-term determination is made at the end of the temporary eligibility period and is based on current individual travel ability.

Utilize Travel Trainers to Assist with Eligibility Determinations

If travel trainers are on staff and travel training services are offered in-house, consider utilizing this staff to assist with ADA paratransit eligibility determinations. Qualified travel trainers have an understanding of the tasks and skills needed to use fixed-route transit services independently. They may also have particular knowledge and experience working with individuals with certain disabilities, such as intellectual disabilities.

Consider consulting this staff when making determinations for applicants with intellectual or other cognitive disabilities. If in-person interviews and functional assessments are used, consider having travel trainers conduct the interviews and assessments for applicants with intellectual or other cognitive disabilities.

Co-locating the travel training program with ADA paratransit eligibility can make this cross-utilization of staff possible. Co-location can be useful even if travel trainers are not used to make determinations. If applicants express an interest in learning more about travel training during interviews, they can be easily referred to meet with a travel trainer to get the process started.

Helpful Tip: If efforts are made to link travel training and eligibility determination programs, it is important to communicate to potential applicants that participation in travel training will not result in denials of ADA paratransit eligibility. Some transit agencies have noted that applicants can be reluctant to express an interest in travel training, or to even provide information about past travel training, if they have heard that it will impact their eligibility for ADA paratransit services. Public information should stress that travel training is designed to expand travel options, not to limit use of ADA paratransit. Persons who participate in travel training and learn to use fixed-route transit for particular trips will have less

TriMet in Portland, OR, and **Valley Metro** in Phoenix, AZ, house their ADA paratransit eligibility determination processes and travel training programs in the same facility. This allows them to more easily get travel training services started for applicants who express an interest in participating in the programs.

Intercity Transit in Olympia, WA, uses travel trainers to conduct functional assessments. In this way, the applicant is introduced to travel training as part of the eligibility determination process, including use of mobility devices on fixed-route transit, site evaluations/barrier assessments for particular trips, and path-of-travel navigation. Inquiries and referrals for travel training also come from other sources. Some ADA paratransit eligible riders self-refer out of a desire for greater independence and spontaneity, and many individuals participate in travel training without any affiliation with Dial-A-Lift, Intercity Transit's ADA paratransit service. Social service agencies and school transition programs also make referrals for riders and students. The tie to the eligibility determination process is, however, one important way to educate riders about travel training.

expensive, more flexible travel options for these trips. And using fixed-route transit for these trips will not impact ADA paratransit eligibility for other trips that they are not able to take by bus or rail.

Strategy Option 4—Apply Conditions of Eligibility to Trips Requested or Made By Riders

By identifying specific conditions of eligibility and making this part of eligibility determinations, some individuals may be encouraged to use fixed-route transit when they are able. For riders with little fixed-route transit experience who may not be inclined to begin using the system on their own, it may be necessary to proactively apply conditions of eligibility to trips that are requested or are currently being made. Applying conditions of eligibility to specific trip requests is known in the industry as “trip-by-trip eligibility.”

Transit Agency Responsibility

If a decision is made to do trip-by-trip eligibility, it is important to realize that the responsibility for determining if a particular trip can be made by fixed-route transit rests with the transit agency, not the riders. It would not be appropriate to make applicants conditionally eligible, require that they identify the specific trips that they cannot make on fixed-route transit, and limit their eligibility to trips that they identify. Doing this would require individuals to attempt to make trips on the fixed-route transit system without knowing if there are barriers that will cause them to be unable to complete their trips.

Instead, transit agencies ideally will review specific trips requested by riders using the conditions of eligibility established for those riders. If trips are reviewed and appear able to be made by fixed-route transit, this information would then be communicated to the riders.

Common Concerns about Implementing Trip-by-Trip Eligibility

While a significant percentage of transit agencies (63%) report that they establish conditions of eligibility as part of the determination process, the research found that very few appear to be

doing trip-by-trip eligibility. Fifty-eight transit agencies indicated that they apply conditions of eligibility in some way. Thirty-one of these indicated only limited application of conditions, such as setting “winter” or “summer” eligibility. Twenty-seven agencies reported that they apply conditions to trips in a broad way. Follow-up with many of these transit agencies indicated, though, that conditions are “related” to trips, but not actually applied to trip requests. Only a handful of transit agencies identified actually apply conditions of eligibility to trip requests. Possible reasons why trip-by-trip eligibility has not been implemented more broadly include:

Lack of Complete and Specific Conditions

Some transit agencies set general conditions of eligibility such as “distance,” or “path-of-travel barriers,” but do not make the conditions specific enough to allow trips to be evaluated. Some transit agencies also identify only a few obvious conditions, such as winter weather, but do not identify all of the barriers that might prevent travel by fixed-route transit. As a result, they are not able to use the conditions on file to actually review specific trips.

Misunderstandings about How Trip-by-Trip Eligibility Should Be Performed

A common misunderstanding is that trip-by-trip eligibility must be done by reservationists and schedulers at the time that riders are calling in to request trips. Because of a lack of national experience and direction on how to do trip eligibility, many transit agencies feel that reservationists have to determine the distance to and from stops, evaluate the paths of travel to and from bus stops, and review other types of barriers at the same time that they are trying to book rides. This misunderstanding leads to the conclusion that trip-by-trip eligibility is operationally infeasible. Adequate guidance on how trip-by-trip eligibility can be implemented has not been provided. The case studies presented below attempt to dispel this misunderstanding by describing how trip eligibility has been successfully implemented in at least two locations.

Misunderstandings About Data Needs

Some transit agencies are under the impression that extensive data about accessibility of the service area is needed before trip eligibility can be implemented. For example, they think that an inventory of all bus stops, identifying which are accessible and which are not, is needed. Or, they think that all streets and intersections need to be surveyed for sidewalks, curb ramps, and other features, and that they must have a detailed inventory of all barriers in the service area before they can implement trip-by-trip eligibility. As the case studies below indicate, trip eligibility only requires an assessment of bus stops and the streetscape for the specific trip being reviewed. A database of accessibility can be built over time, but is not required at the outset.

Case Studies of Successful Implementation of Trip Eligibility

Following are several different approaches for implementing trip-by-trip eligibility that were identified by the research. The transit agencies that were found to have successfully employed these approaches are noted.

Reviewing Specific Trips for Riders—Intercity Transit, Olympia, WA

Intercity Transit in Olympia, WA, offers to do “barrier assessments” for riders who have been determined conditionally eligible. If riders have never made a particular trip on the fixed-route transit system and are not sure what barriers might exist, they can call Intercity Transit and ask that an assessment be done. Assessments are performed by travel trainers employed by the transit agency. The travel trainers will first review the types of barriers that affect the rider. They then go out on the street, walk from the origin to the bus stop that would be used to begin the trip, and walk from the alighting bus stop to the final destination. They make note of whether or not barriers exist along the routes. Once the assessment is completed, they contact the rider to indicate if the trip can be made by fixed-route transit.

This service is offered with “no strings attached.” Riders are under no obligation to make trips by fixed-route transit if the assessment indicates that there are no barriers. Intercity Transit has found, though, that riders who make these requests are interested in using fixed-route transit whenever possible and just need to know if barriers exist before they attempt the trip.

Intercity Transit tracks the number of barrier assessments completed, but not the number of trips that are then made by fixed-route transit. In 2012, 65 barrier assessments were conducted.

Agreeing on Certain Trips That Can Be Made by Fixed-Route Transit—SamTrans, San Carlos, CA

SamTrans in San Carlos, CA, uses in-person interviews and functional assessments to make ADA paratransit eligibility determinations. As part of the interviews, assessors ask about use of fixed-route transit services. This includes past as well as current use of buses and trains. If current use is indicated, assessors ask follow-up questions about the specific trips currently made by bus or train (i.e., exact locations) and make sure to verify with applicants that it is reasonable for them to be using fixed-route transit for these trips. If applicants agree that they can continue to make these trips using fixed-route transit, this information is recorded and made part of the final determination. Letters of determination first state any general conditions of eligibility and then list any trips that applicants agree can be made by fixed-route transit. Text from a sample letter provided by SamTrans is provided below. Note that SamTrans sometimes uses the phrase “trip-by-trip” as a type of conditional eligibility and has two separate paratransit services—Redi-Wheels and RediCoast—that operate in different parts of the service area.

Text Excerpted From Sample SamTrans Letter of Conditional Eligibility

“Dear (Applicant Name):

Thank you for applying for Redi-Wheels or RediCoast paratransit with the San Mateo County Transit District (SamTrans). ADA paratransit eligibility is determined by your functional ability to use fixed-route bus service.

Based on your application and interview, we determined that you can sometimes use the fixed-route bus and sometimes are prevented from using the bus. Therefore, you qualify for TRIP-BY-TRIP use of Redi-Wheels/RediCoast.

You may use ADA paratransit for trips:

- with a destination you cannot reach using a single bus or train.
- when you must travel in hours of darkness between sunset and sunrise, due to limited vision.

As part of the above restriction, you are not allowed to use ADA paratransit during hours of daylight to travel between your home and the following locations, which you indicated you are currently able to reach using fixed-route bus service:

- Tanforan Mall, San Bruno
- Serramonte Mall, Daly City
- Your son’s school: Allen Elementary (near the San Bruno Library), San Bruno

You may use paratransit for other destinations during hours of darkness, or if the destinations cannot be reached using a single bus or train.”

SamTrans' determination letters also include other required information, such as notice of the right to appeal and how to request appeals, eligibility expiration date, telephone number for reaching the ADA paratransit program, and whether use of a PCA is authorized. The above excerpt is just the portion of the letter explaining conditions placed on eligibility.

Conditions of eligibility, as well as descriptions of trips that can be made by fixed-route transit, are included in rider files in the software used to book and schedule trip requests. Reservationists are able to access details about conditions of eligibility for riders identified as being conditional or "trip-by-trip" eligible.

SamTrans noted that they do not evaluate trips using the general conditions of eligibility, but do apply specific trip restrictions. If riders request trips that are listed in the system as being able to be made by fixed-route transit, reservationists can remind riders of the restrictions. SamTrans does not track the number of times this happens in reservations, but reservationists indicated that they do not often get requests from riders for trips that are restricted. This qualitative information suggests that riders understand the trip restrictions that have been placed on their eligibility and are fairly diligent about self-regulating their use of ADA paratransit.

Applying Conditions to Frequently Made Trips—Metro Transit, Seattle, WA

Metro Transit staff indicated that use of a thorough determination process, including in-person interviews and/or assessment for all applicants, has enabled them to identify specific conditions under which some riders can use fixed-route transit service. Metro has established 17 basic types of conditions and customizes these to individual riders. The types of conditions used by Metro are shown in Appendix A. Conditions of eligibility are explained to riders in determination letters. All riders granted conditional eligibility are also contacted in person after letters are sent and their conditions of eligibility are explained and discussed.

Prior to 2006, riders were informed of the conditions under which they were considered able to use fixed-route transit, but all trip requests were accepted and scheduled. In 2006, Metro began to apply conditions of eligibility to rider trip requests. Before implementing eligibility conditions, Metro discussed the concept at length with its advisory committee. Some advisory committee members had concerns about applying conditions and did not fully understand how trip-by-trip eligibility determinations would work. Metro continued these discussions and provided information on the proposed process until all questions were answered and the advisory committee was on board with the approach.

Metro started by doing trip eligibility reviews for the most frequently made trips. From 2006 through 2008, only trips made at least once per week were reviewed. Once these most frequent trips were identified and reviewed, Metro lowered the threshold. In 2009, trips made at least 10 times in 12 weeks were reviewed. In 2010, the threshold was lowered to trips made at least eight times in 12 weeks. In 2011, this was lowered to six trips in 12 weeks. And in 2012, at the time of the review, all trips made at least three times in 12 weeks were being reviewed.

Eligibility Data Management. Metro uses scheduling software to manage the Access paratransit service. Details about rider eligibility are entered into the system. This includes applicable codes for riders granted conditional eligibility. It also includes information about individual trips that have been reviewed for eligibility. The software has been customized to use the information in the rider eligibility file to assist with trip-by-trip eligibility determinations.

Eligibility Conditions. As shown in Appendix A, some eligibility conditions vary by time of day or time of year. These include things such as hot or cold temperatures, the presence of

snow or ice, and low or bright light. Metro has developed the following policies and procedures related to these types of conditions:

- *Hot temperature (HT)* conditions have been standardized to mean that riders are not able to travel when the temperature exceeds 85° F. Seasonal eligibility is granted from July 1 through August 31 to riders with HT conditions. During this period, riders may request trips during the full advance reservation period (up to three days in advance). From September 1 through June 30, riders with HT conditions can only request trips one day in advance, and trips are booked only if the daytime high temperature for that area of King County is greater than 85° F for that day.

From July 1 through August 31, the scheduling software is set not to limit any trip requests based on the HT condition. From September 1 through June 30, managers in the call center look at the predicted temperatures throughout the service area for the next day. If the temperature in any part of the area is predicted to be above 85° F, the software is set to not limit trips based on the HT condition. If no areas are predicted to have temperatures above 85° F, the software is set to apply HT conditions to any trips requested by riders who have this as part of their conditional eligibility.

- *Cold temperature (CO)* conditions have been standardized to mean that riders are not able to travel when the temperature is below 40° F. Seasonal eligibility is granted from November 1 through February 28 to riders with CO conditions. During this period, riders may request trips during the full advance reservation period (up to three days in advance). From March 1 through October 31, riders with a CO condition can only request trips one day in advance, and trips are booked only if the daytime high temperature for that area of King County is below 40° F for that day.

From November 1 through February 28, the scheduling software is set to not limit any trip requests based on the CO condition. From March 1 through October 31, managers in the call center look at the predicted temperatures throughout the service area for the next day. If the temperature in any part of the area is predicted to be below 40° F, the software is set to not limit any trip requests based on the CO condition. If no areas are predicted to have temperatures below 40° F, the software is set to apply CO conditions to any trips requested by riders who have this as part of their conditional eligibility.

- *Snow/ice (SNI)* conditions apply when there is actually snow or ice on the ground that would prevent travel. Riders with this condition must call one day in advance to book trips. During non-winter months, the software is set to apply the SNI condition to any trip requests by riders who have this as part of their eligibility conditions. Throughout the winter months, managers in the call center review the predicted weather throughout the service area and adjust the software setting appropriately. If snow or ice is predicted anywhere in the service area, the software is set to not limit trip requests based on this condition. If there is no snow or ice predicted in the service area, the software is set to apply this condition to trips requested by riders who have this as one of their conditions.
- *Darkness (NT)* conditions apply to riders who have vision disabilities and cannot travel during times of low light. These riders may book trips that involve travel from sunset to sunrise. The scheduling software is programmed to apply or not apply this condition using time settings each month. The time settings are based on the longest hours of darkness each month rounded to the nearest five minutes (rather than being set each day).
- *Extreme Light (LT)* conditions apply to riders who cannot travel during times of bright light. Metro's policy is to allow riders with this condition to use Access during any daylight hours. Daylight hours are set each month based on the longest hours of daylight for that month rounded to the nearest five minutes.

“Pathway” conditions must be evaluated by Mobility Specialists for the specific trips requested. These include things such as maximum walking distances, steep hills, inaccessible bus stops, difficult intersections or street crossings, uneven terrain, or the lack of sidewalks or curb ramps. Since 2008, Metro has used three Mobility Specialists, provided by their call center contractor, to assist with pathway reviews. Mobility Specialists regularly generate lists of riders and trips meeting the review threshold (currently at least three times in 12 weeks). Trips that have not yet been evaluated are then assigned for review. Mobility Specialists start by identifying the specific conditions that would prevent riders from using fixed-route transit service. If riders have “Pathway” conditions, the Mobility Specialists use Metro’s fixed-route trip planner to determine how the trips could be made by bus or train. The fixed-route transit stops that would need to be used are identified and maps are generated showing the streets and paths of travel that would be used to get from the origin to the boarding stop and from the alighting stop to the destination. On-street reviews are then conducted along these paths of travel to determine if any barriers exist.

Metro has developed an automated data collection process to assist in recording observations and storing information about pathways. Mobility Specialists use handheld computers to record observations (see Figure 9-5). Maps of the street networks at both the origin and destination are loaded onto the handheld units. Observations about the accessibility of each street segment are then entered directly into the units and linked to the street segments or intersections on the maps. Graphic attributes (such as the location of curb ramps, the steepness of the street segments, or uneven surfaces) are then used to display accessibility features on the maps (see Figures 9-6 and 9-7).

All physical barriers, whether or not they apply to the rider in question, are evaluated so that the information for those street segments can be stored and used in the evaluation of other trips in those areas.

Results of the on-street reviews are then used to determine if there are any pathway barriers that would prevent the trips being evaluated from being made by fixed-route transit. This information is entered into a trip spreadsheet for each conditionally eligible rider. Each row in the spreadsheet represents a trip that has been evaluated. If no barriers are identified, trips are tagged in the spreadsheet with a NQ (Not Qualified) coding, meaning there are no pathway



Figure 9-5. Mobility specialist recording data on a handheld computer (photo courtesy of Metro).



Figure 9-6. Map showing street segments with graphic attributes (screenprint courtesy of Metro).

