T R A N S I T   C O O P E R A T I V E   R E S E A R C H   P R O G R A M

TCRP Report 24

Guidebook for Attracting Paratransit Patrons to Fixed-Route Services

Transportation Research Board
National Research Council

Report 24

Guidebook for Attracting Paratransit Patrons to Fixed-Route Services

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Subject Area

Public Transit

TRANSPORTATION RESEARCH BOARD
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TRANSIT COOPERATIVE RESEARCH PROGRAM

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

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

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

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

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

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

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

TCRP REPORT 24

NOTICE

Special Notice

FOREWORD

By Staff
Transportation Research
Board

TCRP Report 24, "Guidebook for Attracting Paratransit Patrons to Fixed-Route Services," will be of interest to transit managers and planners in transit systems that provide complementary paratransit services under the Americans With Disabilities Act (ADA). Paratransit services are more expensive to provide on a per-trip basis than fixed-route transit, so operating efficiencies could be achieved by attracting some paratransit riders to fixed route. The Guidebook identifies the characteristics and preferences of four distinct market segments: people with disabilities who use fixed-route transit; people with disabilities who use paratransit; others who currently use paratransit; and people with disabilities who normally do not use transit. The Guidebook also provides step-by-step procedures for estimating demand, locating bus stops, training drivers, providing travel training for patrons, marketing services, and evaluating successes.

Under TCRP Project B-5, research was undertaken by KETRON, a Division of the Bionetics Corporation, to identify the characteristics of paratransit riders with and without disabilities who could be attracted to ride fixed-route service, the features they value in fixed-route services, and the physical and institutional barriers that hinder such efforts. The research is based on consumer surveys of people with disabilities who do not use fixedroute services as well as those who do. On-board surveys, telephone surveys, and focus groups were conduced at transit agencies around the country to obtain data on passenger preferences and abilities. Survey results indicate that the top four features that can make fixed-route transit attractive to paratransit users are (1) low fares, (2) easy access (i.e., no big roads to cross) to the bus stop, (3) drivers who announce all stops, and (4) no transfers.

A demand forecasting methodology was developed using the survey data and peer systems. Systems with transit service were grouped by geographic location, population density, climate, and topography to create peer systems. Using the peer systems tables provided, reference values for a user's system can be obtained on such items as ADA-eligible population, annual paratransit trips provided, productivity, and fixed-route vehicle information. Procedures to estimate the volume of riders who might switch from paratransit to fixed-route service are provided for the peer systems.

To aid implementation, case studies were conducted of successful projects, thereby providing information on good operational practices. Route design, bus stop location, budgeting, advertising, partnerships, public involvement, and market research are all discussed in detail.

A chapter of the Guidebook is devoted to driver training. Many transit riders—especially passengers with disabilities—rely on the driver. The third highest factor for making passengers with disabilities comfortable on fixed-route buses is announcing of stops. Another chapter is devoted to travel training for passengers. Knowledge is essential to making passengers with disabilities comfortable on fixed-route transit.

This Guidebook will help transit managers and planners design and implement fixedroute services that are attractive to passengers with disabilities. An unpublished final report on this project contains the analytical support for the findings and recommendations presented in the Guidebook. This unpublished final report is available on loan through the TCRP, 2101 Constitution Avenue, NW, Washington, DC 20418.

CONTENTS

CHAPTER 1:

INTRODUCTION

PURPOSE OF THIS GUIDEBOOK

The increasingly positive attitudes of the public regarding individuals with disabilities and the requirements specified in the Americans with Disabilities Act legislation have contributed to increased availability of paratransit services at over 550 existing fixed-route systems in the United States. With the increased availability of services, more people with disabilities want paratransit to satisfy their mobility needs. Increased mobility can result in a greater sense of self-worth, a higher quality of life, and the opportunity to participate in the work force — all desirable goals. An ancillary product of increased participation in the work force is the generation of additional revenues for state and federal governments.

The cost of curb-to-curb or door-to-door paratransit services can be and almost always is higher than the cost of accessible, fixed-route services. This cost is necessary if riders cannot use fixed-route services; however, studies and experiences around the country indicate that some individuals with disabilities can use accessible, fixed-route services effectively and at a lower cost to transit systems. A well-designed program to determine eligibility and constant evaluation of the program's performance are essential. This concept includes the effective use of trip-by-trip eligibility designations and the exclusion from the eligibility rolls of individuals with disabilities who can use traditional, accessible, fixed-route transit.

It is desirable to persuade individuals who are currently not getting around at all, are riding with friends or relatives, or are taking some other mode of transportation to use accessible, fixed-route systems. If this goal is to be achieved, certain attitudes of individuals with disabilities have to be modified, and transit systems must provide those amenities and characteristics considered important by potential riders.

Individuals with disabilities do not ride accessible, fixed-route services for a variety of reasons, including, but not necessarily limited to: (1) lack of knowledge about the availability of accessible fixed-route services; (2) the need to cross wide roads to use the service; (3) ineffective policies on the part of the transit

Paratransit tends to be more expensive than accessible fixed-route.

system; (4) inadequate training of drivers regarding the announcement of bus stops; (5) the need to make transfers between modes or among vehicles; (6) inadequate seating; (7) lack of large, covered shelters at bus stops; and (8) the perceived lack of security.

This Guidebook, which reflects the findings of rider and non-rider surveys, is part of the Transit Cooperative Research Program's initiative to develop methods to attract paratransit patrons and other individuals with disabilities to accessible, fixed-route services.

This Guidebook provides fixed-route transit systems with step-by-step instructions on how to attract individuals with disabilities and other potential riders to fixed-route services. The information presented reflects the results of extensive original research conducted by a team of experienced paratransit and fixed-route transit consultants.

This research addresses the following four market segments:

1.   People with disabilities who currently use fixed-route transit,
2.   People with disabilities who currently use paratransit,
3.   Others who currently use paratransit, and
4.   People with disabilities who normally do not use transit.

The fourth segment, generally the largest portion of the market, may be a significant area of growth for fixed-route transit systems. This Guidebook provides information on how to attract riders from each of the four market segments.[1]

ORGANIZATION OF THE GUIDEBOOK

The Guidebook consists of eight additional chapters as follows:

- Chapter 2, *Estimating Travel Demand*, provides step-by-step instructions for developing forecasts of how proposed

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[1] The survey results (by municipality) and other information are provided in the Final Report for this Transit Cooperative Research Program, Project B-5, "Attracting Paratransit Patrons to Fixed-Route Services."

changes to an existing local system will affect demand.

- Chapter 3, *Basic Steps*, discusses the four steps necessary to implement any approach found by the research to be positively correlated with citizen attitudes on fixed-route transit use.

- Chapter 4, *Locating Transit Stops Close to Passengers*, provides a step-by-step plan for using this technique to attract passengers.

- Chapter 5, *Training Drivers*, provides a step-by-step plan to teach drivers how to be sensitive to people with disabilities and how to assist them.

- Chapter 6, *Programming Accessible Bus Stop Improvements*, provides a step-by-step plan for improving bus stops so that individuals with disabilities find it easier to use the system.

- Chapter 7, *Teaching Passengers to Use the Fixed-Route System*, provides a step-by-step approach to providing effective travel training for individuals with disabilities.

- Chapter 8, *Marketing Fixed-Route Services*, provides a step-by-step plan for making individuals with disabilities aware of changes to the fixed-route system that will increase the available level of accessibility and increase the overall amenity level.

- Chapter 9, *Evaluating Success*, discusses how transit systems can assess whether or not the approaches they have used to attract individuals with disabilities to fixed-route services have been successful.

USING THIS GUIDEBOOK

The Guidebook is designed to minimize the amount of local data collection. Expensive, time-consuming interviews with local citizens are unnecessary because the national surveys provide information that can suggest local attitudes on the attributes of a fixed-route system.

Users should read Chapter 2, *Estimating Travel Demand.* After identifying the characteristics of the local fixed-route system and selecting the attributes of a "desired" system, users can consult the tables and other materials in order to determine the volume of

additional trips that could be expected to be achieved if the selected changes are made. If the resultant expected growth in trips from modal split is acceptable, Chapters 4 through 9 can be investigated to identify the actual steps necessary to implement each of the desired improvements.

Chapter 3 details the steps that users should take any time the system is modified.

It is unnecessary to read this Guidebook in its entirety at one sitting. Chapters 4 through 9 describe steps in support of the individual techniques selected for implementation by a system. To this end, the later chapters can be read as needed and in no particular order.

EXAMPLE

Example information is included throughout the document. It can be easily found by looking for the thickened vertical line to the left of the text. This location device is illustrated here.

CONCLUSIONS

This Guidebook reflects research which investigated the fixed-route service features most preferred by paratransit patrons. Each chapter includes methods to attract paratransit patrons and others to the fixed-route service. By implementing these methods, transit systems will reduce their overall cost per trip because some patrons will switch from more costly paratransit service to the fixed-route service for some or all of their trips.

CHAPTER 2:
ESTIMATING
TRAVEL DEMAND

INTRODUCTION

The techniques in this chapter can be used to quickly develop travel demand estimates for alternative fixed-route configurations that will attract people with disabilities to fixed-route services. Decision-making efforts can then concentrate on evaluating options from a number of perspectives, including benefit-cost ratios and economic analysis. It is always preferable to invest resources in evaluating alternatives rather than in developing data.

The demand estimation methodology can be used to accomplish two fundamental goals:

1.   To compare and contrast a study system's paratransit and fixed-route ridership by people with disabilities with that of the system's peers; and
2.   To establish an estimate of the number of people with disabilities in the service area of a study system who are expected to be attracted to fixed-route services if a specific set of improvements is made and to estimate the number of trips they would take on the fixed-route.

COMPARING A SYSTEM WITH ITS PEERS

Compare the local system to the system data tables based on geography, population density, topography, and climate.

Comparing a system with its peers is a quick, simple process of six steps as shown in Figure 2-1. These steps are as follows:[1]

1. Define the geographic location,
2. Define the population density,
3. Define the topography,
4. Define the climate,
5. Identify peer systems, and
6. Find peer system data.

Each step is described in detail in the following subsections.

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[1] A full description of the statistical derivation of the peer system categories is located in the Final Report for TCRP Project B-5, "Attracting Paratransit Patrons to Fixed-Route Services."
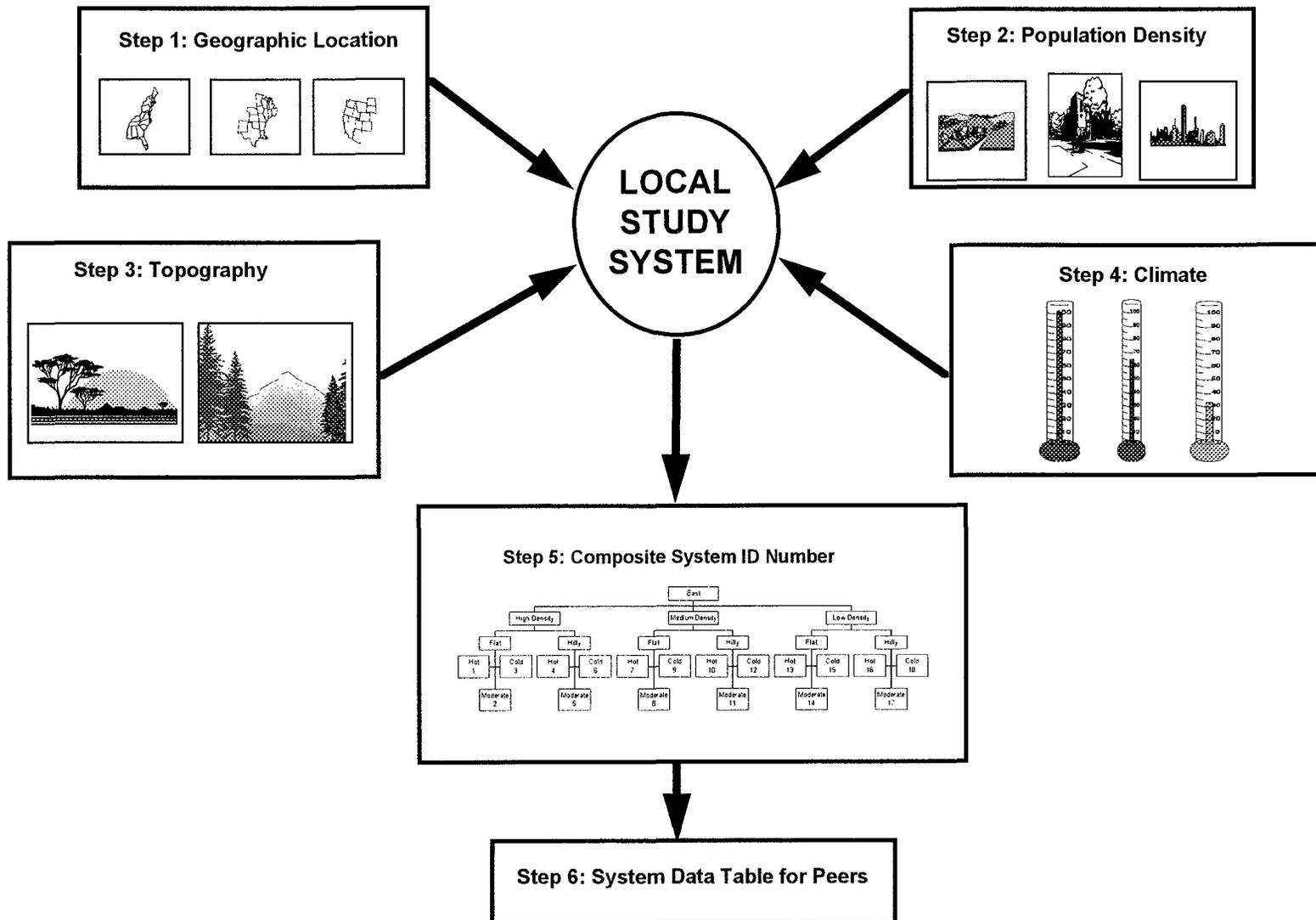
Figure 2-1.   Steps to Compare a System with Its Peers
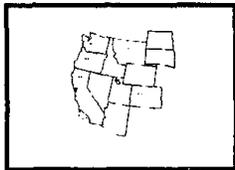
STEP 1: DEFINE GEOGRAPHIC LOCATION

Define the geographic location of the local study system. The three choices are as follows:

- **East** — System is in Federal Transit Administration (FTA) Region 1, 2, 3, or 4;

- **Central** — System is in FTA Region 5, 6, or 7; or

- **West** — System is in FTA Region 8, 9, or 10.

The map illustrated in Figure 2-2 can be used to establish the appropriate FTA region.

Some states (such as Minnesota and Kentucky) have transit systems in two different FTA regions; this may affect which geographic location (East, Central, or West) best defines the system. In such cases, the transit system should use whichever FTA region with which it normally corresponds.