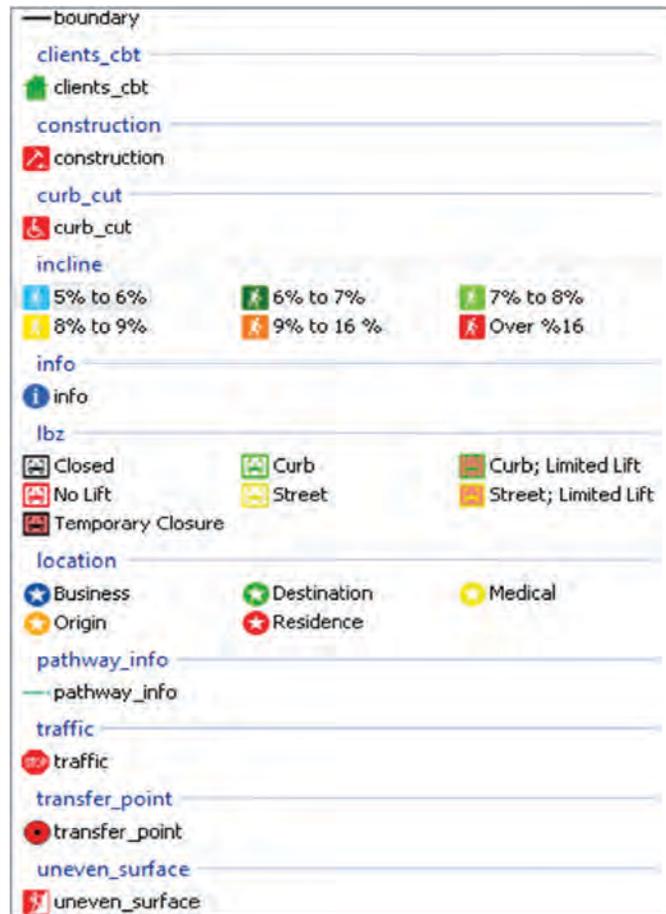


Figure 9-7. Attributes and attribute icons used on trip review maps (screenprint courtesy of Metro).

barriers that qualify them for Access paratransit service. Information in rider trip spreadsheets is then uploaded into the rider eligibility file in the scheduling software.

If pathway reviews indicate that there are no travel barriers, riders are contacted in person by Metro's Mobility Planner. They are informed of the reviews and told that there do not appear to be any barriers that would prevent the use of fixed-route transit. Detailed information about how to make the trips by fixed-route transit is also prepared and sent to riders. If riders are not comfortable attempting the trips alone, travel training services are offered to assist them with the transition. This in-person contact is made before information is uploaded into the scheduling software rider eligibility file, so riders do not first learn that trips are no longer eligible when they call to book the trips.

Documentation of Travel Training. If riders have been successfully travel trained to make certain trips by fixed-route transit, this information is also added to their eligibility file. The origin and destination addresses for these trips are entered and these trips are given the code "BTT" (Bus Travel Trained). As trips are requested, the software will search to see if the origins and destinations of the trips being requested match any BTT trips in the riders' file. If so, the software generates a "pop-up" box alerting the reservationist that this is a trip for which the rider has been travel trained. Metro's policy is to still book the trip, but reservationists record these trips and notify travel trainers that riders have requests the trips by paratransit. Travel trainers then follow up with individuals to determine why they decided to make these trips by Access paratransit.

Metro only considers riders to have been successfully travel trained if they completed training provided by Metro. Information provided by applicants about training received from others is not considered. Staff noted that this policy has been adopted so that Metro can be sure of the quality and results of the training.

Transit Trips That Require Transfers. Another condition that is considered is whether trips can be made directly on fixed-route transit, that is, without a transfer, or whether one or more transfers are required. Some riders can only use fixed-route transit for direct trips. Riders with this type of condition have a "BX" coding in their eligibility file. Mobility Specialists consider this issue when doing reviews of frequently made trips. If trips can be made directly, the trip is given an NQ code in the rider's trip spreadsheet. If there are no other conditions or barriers and the trip can be made by fixed-route transit, riders are contacted in person by the Mobility Planner and options for using the bus or train are explained.

Two conditions depend on the effects of the disability on the day of service. These are "Life-Sustaining Medical" (LSM) and "Good Day/Bad Day" (GBD) conditions. The software is not programmed to limit trip requests based on these conditions. Trip requests from riders with these conditions are simply accepted, but these riders must book trips no more than one day in advance.

Customized Trip Scheduling Software. The software used by Metro to accept and schedule trip requests has been customized to consider all of the above information. If a trip is being scheduled for a conditionally eligible rider, the software will examine the rider's trip eligibility file to see if there are any trips coded as NQ that match the origin and destination of the trip being requested. If the trip is found to be in the file and coded NQ, the software will also consider whether any other conditions apply for that rider that would prevent use of fixed-route transit. This includes conditions related to weather and time of day. The system will only generate a pop-up window and alert reservationists that the trip is not eligible and can be made by fixed-route transit if all conditions in the file for the rider are satisfied. The pop-up windows are also designed to provide relevant information that reservationists can relay to riders. For example, if a rider only has a cold temperature condition (CO), and the predicted weather does not prevent travel by fixed-route transit, the pop-up screen will indicate the rider is only eligible to ride from November 1 through February 28, or when the temperature is below 40° F.

While riders can challenge trip eligibility decisions, it was noted that this rarely happens. Metro staff attributed this to (1) telephone follow-up with all riders to explain their conditions of eligibility, (2) personal contact by phone if trip reviews indicate no barriers and the possibility of making trips by fixed-route transit, and (3) sending riders detailed information about how to make trips by fixed-route transit when reviews identify this as an option.

Applying Established Conditions to All Trip Requests—ACCESS, Pittsburgh, PA

ACCESS is considered a pioneer in applying conditional and trip-by-trip eligibility. The agency began providing conditional eligibility to riders who could sometimes use fixed-route transit services in 1995. Conditions of eligibility have been applied and trip-by-trip eligibility decisions made since July 1, 2003. ACCESS has applied conditions of eligibility to all trips, not just subscription or frequently made trips, since 2003. There is no standard list of conditions that apply to eligibility. The conditions are established based on individual rider abilities.

Public Input and Support. A significant public input process was undertaken before trip-by-trip eligibility determinations were implemented. This included several large community informational meetings, as well as small group meetings with riders to explain how the process would work. ACCESS also has a regular newsletter. Information about conditional and trip-by-trip eligibility was the focus of several newsletters during the time the process was being discussed.

Initially, some riders were not pleased with the idea of trip eligibility. In the end, though, key advocates in the community, who supported the idea of integrated transportation and maximizing use of the fixed-route transit service, convinced others in the community to support the policy. The community did request that ACCESS not implement trip eligibility until all Port Authority of Allegheny County (PAT) fixed-route transit services were 100% accessible. This way, trip eligibility would be applied fairly to all riders, regardless of the type of disability. The community also requested that trip eligibility be applied to all trips, rather than just subscription trips or the most frequently made trips—again for fairness reasons. In total, the policy was debated over a two year period, and ACCESS waited until 2003, when all PAT services became fully accessible, to implement the process.

Convenience Fare. Another key to gaining public support was the introduction of a “convenience fare.” Riders argued that even though trips might be able to be made on fixed-route transit, there may be important reasons why they might prefer to make trips by paratransit. They recognized, though, that these would not be ADA eligible trips. So, it was agreed that these trips would be subject to a higher fare. This convenience fare was set with community input at twice the regular ADA paratransit fare (currently \$6.30 rather than \$3.15). ACCESS and PAT agreed to hold the convenience fare at this price subject to available funding. It was agreed that the fare would be increased if demand for convenience rides was too high and could not be funded. Since its adoption in 2003, riders have been responsible in using the convenience fare option. In FY 2012, a total of 558,332 ADA paratransit eligible trips were provided. Only 32,837 convenience fare rides have been requested, about 5.6% of the total ADA plus convenience trips.

Trip Reviews. From 2003 to 2007, ACCESS implemented trip-by-trip eligibility determinations without any special software or technology. As trips by conditionally eligible riders were requested, the origins, destinations, and names of the riders were recorded and added to a list of trips that needed to be reviewed. Customer service staff took one trip at a time, looked up the rider’s specific conditions, and conducted a review to determine if the trip requested could be made by fixed-route transit. Until trips were reviewed and decisions about their eligibility made, the trips were considered presumptively eligible. Once trips were reviewed, the decisions about eligibility were recorded for each conditionally eligible rider. If it was found that trips could be made by fixed-route transit, riders were contacted by phone by customer

service staff. Detailed instructions for making the trip by fixed-route transit were provided. Applicable bus schedules and instructions were also prepared and mailed to riders. ACCESS also offered riders the option of having a staff person go with them on the first trip. This personal contact was made before trip eligibility decisions started to be made in reservations. This way, riders knew the eligibility of trips even before they called to request rides. As noted above, they could still request rides under the convenience fare option, but they knew in advance which trips qualify as ADA eligible at the lower fare and which would require paying the higher convenience fare.

In some cases, the review could be conducted by simply looking up readily available information about the trip. For example, if a rider's only condition was that he/she could not make a trip by fixed-route transit if it involved a transfer, the staff person only needed to consult the PAT trip planner to see if the trip could be made by fixed-route transit without a transfer. Or, if the only condition was that the rider could only walk three blocks to get to or from fixed-route transit stops, the staff person could again consult the trip planner as well as a computer mapping program to see how far the origin and destination were from stops that would be used to make the trip.

Other reviews took more effort. If the rider's conditions included path-of-travel issues, such as steep terrain, a lack of curb cuts, a lack of sidewalk, or uneven surfaces, the staff person needed to go out on the street and evaluate the path of travel to and from stops firsthand.

Weather and time of day conditions were handled in reservations. These included heat and cold, snow and ice, and dusk to dawn conditions. ACCESS provided information about predicted weather to each service provider. Each provider was required to post the predicted weather in their reservations area. Reservationists then considered these predicted conditions when trip requests were received from riders with conditional eligibility. ACCESS worked with riders and its advisory board to establish a policy for handling these types of conditions. Riders with weather and time of day conditions were asked to call one day in advance to place trip requests. It was agreed that the National Weather Service (NWS) would be used, since it was readily available by phone, online, and on the radio and was updated several times each day. If the NWS predicted a 30% or greater chance that the particular weather condition would exist, the ride was made eligible. If that weather condition did not materialize, the ride was still provided. And if a trip was not approved and the weather turned out to be worse than predicted, riders with weather conditions were allowed to call and request same-day rides. ACCESS staff reported that the NWS proved to be surprisingly reliable and that weather related conditions of eligibility turned out to be some of the easiest to apply. The number of same-day trips that needed to be provided because of incorrect NWS forecasts were very small and very manageable. Same-day trips because of unpredicted snow and ice proved to be easy to accommodate since many other riders tended to cancel trips on those days, creating slack time in the schedules.

Good Day/Bad Day Conditions. Trip requests by riders with "good day/bad day" conditions, meaning their abilities to use fixed-route transit could change each day, were not reviewed. Riders were simply allowed to place trip requests and these requests were booked.

Manual Record Keeping. In the initial years of implementation, ACCESS created manual recordkeeping systems to manage trip eligibility information. This included street information binders for various sections of the service area, which were used to record the accessibility of street segments. It also included a catalog of conditionally eligible riders, with decisions about their prior trip requests.

In the first few years of implementation, ACCESS indicated that about 0.5 FTE of customer service staff time was spent reviewing trip eligibility and accompanying riders the first time they used fixed-route transit. Over time, the amount of staff effort required decreased as many

of the trips made by conditionally eligible riders were already reviewed. As records of path-of-travel barriers were developed, staff could also consult these records rather than going out to review street segments that had not yet been evaluated. Once the path-of-travel from a rider's home to the nearest bus stop was reviewed, decisions about future trips that originated at the home only required an evaluation of the path of travel from the alighting stop to the destination.

In 2012, few new trips by existing conditional riders needed to be reviewed. Most of the time was spent reviewing trips requested by newly certified conditional riders. ACCESS managers were estimated that only about 1.5 hours per day was spent by customer service staff in 2012 to review trip requests from conditionally eligible riders.

While it was possible to do trip-by-trip eligibility with manual records, ACCESS staff indicated that there were some problems. Initially, riders complained that not enough information was provided when trips were determined able to be made by fixed-route transit. This was addressed by stressing the need for better communications about trip decisions. The decentralized service delivery design also presented challenges. With eight different providers and reservations centers, there were inconsistencies in the application of trip eligibility procedures. ACCESS had to regularly audit trip bookings by conditionally eligible riders to improve consistency.

Software for Trip Eligibility. In 2007, ACCESS developed software to assist with trip-by-trip eligibility determinations. The software, known as ACCESS Infinity, was developed with a local information technology company, and also includes reservations, scheduling and dispatch capabilities. The software has been adopted by all of ACCESS's dedicated service providers.

A trip eligibility file is set up for all riders who are conditionally eligible. The file contains detailed information about their conditions of eligibility. It also notes the fixed-route bus stop nearest the home and whether the rider is able to get to that stop—determined through interviews and on-street assessments as needed. Knowing whether riders can get to and from the nearest bus stop is then helpful for doing trip eligibility reviews for any trips that start or end at the home.

The eligibility file also includes the results of trip reviews. Riders indicate in the ADA paratransit application form their three most common trips. These are reviewed as part of the initial eligibility determination and riders are informed in determination letters, as well as through personal phone contacts, whether these trips can be made by fixed-route transit. The results of the review of these three most common trips are also entered into the trip file. As additional trips are requested and reviewed, they are also added to the file. The lower ADA paratransit fare is linked to trips that are determined not possible by fixed-route transit. The higher convenience fare is linked to trips that are determined able to be made by fixed-route transit. A screen print of a sample ACCESS Infinity trip eligibility file is shown as Figure 9-8.

When riders call and request trips, the Infinity system compares the origin and destination of the trip being requested to trips in the rider's eligibility file. If the information in the file indicates that the trip is ADA paratransit eligible, the system populates the fare field on the trip booking screen with the ADA paratransit fare. This lets the reservationists know that the trip is paratransit eligible. The system also tags the trip with the code for why the trip cannot be made by fixed-route transit using standardized conditional trip eligibility codes (e.g., "8 – Route Not Accessible"). If the trip eligibility file indicates that the trip can be made by fixed-route transit, the system enters the convenience fare into the fare field in the trip booking screen, letting the reservationist know that the trip is not ADA paratransit eligible but can still be taken if the rider elects to pay the higher fare. If the trip being requested is not in the trip eligibility file (a new request or a trip that has not yet been evaluated), the system considers the trip presumptively ADA paratransit eligible.

Summary Information

MobilityAids	Accounts	Addresses	Phone Numbers
Walker	GE	1600 Rosedale St Zone 177	ClCell (412) 877-5460
WC-Power	GEC		ClEmerg (412) 628-2587
	GEC		ClHome (412) 829-2371
	GEX		

Created By: ACCESS Created Date: 3/29/2008 Updated By: rbaich Updated Date: 5/16/2012

[TRIP INQUIRY](#)

ADDRESSES	MOBILITY	LOCATIONS	NOTES	COND. TRIPS	ACCOUNTS	PHONE #S	STANDING ORDERS	ELIG. MGMT	MISC	EPURSE	CORRESPONDENCE	OWES TIX				
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		99 - No bus within 3/4 mile - not feeder candidate					Yes		1600 Rosedale St	177	1032 Broadway St	177	blherman	02/27/2012	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		0 - General				Home Route: P76; / Home Inbound Stop: "GREENSBURG PIKE OPP BOWLING ALLEY" (0.15) / Home Ou...	Yes						ACCESS	04/10/2012	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		99 - No bus within 3/4 mile - not feeder candidate					Yes		1600 Rosedale St	177	2570 Haymaker Rd	140	blherman	04/17/2012	blherman 02/15/2013
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		5 - Terrain				Too short to double feed, 5.2 miles. No sidewalks at destination	Yes		1600 Rosedale St	177	2500 Mc Crady Rd	121	blherman	04/19/2012	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		99 - No bus within 3/4 mile - not feeder candidate					Yes		1600 Rosedale St	177	2380 McGinley Rd	140	blherman	07/26/2012	blherman 02/15/2013
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		99 - No bus within 3/4 mile - not feeder candidate					Yes		1600 Rosedale St	177	2420 Moss Side Blvd	139	blherman	08/08/2012	blherman 02/15/2013
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		99 - No bus within 3/4 mile - not feeder candidate					Yes		1600 Rosedale St	177	2580 Haymaker	140	blherman	08/16/2012	blherman 02/15/2013
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		5 - Terrain				Too short to feed 2.7 miles, berm of road	Yes		1600 Rosedale St	177	1916 Lincoln Hwy	177	blherman	08/29/2012	blherman 02/15/2013
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		88 - Convenience				Can use bus Feed to Walmart 59/69	Yes		1600 Rosedale St	177	101 6th St	110	blherman	09/27/2012	blherman 02/15/2013
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		5 - Terrain				Too short to double feed 5.1 miles, berm	Yes		101 Mall Blvd	137	1600 Rosedale St	177	blherman	10/01/2012	blherman 02/15/2013
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		88 - Convenience				Able to ride bus 61C to McKeesport Transportation Center Feed to destination	No		719 Liberty Ave	110	1600 Rosedale St	177	blherman	11/15/2012	blherman 02/15/2013
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		5 - Terrain				5.6 miles Too short to dble feed Berm	Yes		1600 Rosedale St	177	699 Rodi Rd	121	jmccormick	12/06/2012	blherman 02/15/2013
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		5 - Terrain				WHEN USING WALKER	No						blherman	12/29/2012	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		5 - Terrain				Too short to double feed-Berm of road 9.2 miles	Yes		1600 Rosedale St	177	250 Aster St	122	blherman	01/08/2013	blherman 02/15/2013

[SAVE](#) [CANCEL](#)

Copyright © 2007 ACCESS Transportation Systems. All rights reserved.
Build 5.0.1.201001081458

Figure 9-8. Screenprint of sample infinity trip eligibility file (courtesy of ACCESS).