STEP 2: DEFINE POPULATION DENSITY

Define the population density of the service area of the local system. The three choices are as follows:
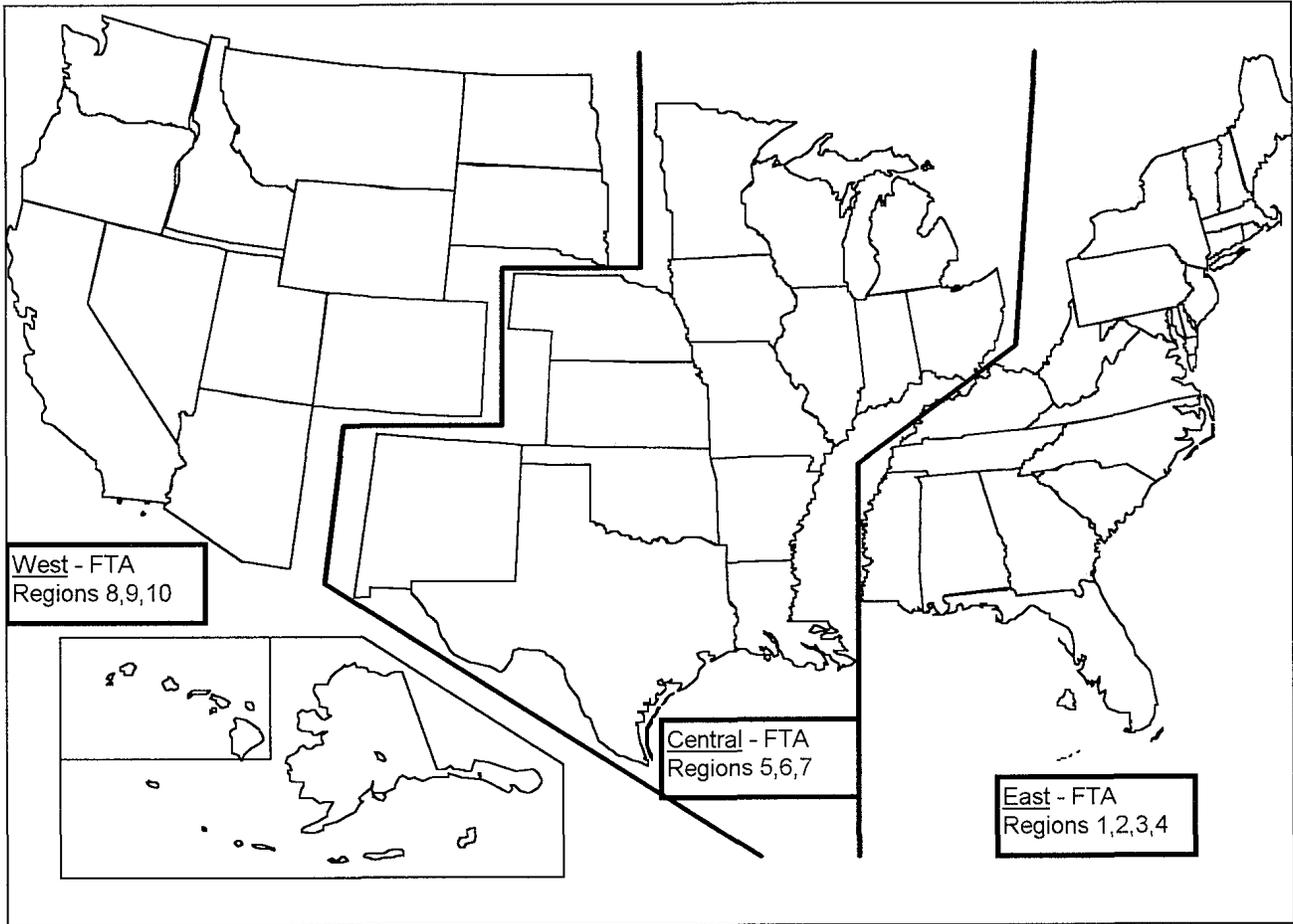
Figure 2-2.   Geographic Locations of Transit Systems
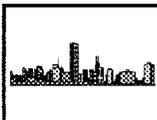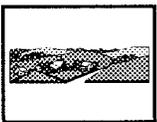
- **Low Density** — The service area county density is less than 100 persons per square mile;

- **Medium Density** — **(Suburban)** The service area county density is equal to or between 100 and 400 persons per square mile; or

- **High Density** — **(Urban)** The service area county density is greater than 400 persons per square mile.

Because many transit systems operate in both urban and rural areas, such as downtown areas as well as suburban and/or rural routes, the density of the county where the transit system is

located should be used. The county population density may be obtained from the local planning commission, from any published data source (such as the current *County and City Data Book* from the U.S. Department of Commerce, Bureau of the Census, which is usually available at a local public or university library), or by dividing the total population of the county by the total land area in the county. Systems may also subjectively be categorized as rural, urban, or suburban.

STEP 3: DEFINE TOPOGRAPHY

Define the topography of the local study system. The two choices are as follows:

- **Flat** — The topography has few hills or mountains as in some coastal areas, in plains areas, and in some desert areas; or

- **Hilly** — The topography is characterized by large hills or mountains which can make it difficult for people with disabilities to move to and from fixed-route transit routes.

The topography of the service area is a subjective measure. Any representative from the transit system may judge whether the service area can be categorized as flat or hilly.

STEP 4: DEFINE CLIMATE

Define the climate of the local system. The three choices are as follows:
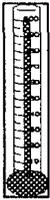
- **Hot** — The average yearly temperature is greater than 58.7° F;

- **Moderate** — The average yearly temperature is equal to or between 50.29° F and 58.70° F; or

- **Cold** — The average yearly temperature is less than 50.29° F.

The data collected on average yearly temperatures from across the country exhibit a small range — only 8.4° F separates hot from cold. If average yearly temperature data for the service area are readily available, or can easily be calculated, the transit system can categorize the climate as hot, moderate, or cold on the basis of the guidelines shown above. Sources of average annual temperature data include a local weather service at a news station or airport, a local weather almanac, an encyclopedia, or a collection of published climate data at a local or university library. Transit systems may also subjectively categorize the climate in the service area as hot, moderate, or cold.

After completing Steps 1 through 4, the local transit system should characterize itself using four descriptors: location, topography, density, and climate. This composite system description will be used to find other transit systems with similar characteristics.

STEP 5: IDENTIFY PEER SYSTEMS

From the composite system description obtained above, use the Peer Systems Chart shown in Figure 2-3 to obtain a category identification number. This identification number represents the composite transit system which most resembles the local study system. There are 54 different categories available.
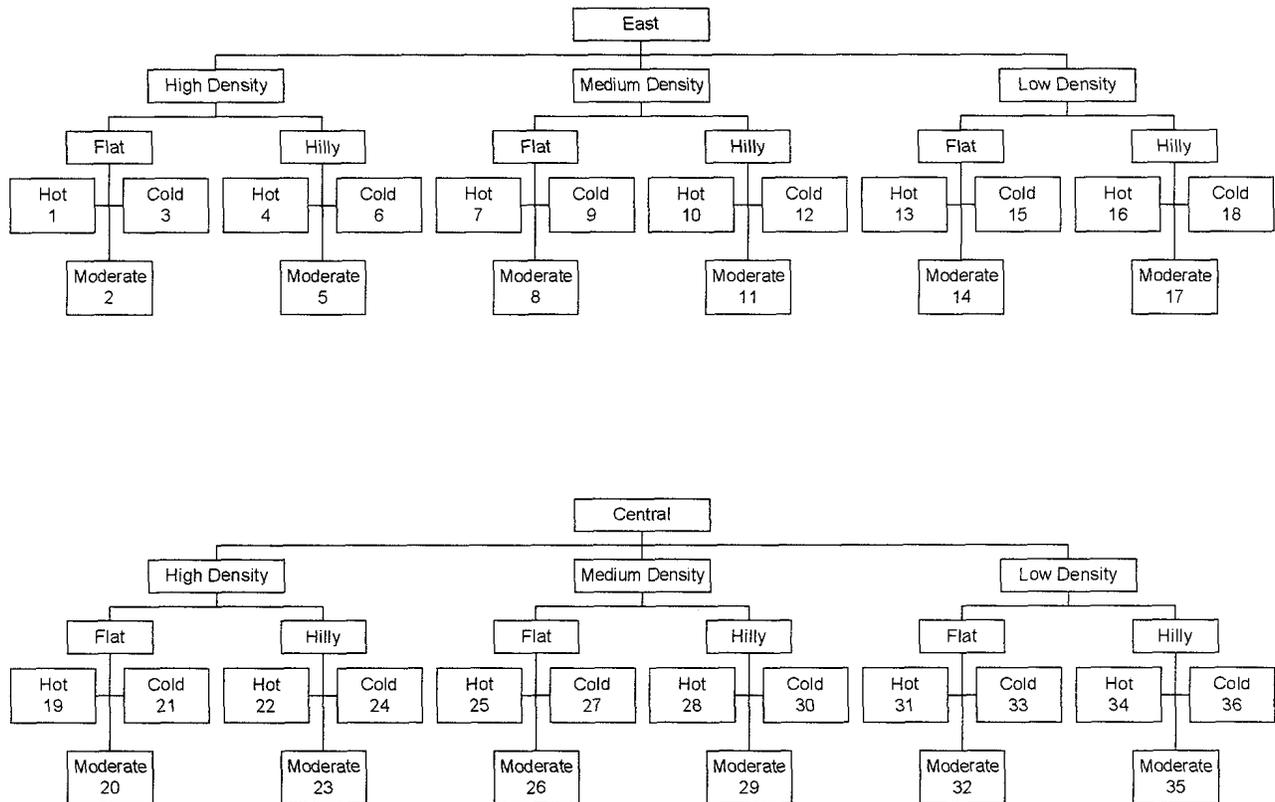
Figure 2-3.   Peer Systems Chart
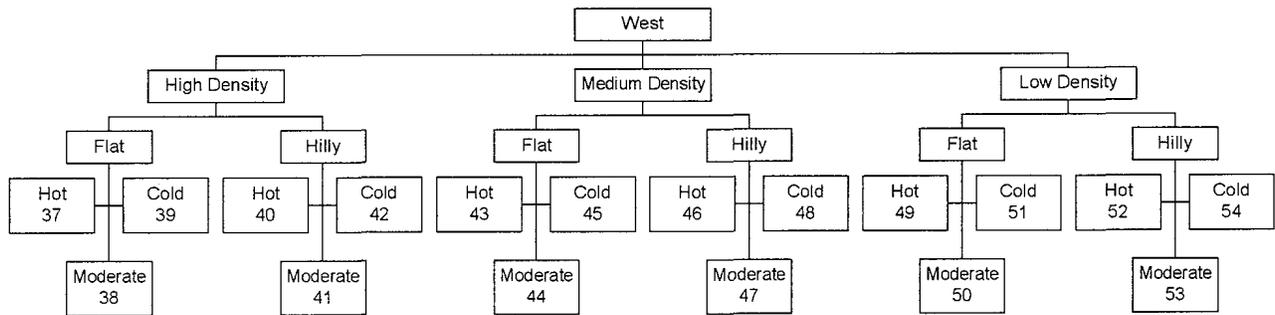
Figure 2-3.   Peer Systems Chart (Concluded)

STEP 6: FIND PEER SYSTEM DATA

Once the identification number for the composite system has been determined, use the set of system data tables in Appendix A to find peer systems. Locate the system data table in Appendix A which has the corresponding identification number. This table will provide information (such as service area population, ADA-eligible population, annual paratransit trips provided, productivity, and fixed-route and paratransit vehicle fleet information) for the various transit systems from across the country that have the same composite system identification number.

COMPARISON OF A LOCAL SYSTEM WITH ITS PEERS

For an illustration of how to compare a local study system with its peers, assume that a local system has the following characteristics:

- Geographic location - Pennsylvania;
- Population density - 125 persons per square mile;
- Topography - rolling terrain; and
- Climate - average yearly temperature of 57° F.

Following Steps 1 through 4 as outlined above, the study system can be characterized by location, density, topography, and climate. Using these descriptors, the local study system is located in the **East**, with a **Medium Density (Suburban)** in the

service area, a **Hilly** terrain, and a **Moderate** climate, as shown in Figure 2-4.
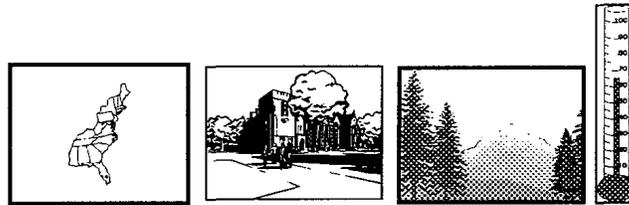
Figure 2-4.   Composite Description of Example Study System

Following Step 5, the composite system description is compared to the Peer Systems Chart (Figure 2-3) to obtain an identification number. This identification number represents the composite transit system description which most resembles the local study system (see Figure 2-5).
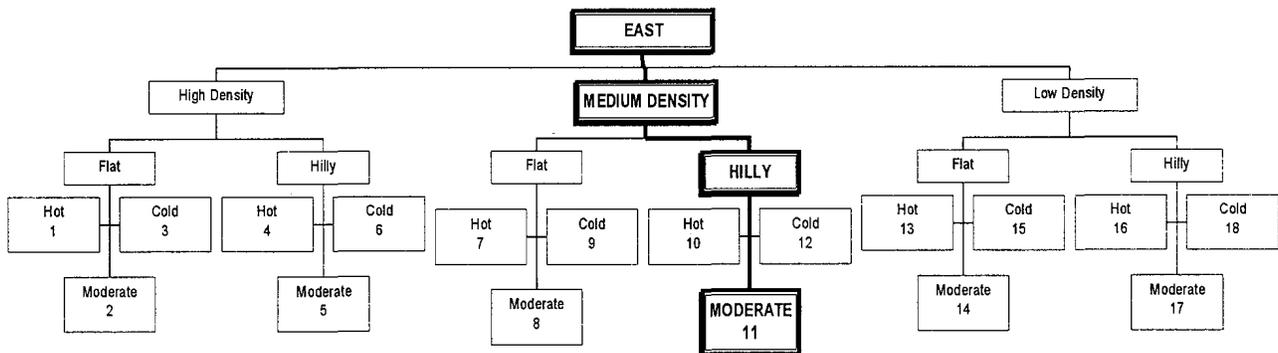
Figure 2-5.   System Identification Number for the Example Study System

The Peer Systems Chart shows that the local study system has a composite system description identification number of 11. This allows the study system to compare itself with peers having the same descriptive characteristics

Following Step 6, review the system data tables in Appendix A to highlight those systems with identification number 11. The definitions for data categories (fields) used in the system data tables are included below in Tables 2-1 (population, trips, and productivity) and 2-2 (vehicle fleet) as well as in Appendix A. The system data tables for System 11 are shown in Tables 2-3 and 2-4.

Table 2-1. Population, Trips, and Productivity Definitions Used in the System Data Tables

NO. (Number): Each transit authority was assigned a number in the database. This number is only used for reference purposes.
STATE: Location state for the particular transit authority.
97 ADA ELIGIBLE: Number of individuals expected to be registered as ADA eligible in 1997 as reported by the transit authority. This number is in thousands in the tables.
SERV AREA POP: Total population of the service area as reported by the transit authority. This number is in thousands in the tables.
UZA POP: Total population of the urbanized area where the transit authority is located. This number is in thousands in the tables.
94 ADA PT TR/YR: Number of ADA paratransit trips provided in 1994 as reported by the transit authority. This number is in thousands in the tables.
97 ADA PT TR/YR: Number of ADA paratransit trips forecast to be provided in 1997 as reported by the transit authority. This number is in thousands in the tables.
97 REV HRS: Total number of paratransit (ADA and non-ADA) revenue hours forecast for 1997 as reported by the transit authority. This number is in thousands in the tables.
94 TOTAL PT TR/YR: Total number of (ADA and non-ADA) paratransit trips provided in 1994 as reported by the transit authority. This number is in thousands in the tables.
97 TOTAL PT TR/YR: Total number of (ADA and non-ADA) paratransit trips forecast to be provided in 1997 as reported by the transit authority. This number is in thousands in the tables.
97 PRODUCTIVITY: Expected paratransit productivity in trips per revenue hour for 1997. This number was calculated by dividing the total number of paratransit trips (ADA and non-ADA) forecast to be provided in 1997 by the number of total paratransit revenue hours (ADA and non-ADA) forecast for 1997.