Weather and Time of Day Conditions. With the new software system, ACCESS handles weather and time of day issues as follows: At the time of trip bookings, the Infinity software does not consider weather or time of day issues. Trip requests by riders with these types of conditions are booked only considering other types of possible barriers. One day before the day of service, ACCESS staff reviews all trips that are booked with weather or time of day eligibility codes. If the predicted weather or time of day will not prevent travel, riders are contacted and informed the trip can either be taken on fixed-route transit or on paratransit at the convenience fare. ACCESS staff noted that very few calls typically have to be made. Weather and time of day issues are often not the only conditions that affect travel.

ACCESS is considering upgrades to the Infinity system to avoid call-backs, though. In the future, ACCESS plans to have the Infinity system link to the NWS so that predicted weather can be considered during the trip booking process. Adding information about hours of dawn and dusk is also being considered so that this issue can be automatically considered.

ACCESS tracks trips provided to conditionally eligible riders. Trips are categorized based on the primary barrier that prevents use of fixed-route transit. For example, if a rider's use of fixed-route transit is affected by the lack of sidewalks as well as by hot temperatures, and there are no sidewalks from her origin to the closest bus stops, the trip would be placed under the "Route Not Accessible" category since she would always be prevented from making this trip, regardless of the temperature.

When applicable, this information is used to inform local officials about the need for accessibility in the community. For example, ACCESS can identify the trips prevented from being made on fixed-route transit due to a lack of intersection controls, or the lack of sidewalks or curb ramps. This information can then be provided to local communities and can be used to advocate for accessibility improvements. Similarly, ACCESS can identify trips that cannot be made because of inaccessible bus stops and can provide this information to PAT.

9.4 Outcomes, Costs, and Benefits

The literature contains some information about the outcomes and costs associated with more thorough determination processes that can identify conditions of ADA paratransit eligibility. Very limited information exists, however, about the outcomes, costs and benefits of doing trip-by-trip eligibility determinations.

As part of this study, additional outcome data was collected from the five case studies conducted on conditional and trip-by-trip eligibility determinations. Cost and benefit information associated with trip-by-trip eligibility determinations was collected from two of the case study sites—Metro Transit in Seattle and ACCESS in Pittsburgh.

This section first summarizes the outcomes, costs and benefits associated with more thorough ADA paratransit eligibility determinations. It then provides a detailed analysis of the outcomes, costs and benefits of trip-by-trip eligibility determinations at Metro Transit in Seattle and ACCESS in Pittsburgh.

More Thorough Eligibility Determinations

Outcomes

TCRP Synthesis 30 (54), the first national review of ADA paratransit eligibility processes and outcomes, provides information about typical outcomes reported by transit agencies using various types of determination processes. Transit agencies that relied on self-certification and

verification of disability from professionals reported that 88% of applicants were determined unconditionally eligible, 11% were found to be conditionally eligible, 1% were given temporary eligibility, and 7% were found not eligible. Agencies that included in-person interviews and functional assessments in the process reported much different results. Depending on how interviews and functional assessments were used, they reported that between 57% and 75% were unconditionally eligible, 18–37% were conditionally eligible, 4–10% were eligible on a temporary basis, and 9–23% were not eligible.

In 2009, the National Transit Institute (NTI) collected eligibility determination outcome data from three transit agencies that were considered to have thorough processes. The data are included in NTI’s participant workbook for its course on Comprehensive ADA Paratransit Eligibility. (58) The three transit agencies reported finding between 48% and 70% of applicants unconditionally eligible, 28–31% conditionally eligible, 4–11% eligible on a temporary basis, and 2–9% not eligible.

The research suggests that a thorough and accurate ADA paratransit eligibility process does not result in significantly increased denials of eligibility. Instead, it does a better job of identifying when some applicants are able to use fixed-route transit, which results in more applicants being conditionally eligible rather than unconditionally eligible.

A study conducted for the Regional Transportation Authority (RTA) in Chicago also provides outcome information collected from five transit agencies that were considered to have thorough processes. (59) All five required applicants to participate in interviews and performed functional assessments as needed. Reported outcomes were: 38–70% unconditional; 25–54% conditional; 2–13% temporary; and 1–11% not eligible.

Outcome data were also collected from five transit agencies that served as case studies for this research. Four of the agencies (Metro Transit, ACCESS, UTA, and SamTrans) require all applicants to participate in in-person interviews. Functional assessments are then conducted as needed. Intercity Transit uses in-person interviews and functional assessments only as needed and typically asks about 12% of applicants to appear in-person. Reported outcomes were as follows: 53–70% unconditional; 8–30% conditional; 7–17% temporary; and 1–15% not eligible.

Table 9-3 summarizes outcome information from all of the above sources. The table shows outcomes for transit agencies that only use paper applications as well as outcomes from agencies that use in-person interviews and functional assessments. Outcomes for transit agencies that use only paper applications are based on *TCRP Synthesis 30*. Outcomes shown for agencies that use in-person interviews and functional assessments are averages, as well as ranges, based on all of the sources detailed above. On average, studies have found that transit agencies that rely on paper applications find 88% of applicants unconditionally eligible, 11% conditionally eligible, and 1% eligible on a temporary basis. Transit agencies that include in-person interviews and functional assessments in the process find, on average, about 63% of applicants unconditionally eligible, 28% conditionally eligible, and 9% eligible on a temporary basis.

Table 9-3. Reported ADA paratransit eligibility determination outcomes for paper versus in-person determination processes.

Type of Process	Determination Outcomes			
	Unconditional	Conditional	Temporary	Not Eligible
Paper Applications with Professional Verification*	88%	11%	1%	7%
In-Person Interviews and Functional Assessments**	63% Range: 38-75%	28% Range: 8-54%	9% Range: 2-17%	7% Range: 1-23%

*Source: (54). Note: Report provides averages. Ranges not indicated.

**Sources: (47, 54, 58, 59), Case Studies.

It is interesting to note that using in-person interviews and functional assessments does not appear to increase the percent of applicants found not eligible. For both types of processes, about 7% of applicants were determined not eligible. More thorough processes that use in-person interviews and functional assessments find more applicants conditionally eligible or eligible on a temporary basis, and fewer applicants unconditionally eligible.

Costs

Three types of costs are incurred to make in-person interviews and functional assessments part of the ADA paratransit eligibility determination process. These are costs associated with conducting interviews and assessments, facility and equipment costs for setting up assessment centers, and transportation costs for getting applicants to and from assessment centers.

Interview and Functional Assessment Costs

Limited information is available in the literature on the cost of in-person interviews and functional assessments. The information available, though, suggests that costs can vary significantly depending on how the process is structured, what parts of the process are performed by transit agency staff versus contractors, and the qualifications of individuals performing functional assessments.

Material for NTI's Comprehensive ADA Paratransit Eligibility course provides cost information for two transit agencies that contract to have licensed physical or occupational therapists conduct functional assessments. (58) Costs (in 2009) ranged from \$105 to \$155 per interview/assessment. Assuming 2% inflation per year, this would suggest 2013 costs of \$114 to \$168 per interview/assessment.

A study conducted for Valley Metro of Phoenix includes 2008 cost information from two transit agencies that contract to have other types of professionals perform interviews and functional assessments. (47) Costs ranged from \$78 to \$93 per interview and assessment. This would be about \$86 to \$103 in 2013 dollars.

The case study of Metro Transit in Seattle, conducted as part of this study, found similar costs. In 2011, Metro Transit paid \$799,085 to a regional medical center to have 4,694 interviews and functional assessments performed by occupational or physical therapists. On average, interviews and assessments cost \$170. In 2013 dollars, this would be about \$177 per interview/assessment.

The case study of ACCESS in Pittsburgh, PA, indicated that it is possible to incorporate in-person interviews and functional assessment into the eligibility determination process at a lower cost by working cooperatively with local disability organizations. ACCESS has a contract with Easter Seals of Western Pennsylvania (ESWP) under which ESWP provides the services of physical therapist at a rate of \$50 per hour. ACCESS then schedules assessments as needed. ACCESS estimates that each functional assessment requires about one hour of time, which includes the assessment as well as paperwork. Each functional assessment therefore costs ACCESS about \$50.

Facility and Equipment Costs

Facility and equipment costs also can vary significantly depending on how assessments are conducted. Some agencies have built elaborate indoor assessment centers with ramps of various slopes, paths of travel with various types of surfaces, mock-ups of buses and bus stops, and mock-ups of street crossings. All assessments are conducted in a simulated travel environment in these facilities. Other transit agencies conduct assessments in the real environment whenever possible and have minimal props and equipment in an indoor facility that are used only when going outdoors is not appropriate.

Facility costs can also vary based on the number of assessment centers that are set up. Typically, unless the service area is very large, transit agencies conduct interviews and assessment in one central facility. This not only reduces cost, but can help ensure more consistent outcomes. The research team is aware of only a few transit agencies that have set up multiple assessment centers—New Jersey Transit, which operates statewide; the RTA in Chicago, which has an ADA paratransit service area roughly the size of Connecticut; and New York City MTA, which has multiple contractors (due in part to the volume of applications received) who conduct interview assessments at their various locations in each of the city’s boroughs.

- **Access Services, Inc. (ASI) in Los Angeles** is an example of a transit agency that built an assessment center and conducts all assessments in this facility. The facility is 19,500 sq. ft. in size and cost \$17,000 in rent per month in 2009. A large facility is needed to accommodate the 150–160 assessments done each weekday and to allow multiple assessments to be conducted at one time. Modifications to the facility and equipment for conducting assessments cost about \$310,000 in 2005. (58)
- **SamTrans in San Carlos, CA**, also conducts all assessments indoors in a specially built facility. The facility is smaller, though, and is designed for much lower volume—about 10 to 11 applicants per day. The facility is about 3,000 sq. ft. in size. As part of the case study conducted for this research, SamTrans indicated that initial modifications to the rented space, as well as props and equipment, cost about \$70,000. Subsequent changes were made to the facility costing about \$10–15,000. Total facility build-out and equipment cost therefore was about \$80–85,000.
- **ACCESS in Pittsburgh** is an example of an agency that conducts outdoor assessments whenever possible. Assessments are conducted along an outdoor course located in the neighborhood around the main ACCESS offices. Two conference-sized rooms have been set aside for interviews and assessments. Minimal props, including a mock-up of a curb and curb ramp, and a mock-up of a bus lift have been built. Total cost incurred for indoor props and equipment was estimated by ACCESS staff at about \$10–15,000.
- **DART in Dallas** also conducts assessments in the real environment whenever possible. The assessment center is housed in DART’s main administrative building in downtown Dallas. Assessments are conducted along a set route in the area of the center. The center is located at a light rail station, which allows assessments to include short trips on the light rail as appropriate. The assessment center is composed of four offices where interviews are conducted and a common area connecting the offices where some basic assessment props are located. In total, the center is about 1,000 sq. ft. in size. If outdoor assessments are not appropriate because of extreme weather, assessors walk with applicants along corridors in the building. The cost for props and equipment was minimal.

Transportation Costs

U.S.DOT ADA regulations require that there can be no cost associated with applying for ADA paratransit eligibility. FTA has indicated that this means that transit agencies must provide transportation, if needed by applicants, to and from any required in-person interviews or assessments.

Typically, when interviews and functional assessments are being scheduled, eligibility determination staff ask if applicants need transportation to and from the assessment center. If transportation is needed, it is either arranged on the transit agency’s ADA paratransit service (at no fare), or provided through a separate contract or fleet of vehicles (also at no fare).

Costs for providing transportation to and from interviews/assessments vary based on local circumstances. Higher per trip costs can be expected in areas with large ADA paratransit service areas with long average trip lengths. Higher costs can also be expected if the assessment

center is not located near accessible public transportation, as a higher percentage of applicants will need assistance with transportation.

In general, transit agencies should expect to pay something close to the average ADA paratransit per trip cost for transportation to and from interviews and assessments. Depending on the location of the assessment center and the quality of fixed-route public transit services, agencies should also expect 70–80% of applicants to request assistance with transportation.

Summary of Costs

Table 9-4 provides a summary of the likely costs associated with including in-person interviews and functional assessments in the ADA paratransit eligibility determination process. The added cost of performing interviews and functional assessments is typically \$100–\$150 per applicant. This can range from as low as \$50 to as much as \$200 per applicant. Factors that further define the cost are the required qualifications of the staff that perform assessments (e.g., whether licensed physical or occupational therapists are used), and if the transit agency is able to work with local disability or public service organizations that provide in-kind contributions to the process.

The cost of setting up an assessment center is typically about \$50,000 to \$100,000. Facility set-up costs can vary significantly, from a low of about \$15,000 to as much as \$350,000. Set-up and build-out cost depends on the size of the facility needed and whether extensive testing is done indoors versus in the real environment.

Ongoing facility costs depend on the size of the facility, local commercial rents, and whether a new facility is needed. An average assessment center is in the range of 2,000 sq. ft. Ongoing facility costs can be minimal if assessments are conducted mainly in the real environment and interviews are conducted in existing, available administrative offices. Ongoing costs can be higher, though, if a large assessment center is created. Centers of 15,000 sq. ft. and greater have been set up by some agencies.

Transportation costs can be expected to be about the same as the average local ADA paratransit costs. The majority of applicants (perhaps 70–80%) can be expected to need assistance with transportation. The percent of applicants needing transportation will depend on the location of the assessment center and on its proximity to accessible fixed-route transit services.

Table 9-4. Summary of costs for incorporating in-person interviews and functional assessments into the eligibility determination process.

Cost	Typical Cost	Range and Factors
Interview and Functional Assessment Costs	\$100-\$150 per interview/assessment	\$50-\$200 (depending on required qualifications of assessors and cost-reduction assistance received from working with local disability agencies)
Facility and Equipment Costs—Set-Up	\$50,000-\$100,000	\$15,000-\$350,000 (depending on the role of the indoor facility in the process and number of applicants per day)
Ongoing Facility Cost	Rent for 2,000-3,000 sq. ft. space	From minimal (share of rent in current agency facility) to rent for 15,000 sq. ft facility. Depends on size of desired assessment center
Transportation Costs	Approx. the average local ADA paratransit cost per trip, with 70-80% of applicants requiring assistance with transportation	Actual cost depends on typical local trip distances and on proximity of the assessment center to accessible fixed-route transit services

Benefits

The main benefit of more thorough eligibility determination is that more applicants are found able to use fixed-route transit services for some of their trips. If implemented in a holistic way, riders are provided with information about how to make some trips by fixed-route transit. This can increase independence and allow people to travel more spontaneously.

Finding more applicants able to use fixed-route transit, at least for some trips, also reduces the demand for and cost of ADA paratransit service. The impacts of more rigorous eligibility determinations on ADA paratransit demand was first studied and documented in *TCRP Report 119*. (60) An aggregate statistical model based on data from 28 “representative” agencies was developed to improve the estimation of ADA paratransit demand. This model suggested a demand elasticity of -0.29 for the percent of applicants found conditionally eligible (i.e., a 1% higher percent of applicants found conditionally eligible compared to the mean value of 21% corresponds to a 0.29% decrease in demand). So, for example, a process that does not grant conditional eligibility, but grants unconditional eligibility to all persons found eligible, can expect to have about 6% higher demand than an agency that finds 21% of applicants conditionally eligible (the mean value in the model), all else being equal. And an agency that finds 30% of applicants to be conditionally eligible can expect 3% less demand for service than an agency that finds only 21% of applicants conditionally eligible.

Trip-by-Trip Eligibility Determination Outcomes, Costs, and Benefits

Very limited information about the benefits of implementing trip-by-trip eligibility is provided in the literature. Only one report was found, *TCRP Report 119*, which included estimates. (60) The model developed as part of that study predicts that transit agencies that do trip-by-trip eligibility screening experience 48% lower ADA paratransit demand than systems that do not do trip screening.

To supplement this limited information from the literature, detailed analysis of the outcomes, costs and benefits of trip-by-trip eligibility programs at Metro in Seattle, WA, and ACCESS in Pittsburgh, PA, was conducted. This analysis is presented below.

Costs and Benefits, Metro Transit, Seattle, WA

Table 9-5 provides information about trip-by-trip eligibility reviews from 2008 through 2011. This includes the number of unique trips screened by Mobility Specialists, the number of unique trips found not eligible, estimates of the number of trips per year affected by these decisions, estimates of annual operating cost savings, the annual costs of reviewing trips, and estimates of the net savings per year.

Metro keeps statistics related to trip reviews conducted by Mobility Specialists, including the total number of trips reviewed and the number found not eligible. In 2008, when trips made at least once each month were evaluated, Mobility Specialists reviewed a total of 2,245 unique trips. Each leg of a trip is counted separately, so this represents one-way trips reviewed. Of these, 624 (or 28%) were found to have no pathway or navigational barriers that would prevent use of fixed-route transit. In 2009, when trips made at least 10 times in 12 weeks were considered, 2,937 unique trips were reviewed and 1,459 (or 50%) were found to have no barriers.⁷ In 2010, trips made at least eight times in 12 weeks were evaluated. A total of 3,062 trips were reviewed

⁷The increase in trips able to be made by fixed route in 2009 is due to a backlog of reviews conducted in 2008 but not communicated to riders until 2009. Metro does not record trips as being able to be made by fixed route until notice is provided to riders. While the data are presented based on the way it is recorded by Metro by year, an averaging of data for 2008 and 2009 would provide a more accurate picture of the percent of trips found able to be made by fixed-route transit in those years.

Table 9-5. Metro transit trip eligibility review statistics and costs, 2008–2011.