Table 2-2. Vehicle Fleet Definitions Used in the System Data Tables

NO. (Number): Each transit authority was assigned a number in the database. This number is only used for reference purposes.
93 FR BUSES: The total number of buses in the fixed-route fleet in 1993 as reported by the transit authority.
97 FR BUSES: The total number of buses forecast to be in the fixed-route fleet in 1997 as reported by the transit authority.
93 ACC FR BUSES: The total number of accessible buses in the fixed-route fleet in 1993 as reported by the transit authority.
97 ACC FR BUSES: The total number of accessible buses forecast to be in the fixed-route fleet in 1997 as reported by the transit authority.
93 TOTAL FR BUS FLEET - PERCENT ACC: The percentage of the total fixed-route bus fleet that was accessible in 1993. This number was calculated by dividing the number of accessible fixed-route buses in 1993 by the total number of buses in the 1993 fixed-route bus fleet.
97 TOTAL FR BUS FLEET - PERCENT ACC: The percentage of the total fixed-route bus fleet forecast to be accessible in 1997. This number was calculated by dividing the number of accessible fixed-route buses forecast for 1997 by the total number of buses forecast for the 1997 fixed-route bus fleet.
BOARDINGS: This is the approximate number of boardings on the fixed-route system where lifts/ramps were deployed as reported by the transit authority. This number is in thousands in the tables.
93 ADA ACC FR BUSES: The total number of accessible buses in the fixed-route fleet in 1993 that meet ADA specifications as reported by the transit authority.
97 ADA ACC FR BUSES: The total number of accessible buses forecast to be in the fixed-route fleet that meet ADA specifications in 1997 as reported by the transit authority.
93 TOTAL PT FLEET: The total number of vehicles in the paratransit fleet in 1993 as reported by the transit authority.

Table 2-3.   System Data Tables for System 11: Data for East, Medium Density, Hilly Topography, Moderate Climate — Population, Trips, Productivity

Note: Cells have been left blank when information has not been reported or is unavailable.

NO.	STATE	97 ADA ELIGIBLE	SERV AREA POP	UZA POP	94 ADA PT TR/YR	97 ADA PT TR/YR	97 REV HRS	94 TOTAL PT TR/YR	97 TOTAL PT TR/YR	97 PRODUC -TIVITY
57	NY	7.00	259.00	148.53	3	28	39	84	112	2.87
58	NY	0.44	29.00		0	124	27	0	124	4.57
77	MD	0.25	41.00	114.00	2	15	0	18	27	
79	MD	0.60	121.00	70.21	4	23	0.3	14	35	116.67
80	MD	1.00	75.00	54.66	8	9	0	21	22	
86	PA	0.20	80.00	19.00	5	5	32	110	135	4.22
87	PA	0.50	289.00	392.00	3	5	3.7	3	5	1.38
95	PA	5.50	25.00	186.27	21	41	49	213	247	5.04
97	PA	0.05	173.00	142.68	2	3	3.85	6	7	1.82
98	PA	0.11	43.25	77.84	0	0	11.5	39	44	3.83
100	PA	0.49	65.00	65.07	0	1	1	0	1	1.30
105	PA	0.13	106.00	0.00	1	1	46.5	124	133	2.86
106	PA	0 10		0.00	0	0	13.8	57	59	4.24
107	PA	0.15	33.00	0.00	1	1		1	1	
108	PA	0.06	38.00	0.00	0	104	3.5	0	8	2.29
109	PA	0.02	11.00	0.00	0	0	18.5	59	61	3.30
113	PA	0.30		0.00	0	1	2	0	12	5.75
118	PA	0.05		0.00	0	1		0	53	
119	PA	0.04	89.00	0.00	0	1	10.5	36	42	4.00
121	PA	0.05		0.00	0	0	0.023	0	0	6.96
132	VA	0.16	35.00	0.00	9	10	2.4	9	10	4.08
135	WV		104.00	169.59	8	9	4	8	9	2.25
136	WV	2.00	183.00	164.42	28	30	20	563	495	24.75
137	WV	0.40	70.00	84.51	10	20	13	10	20	1.54
138	WV	1.00	45.00	58.68	17	20	5	18	20	4.00
139	WV		1.00	0.00	0	4		0	4	
140	WV		4.00	0.00	0	3		0	3	
141	WV	0.30	45.00	0.00	4	6	6	4	6	1.00
142	WV		4.00	0.00	0	3		0	12	
179	KY	0.06	25.85	170.00	8	8	1.8	8	8	4.44
180	KY	0.82	53.00	60.65	16	20	11	17	20	1.82
181	KY	0.03	24.00	0.00	7	8	2.76	7	8	2.75
182	KY	0.13	36.60	0.00	1	10	3.6	7	10	2.64
198	NC	1.16	66.00	110.43	23	30	9.8	23	30	3.10
206	NC	0.01	13.00	13.00	1	1	0.4	1	1	2.50
224	TN	0.12	10 90	87.40	1	1	0.85	1	1	1.65
226	TN	0.03	23.40	52.56	0	1	7.6	21	23	2.97
228	TN	0.73	45.40	82.38	17	22	8.3	18	23	2.80

Table 2-4.   System Data Tables for System 11: Data for East, Medium Density, Hilly Topography, Moderate Climate — Vehicle Fleet

Note: Cells have been left blank when information has not been reported or is unavailable.

NO.	93 FR BUSES	97 FR BUSES	93 ACC FR BUSES	97 ACC FR BUSES	93 TOTAL FR BUS FLEET - % ACC	97 TOTAL FR BUS FLEET - % ACC	BOARD -INGS	93 ADA ACC FR BUSES	97 ADA ACC FR BUSES	93 TOTAL PT FLEET
57	15	15	0	15	0%	100%	0	0	15	24
58	8	8	8	8	100%	100%	0.208	2	7	0
77	5	9	5	9	100%	100%	1.2	0	9	4
79	14	14	9	14	64%	100%	0.5	0	14	4
80	12	12	7	12	58%	100%	0.012	0	6	9
86	11	11	1	3	9%	27%	0.005	1	3	6
87	22	22	18	18	82%	82%	0.1	2	10	10
95	56	56	35	44	63%	79%	0.65	35	44	35
97	22	22	19	22	86%	100%	4.69	1	15	6
98	34	34	31	34	91%	100%	5.178	4	20	8
100	14	21	10	21	71%	100%	0.137	10	21	0
105	12	13	7	13	58%	100%	1.4	5	6	42
106	0	0	0	0						19
107	3	3	3	3	100%	100%	0.09	3	3	6
108	12	12	0	12	0%	100%	0	2	12	13
109	5	5	4	4	80%	80%	0	4	4	19
113	4	8	0	4	0%	50%	0	0	4	0
118	0	0	0	0						0
119	9	10	9	10	100%	100%	3	3	5	11
121	2	4	2	4	100%	100%	0.036	2	4	1
132	28	30	3	16	11%	53%	0.008	3	16	4
135	29	32	0	30	0%	94%	0	0	30	5
136	58	55	8	35	14%	64%	3	8	35	9
137	20	20	14	14	70%	70%	0.08	2	6	5
138	15	14	5	5	33%	36%	0	4	4	2
139	0	0	0	0						0
140	0	0	0	0						0
141	7	7	0	0	0%	0%	0	0	0	2
142	0	0	0	0						0
179	6	6	3	6	50%	100%	0.072	3	6	1
180	8	8	8	8	100%	100%	0.1	0	2	4
181	5	5	5	5	100%	100%	0.3	0	0	1
182	8	8	3	5	38%	63%	0.025	0	4	2
198	25	20	0	16	0%	80%	0	0	16	17
206	12	12	1	12	8%	100%	0.003	1	12	3
224	2	5	1	4	50%	80%	0	0	3	3
226	4	4	4	4	100%	100%	0	4	4	3
228	10	10	2	2	20%	20%	0	2	2	4

Transit systems should consider how a change in population density will affect them.

Eastern location, high density (urban), hilly terrain, and a moderate climate characterize System 5.

The system data tables for System 11 contain comparison information on 38 transit systems in New York, Maryland, Pennsylvania, West Virginia, Kentucky, North Carolina, and Tennessee. These are the transit systems (within the database of 536) that may be considered peers to the system under study.

Although geographic location, topography, and climate will not change over time for a local transit system, population density could change as a result of population growth. A transit system may want to look at a future version of the system by observing the data for systems with similar location, topography, and climate, but higher density. In the case of the study system in this example, this could be accomplished by looking at the composite system description of **East, <u>High Density (Urban),</u> Hilly,** and **Moderate** climate as shown in Figure 2-6. The identification number for this system is 5 as shown in Figure 2-7.

Figure 2-6. Composite Description of Example Study System with Higher Density
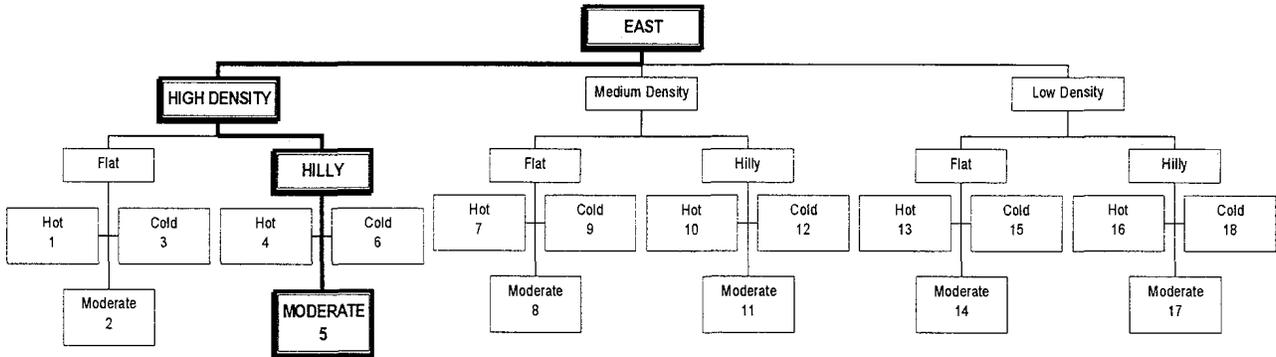
Figure 2-7.   System Identification Number for the Example Study System with Higher Density

The system data tables for System 5 (see Tables 2-5 and 2-6) contain information on 18 transit systems from Massachusetts, Maryland, Pennsylvania, Virginia, Kentucky, North Carolina, and Tennessee. These are the transit systems (within the database of 536) that may resemble the study system if the population density increases in the future.

Looking at other areas of the country for comparison may be beneficial.

To compare itself with peers in other areas of the country, a system switches the location descriptor. If the example study system wanted to observe characteristics of similar systems in the west, the descriptors would become **West, Medium Density (Suburban), Hilly,** and **Moderate,** which corresponds to identification number 47. The system data tables for System 47 are in Appendix A.

Table 2-5.   System Data Tables for System 5: Data for East, High Density, Hilly Topography, Moderate Climate — Population, Trips, Productivity

Note: Cells have been left blank when information has not been reported or is unavailable

NO.	STATE	97 ADA ELIGIBLE	SERV AREA POP	UZA POP	94 ADA PT TR/YR	97 ADA PT TR/YR	97 REV HRS	94 TOTAL PT TR/YR	97 TOTAL PT TR/YR	97 PRODUC-TIVITY
17	MA	3.20	551.50	533.00	54	74	125	265	286	2.28
75	MD	1.74	117.00		19	19	2.4	93	93	38.75
76	MD		78.00	1889.87	168	256	0	168	256	
88	PA		99.00	204.00	22	23	16	65	66	4 13
90	PA	5.50	538.00	410.44	159	190	1100	306	360	0.33
93	PA		391.00	292.90	7	7	3	7	7	2.33
104	PA	0.09	45.00		3	7	2	3	7	3.35
125	VA	0.85	100.00	178.28	17	23	14	17	23	1.61
127	VA	0.40	78.00	98.14	15	22	4.2	15	22	5 24
129	VA	3.00	68.00	0.00	65	73	0	65	73	
131	VA	0.06	22.00	0.00	4	4	3.2	4	4	1 34
134	VA		30.00	0.00	15	19	0	15	19	
177	KY	11.00	665.00	754.96	298	335	199	322	362	1.82
178	KY	4.50	225.00	220.70	99	102	35.3	35	35	1.00
195	NC	2.70	206.00	194.51	72	83	47	92	141	3.00
221	TN	8.00	510.00	573.30	124	164	67	134	174	2.60
222	TN	1.65	208.00	304.50	41	63	29.9	41	63	2.11
231	VA	0.03	18.40		25	40	80	25	40	0.50

Table 2-6.   System Data Tables for System 5: Data for East, High Density, Hilly Topography, Moderate Climate — Vehicle Fleet

Note: Cells have been left blank when information has not been reported or is unavailable

NO.	93 FR BUSES	97 FR BUSES	93 ACC FR BUSES	97 ACC FR BUSES	93 TOTAL FR BUS FLEET - % ACC	97 TOTAL FR BUS FLEET - % ACC	BOARD INGS	93 ADA ACC FR BUSES	97 ADA ACC FR BUSES	93 TOTAL PT FLEET
17	178	178	26	93	15%	52%	0.26	11	78	47
75	8	8	8	8	100%	100%	0.208	0	0	43
76	0	0	0	0						0
88	13	15	4	5	31%	33%	0.003	4	5	22
90	70	70	3	38	4%	54%	0 012	3	38	101
93	67	65	0	24	0%	37%	0	0	24	12
104	5	10	5	10	100%	100%	0.3	5	10	2
125	38	38	10	28	26%	74%	0.431	28	28	15
127	26	26	5	20	19%	77%	0 037	5	20	3
129	16	16	3	16	19%	100%	0.26	0	13	28
131	11	10	0	7	0%	70%	0	0	7	1
134	15	16	6	13	40%	81%	0	3	10	3
177	302	302	172	260	57%	86%	1.25	0	130	65
178	40	36	7	14	18%	39%	3.12	5	14	14
195	22	27	22	27	100%	100%	1.228	22	27	12
221	132	142	29	71	22%	50%	1	29	71	35
222	58	58	8	19	14%	33%	0	7	18	7
231	5	5	2	5	40%	100%	0	0	20	4

ESTIMATING RIDERSHIP PREFERENCES FOR AN IMPROVED FIXED-ROUTE SYSTEM BY PARATRANSIT PATRONS AND PEOPLE WITH DISABILITIES

Once a system has been compared with peers, planners may want to estimate what improvements to the fixed-route system are preferred by paratransit patrons and people with disabilities. Planners can use comparisons of current systems to improved systems to estimate ridership on a fixed-route system by paratransit patrons and people with disabilities if improvements are implemented on the fixed-route service. This methodology allows decision-makers to evaluate different options using costbenefit ratios and economic analyses. The focus is on evaluating alternative improved systems rather than collecting data.

Ridership estimates can be accomplished in the steps described below. Tables 2-7 through 2-14 are at the end of this section for the convenience of the user.

STEP 1: EXAMINE CURRENT SYSTEM DESCRIPTIONS

Examine the current system descriptions in Table 2-7. These descriptions of five current fixed-route systems (Current System A through Current System E) address seven service features: transit stop distance, convenience, general atmosphere, transit stops, security, vehicle accessibility, and driver training.[2] Choosing a system which best matches the current description allows the user to develop a base line against which all other potential systems can be monitored and evaluated.

STEP 2: CHOOSE ONE CURRENT SYSTEM DESCRIPTION

Choose the system in Table 2-7 which best describes the current system. More than one of the systems in Table 2-7 may describe the current system. This is because so many variations are possible that any one current system description may not exactly match the characteristics of the study system. This may result in
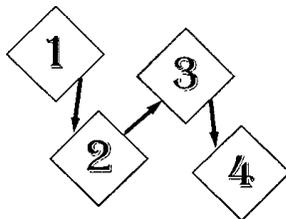
Use Tables 2-8 and 2-9 to estimate ridership preferences for a set of improvements to a fixed-route system.

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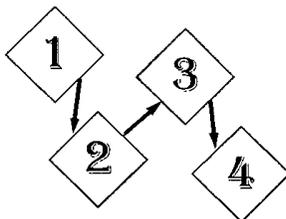
[2] Current systems are those which include the least preferred service feature configurations, based on a conjoint analysis of the results of a survey of representative paratransit patrons.
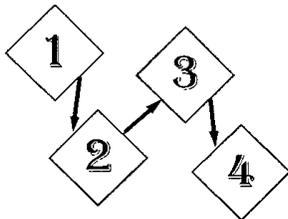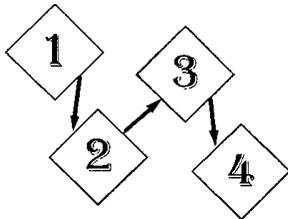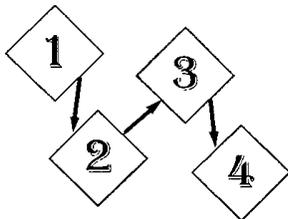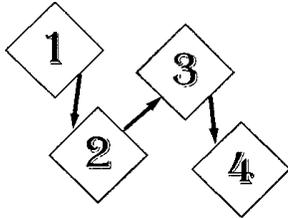
a range of estimates being made using different systems, if appropriate.