	2008	2009	2010	2011
Unique Trips Reviewed	2,245	2,937	3,062	3,318
Unique Trips Able to Be Made by Fixed-Route Transit	624 (28%)	1,459 (50%)(1)	640 (21%)	655 (20%)
Est. Trips Per Year Able to Be Made by Fixed-Route Transit	32,448 (2)	31,368 (3)	11,200 (4)	8,515 (5)
Est. Cumulative Trips Able to Be Made by Fixed-Route Transit (6)	32,448	96,264	138,832	158,547
Est. Operating Cost Savings (7)	\$1,114,264	\$3,408,708	\$5,067,368	\$5,966,124
Cost to Do Trip Screenings (8)	\$293,396	\$302,470	\$311,825	\$320,384
Est. Net Savings	\$820,868	\$3,106,238	\$4,755,543	\$5,645,740

(1) The increase in trips able to be made by fixed-route transit in 2009 is due to a backlog of reviews conducted in 2008 but not communicated to riders until 2009. Metro does not record trips as being able to be made by fixed-route transit until notice is provided to riders.

(2) Assumes average trip reviewed was made twice each week (104 trips per year) and that reviews were evenly distributed throughout year so that about 52 trips were affected on average.

(3) Assumes average trip was made 10 times in 12 weeks (43 times a year) and that reviews were evenly distributed throughout year.

(4) Assumes average trips were made eight times in 12 weeks (35 times per year) and that reviews were evenly distributed throughout year.

(5) Assumes average trips were made six times in 12 weeks (26 times per year) and that reviews were evenly distributed throughout year.

(6) Assumes trips each year continue to be made in subsequent years.

(7) Average 2011 paratransit operating cost was \$42.11 per trip, paratransit fare was \$1.25, fixed-route transit operating cost was \$3.98 per trip, and fixed-route transit (reduced) fare was \$0.75. Savings per trip in 2011 therefore estimated at \$37.63 ($($42.11 - $1.25) - ($3.98 - $0.75)$). Savings were considered to be 3% less each subsequent year (\$36.50 in 2010; \$35.41 in 2009; and \$34.34 in 2008).

(8) Actual costs for 2010 and 2011 were calculated. Costs for 2008 were assumed to be 3% less than 2010. Costs for 2008 were assumed to be 3% less than 2009.

and 640 (21%) were found to have no barriers. And in 2011, when trips made at least six times in 12 weeks were considered, a total of 3,318 trips were reviewed and 655 (or 20%) were found to have no barriers. To estimate the total number of trips affected each year, an average number of trips per year per unique trip reviewed was assumed.

In 2008, when the review threshold was that trips must be made at least one time per week, it was assumed that the average trip was made twice each week (104 times per year). This is likely a conservative estimate since riders using the service to go to work or work training make the same trips five times per week. It was also assumed that the trip reviews were spread evenly throughout the year, so about half of the trips reviewed would be affected that year. The estimate of trips affected in 2008 is therefore 16,224 (624 unique trips \times 52 trips per year \times 0.5).

In 2009, it was assumed that most trips made at least once each week would have already been reviewed, and that the reviews that year would have focused on trips made from 10 times in 12 weeks to once each week. It was conservatively estimated that the average trip reviewed that year would have been made 10 times in 12 weeks, or about 43 times each year. During that year, reviews would have therefore affected about 31,368 trips (1,459 unique trips \times 43 trips per year \times 0.5). It was also assumed that the trips affected by reviews in 2008 would still exist, and that

a full year of trips reviewed in 2008 would still be affected (or 64,896 trips). The cumulative number of trips affected by reviews in 2008 and 2009 would therefore be 96,264 (64,896 trips from 2008, plus 31,368 trips affected in 2009).

Similar calculations for trips affected each year and the cumulative number of trips affected were made for 2010 and 2011. In 2010, it was conservatively estimated that each trip found to have no barriers was made 8 times in 12 weeks (35 times per year), which was the review threshold for that year. In 2011, it was conservatively estimated that each trip found to have no barriers was made 6 times in 12 weeks (26 times per year), which was the review threshold for that year. The calculations of cumulative trips affected in 2010 and 2011 are as follows:

- *For 2010:* 64,896 continuing trips affected by 2008 reviews, plus 62,736 continuing trips affected by 2009 reviews, plus 11,200 trips affected in 2010, or 138,832 total trips affected.
- *For 2011:* 64,896 continuing trips affected by 2008 reviews, plus 62,736 continuing trips affected by 2009 reviews, plus 22,400 continuing trips affected by 2010 reviews, plus 8,515 trips affected in 2011, or 158,547 total trips affected.

To estimate the savings in operating costs, the average costs for Access paratransit and fixed-route transit trips, and the fares for each mode, were considered. In 2011, the average operating cost per Access paratransit trip was \$42.11, the paratransit fare was \$1.25, the average fixed-route transit cost was \$3.98, and the reduced fare on fixed-route transit was \$0.75. The savings per trip for trips made by fixed-route transit rather than Access paratransit was therefore \$37.63 ($(\$42.11 - \$1.25) - (\$3.98 - \$0.75)$). It was assumed that savings for each subsequent year would be 3% less than this amount, or \$36.50 in 2010, \$35.41 in 2009, and \$34.34 in 2008. Applying these average per trip savings to the cumulative number of trips affected each year suggests total operating cost savings of \$1,114,264 in 2008, \$3,106,238 in 2009, \$4,755,543 in 2010, and \$5,645,740 in 2011.

Finally, the cost to conduct trip reviews and make trip eligibility determinations was considered. In 2011, Metro estimated that program costs included the full-time Mobility Planner (\$103,658), 30% of the time of the CERT Administrator (or \$37,658), three Mobility Specialists at \$45,605 each (or \$136,815), 25% time for a dispatch manager to adjust software settings (or \$16,760), and 16.6% overhead and profit on contractor provided positions (or \$25,493). Total costs for 2011 were therefore estimated to be \$320,384. Similar calculations were done for 2010. These calculations yielded a cost estimate of \$311,825 for 2010, or about 3% less than the costs for 2011. For 2009, it was assumed that costs were 3% less than 2010 (or \$302,470). For 2008, costs were assumed to be 3% less than 2009 estimates (or \$293,396).

Subtracting program costs from operating cost savings, it was estimated that trip-by-trip eligibility saved a net amount of \$820,868 in 2008, \$3,106,238 in 2009, \$4,755,543 in 2010, and \$5,645,740 in 2011.

A large part of these savings is based on the assumption that trips reviewed in past years would likely continue to be made and requested in subsequent years. However, even if only a portion of prior year trips continue to be made, the amount of the savings would still be significant and much greater than annual program costs. The estimates in Table 9-5 also do not include the effects of trip reviews conducted between 2006 and 2008.

While Metro continued to use three full-time Mobility Specialists in 2012 to do on-street pathway reviews, it was noted that fewer trips were likely need to be reviewed each year. Program costs were expected to decrease each year once the most frequent trips have already been reviewed.

ADA Paratransit Ridership Trends

Figure 9-9 and Table 9-6 show Access ADA paratransit ridership (boardings) from calendar years 2001 through 2012. Table 9-7 identifies significant eligibility or service changes by year.

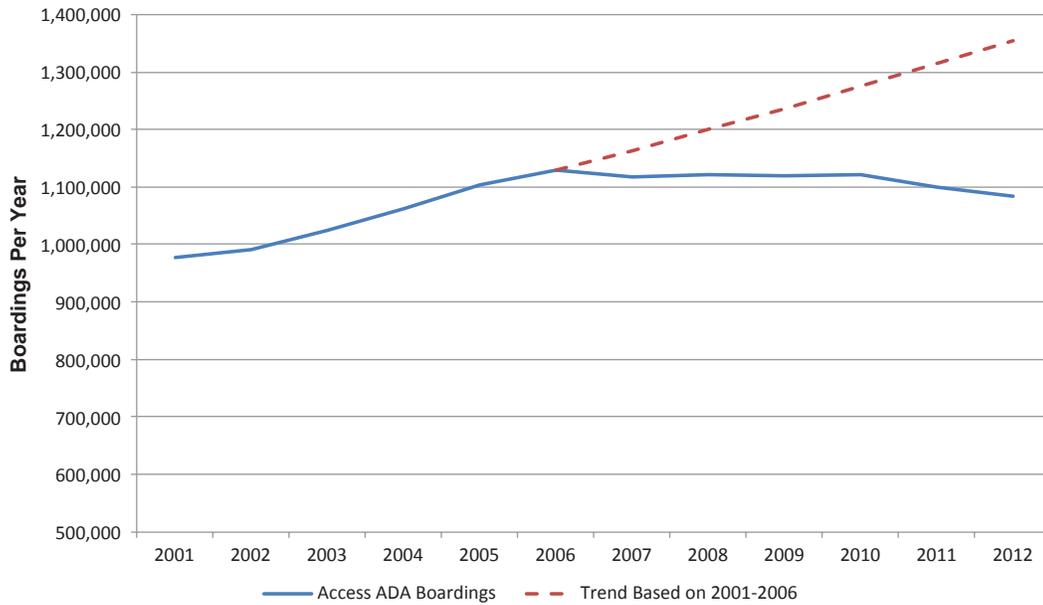


Figure 9-9. Access ADA paratransit ridership, 2001–2012.

Table 9-6. Access ADA paratransit ridership, 2001–2012.

Calendar Year	ADA Paratransit Boardings	% Change	Est. Boardings (2001-2006 Trend)
2001	976,707	NA	976,707
2002	991,464	2%	991,464
2003	1,024,491	3%	1,024,491
2004	1,062,092	4%	1,062,092
2005	1,104,480	4%	1,104,480
2006	1,128,496	2%	1,128,496
2007	1,118,400	-1%	1,163,479
2008	1,121,776	0%	1,199,547
2009	1,119,927	0%	1,236,733
2010	1,120,990	0%	1,275,072
2011	1,099,954	-2%	1,314,599
2012	1,084,041	-1%	1,355,352

Table 9-7. Significant eligibility and service changes by year.

Year	Changes
2003	First Hyde Shuttle implemented
2006	Increased use of in-person interviews/assessments (from 40% of applicants to 100% of applicants). Started trip eligibility determinations
2007	Implemented Transportation Resource Center
2007-2012	Expanded Hyde Shuttles and community buses
2008	Access fare increased from \$0.75 to \$1.00
2010	Access fare increased from \$1.00 to \$1.25

From 2001 through 2006, ridership increased from 976,707 to 1,128,496, or about 3.1% per year. During this period, the Access paratransit fare was \$0.75 and the first local demand response service (Hyde Shuttle) was implemented (2003).

Starting in 2006, Metro began requiring that all applicants for ADA paratransit eligibility participate in interviews and functional assessments. Trip eligibility was also implemented in 2006. The growth in ridership slowed from 4% in 2005 to 2% in 2006. Ridership then declined 1% in 2007.

A number of changes were made between 2007 and 2012. The Transportation Resource Center was created and began to be used by Evaluators at Harborview Medical Center in July of 2007. The Access paratransit fare was increased twice—first from \$0.75 to \$1.00 in 2008, and then from \$1.00 to \$1.25 in 2010. And the Hyde Shuttle and community bus programs were steadily expanded from 2007 through 2012.

After the 1% decrease in 2007, Access paratransit ridership remained essentially unchanged from 2008 through 2010. In 2011, ridership declined 2%. And in 2012, it declined by 1%.

The many eligibility and service changes between 2006 and 2012 appear to have had an impact on the use of Access paratransit. If the trend experienced from 2001 through 2006 had continued, the expected ridership in 2012 would have been 1,355,352. The actual ridership of 1,084,041 in 2012 is about 20% less than this projection.

The impacts of conditional and trip-by-trip eligibility determinations appear to be significant. Prior to implementing conditions of eligibility, Access paratransit ridership was increasing by about 3.1% each year. In each of the six years following implementation of trip-by-trip eligibility, as well as other service changes, ridership has remained constant or has decreased slightly. Access paratransit ridership in 2012 appears to be about 20% less than it would have been if trip-by-trip eligibility and other service changes had not been made. Conditional and trip-by-trip eligibility have not been the only changes that have encouraged greater use of other transit modes, but appear to have played a significant role, in combination with travel training and the development of other accessible transportation options.

Costs and Benefits, ACCESS, Pittsburgh, PA

All trips requested by conditionally eligible riders are screened by ACCESS staff using the Infinity system. If trips are determined able to be made by fixed-route transit, riders can choose to still book the trip at the higher convenience fare. If riders elect not to pay the convenience fare, trips are not scheduled on ADA paratransit. Riders then must make the trip by fixed-route transit or by some other means.

ACCESS tracks the number of trips made by conditionally eligible riders at the regular fare (trips determined ADA paratransit eligible) as well as the number of trips taken at the convenience fare (trips determined not ADA paratransit eligible). However, ACCESS does not track the number of trips requested by conditionally eligible riders who decide not to pay the higher fare and therefore do not make the trips by ADA paratransit.

Table 9-8 shows ADA paratransit trips for FY 2012 by type of rider eligibility. Detail on the number of trips taken by conditionally eligible riders, both at the regular fare and at the convenience fare, is also provided.

As shown, a total of 77,476 trips were provided to riders who were conditionally eligible for ADA paratransit service. All of these trips were reviewed for eligibility. The reviews found 44,639 trips requested by conditionally eligible riders were eligible, and these trips were provided at the regular fare. The reviews found that 32,837 trips requested by conditionally eligible riders could be made by fixed-route transit, so these trips were provided at the higher convenience fare.

Table 9-8. Paratransit trips by rider eligibility and fare type, FY 2012.

Rider Eligibility	One-Way Trips	% of Total
Unconditional	242,630	75.3%
Conditional	77,476	24.0%
<i>Regular Fare</i>	44,639	13.8%
<i>Convenience Fare</i>	32,837	10.2%
Temporary	2,114	0.7%
Totals	322,220	100%

The data in Table 9-8 suggests that ACCESS staff used the Infinity system to review at least 77,476 trips requested by conditionally eligible riders in FY 2012. Of these, 32,837 (about 42%) were found able to be made by fixed-route transit but still provided at the higher convenience fare. Not all of these trips required staff review in FY 2012. The large majority had been reviewed by staff in prior years and the Infinity system continued to apply the prior review determinations as trips were requested in FY 2012.

While the data suggests that at least 77,476 trip requests were reviewed for eligibility in FY 2012, this does not represent the total number of trips reviewed. Some trips requested by conditionally eligible riders were determined able to be made by fixed route and the riders, when apprised of the higher fare, chose not to make the trips by ADA paratransit. These cancelled requests are not tracked by the ACCESS Infinity system.

The 77,476 trips provided to conditionally eligible riders in FY 2012 also does not reflect the trips that these riders chose to make on fixed-route transit without requesting ADA paratransit. ACCESS staff noted that when some riders are informed about fixed-route transit options, and in some cases accompanied on the first trip, they simply continue to make those trips by fixed-route transit and do not request ADA paratransit.

To estimate the number of trips that were not requested by conditionally eligible riders and made by fixed-route transit or other modes, the trip-making rates of riders were examined. Table 9-9 shows the number of riders by eligibility type (unconditional, conditional, temporary) as well as the number of trips taken in FY 2012 by riders in each category. The trip-making rates of riders are then calculated and included in the table.

As shown, there were 4,397 registered ADA eligible riders in the ACCESS system in early 2012. Unconditionally eligible riders made up 62.5% of the total, conditionally eligible riders were 32% of the total, and 5.5% of registered riders had temporary eligibility. Unconditionally eligible riders took 75.3% of the PAT-ADA paratransit trips provided in FY 2012. On average, these riders made 88.3 trips in FY 2012 on ADA paratransit. Conditionally eligible riders took 24% of the trips and had an average trip-making rate of 55.1 trips per rider per year. Riders with temporary eligibility took only 0.7% of all ADA paratransit trips, for an average trip-making rate of only 8.7 trips per person per year.

Table 9-9. Riders and trips by eligibility type, FY 2012.

Eligibility Type	# of Registered Riders	% of Riders	PAT-ADA Trips (FY 2012)	Convenience Trips (FY 2012)	Total Trips (FY 2012)	% of Trips	Tripmaking Rate (trips/pers/yr)
Unconditional	2,748	62.5%	242,630	0	242,630	75.3%	88.3
Conditional	1,407	32.0%	44,639	32,837	77,476	24.0%	55.1
Temporary	242	5.5%	2,114	0	2,114	0.7%	8.7
Totals	4,397	100.0%	289,383	32,837	322,220	100.0%	152.1

Note: PAT-ADA Conditional Trips in FY 2012 excludes Base Plus Trips and Out of Town Visitors

Table 9-10. Trip eligibility estimated costs and savings, FY 2012.

# of Convenience Fare Trips	32,837 trips
Convenience Fare Net Operating Cost Savings	\$73,883 (1)
Est. of Other Trips by Fixed-Route Transit	46,762 trips (2)
Operating Cost Savings per Trip	\$17.49 (3)
Est. Cost Savings for Other Trips by Fixed-Route Transit	\$817,867 (4)
Est. Total Operating Cost Savings	\$891,750 (5)
FY 2012 ACCESS Trip Screening Costs	\$16,965 (6)
Est. Net Operating Cost Savings	\$874,785 (7)

- (1) Difference in FY 2012 regular versus convenience paratransit fare (\$4.50-\$2.25) times number of convenience fare trips.
- (2) Difference between total trips by conditionally eligible riders (assuming the same trip-making rate as unconditionally eligible riders) and the actual trips taken on ADA paratransit (124,238 – 77,476).
- (3) Difference between net paratransit cost per trip and net fixed-route transit cost per trip: $((\$23.90 - \$2.25) - (\$5.41 - \$1.25)) = \$17.49$.
- (4) \$17.49 times 139,531 trips.
- (5) Savings from convenience fare trips plus other trips by fixed-route transit.
- (6) 1.5 hours of staff time per day at \$34.80 per hour with overhead, for 325 days per year.
- (7) Total estimated operating cost savings per year minus trip screening costs per year.