STEP 3: EXAMINE IMPROVED SYSTEM DESCRIPTION

Examine the improved system descriptions in Table 2-8. These descriptions of 20 improved fixed-route systems (Improved System A through Improved System T) illustrate what the current fixed-route system would be like if a specific set of improvements was made.[3]

STEP 4: CHOOSE IMPROVED SYSTEM

Choose the system which best describes what the fixed-route system would look like after improvements are implemented. More than one of the systems in Table 2-8 may describe the improved system. If appropriate, the system can produce estimates for each system. This may be necessary because so many possible combinations of improved systems are possible that no one in particular will meet the exact needs of the study system.

STEP 5: DETERMINE FIXED-ROUTE FARE

Determine the base fixed-route fare.

STEP 6: EXAMINE MODAL SPLIT TABLE

Examine Table 2-9. The current system descriptions (A-E) are listed in the left-hand column, and the Improved Systems (A-T) are in the first row. There are five fare levels associated with each current system. This table shows the percentage of all paratransit patrons and individuals with disabilities who would prefer each of the improved systems, as well as those who would prefer the current fixed-route system.

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[3] Improved systems are those which include the preferred service configurations, based on a conjoint analysis of the results of a survey of representative paratransit patrons.
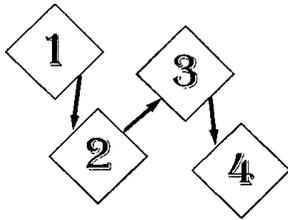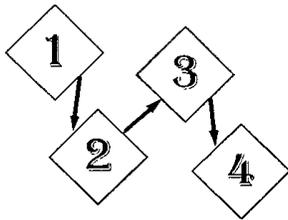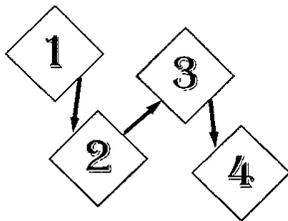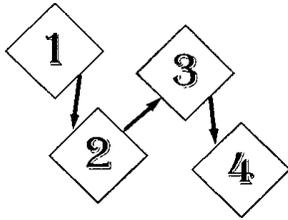
STEP 7: IDENTIFY PROPER TABLE ROW

Find the current system description and existing fixed-route fare. Applying the fixed-route fare to the current system that was chosen will identify the proper row in Table 2-9 for the system.

STEP 8: DETERMINE PREFERRED PERCENT

After locating the proper row describing the current system and fare, read across the row to the appropriate column with the improved fixed-route system chosen. This number indicates the percent of paratransit patrons and individuals with disabilities who would prefer the improved system over all other improved systems

STEP 9: DETERMINE PERCENT CURRENTLY SATISFIED

Using the proper row describing the current system and fare, read across the row to the "current" column. This number indicates the percent of paratransit patrons and individuals with disabilities who would prefer the current fixed-route system (without any improvements) over all other improved systems. If individuals would prefer the current fixed-route system over the improved system as chosen by the transit system, the improvements scheduled to be made should be reevaluated, and different, more effective measures may need to be considered.

STEP 10: DETERMINE VOLUME OF RIDERS PREFERRING NEW SYSTEM

Multiply the forecast number of ADA-eligible riders in 1997 for the local study system (or from the peer systems found in the system data tables) by the appropriate percentage found from Table 2-9. This number represents the actual *total* number of ADA-eligible persons who would prefer a particular fixed-route system.

STEP 11: ESTIMATE TRIP VOLUME DIVERSIONS

The final step is to arrive at estimates for the volume of trips that may be diverted to fixed-route services. Multiply the number of persons preferring an improved fixed-route system (as determined in Step 10) by trip generation rates from local system current statistics. If the local system does not keep these statistics, data from the peer systems in the system data tables may be used.

ESTIMATING RIDERSHIP PREFERENCES BY MARKET SEGMENT

Use Tables 2-10 through 2-13 to estimate preferences by market segment.

The research for the Guidebook identified four categories of paratransit patrons. Each category or market segment had different preferences for fixed-route service. The market segments are as follows:

- Market Segment 1 consists of people with disabilities who use fixed-route.
- Market Segment 2 consists of people with disabilities who use paratransit.
- Market Segment 3 consists of others who use paratransit.
- Market Segment 4 consists of people with disabilities who do not use transit.

Transit systems may want to estimate ridership for each of the four market segments. To do so, follow the steps below.
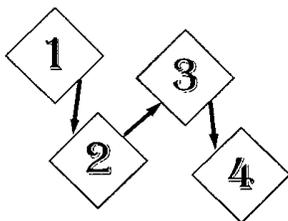
STEP 1: ESTIMATE MARKET SEGMENT SIZES

To estimate the number of paratransit-eligible individuals in each market segment who would prefer a particular fixed-route system, planners must determine the size of each market segment. This may be done by examining local system client data and trip records. Transit systems generally have disability information on clients in a database or on client lists and have a record of the trips riders have taken on paratransit. This is either on driver
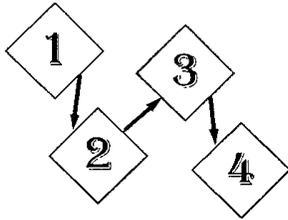
manifests or trip logs or in the computerized scheduling system. This information can be used to determine the sizes of some of the market segments.

STEP 1A: ESTIMATE SIZE OF MARKET SEGMENT 1

Market Segment 1, people with disabilities who use fixed-route, is possible to determine for some systems. For those systems that use conditional or trip-by-trip eligibility, those who are conditionally eligible would be the market segment of people who use fixed-route. That segment may also include those who have been referred to the fixed-route for particular trips or those who have been referred for travel training. For those systems that do not have information on fixed-route use, a survey can be used for estimating the market segment size.
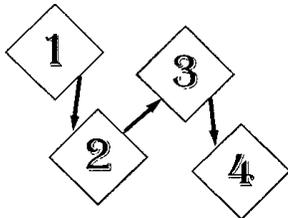
STEP 1B: ESTIMATE SIZE OF MARKET SEGMENT 2

Market Segment 2 consists of people with disabilities who use paratransit. From the client database, the transit system can list and count the clients with disabilities who have taken a paratransit trip. The transit system can determine from their experience whether they should limit that in some way, for example, to people who have taken a paratransit trip in the last year or the last 6 months.
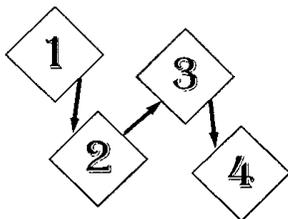
STEP 1C: ESTIMATE SIZE OF MARKET SEGMENT 3

Market Segment 3 consists of other people who use paratransit. For those systems that provide paratransit for people who are eligible on a basis other than disability, list and count the number of people without a disability who have taken a paratransit trip. This can be limited to people who have taken a paratransit trip in the last year or the last 6 months. For those systems which limit paratransit eligibility to people with disabilities, the size of Market Segment 3 is zero.
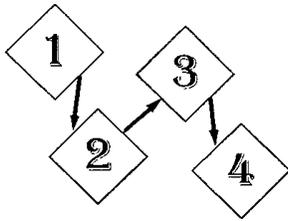
STEP 1D: ESTIMATE SIZE OF MARKET SEGMENT 4

Market Segment 4 consists of people with disabilities who do not use transit. The rider database can indicate which people with disabilities have not taken a paratransit trip in the specified period. Information on whether such people have used fixed-route can be determined through a survey.
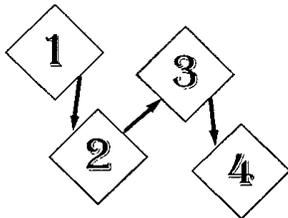
STEP 1E: USE OF DEFAULT DATA