Table 9-10 provides information about the cost of making trip eligibility decisions, and includes estimates of possible savings in FY 2012 as a result of trip-by-trip eligibility screening. First, as noted above, a total of 32,837 trips were determined able to be made by fixed-route transit, but still provided as non-ADA trips at the higher convenience fare. The savings in operating cost for these trips is the difference between the \$4.50 convenience fare and the standard \$2.25 ADA paratransit fare (the fares in FY 2012). For the 32,837 convenience fare trips, the cost savings was \$73,883.

Second, as shown in Table 9-8, riders with conditional eligibility make far fewer trips by ADA paratransit than riders with unconditional eligibility. If it is assumed that the overall trip-making rates of conditionally and unconditionally eligible riders are similar, but that conditionally eligible riders are requesting fewer ADA paratransit trips and making more trips by fixed-route transit or other modes, an additional savings for these other trips on fixed-route transit can be estimated. Applying the trip-making of unconditionally eligible riders (88.3 trips per person per year) to the number of conditionally eligible riders (1,407) suggests that conditionally eligible riders took a total of 124,238 trips in FY 2012, but only 77,476 on ADA paratransit. This suggests that 46,762 trips were made on fixed-route transit or other modes. Assuming that these trips were taken on fixed-route transit, the per trip savings in operating costs would be the difference between the net ADA paratransit per trip operating costs and the net fixed-route transit per trip operating costs.

ACCESS's average paratransit operating cost was \$23.90 per trip in FY 2012, and the regular ADA paratransit fare was \$2.25. The net ADA paratransit cost per trip was therefore \$21.65. The average fixed-route transit cost was \$5.41 per trip and the reduced fare for riders with disabilities is \$1.25, for a net cost of \$4.16 per trip. The savings is therefore \$17.49 per trip ($\$21.65 - \4.16). Multiplying this net per trip savings by the estimated number of other trips taken on fixed-route transit by conditionally eligible riders (46,762) resulted in an additional estimated operating cost savings of \$817,867 in FY 2012. Together with the \$73,883 savings in cost for trips taken at the convenience fare suggests a total operating cost savings in FY 2012 of \$891,750.

ACCESS staff estimated that about 1.5 hours are spent each day screening trips requested by conditionally eligible riders. The staff doing these screenings is paid \$18.50 per hour. Adding 71% overhead and 10% fee to this hourly rate, the total cost per hour for staff to screen trips is \$34.80. For 1.5 hours per day, 325 days per year, the estimated cost is \$16,965 per year.

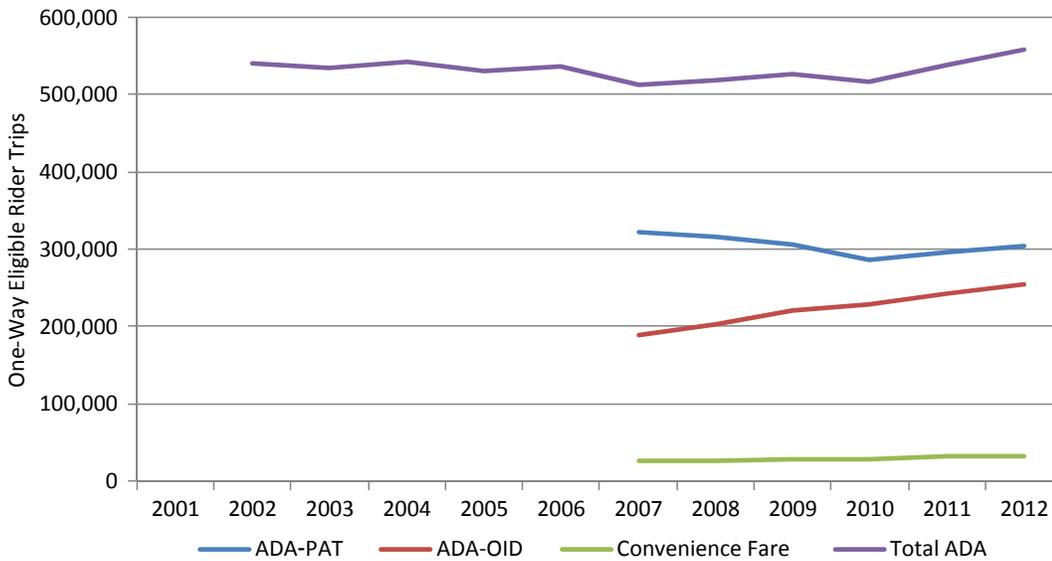


Figure 9-10. PAT/ACCESS ADA paratransit ridership, FY2001–FY2012.

ACCESS managers noted that when trip eligibility screening was started back in 2003, it required about four hours of staff time each day. Over time, as the trips of current riders were reviewed and recorded in the Infinity system, less time was required. In 2012, only new trips by current riders or trips by new conditionally eligible riders had to be reviewed. And, given that many street segments, intersections, and bus stops have already been visited and their accessibility noted, these reviews often can be performed using existing records.

With an estimated operating cost savings of \$891,750 in FY 2012, and a total screening cost of only \$16,965, a net operating cost savings of \$874,785 is estimated. Given that the PAT total operating cost for ADA paratransit service was about \$7.7 million in FY 2012, this represents about a 10% savings in ADA paratransit costs.

ADA Paratransit Ridership Trends

Figure 9-10 and Table 9-11 show ADA paratransit and convenience fare ridership from FY 2001 through FY 2012. Table 9-12 lists significant ADA paratransit service changes throughout this period.

Table 9-11. PAT/ACCESS ADA paratransit ridership, FY2001–FY2012.

Year	One-Way Eligible Rider Trips				
	ADA-PAT	ADA-OID	Total ADA	Conven. Fare	Total ADA & Conven. Fare
2001					
2002			539,992		539,992
2003			534,055		534,055
2004			541,483		541,483
2005			530,457		530,457
2006			536,041		536,041
2007	321,973	189,959	511,932	26,249	538,181
2008	316,615	202,423	519,038	26,643	545,681
2009	305,238	220,732	525,970	27,794	553,764
2010	286,878	229,329	516,207	28,915	545,122
2011	295,809	242,049	537,858	31,794	569,652
2012	304,563	253,769	558,332	32,486	590,818

Table 9-12. ADA paratransit service changes, FY 2001–FY 2012.

Year	Service Change
2003	Trip-by-trip eligibility started
2008	ADA paratransit fare increase from \$2.00 to \$2.25
2001-2012	Continuous on-time performance improvements, from 90% in 2001 to 96% in 2012

As noted in Table 9-11, few service changes were made from FY 2001 through FY 2012. Trip-by-trip eligibility was introduced in FY 2003. There was a fare increase from \$2.00 to \$2.25 in FY 2008. Also, ACCESS staff noted that on-time performance continually increased from 2001 through 2012. In 2001, about 90% of trips were performed on-time. In 2012, on-time performance was about 96%. There have been other, very recent service changes. The ADA paratransit service area was reduced to the minimum $\frac{3}{4}$ -mile corridor requirement (and the Connection service introduced). And the ADA paratransit fare was increased from \$2.25 to \$3.15. Both of these changes occurred at the start of FY 2013, though, and are not reflected in the ridership through FY 2012.

Also, it should be noted that ACCESS tracked total ADA paratransit ridership through FY 2006. ADA service for PAT was separated out from ADA trips sponsored by the Office of Intellectual Disabilities (OID) starting in FY 2007. Convenience fare trips also began to be included in standard reports in FY 2007.

As shown, total ADA paratransit ridership has remained about the same throughout this 12-year period. It has fluctuated by only a few percentage points, both up and down, each year. ADA-PAT ridership, trips supported by the transit agency, decreased from 2007 through 2010, from 321,973 in 2007 to 286,878 in 2010. In 2011 and 2012, ADA-PAT ridership increased slightly, but still below 2007 levels.

Most of the increase in ridership in recent years has been in ADA-OID trips: trips to ADA paratransit eligible riders going to OID work training programs and to supported and competitive employment.

Most public transit agencies report increases in ADA paratransit ridership over the past decade. Nationally, FTA reports that ADA paratransit ridership increased from about 45 million one-way trips in NTD reporting year 2000 to 75 million trips in reporting year 2008 (a 67% increase). ACCESS's use of conditional and trip-by-trip eligibility appears to have encouraged greater use of fixed-route transit service and less reliance on ADA paratransit service over a similar period of time.

Summary of Trip Eligibility Case Study Findings

Table 9-13 provides a summary of the costs and benefits findings for trip-by-trip eligibility determinations for the two case studies presented above. As noted in the case study descriptions, the two programs are at different stages of implementing trip-by-trip eligibility. Seattle Metro began doing trip-by-trip eligibility in 2006 and was still at a stage where they were reviewing the most frequent trips made by conditionally eligible riders. ACCESS in Pittsburgh implemented trip eligibility in 2003 and frequently made trips by registered riders, as well as infrequent trips by current riders, had already been reviewed. ACCESS was at the point in implementation where they were mainly checking prior records to make trip determinations, with some occasional new reviews of trips not previously requested. ACCESS also had developed a fairly extensive database of community barriers that allowed many new trip reviews to be conducted by simply consulting these records of community accessibility.

Table 9-13. Summary of cost and benefit findings, Metro (Seattle, WA) and ACCESS (Pittsburgh, PA).

Cost/Benefit	Metro, Seattle (2008–2011)	ACCESS, Pittsburgh (2012)
Number of unique (non-repeat) trips reviewed each year	2008 – 2,245 2009 – 2,937 2010 – 3,062 2011 – 3,318	NA
Total number of trips reviewed each year	NA	77,476
Annual cost to review trip eligibility	2008 – \$293,396 2009 – \$302,470 2010 – \$311,825 2011 – \$320,384	\$16,965
Avg. cost to review unique (non-repeat) trip	2008 – \$130.69 2009 – \$102.99 2010 – \$101.84 2011 – \$96.56	NA
Avg. cost per trip to review all trips by conditionally eligible riders	NA	\$0.22
% of trips reviewed found able to be made on fixed-route transit	2008 – 28% 2009 – 50% 2010 – 21% 2011 – 20%	42%
No. of total trips requested by conditionally eligible riders on paratransit and found able to be made on fixed-route transit each year	2008 – 32,448 2009 – 31,368 2010 – 11,200 2011 – 8,515	32,837
Est. of number of trips conditionally eligible riders made on fixed-route transit by choice	NA	46,762
Total annual ADA paratransit ridership	2008 – 1,121,776 2009 – 1,119,927 2010 – 1,120,990 2011 – 1,099,954	304,563
% of total trips made by fixed-route transit	2008 – 2.9% 2009 – 5.7% 2010 – 6.7% 2011 – 7.5%	15%
Est. Annual net operating cost savings per year	2008 – \$820,868 2009 – \$3,106,238 2010 – \$4,755,543 2011 – \$5,645,740	\$874,785

Metro tracked the number of reviews performed for unique trip requests. These were one-time reviews that then applied to these trips in the future. The number of reviews per year varied from 2,245 to 3,318 between 2008 and 2011. ACCESS reviewed all trip requests made by conditionally eligible riders each time they were made and did not track how many unique (non-repeat) trips this included. In 2012, ACCESS staff reviewed 77,476 trip requests by conditionally eligible riders.

Metro had three Mobility Specialists that conducted pathway reviews to determine trip eligibility, as they were still in the process of reviewing a large number of frequently made trips by existing riders with conditional eligibility. The estimated cost per year for these on-street reviews ranged from \$293,396 in 2008 to \$320,384 in 2011. The average cost for conducting on-street reviews of unique trip requests averaged between \$96.56 and \$130.69 between 2008 and 2011.

ACCESS reported only spending about 1.5 hours of staff time per day to review the eligibility of trips requested by conditionally eligible riders, which average about 250 per day. This was done mainly by a desk review using a database of information of past reviews as well as information on community accessibility developed over time. Most of the trip reviews only require

a glance at the record to see whether the trip has been determined eligible or not. ACCESS estimated that the staff time cost only about \$16,965 per year including wages and benefits. The average cost per trip to review the 77,476 trips requested by conditionally eligible riders was therefore only about 22 cents.

Metro's records indicated that between 20% and 50% of the unique trip requests reviewed each year were found able to be made by fixed-route transit. The percentage was higher in 2008 and 2009 and lower in 2010 and 2011. ACCESS records indicated that 42% of the trips requested by conditionally eligible riders were found able to be made by fixed-route transit. This higher percent was due to ACCESS's "convenience fare" program which allows conditionally eligible riders to still request trips on paratransit and to then pay a higher fare if the trips could otherwise be made by fixed-route transit.

Metro estimated that the review of unique trips resulted in 32,448 trips by conditionally eligible riders being made by fixed-route transit rather than ADA paratransit in 2008; 31,368 trips in 2009; 11,200 trips in 2010; and 8,515 trips in 2011. The lower number each year reflects the fact that less frequently made trips were being reviewed in the latter years. This included only those trips where ADA paratransit trip requests were made by conditionally eligible riders. The analysis of Metro did not estimate the number of trips that conditionally eligible riders made by fixed-route transit by choice (didn't call and request an ADA paratransit ride).

The analysis of trip-making rates by ADA paratransit eligible riders in Pittsburgh indicated that riders who were conditionally eligible were requesting ADA paratransit service far less frequently than those who were unconditionally eligible. It was estimated that about 46,762 trips were being made each year on fixed-route transit by choice by riders with conditional eligibility. This appears to reflect the fact that trip eligibility is well established in Pittsburgh and conditionally eligible riders have transitioned many of their trips to the fixed-route transit systems.

The analysis of Metro suggested that the number of trips by conditionally eligible riders found able to be made by fixed-route transit amounted to about 2.9% of total ADA paratransit ridership in 2008. Assuming that these trips continued to be made on fixed-route transit and that additional trips were found able to be made by fixed-route transit each year, this increased to 5.7% of all ADA paratransit trips in 2009, 6.7% of all ADA paratransit trips in 2010, and 7.5% of all ADA paratransit trips in 2011. In Pittsburgh, with a more longstanding and established process, it was estimated that the number of trips being made on fixed-route transit by conditionally eligible riders amounted to about 15% of the total annual ADA paratransit ridership.

Net operating cost savings estimated for Metro in 2008 was \$820,868. Assuming that trips found able to be made by fixed-route transit continued to be made by fixed-route transit in subsequent years, and that each year additional, ongoing trips were able to be made by bus or train, the estimate of savings increases to about \$3.1 million in 2009, about \$4.8 million in 2010, and about \$5.6 million in 2011. Net operating cost savings in Pittsburgh for one year (2012) were estimated to be \$874,785.

In Seattle, implementation of trip eligibility enabled 7.5% of trips by conditionally eligible riders to be made on fixed-route transit rather than ADA paratransit by the fourth year of the program. In Pittsburgh, trip eligibility has enabled about 15% of trips by conditionally eligible riders to be made on fixed-route transit rather than on ADA paratransit.

9.5 Implementation Issues, Lessons Learned

The research indicates that doing thorough ADA paratransit eligibility can assist riders with disabilities in identifying travel options beyond ADA paratransit. The research also suggests that thorough eligibility determinations and implementation of trip-by-trip eligibility can help transit agencies serve riders with disabilities in a more cost-effective way.

Implementing a more thorough eligibility determination process and trip-by-trip eligibility determinations can, however, be costly and require considerable work. Extensive community input is needed when changing the eligibility determination process. Creating transportation assessment centers and including in-person interviews and functional assessments as part of the process can also be costly and require a significant initial investment.

Implementing a trip eligibility process and conducting trip eligibility reviews can also be complicated and somewhat costly to implement.

- On-street reviews of pathway accessibility must be conducted.
- Software must be customized or created to store trip eligibility decisions so that ADA paratransit reservationists and schedulers have the information they need to quickly determine if trips that are requested should be scheduled.
- Procedures need to be developed and implemented to allow reservationists and schedulers to easily make decisions related to factors that vary from day to day (such as the weather or time of day) and cannot be pre-determined.

Over time, though, once frequently made trips by current riders are reviewed, if a database of past decisions is created, and if procedures for addressing day-to-day issues are developed, making trip eligibility decisions can be relatively inexpensive. This is demonstrated by the costs reported by ACCESS in Pittsburgh, the agency that has ventured the farthest into trip-by-trip eligibility determinations.

If done correctly and with public input, more thorough eligibility determinations and trip-by-trip eligibility can have significant benefits that outweigh these initial and ongoing costs. More thorough processes reinforce the idea within the community that fixed-route transit should be used whenever possible and that ADA paratransit is to be used only when travel by bus and train is not possible. If an accessible and usable fixed-route transit service is in place, it also enables and promotes more flexible and spontaneous travel. Achieving this change in mindset within the disability community can be a significant step in making ADA paratransit sustainable.

Transit agencies that have successfully implemented more thorough ADA paratransit eligibility determination processes noted several important implementation issues. These include:

- Developing a range of accessible transportation services and options for riders with disabilities.
- Holding extensive discussions with the community to obtain support prior to implementation.
- Stressing that the application process is not just about eligibility for the ADA paratransit service, but is also to identify all of the accessible transportation options that can assist individuals with meeting their travel needs.
- Taking every opportunity throughout the process to inform individuals about all accessible transportation services, including sending this information with application materials, telephone follow up when applications are received, and discussing transportation options during in-person interviews.
- Including in-person interviews and functional assessments in the process so that conditions of eligibility can be accurately and thoroughly determined.
- Setting measurable and specific conditions of eligibility so that they can be applied to trip requests.
- Not relying on determination letters to communicate conditions of eligibility, but following up by phone with individuals determined conditionally eligible to explain their conditions and to answer any questions they may have.

Implementing trip eligibility requires an initial investment in a more thorough ADA paratransit eligibility determination process and individual trip reviews. The benefits can be significant, though, including reinforcement of the idea that fixed-route transit should be used whenever possible and ADA paratransit should be used only when travel by fixed-route transit is not possible.

- Conducting detailed on-street assessments to identify path-of-travel barriers when making trip eligibility decisions.
- Developing and using technology to record pathway and trip eligibility information.
- Customizing existing software, or developing supplemental software that can record the results of trip eligibility reviews and automatically apply the results to rider requests so that decisions about trip accessibility do not have to be made by reservationists.
- Developing a database of community accessibility as on-street pathway and trip eligibility reviews are completed, and using this to more easily make other trip eligibility decisions in similar areas.
- Contacting people in person if a trip is possible on fixed-route transit rather than having them find out when the trip is not accepted by a reservationist.
- Offering to accompany riders on initial fixed-route trips to facilitate a transition from ADA paratransit-to-fixed-route transit.
- Having a travel training program that can assist riders with the transition to fixed-route service.
- Adopting a “convenience fare” that allows riders to still use paratransit at a higher, non-ADA fare when trips are determined able to be made by fixed-route transit.

9.6 Evaluating Eligibility Efforts

If a more thorough ADA paratransit eligibility determinations process and trip-by-trip eligibility program are implemented, it is important to track outcomes, costs, and benefits to assess the effectiveness of the efforts. Possible methodologies for assessing general eligibility improvements efforts, as well as trip-by-trip eligibility programs, are presented in Appendix D. Following is a summary of the suggested approaches.

Evaluating General Eligibility Determination Improvements

This chapter presents several strategies for making general improvements to the ADA paratransit eligibility determination process. These include better explaining ADA paratransit eligibility to potential applicants, developing public information that better communicates ADA paratransit eligibility, and making more thorough determinations through the use of in-person interviews and functional assessments.

Communicating ADA Paratransit Eligibility

The effectiveness of communicating the nature of ADA paratransit eligibility can be evaluated in several ways, including:

- Recording the number of general information calls received requesting information about ADA paratransit eligibility. Recording the number of application packets sent to callers. Also noting the number of callers that “self-select” out and choose not to apply. This information can indicate the effectiveness of call-taking staff in explaining ADA paratransit eligibility.
- Tracking the number of application packets sent to prospective applicants. Also recording the number of applications returned. This can help indicate the effectiveness of the information in the packet in explaining ADA paratransit eligibility. Note that this analysis will not be possible if application packets are widely distributed through outlets in the community or online.

Making More Accurate and Thorough Determinations of Eligibility

The accuracy and thoroughness of the ADA paratransit eligibility determination process can be evaluated in several ways, including:

- Comparing outcomes (percent of applicants determined unconditionally eligible, conditionally eligible, temporarily eligible, not eligible) to the national experience of agencies

considered to have good processes. The data in Table 9-3 can help with this comparison. Information should also be considered from any future reports on ADA paratransit eligibility determination outcomes.

- Using the number of individuals determined ADA paratransit eligible and the population of the service area, calculate the proportion of the area population that has been determined ADA paratransit eligible. Compare this information to the national experience or peer systems. *TCRP Synthesis 30* and *TCRP Report 119* contain national experience information. (54, 60)
- Dividing the number of annual ADA paratransit trips provided by the service area population to get a measure of trips per capita. Compare this information to national experience and peer systems.
- Tracking the number of eligibility determinations that are appealed and the appeal outcomes. A high percentage of determinations overturned on appeal could indicate issues with the accuracy of the initial determination process (note that it could also, though, indicate issues with the appeal process). Also use the individual findings from appeals where decisions are changed to evaluate the accuracy and thoroughness of initial determinations.
- Analyzing trends in ADA paratransit ridership before and after any changes are made to the eligibility determination process. Note other changes to ADA paratransit eligibility during this period (see analysis done in Section 9.4).

The above approaches, particularly the ridership trend analysis and the comparison of trips per capita, can then be used to estimate the impact of more thorough ADA paratransit eligibility determinations on ADA paratransit ridership. Estimated reductions in ADA paratransit ridership can be used to calculate operating cost savings. Finally, the costs associated with implementing a more thorough eligibility determination process can be subtracted from the estimated savings to determine the net cost-benefit of efforts. Note that beyond the cost savings, other qualitative benefits to riders and the community, such as increased travel options and more flexible and spontaneous travel by fixed-route transit also need to be considered.

Evaluating Trip-by-Trip Eligibility Efforts

Two different approaches for evaluating the effectiveness of trip-by-trip eligibility efforts are detailed in Appendix D. The first considers the individual trip decisions that are made and the costs of making these decisions. The second considers broader impacts of trip-by-trip eligibility determinations on the trip-making patterns of riders.

Individual Trip Reviews and Decisions

This evaluation methodology involves tracking the costs and outcomes associated with individual trip decisions. It is the approach used in Section 9.4 to evaluate the trip eligibility efforts at Metro in Seattle.

Costs for making trip decisions need to be recorded. This includes the cost of staff used to conduct trip reviews, equipment required to assist in the reviews, and computer software needed to record the decisions.

The number of trips reviewed and the number found able to be made on fixed-route transit should also be tracked. The frequency of each trip found able to be made on fixed-route transit should be noted so that an estimate of the total number of trips able to be made on fixed-route transit can be estimated.

Using the average operating cost per ADA paratransit trip, and the average fare, calculate the net cost for each ADA paratransit trip. Subtract the net operating cost per fixed-route trip (average operating cost per trip minus average fare) to get the net savings for each trip that is made

by fixed-route transit rather than ADA paratransit. Multiply this by the estimated number of trips determined able to be made on fixed-route transit to get the estimated net operating cost savings.

To consider multiple year impacts, it will be necessary to make an assumption about the likelihood that trips will continue to be made on fixed-route transit rather than ADA paratransit in future years.

This evaluation methodology is appropriate for a new trip eligibility program.

Trip-Making by Conditionally Eligible Riders

For a trip eligibility determination program that has been in place for a number of years, it will also be important to assess impacts on trip-making decisions by riders who are conditionally eligible. Over time, as the eligibility of trips by ADA paratransit is reviewed, riders are likely to begin making decisions to use fixed-route transit without first requesting ADA paratransit service.

To consider impacts on trip-making decisions, compare the trip-making rates on ADA paratransit of riders who have conditional eligibility to riders who have unconditional eligibility. To do this will require the capability to identify trips by type of rider. If this is not possible, a sample of riders who are conditional versus unconditional might be identified and trips for each group totaled and compared.

The differences in trip-making rates can be used to estimate the number of trips that conditionally eligible riders might be making by fixed-route transit rather than by ADA paratransit. This approach was used in Section 9.4 to analyze trip eligibility efforts by ACCESS in Pittsburgh. Note that this analysis assumes that riders with different types of eligibility make, on average, the same number of total trips. Ideally, trip-making rates before and after the implementation of trip eligibility should be analyzed to account for any differences in travel by these two groups.

Again, the above analysis focuses on the cost effectiveness of trip eligibility efforts. Other qualitative benefits should also be considered and factored into any decisions about the utility of programs and efforts. Qualitative benefits include assisting people with disabilities to identify travel options that are more flexible and spontaneous and that provide for a greater degree of personal independence.



References

Chapter 1. Introduction and Suggested Strategies

1. *Americans with Disabilities Act of 1990*, Public law 101-336, July 26, 1990.
2. Hershey, Cheryl L., et. al, *Accessible Public Transportation in the United States: Twenty Years After Passage of the ADA*, 12th International Conference on Mobility and Transport for Elderly and Disabled Persons, June 2010.
3. TranSystems, et. al, TCRP Project B-40, “Strategy Guide to Enable and Promote the Use of Fixed-Route Transit by People with Disabilities, Final Research Report,” Transportation Research Board of the National Academies, Washington, D.C., 2014. (*Available online on the TRB website: <http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=3083>.*)

Chapter 4. Operating Accessible and Usable Fixed-Route Transit Services

4. Nelson\Nygaard, *Status Report on the Use of Wheelchair and Other Mobility Devices on Public and Private Transportation*, Easter Seals Project ACTION, Washington, D.C., 2008.
5. Cross, D., *Wheelchair Access: Improvements, Standards and Challenges*, presented at APTA Bus and Paratransit Conference, May 2006, Orange County, CA, 2006.
6. Disability Rights Education and Defense Fund (DREDF), *Topic Guides on ADA Transportation: Stop Announcements*, Federal Transit Administration, Washington, D.C., 2010.
7. Planners Collaborative, *Review of Route Identification and Stop Announcements, Toledo Regional Transit Authority*, Federal Transit Administration, Washington, D.C., 2011.

Chapter 5. Accessible Bus Stops and Pedestrian Infrastructure

8. American Public Transportation Association, *2012 Public Transportation Fact Book*, Washington, D.C., September 2012.
9. City of Tucson Department of Transportation, Transit Services Division, *ADA Bus Stop Accessibility Study Report*, October 2009.
10. Arlington County, Virginia, *Americans with Disabilities Act Evaluation Study*, prepared for the Metropolitan Washington Council of Governments by KFH Group, Inc., 2012.
11. *Pedestrian to Transit Accessibility Prioritization*, prepared for Prince George’s County, Maryland, and Metropolitan Washington Council of Governments by KFH Group, Inc., August 2012.
12. *Maui County Bus Stops*, prepared for Maui Bus, County of Maui, Hawaii, by KFH Group, Inc., 2008.
13. *Accessibility Pathway Analysis for the Washington Metropolitan Transit Authority’s MetroAccess Customers*, prepared for the Washington Metropolitan Transit Authority and Metropolitan Washington Council of Governments by KFH Group, Inc., 2008.
14. *Montgomery County Bus Stop Facility Inventory and Assessment, Final Report*, prepared for Montgomery County Public Works Department, by the KFH Group, Inc., 2005.
15. *Americans with Disabilities Accessibility Assessment*, prepared for Corpus Christi Regional Transportation Authority by the KFH Group, Inc., in association with D. Cross Consulting, D. Walter Architect, and Coastal Bend Center for Independent Living, March 2007.

16. Enhanced Mobility for Seniors and Individuals with Disabilities: Proposed Circular, *Federal Register*, Vol. 78, No. 133, July 11, 2013.
17. LaBonty, G. and Beveridge, C., Increasing Accessibility in Communities through the Community Development Block Grant Program, Paper presented at the APTA Bus and Paratransit Committee, 2003.
18. Lowenherz, F., "Bellevue's ADA Sidewalk and Curb Ramp Compliance Program," *Washington State LTP News*, Issue 103, Winter 2010; and Quiroga, C., NCHRP Project 20-07, Task 249, "Asset Management Approaches to ADA Compliance," Transportation Research Board of the National Academies, Washington, D.C., 2008.
19. Salgado-Tamayo, L., Comparison of Capital Costs for Fixed-Route Bus Stop Improvements to Paratransit Operating Cost, Maryland Transit Administration, Maryland Department of Transportation as reported in *Equipment and Maintenance, Topic Guide 1*, DREDF, 2010.
20. Goodwill, J. and H. Carapella, Creative Ways to Manage Paratransit Costs, Final Report, Prepared for the Florida Department of Transportation Research Center by National Center For Transit Research, Center for Urban Transportation Research, University of South Florida, 2008.
21. *Accessible Pathways to Bus Stops and Transit Facilities: A Process Guide*, prepared for Easter Seals Project ACTION by Institute of Transportation Engineers, 2009.

Chapter 6. Marketing, Public Information, Trip Planning, and Travel Training

22. Easter Seals Project ACTION, Stories of Changed Lives: The Personal Impact of Transportation Access, July 2003.
23. Easter Seals Project ACTION, You Can Really Go Places, June 2002.
24. Bus Riding Made Easy brochure, Intercity Transit, Olympia, Washington.
25. Access Guide, San Francisco Muni, San Francisco, CA.
26. Biernbaum, Lee, Rainville, Lydia, Spiro, Arlen, Multimodal Trip Planner System: Final Evaluation Report, FTA-MA-ITS-2011.1, U.S. Department of Transportation, John A. Volpe National Transportation Systems Center, Cambridge, MA, May 2011.
27. Kim, Julia, *The Road to Independence: Youth with Disabilities Transportation Roundtable*, National Easter Seal Society, Washington D.C., May 2010.
28. Project ACTION, *Helping Schools Meet the Transportation Needs of Students with Disabilities*, National Easter Seal Society, Washington D.C., June 2009.
29. Project ACTION, The National Dialogue, Transportation and Research Forum on Accessible Community Transportation, National Easter Seal Society, Washington D.C., April 2004.
30. Jenkins, Janet, Transportation for Older Adults, *Transportation Planning*, Volume 32, Issue 1, American Planning Association, Chicago, IL, February 2002.
31. Feeley, Cecilia, *Evaluating the Transportation Needs and Accessibility Issues for Adults on the Autism Spectrum in New Jersey*, Presented at 89th Annual Meeting of the Transportation Research Board, Washington D.C., 2010.
32. Wolf-Branigan, Karen and Wolf-Branigan, Michael, *A Travel Training Cost Benefit Model for People with Disabilities*, Public Transportation Agencies and Communities, ITS Monash, June 2010.
33. Wolf-Branigan, Karen, Wolf-Branigan, Michael, Welch, Kevin, and Culver, J.D., *Applying a Travel Training Cost-Benefit Model for People with Disabilities*, Presented at 90th Annual Meeting of the Transportation Research Board, Washington D.C., 2011.
34. Travel Training Options Help Take the Pressure off Paratransit Services, *Metro Magazine*, Volume 107, Number 6, American Public Transportation Association, Washington D.C., June 2011.
35. Wolf-Branigan, Karen and Wolf-Branigan, Michael, The Emerging Field of Travel Training Services: A Systems Perspective, *Journal of Public Transportation*, Volume 11, Number 3, Center for Urban Transportation Research, 2008.
36. Rubbell, J., "Public Transit 101: A Powerful Partnership," American Public Transit Association, Washington, D.C., May 2005.
37. Project ACTION, *Helping Schools Meet the Transportation Needs of Students with Disabilities*, National Easter Seal Society, Washington D.C., June 2009.
38. Paddeau, Dennis, The MATT Bus: Teaching Seniors to Ride Public Transit, American Public Transportation Association, Washington D.C., May 2005.
39. Kachmar, Betty, *Travel Training in Indiana*, American Public Transportation Association, Washington D.C., May 2005.
40. Shaheen, Susan, Allen, Denise, and Liu, Judy, Public Transit Training: Mechanism to Increase Ridership among Older Adults, Report 09-3805, Presented at 88th Annual Meeting of the Transportation Research Board, Washington D.C., 2009.

41. Babka, Rhianna, Cooper, Jill, and Ragland, David, Evaluation of Urban Travel Training for Older Adults, *Transportation Research Record: Journal of the Transportation Research Board, No. 2110*, Transportation Research Board of the National Academies, Washington D.C., 2009, pp. 149–154.
42. Ketola, N. and Chia, D., *Assessment of ADA Research and Development Needs*, U.S.DOT, Washington, D.C., 1997.
43. Chia, D., *TCRP Synthesis 74: Policies and Practices for Effectively and Efficiently Meeting ADA Paratransit Demand*, Transportation Research Board of the National Academies, Washington, D.C., 2008.
44. Easter Seals Project ACTION, *Innovative Practices in Paratransit Services*, Washington, D.C., 2002.

Chapter 7. Fare Incentive Programs

45. EG&G Dynatrend, *TCRP Report 9: Transit Operations for Individuals with Disabilities*, TRB, National Research Council, Washington, D.C., 1995.
46. Nelson\Nygaard Consulting Associates, Inc., *Transit Sustainability Project: Paratransit Final report*, Metropolitan Transit Commission, San Francisco, CA, 2012.
47. TranSystems Corp., *ADA Paratransit Eligibility Determination Processes and Information Obtained From Selected Transit Agencies, Final Report*, Valley Metro, Phoenix, AZ, 2009.

Chapter 8. Alternative Transit Service Designs

48. DREDF, *Accessible Transportation Services for All*, Federal Transit Administration, Washington, D.C., 2014.
49. Koffman, D., *TCRP Synthesis 53, Operational Experiences with Flexible Transit Services*, Transportation Research Board of the National Academies, Washington, D.C., 2004.
50. Weiner, R., *TCRP Synthesis 76, Integration of Paratransit and Fixed-Route Transit Services*, Transportation Research Board of the National Academies, Washington, D.C., 2008.
51. Volinski, J. M., Connor, M., McLaughlin, J., Kopp, C., Ryus, P., Pittman, D., *TCRP Report 116, Guidebook for Evaluating, Selecting, and Implementing Suburban Transit Services*, Transportation Research Board of the National Academies, Washington D.C., 2006.
52. Becker, A. and Teal, R. Next-Generation General Public Demand Responsive Transportation. Presented at the 90th Annual Meeting of the Transportation Research Board, Washington, D.C., 2011.
53. Federal Transit Administration, *FY2013 Triennial Review Workshop Workbook*, http://www.fta.dot.gov/5-24_0700_Granttee_Handbook.pdf

Chapter 9. ADA Paratransit Eligibility Determinations

54. Weiner, R., *TCRP Synthesis 30: ADA Paratransit Eligibility Certification Practices*, TRB, National Research Council, Washington, D.C., 1998.
55. TranSystems Corp., *Determining ADA Paratransit Eligibility: An Approach, Guidance and Training Materials*, Easter Seals Project ACTION, Washington, D.C., 2003.
56. Disability Rights Education and Defense Fund (DREDF), *Topic Guides on ADA Transportation: Eligibility for ADA Paratransit*, Federal Transit Administration, Washington, D.C., 2010.
57. *TCRP Research Results Digest 107: Developing Partnerships Between Transportation Agencies and the Disability and Underrepresented Communities*, Transportation Research Board of the National Academies, Washington, D.C., April 2013.
58. National Transit Institute, *Comprehensive ADA Paratransit Eligibility, Participant Workbook*, Rutgers, The State University of New Jersey, New Brunswick, NJ, 2010.
59. TranSystems, Corp., *Review of the RTA ADA Paratransit Eligibility Certification Program, Final Report*, Regional Transportation Authority, Chicago, IL, 2011.
60. Koffman, D., Lewis, D., Chia, D., Burkhardt, J., Bradley, M., *TCRP Report 119: Improving ADA Complementary Paratransit Demand Estimation*, Transportation Research Board of the National Academies, Washington, D.C., 2007.



APPENDIX A

Examples of ADA Paratransit Eligibility Conditions

- A.1 Seattle Metro Access Transportation Conditional Eligibility Categories and Codes
- A.2 Pittsburgh ACCESS Conditional Eligibility Categories and Codes

A.1 Seattle Metro Access Transportation Conditional Eligibility Categories and Codes

CODE	MEANING	DEFINITION
PATHWAY		
B1	1 Block	Disability prevents travel of more than 330 ft.
B2	2 Blocks	Disability prevents travel of more than 660 ft.
B3	3 Blocks	Disability prevents travel of more than 990 ft.
CC	Curb cuts	Disability prevents travel when ADA standard sidewalk curb cuts are not present.
INC	Uphill or Downhill Travel	Disability prevents travel on 8% or greater incline/decline.
LBZ	Lift Accessible Bus Zone	Disability prevents the use of a bus zone that is not lift accessible for client to enter/exit bus.
TR	Complex Traffic	Disability prevents travel when five streets converge with no audible signals; <u>or</u> when a high-traffic volume intersection with no traffic controls exist, such as a 3-way merging intersection. Generally for people with visual disabilities who are prevented from evaluating the flow of traffic in order to cross the street.
UN	Uneven Surfaces	Disability prevents travel when there is a vertical break in the walking path that is greater than 1 inch. Disability prevents travel on stairs, gravel, grass, dirt, or unpaved pathway.
NAVIGATIONAL		
BX	Bus Transfer	Disability prevents travel when route requires transfer between fixed-route buses. (Examples include people with cognitive disabilities who can only use fixed route for simple one-bus routings; or people with <u>extreme</u> fatigue that prevent them from riding more than one bus.)
NTT	Not Transit Trained	Disability prevents use of the fixed-route system to travel successfully to any new destinations without training. Identifies riders who, due to a cognitive or visual disability, are not able to independently ride the bus without training, where there is a reasonable expectation that they can be successfully trained. Riders who indicate that they sometimes ride the bus are given the condition if they are not able to generalize information from the trip(s) they are currently taking and apply that information to bus trips for different destinations or for different routes.
VARIABLE		
LSM	Life-Sustaining Medical	This condition is present when a person receiving life-sustaining medical treatment experiences temporary physical weakness caused by the treatment which prevents them from riding the fixed-route system.
GBD	Good Day / Bad Day	A variable disability exists which prevents a person from traveling to and from a bus stop when experiencing a bad day due to a condition causing fatigue.
SEASONAL		
CO	Extreme Cold	Disability prevents travel when the daytime high is lower than 40°F. Between November 1 through February 28, when lower temperatures are most likely, Demand Response Trips may be booked up to the full Advanced Reservation period. Between March 1 through October 31, trips may be booked the day before if the daytime high forecast for any area of King County is below 40° F for that day. No subscription service is available unless other pathway conditions apply.

(continued on next page)

A.1 (Continued)

CODE	MEANING	DEFINITION
DK	Darkness	Disability prevents travel between sunset and sunrise. Sunrise and sunset times are posted in local papers and the Internet. Access will change the hours of darkness monthly, using the longest period of darkness in each month. The sunset time will be rounded down to the nearest 5 minutes and the sunrise time will be rounded up to the nearest 5 minutes. Demand Response Trips may be booked up to the full Advanced Reservation period. Subscription Service will be available when any portion of a trip is within the hours of darkness all year round. The hours between 9 p.m. and 5 a.m. are always in darkness. Each leg of the trip will be treated separately.
HT	Extreme Heat	Disability prevents travel when the daytime high is greater than 85° F. Between July 1 through August 31, when higher temperatures are most likely, Demand Response Trips may be booked up to the full Advanced Reservation Period. September 1 through June 30 trips may be booked the day before if the daytime high forecast for any area of King County is greater than 85° F for that day. No subscription service is available unless other pathway conditions apply.
LT	Extreme Light	Disability prevents travel during periods of bright sunlight. Persons may book Demand Response Trips during daylight hours one day in advance. No subscription service is available unless other pathway conditions apply.
SNI	Snow and/or Ice	Disability prevents travel when snow or ice is on the ground; also applicable when Metro declares a Stage 1 level of response or higher. Demand Response Trips may be booked one day in advance under these conditions, subject to Access Transportation's Adverse Weather Policy. No subscription service is available unless other pathway conditions apply.
PATHWAY REVIEW		
NQ	Not Qualified	Not qualified for a specific trip on ACCESS as determined by a Pathway Review.
BPL	Bus Plus Service	Specific portions of a trip taken on ACCESS and Fixed-Route.
TRANSIT INSTRUCTION		
CBT	Completed Bus Training	Successfully completed Bus Training for a specific trip.
SBT	System Bus Trained	Successfully completed Bus System Training to utilize entire transit system.
LBT	Lift Bus Trained	Participated in Lift Training. Outcome is entered into LBT code description.
BTT	Bus Transit Training	Specific trip denied on ACCESS due to successful completion of Bus Transit Training.
RIDE HISTORY		
PFR	Potential Fixed Route	Indication of past usage of fixed-route

A.2 Pittsburgh ACCESS Conditional Eligibility Categories and Codes

Conditional Categories and Codes	Description/Types of Barriers Preventing Use of Fixed-Route Transit
Base Plus Rides	Trips Outside the ¾ mile ADA paratransit service area funded by New Freedoms and JARC. Also called Connections Plus and Access Works Trips.
Feeder Rides	Trips by conditionally eligible riders to fixed-route stop or station with part of trip by fixed-route transit. Typically by riders prevented from using fixed route by Dangerous Traffic (01), Difficult Terrain (05), or Route Not Accessible (08) types of barriers.
Other Conditional Rides:	
01 – Dangerous Traffic	Trips by riders who cannot cross wide or busy street Trips by riders who cannot cross wide open parking lots Trips by riders who cannot navigate certain types of intersections (such as uncontrolled, offset crossings, etc.)
02 – Requires Transfer	Trips by riders who cannot navigate fixed-route transit when transfers are required
03 – Temperature Sensitivity	Trips by riders who are prevented from using fixed-route transit in very hot or cold temperatures. Appropriate temperatures vary by rider, but below 40° F is often used as a measure of “too cold” and above 80° F is often used as a measure of “too hot”
04 – Weakness After Treatment	Trips by riders who are affected by dialysis, radiation, or chemotherapy treatments.
05 – Difficult Terrain	Trips by riders who are prevented from using fixed route due to steep hills, or walking distances to or from stops/stations that are further than they can manage.
06 – Not Trained to Destination	Trips by riders who can use fixed-route transit with training, who have not been trained for these trips
07 – Good Day/Bad Day	Trips by riders whose functional abilities vary by day due to the variable nature of their disabilities
08 – Route Not Accessible	Trips by riders who are prevented from using fixed-route transit because of a lack of curb ramps, lack of sidewalks, or uneven or broken sidewalks
09 – Presumptive Eligibility	Granted to riders if trips requested have not yet been reviewed
10 – Snow/Ice	Trips by riders prevented from using fixed-route transit because of the presence of snow or ice.
11 – Out-of-Town Visitor	Trips provided to visitors from out of town who have ADA eligibility granted by another transit agency or have a disability that prevents use of fixed-route transit
12 – Dawn-Dusk	Trips by riders who are prevented from using fixed-route transit in times of low light



APPENDIX B

Task and Skills Lists for ADA Paratransit Eligibility

Assessing Abilities to Use Fixed-Route Transit Services

SUGGESTED TASK LIST (To Be Discussed and Refined with Local Input)

Following is a draft list of tasks to be considered when developing a master task list with local input. Tasks must be performed independently or with assistance provided by drivers or transit system employees based on ADA requirements and local agency policies and procedures

With a *reasonable level of effort or risk*, can the applicant *consistently*:

- Get and Remember Transit System Information
- Walk/Wheel to and from Transit Stop/Station
 - Throughout area – up to 3/4 mile
 - Over various surfaces
 - Over various terrain
 - Up/down curbs
 - Up/down curb cuts
 - Cross streets of various widths and with various controls
 - Find way in familiar and unfamiliar settings
- Enter and Exit Transit Stations
 - Flights of stairs
 - Elevators and escalators
 - Navigating complex stations
- Wait at a Stop/Station for Transit Vehicle
 - With and without benches/shelters
- Locate and Recognize Bus/Train to Take
 - Single route and multiple routes with transfers
- Board and Exit Vehicle
 - Inaccessible vehicles
 - Accessible vehicles (lift, ramp)
- Pay Fare
- Get to Seat/Securement Area
- Ride in Seated or Standing Position
- Recognize Destination
- Signal for Stop
- Perform Above Tasks in Various Weather and Environmental Conditions
 - Snow, ice, rain, heat, humidity, cold, smog
 - Bright light, low light, background noise
- Handle Unexpected Situations
- Travel Safely in the Community

SUGGESTED FUNCTIONAL SKILLS LISTS
(To Be Discussed and Refined with Local Input)

PHYSICAL FUNCTIONAL SKILLS

Physical functional abilities needed to perform tasks required to use fixed-route transit system.

- Walking speed
- Endurance
- Coordination
- Strength
- Balance
- Gait
- Range of Motion
- Dexterity

COGNITIVE FUNCTIONAL SKILLS LIST

Cognitive functional abilities needed to perform tasks required to use fixed-route transit system.

- Orientation to Person, Place and Time
- Judgment and Safety Skills
- Problem Solving
- Coping Skills
- Short and long-term memory
- Concentration (Attention to Task)
- Ability to Seek and Act on Directions
- Ability to Process Information
- Ability to Communicate Needs
- Consistency
- Behavioral Skills

SENSORY FUNCTIONAL SKILLS LIST

Sensory functional abilities needed to perform tasks required to use fixed-route transit system.

- Orientation to Place
- Directional Wayfinding
- Ability to Detect Changes on Surfaces
- Ability to Detect Environmental Cues (Hearing)
- Proficiency in Using Mobility Aids



APPENDIX C

Sample Conditional ADA Paratransit Eligibility Determination Letter (Courtesy Seattle Metro)

Seattle Metro Sample Conditionally Eligible Letter

Thank you for applying for King County Metro's Access Transportation program. As a result of your application, it has been determined that sometimes you cannot use regular Metro bus service because of the following reason(s):

[Note: One or more of the following reasons would be included, as appropriate]

- You need the assistance of another person beyond that provided by the bus driver in order to board, ride or disembark an accessible transit bus or light rail vehicle.
- You need to use a ramp or lift to board the bus and these are not always available or cannot be deployed.
- Your disability causes some environmental factors (such as a lack of curb cuts, the distance to the bus stop or inclement weather) to be a barrier for you. These barriers prevent you from accessing some or all bus stops or rail stations.

Because you cannot use Metro regular bus services in some situations, you have been determined conditionally eligible for Access Transportation, Metro's Americans with Disabilities Act paratransit service. Conditional eligibility means that whenever your conditions prevent you from taking the regular fixed-route bus, you are eligible to take your trip on Access. The following conditions have been determined to prevent you from riding the bus. You will be able to use Access when:

[Insert appropriate conditions here—see attachment 2]

When these conditions are not present, it is expected that you will use Metro's regular bus service. In situations where these conditions prevent you from making only part of a trip on the bus, Access may take you to a bus stop where you can complete the rest of your trip on the regular Metro bus. Access enforces trip-by-trip qualification for conditionally eligible riders. You will receive more information when we review the trips you take.

Try Metro's regular bus service. All of Metro's buses are fully accessible, have a lift or ramp to make it easier to get on and off, and priority seating for seniors and people with disabilities. You may call one of Metro's Rider Information Specialists to get help planning your trip. Call 206-553-3000 (TTY users: 711 Relay) or get information online at <http://metro.kingcounty.gov>.

Want practice using the bus and light rail? Transit instruction is a free service that can help you figure out which bus stops and routes work for you. The knowledgeable instructors can help with trip planning and provide training for a successful journey. Learning how to ride the bus can give you more independence by providing increased flexibility, reliability and convenience. The same-day service and regular schedule allow you to go where you want when you want. For information about this service call 206-749-4242 (TTY Relay: 711).

The Access Ride Guide is enclosed to help you use Access. We hope you find it helpful and encourage you to read it through before you reserve your first trip. We also encourage you to call customer service with any questions.

Your eligibility is effective through [date]. Your Access ADA paratransit card is enclosed. The card has your identification number printed on the bottom of it. Your identification number is [insert number here]. If you travel outside King County, you can use the paratransit services in other communities within the United States. Your identification card or this letter serves as proof that you are eligible for this service.

You have been certified for [assistance type—see attachment 1] . . . [Boarding Paragraph, PCA paragraph, if needed - see attachment 1]

If you have any questions about your eligibility determination, please call 206-263-3113 (TTY relay: 711)

If you disagree with our decision regarding your eligibility, you may appeal. For information about the appeal process, please read the enclosed brochure: “ADA Paratransit Eligibility Appeal.”

If you have questions about Access, or if you need this information in large print, Braille, or on an audiotape or CD, please call 206-263-3113 (TTY relay: 711)

Sincerely,

Attachment 1

Assistance Levels

[C2C]You have been certified for curb-to-curb service. The driver will meet you at the Access van to assist you with getting on and off the vehicle.

[D2D]You have been certified for door-to-door service because you require assistance between the vehicle and the doorway of your residence or destination. However, because of terrain or narrow streets, we may not be able to deliver this level of service at all locations. If that occurs, we will contact you with specific information. The driver must remain within sight of the vehicle at all times.

[H2H]You have been certified for hand-to-hand service because your disability requires that you always be picked up and delivered to the care of another person, and must never be left alone. There must always be someone to meet you and the driver at your origin and your destination. Because the driver must remain within sight of the Access vehicle at all times, it may not be possible for the driver to accompany you to the entrance at all locations. In that case, the person who meets you must meet you at the curb. If that occurs, we will notify you of the specific details about such locations.

PCA Allowed, Back Boarding and Attendant Required

[PCA]You have been certified to have a personal care attendant (PCA) accompany you on the van to assist you with one or more daily life functions. A PCA need not always be the same person. PCAs do not pay a fare on the Access van. The PCA's trip origin and destination must be the same as yours.

[BB, OR, SC, WH, WX]When using the lift on Access vehicles, position your wheelchair or scooter so that your back is to the vehicle. The lift manufacturers recommend boarding in this way because it is safer and reduces wear and tear on the lift. Access drivers can provide

assistance in maneuvering a manual chair. However, drivers cannot operate the electronic controls of a power chair. If you are concerned about boarding with your back to the vehicle, we are happy to bring a van out to your home so that you can practice boarding in this way. Call customer service on 206-205-5000 and we will set up a practice session for you. You may also bring a companion along whenever you travel to help you maneuver onto the lift.

[AR]You will be required to have a PCA with you when you ride Access. This is because you need the assistance of another person beyond that provided by the Access van driver. If you would like to hear the specific reasons for this requirement please call 206-263-3113 (TTY relay: 711). The driver will not be able to transport you if you are not accompanied by a PCA, and the trip will be treated as a “no show.” A PCA need not always be the same person. PCAs do not pay a fare on the Access van. The PCA’s trip origin and destination must be the same as yours. **[Note: This requirement is only included if documentation exists that the rider needs assistance beyond that provided by drivers and not having a PCA during the trip would result in serious disruption to the service.]**

Attachment 2

Eligibility Conditions

[CO]You cannot wait for a bus because the weather is extremely cold. You will be able to make reservations up to three days in advance in November-February. During other months, you will be able to make reservations one day in advance when the daytime high is expected to be below 40 degrees Fahrenheit.

[HT]You cannot wait for a bus because the weather is extremely hot. You will be able to make reservations up to three days in advance in July and August. In other months, you will be able to make reservations one day in advance when the daytime high is expected to be above 85 degrees Fahrenheit.

[SNI]You cannot get to or from the bus stop because there is snow or ice on the ground or forecast within the next 24 hours. (One day advance reservations only.)

[DK]You cannot get to or from the bus stop because it is dark at the time you would be traveling.

(Trips may be booked from sunset to sunrise; the hours will vary monthly)

[LT]You cannot get to or from the bus stop during periods of extremely bright light. (One day advance reservations only)

[GBD]Your variable health condition is causing you to have a bad day that prevents you from riding regular public transit.

[B1, B2, B3]You cannot get to or from the bus stop because you would have to travel more than (1, 2 or 3) block(s).

[CC]You cannot get to or from the bus stop because there are no curb cuts.

[LBZ]You need a bus stop where it is possible for the lift or ramp to deploy and you can get on to the lift or ramp.

[UN]You cannot get to or from the bus stop because the ground is uneven.

[INC]You cannot get to or from the bus stop because there are steep slopes.

[NTT]You have not received Transit Instruction to ride regular public transit to a specific destination. When bus service is available, Metro will provide free Transit Instruction for trips

that you take frequently. A Transit Instructor will contact you whenever training to a specific destination is appropriate.

[BX] You cannot complete your trip on a single bus, without a transfer.

[BB] You cannot use a bus because it is equipped with a lift or ramp that is not rated to carry over 600 pounds.

[TR] You cannot get to or from the bus stop because you would have to cross a busy intersection with no traffic controls.

[LSM] You are experiencing temporary physical weakness related to receiving life-sustaining medical treatment.



APPENDIX D

Evaluation Methodologies

- D1 Methodology for Evaluating Bus Stop and Pedestrian Infrastructure Improvement Efforts
- D2 Methodology for Evaluating Fare Incentive Programs
- D3 Methodology for Assessing the Effectiveness of In-Person ADA Paratransit Eligibility Determination Processes, and the Use of Conditional and Trip-by-Trip Eligibility

D1. Methodology for Evaluating Bus Stop and Pedestrian Infrastructure Improvement Efforts

<i>Ridership Change At Improved Stops—Riders With Disabilities</i>		
Measure	Analysis Method	Data Sources
<p>Ridership change by riders using wheelchairs/scooters at stops receiving stop and pedestrian infrastructure improvements.</p> <p>While riders using wheelchairs/scooters are only a subset of riders with disabilities, stop/infrastructure improvements particularly benefit them.</p>	<p>If lift or ramp deployments or boardings by stop are available, calculate the before-and-after number of lift/ramp boardings for one year before the improvements to one year after the improvements at each of the stops.</p> <p>Compare this change to the change in total lift/ramp deployments system-wide for the same before-and-after time periods.</p>	<ul style="list-style-type: none"> • Ridership data by stop, disaggregated by lift/ramp deployments for time periods before and after the stop/infrastructure improvements. • Total lift/ramp deployments system-wide for the same two time periods.

<i>Ridership Change At Improved Stops—All Riders</i>		
Measure	Analysis Method	Data Sources
<p>Change in total boardings at stops receiving stop and pedestrian infrastructure improvements.</p> <p>Infrastructure improvements benefit all riders, as each bus stop trip begins and ends with a pedestrian trip.</p>	<p>With boardings by stop, calculate the before-and-after number of boardings at the improved stops for one year before and one year after the improvements.</p> <p>Compare this change to the change in total boardings system-wide for the same before-and-after time periods.</p>	<ul style="list-style-type: none"> • Boardings by stop for time periods before and after the stop/infrastructure improvements. • Total boardings for the same two time periods.

<i>Ridership Changes At Improved Stops by Riders with Disabilities Contrasted with Change in ADA Paratransit Ridership within Catchment Area of Improved Stops</i>		
Measure	Analysis Method	Data Sources
<p>Change in number of lift/ramp deployments at the improved stops for a time period before the improvements to a similar time period after, contrasted with change in ADA paratransit ridership within ¼-mi. radius of the improved stops over the same time periods, focusing on riders who have conditional eligibility.</p>	<p>For the stops receiving improvements, calculate the before-and-after number of lift/ramp boardings for one-year period before the improvements to the one-year period after.</p> <p>For ADA paratransit ridership change, GIS analysis is required to create a ¼-mile radius around the improved stops. ADA ridership (disaggregated by type of ADA rider if available—unconditionally eligible vs. conditionally eligible), is then calculated within the defined area around each improved bus stop for the same before and after time periods used to assess change in lift/ramp deployments.</p> <p>The change in the before-and-after time periods for lift/ramp deployments is then contrasted to the change in the before-and-after time periods for ADA conditionally eligible riders.</p>	<ul style="list-style-type: none"> • Ridership data by stop, disaggregated by lift/ramp deployments for time periods before and after the stop/infrastructure improvements. • ADA ridership within the defined area of the improved stops, disaggregated by type of eligible rider, for the same time periods.

(continued on next page)

D1. (Continued)

Cost Analysis: ADA Paratransit Costs Deferred with New Trips on Fixed Route by Riders with Disabilities		
Measure or Issue	Analysis Method	Data Sources
<p>Cost “savings” for ADA paratransit trips now on fixed route.</p> <p>If new fixed-route trips at the improved stops by riders using wheelchairs/scooters replace trips that would otherwise be taken on ADA paratransit, costs for ADA paratransit are deferred.</p>	<p>Calculate the average operating cost per ADA paratransit trip and subtract the average operating cost per fixed-route trip for the net operating cost per ADA trip. Multiply this by the number of new fixed-route trips at the improved stops by riders with disabilities, as measured by number of lift/ramp deployments, for a defined time period.</p>	<ul style="list-style-type: none"> • Total ADA paratransit operating costs • Total ADA paratransit ridership (one-way trips) • Total fixed-route operating costs • Total fixed-route ridership (one-way trips) • New trips at the improved stops as measured by lift/ramp deployments for selected time period.

Cost Analysis: “Break-even” Number of Trips by Riders Who Use Wheelchairs/Scooters to Recover Cost for Stop/Infrastructure Improvements		
Measure or Issue	Analysis Method	Data Sources
<p>At a certain number of trips by riders who use wheelchairs/scooters at an improved stop/infrastructure, the cost of the improvements will equal deferred ADA paratransit trip costs, and the costs can be considered “recovered.”</p>	<p>Calculate the cost for a specific stop improvement or an average cost for selected improvements.</p> <p>Calculate the operating cost per ADA paratransit trip.</p> <p>Divide the cost of improvements by the average cost per ADA paratransit trip to determine the “break-even” number of trips by riders who use wheelchairs/scooters that equals the improvement cost.</p>	<ul style="list-style-type: none"> • Cost per stop for stop/infrastructure improvements. • Total ADA paratransit operating costs. • Total ADA paratransit trips.

D2. Methodology for Evaluating Fare Incentive Programs

Measure or Issue	Analysis Method	Data Sources
<p>1. Number of paratransit trips diverted to fixed-route as a result of fare incentive program. (Diverted trips.)</p>	<p>Monitor ridership trends on both modes before and after implementation of incentive program. If no other changes made, diverted trips assumed to be difference in ADA paratransit ridership. For more thorough analysis, consider survey of current and former paratransit riders about mode changes.</p>	<p>Ridership reports Paratransit rider survey Fixed-route rider survey</p>
<p>2. Number of induced fixed-route trips by disabled riders who would otherwise not have made the trip. (New trips.)</p>	<p>(New fixed-route reduced fare ridership – Trips diverted from ADA paratransit) - (Prior fixed-route reduced fare ridership). Also consider rider survey.</p>	<p>Fixed-route reduced fare ridership (before and after) Diverted trips (calculated above)</p>
<p>3. Number of continuing fixed-route trips by riders taking advantage of increased discount. (Continuing trips.)</p>	<p>(New fixed-route reduced fare ridership) – (Trips diverted from ADA paratransit + New fixed-route discount fare trips). Also consider rider surveys about present and prior ridership.</p>	<p>Fixed-route reduced fare ridership (before and after) Diverted trips (calculated above) New trips (calculated above)</p>
<p>4. Number of new requests for ADA paratransit eligibility (Applicable if fare incentive is tied to ADA paratransit eligibility).</p>	<p>Analysis of trends in applications received before and after fare incentives introduced.</p>	<p>Eligibility records</p>

D2. (Continued)

Cost Analysis: Fare Incentive Programs		
Measure or Issue	Analysis Method	Data Source
Cost per paratransit trip.	(Total annual operating and amortized capital costs) / (Annual passenger trips)	Financial reports, operations reports.
Cost savings per diverted trip.	(Cost per paratransit trip) - (Difference between paratransit fare and ADA discount fixed-route fare).	Measures computed below. Fare policies.
Revenue gain from new discounted trips.	(Number of new discounted trips) x (discounted fixed-route fare). Zero if free fare.	Fare policy. Ridership analysis.
Cost savings from diversion of paratransit passengers to fixed-route service.	(Cost savings per diverted trip) x (Number of diverted trips).	Measures computed above. Ridership analysis.
Initial cost of setting up fare incentive program.	Determine costs of initial planning, increased staff time for enhanced eligibility screening procedures, production costs of new farecards (if necessary), community education and marketing.	Interviews with staff, budgets, financial reports.
Cost of increased eligibility screening.	(Number of additional monthly hours devoted to eligibility following program implementation) x (Hourly rate including fringes and overhead).	Interviews with administrative staff, time sheets.
Revenue loss from continuing discount trips.	(Annual continuing trips) x (Difference between old discount fare and new discount fare).	Ridership analysis.
Total cost savings from fare incentives.	(Cost savings from diversion of paratransit trips to fixed-route) + (Revenues from new discounted trips) minus (Initial cost of setting up fare incentive program) + (Cost of enhanced eligibility screening) + (Revenue loss from continuing discount trips) + (Revenue loss from diverted trips) + (Revenue costs from newly eligible trips).	Measures computed above. Assumes zero dollars for marginal cost of each additional fixed-route passenger.
Break-even volume of trip diversions for total cost savings.	Determine number of trips that would need to be diverted from paratransit to fixed-route service at which cost savings would outweigh initial set-up cost.	Results of measures computed above.

D3. Methodology for Assessing the Effectiveness of In-Person ADA Paratransit Eligibility Determination Processes, and the Use of Conditional and Trip-by-Trip Eligibility

Measure or Issue	Analysis Method	Data Sources
1. Effectiveness of process in explaining ADA paratransit eligibility	Record the number of general information calls received regarding ADA paratransit service and the number of application packets sent in response to these calls. Note the number of callers who elect not to receive an application packet. Calculate percentage of callers who self-select out. Note: Not applicable if transit agency distributes application material broadly in the community and does not require individuals to call to get application materials.	ADA paratransit eligibility office/staff. General information phone data and tabulations of applications sent. May require manual tabulation for a period of time by staff. Collect for a reasonable period (e.g. one week).
2. Effectiveness of public information materials in explaining ADA paratransit eligibility	The difference between the number of application packets sent for a period of time and the number of "completed applications" received. If the process requires that individuals not only complete a paper application form, but appear in-person for an interview and/or assessment, a "completed application" would include submission of the form and participation in the interview/assessment. Note the difference not only in applications sent versus received, but any "self-selection" out of the process through interview no-shows or cancellations.	ADA paratransit eligibility office/staff.
3. Accuracy and thoroughness of initial determination process	Compare determination outcomes (percent unconditional, conditional, temporary, not eligible) to outcomes from "exemplary" systems. Also, calculate a per capita rate of eligibility (total eligible riders divided by total ADA paratransit service area population) and compare to peers and other "exemplary" systems. Finally, calculate the annual ADA paratransit trips per capita (annual trips divided by total population in the ADA paratransit service area). This can also serve as a measure of eligibility determination effectiveness.	ADA paratransit eligibility office/staff. Readily available service and area statistics (ridership, population)
4. Accuracy and thoroughness of initial determination process	Determine the number and percentage of initial determinations that are appealed. Compare to "exemplary" systems. Note: Appeal rates may increase during recertifications using new process and materials. Determine the number and percentage of initial determinations that are changed on appeal. Compare rate of changed decisions to "exemplary" systems. Note: Atypical rates of change could indicate issues with the appeal process as well as the accuracy of initial determinations.	ADA paratransit eligibility office/staff.
5. Trends in Annual ADA Paratransit Ridership	Analyze trends in ADA paratransit ridership for several years prior to changes/improvements in the eligibility process. Use prior ridership to estimate likely ridership without eligibility changes. Compare predictions to actual ridership after the eligibility changes.	Readily available ADA paratransit service statistics.
6. Number of trips taken by riders who are unconditionally eligible, and trip-making rate	Sort trips provided for a period of time (e.g., one week or one month) by rider eligibility. Determine the total trips made by riders who have unconditional eligibility. Divide the total trips by the number of unconditional riders who made trips during that period to calculate a trip-making rate for those riders. Use in cost analysis detailed below.	Special data run linking master rider file with trip file.

D3. (Continued)

Measure or Issue	Analysis Method	Data Sources
7. Number of trips taken by riders who are conditionally eligible, and trip-making rate	Same analysis as above for conditionally eligible riders. Determine the total trips made by riders who have unconditional eligibility. Divide the total trips by the number of unconditional riders who made trips during that period to calculate a trip-making rate for those riders. Use in cost analysis detailed below.	Special data run linking master rider file with trip file.
8. Number of trips requested by conditionally eligible riders determined not ADA paratransit eligible	If the transit agency reviews trip requests by riders who are conditionally eligible, determine: (1) the number of trips requested by conditionally eligible riders for a period of time (e.g., one month or one year); (2) the number of trips that were reviewed for trip eligibility, and; (3) the number and percentage of total trips requested that are determined not eligible. Use in cost analysis detailed below.	Special data run linking master rider file with trip file. ADA paratransit eligibility office/staff records of trips evaluated.
9. Number of trips not requested by conditionally eligible riders and made instead by fixed route	Estimate the number of trips being made on fixed route by conditionally eligible riders by comparing the trip-making rates of these riders to the trip-making rates of riders with unconditional eligibility. Take the difference in the trip-making rates (presumably less for conditionally eligible riders) and multiply by the number of persons with conditional eligibility that used the service in a given period of time (e.g., one year). This could be considered the number of trips made by conditionally eligible riders on fixed route. Use in cost analysis detailed below.	Special data run linking master rider file with trip file to determine number of trips by conditionally eligible riders, and an unduplicated count of conditionally eligible riders using the service for the study period.
Cost Analysis: More Thorough ADA Paratransit Eligibility Determinations and Conditional/Trip-by-Trip Eligibility Determinations		
Measure or Issue	Analysis Method	Data Sources
1. Annual additional eligibility determination costs	The difference in annual cost between the prior and new process would need to be calculated. This might include: <ul style="list-style-type: none"> • in-house staff costs • overhead and administrative costs • contractor costs • transportation costs for getting applicants to and from interviews/assessments • technology or software costs to better record eligibility data • costs associated with the handling of an increased number of appeals 	ADA paratransit eligibility office/staff
2. Annual trip review costs	The annual cost associated with making these decisions would need to be calculated. This might include: <ul style="list-style-type: none"> • staff time to review trips • travel expenses if staff are required to do on-street assessments and get reimbursed for these travel costs • any special technology or software modifications to implement trip-by-trip determinations 	ADA paratransit eligibility office/staff
3. Average subsidy per ADA paratransit trip	The average total ADA paratransit trip cost minus the average ADA paratransit fare	Readily available trip, cost and revenue data
4. Average subsidy per fixed-route trip		Readily available trip, cost and revenue data

(continued on next page)

D3. (Continued)

Measure or Issue	Analysis Method
<p>5. Annual savings resulting from a more thorough process in general</p>	$((R_{pre} - R_{act}) * AS_{pt}) - ((R_{pre} - R_{post}) * AS_{fr}) - (DC + RC)$ <p>where:</p> <p>R_{pre} = Predicted ADA paratransit annual ridership for the current year based on trends prior to the implementation of the more thorough eligibility process R_{act} = Predicted ADA paratransit annual ridership for the current year based on trends after to the implementation of the more thorough eligibility process AS_{pt} = Average subsidy per ADA paratransit trip AS_{fr} = Average subsidy per fixed-route trip DC = Additional annual costs of eligibility determination RC = Additional annual costs of trip reviews</p>
<p>6. Annual savings related specifically to determinations of conditional eligibility and trip-by-trip determinations, Option #1</p>	$(((TR_{unc} - TR_{con}) * CR) * AS_{pt}) - (((TR_{unc} - TR_{con}) * CR) * AS_{fr}) - (DC + RC)$ <p>where</p> <p>TR_{unc} = Trip-making rate for unconditionally eligible riders TR_{con} = Trip-making rate for conditionally eligible riders CR = Total number of conditionally eligible riders using service in the year AS_{pt} = Average subsidy per ADA paratransit trip AS_{fr} = Average subsidy per fixed-route trip DC = Additional annual costs of eligibility determination RC = Additional annual costs of trip reviews</p>
<p>7. Annual savings related specifically to determinations of conditional eligibility and trip-by-trip determinations, Option #2</p>	$(T_{ne} * AS_{pt}) - (T_{ne} * AS_{fr}) - (DC + RC)$ <p>where</p> <p>T_{ne} = Number of trips per year requested by riders who are conditionally eligible that are found to be not eligible AS_{pt} = Average subsidy per ADA paratransit trip AS_{fr} = Average subsidy per fixed-route trip DC = Additional annual costs of eligibility determination RC = Additional annual costs of trip reviews</p>

Abbreviations and acronyms used without definitions in TRB publications:

A4A	Airlines for America
AAAAE	American Association of Airport Executives
AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
ACI-NA	Airports Council International-North America
ACRP	Airport Cooperative Research Program
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATA	American Trucking Associations
CTAA	Community Transportation Association of America
CTBSSP	Commercial Truck and Bus Safety Synthesis Program
DHS	Department of Homeland Security
DOE	Department of Energy
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
HMCRRP	Hazardous Materials Cooperative Research Program
IEEE	Institute of Electrical and Electronics Engineers
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
ITE	Institute of Transportation Engineers
MAP-21	Moving Ahead for Progress in the 21st Century Act (2012)
NASA	National Aeronautics and Space Administration
NASAO	National Association of State Aviation Officials
NCFRP	National Cooperative Freight Research Program
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
PHMSA	Pipeline and Hazardous Materials Safety Administration
RITA	Research and Innovative Technology Administration
SAE	Society of Automotive Engineers
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (2005)
TCRP	Transit Cooperative Research Program
TEA-21	Transportation Equity Act for the 21st Century (1998)
TRB	Transportation Research Board
TSA	Transportation Security Administration
U.S.DOT	United States Department of Transportation