Estimate the size of all market segments using TCRP data. If a transit system cannot estimate market segment size on the basis of its own data and survey results, the results of this research can be used as a default. Table 2-14 shows market segment sizes as reflected in surveys of five mid-sized cities. These sizes are based on the survey respondents used in this study, so more specific information can be gathered at individual transit systems.
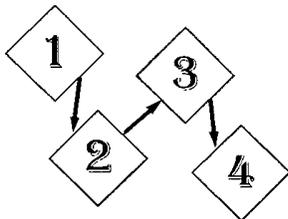
STEP 2:   DETERMINE PERCENTAGE OF PEOPLE WHO PREFER FIXED-ROUTE AND CURRENT OPTIONS

Examine Tables 2-10 through 2-13. Similar to Table 2-9, Tables 2-10 through 2-13 describe percentages of people who would prefer each current or improved fixed-route system; however, Table 2-9 includes *all* paratransit patrons and people with disabilities, whereas Tables 2-10 through 2-13 group these individuals into market segments. Table 2-10 shows figures for Market Segment 1, (people with disabilities who use fixed-route services). Table 2-11 shows figures for Market Segment 2 (people with disabilities who use paratransit). Table 2-12 shows figures for Market Segment 3 (others who use paratransit). Table 2-13 shows figures for Market Segment 4 (people with disabilities who do not normally use transit).
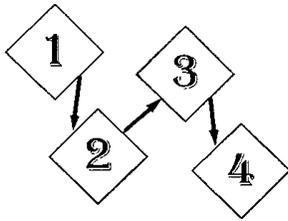
STEP 3: DETERMINE PREFERENCES BY MARKET SEGMENT

To determine preferences by market segment, follow the same procedures described to estimate preferences for all patrons with disabilities in Steps 1 through 10; however, use Tables 2-10 through 2-13 instead.
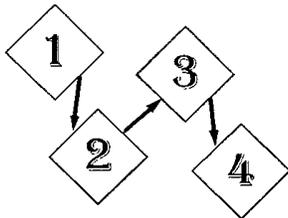
STEP 4: DETERMINE VOLUME PREFERRING FIXED-ROUTE BY MARKET SEGMENT

Multiply the calculated number of ADA-eligible riders in 1997 for each market segment as determined in Step 1 by the appropriate percentages found in Tables 2-10 through 2-13 as determined in Step 3. These numbers represent the number of ADA-eligible persons in each market segment who would prefer a particular fixed-route system.
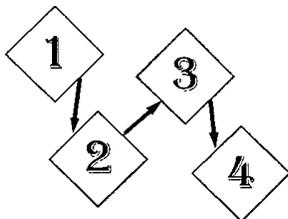
STEP 5: ESTIMATE VOLUME OF TRIPS DIVERTED

To estimate the volume of trips that may be diverted to fixed-route services, multiply the number of people in the market segment who prefer an improved fixed-route system (as determined in Step 4) by trip generation rates from local system current statistics. If the local system does not keep these statistics, data from the peer systems in the system data tables may be used.

These demand estimates give empirical, maximum numbers of diverted trips. However, the likelihood of individuals actually using the system may be somewhat different. To further refine estimates of people using improved fixed-route services, follow the directions in the next section, Probability of Purchase.

Table 2-7. Current System Descriptions

Current System A

Service Feature
A consumer has a short traveling distance to and from the vehicle
The schedules are reliable
Other passengers don't complain when a consumer needs extra time
Schedules a consumer can use are at the stops
Uniformed officers may be on the vehicles
Mobility or other equipment can be stored near the consumer
Drivers understand boarding and securing wheelchairs

Current System B

Service Feature
There are no uphill portions on the way to the vehicle
The schedules are reliable
Other passengers don't complain when a consumer needs extra time
Schedules a consumer can use are at the stops
Vehicle stops have security cameras
Mobility or other equipment can be stored near the consumer
Drivers move people out of the front seats when a consumer with a disability asks

Current System C

Service Feature
There are no uphill portions on the way to the vehicle
The schedules are reliable
Vehicle doesn't move until consumers are ready
Schedules a consumer can use are at the stops
Vehicle stops have security cameras
Mobility or other equipment can be stored near the consumer
Drivers understand boarding and securing wheelchairs

Table 2-7. Current System Descriptions (Concluded)

Current System D

Service Feature
A consumer has no big roads to cross to get to the vehicle
Vehicle stops near the consumer's home and goes where the consumer wants
Other passengers don't complain when a consumer needs extra time
Shelters are lighted
A consumer feels safe waiting for the vehicle
Vehicle is close to the ground and has no steps
Drivers move people out of the front seats when a consumer with a disability asks

Current System E

Service Feature
A consumer has a short traveling distance to and from the vehicle
Arrangements are made for consumers if the vehicle or lift breaks down
Other passengers don't complain when a consumer needs extra time
Stops have benches
Uniformed officers may be on the vehicles
Consumers can be trained on using the transit system
Drivers understand boarding and securing wheelchairs

Table 2-8. Improved System Descriptions

Improved System A

Service Feature
Trip costs up to $1.00
A consumer has no big roads to cross to get to the vehicle
Vehicle stops near the consumer's home and goes where the consumer wants
A consumer doesn't have to transfer vehicles and the trips are short
Stops have large, covered shelters
A consumer feels safe traveling to and from the vehicle
Drivers announce all stops and routes
Drivers drive safely

Improved System B

Service Feature
Trip costs up to $1.00
There are sidewalks between a consumer and the vehicle
Arrangements are made for consumers if the vehicle or lift breaks down
A consumer doesn't have to transfer vehicles and the trips are short
Shelters are lighted
A consumer feels safe traveling to and from the vehicle
Drivers announce all stops and routes
Drivers drive safely

Improved System C

Service Feature
Trip costs up to $1.00
A consumer has no big roads to cross to get to the vehicle
A consumer can always leave and arrive when he/she wants
A consumer always has a seat or a wheelchair position
Shelters are lighted
A consumer feels safe waiting for the vehicle
Drivers announce all stops and routes
Drivers don't complain when a consumer needs help

Table 2-8. Improved System Descriptions (Continued)

Improved System D

Service Feature
Trip is free
There are sidewalks between a consumer and the vehicle
The schedules are reliable
Vehicle is a comfortable temperature
Stops have large, covered shelters
Vehicle stops have security cameras
A consumer can board in his/her wheelchair and be secured in it
Driver knows how to communicate with consumers

Improved System E

Service Feature
Trips costs up to $1.00
A consumer has no big roads to cross to get to the vehicle
Vehicle stops near the consumer's home and goes where the consumer wants
The consumer doesn't have to transfer vehicles and the trips are short
Stops are clearly labeled
The consumer feels safe traveling to and from the vehicle
The consumer can board in his/her wheelchair and be secured in it
Drivers know how to communicate with consumers

Improved System F

Service Feature
Trip costs between $1.01 and $2.00
There are no curbs or steps on the way to the vehicle
A consumer can always leave and arrive when he/she wants
A consumer always has a seat or a wheelchair position
Shelters are lighted
A consumer is not exposed to crime on the vehicle
A consumer can board in his/her wheelchair and be secured in it
Drivers know how to communicate with consumers

Table 2-8. Improved System Descriptions (Continued)

Improved System G

Service Feature
Trip costs between $1.01 and $2.00
A consumer has no big roads to cross to get to the vehicle
A consumer can always leave and arrive when he/she wants
Vehicle doesn't move until consumers are ready
Stops have large, covered shelters
A consumer is not exposed to crime on the vehicle
A consumer can board in his/her wheelchair and be secured in it
Drivers don't complain when a consumer needs help

Improved System H

Service Feature
Trip costs between $1.01 and $2.00
A consumer has a short traveling distance to and from the vehicle
Vehicle stops near the consumer's home and goes where the consumer wants
A consumer doesn't have to transfer vehicles and the trips are short
Stops have benches
A consumer feels safe traveling to and from the vehicle
A consumer can board in his/her wheelchair and be secured in it
Drivers move people out of the front seats when a consumer with a disability asks

Improved System I

Service Feature
Trip costs up to $1.00
There are no curbs or steps on the way to the vehicle
Arrangements are made for consumers if the vehicle or lift breaks down
Vehicle doesn't move until consumers are ready
Stops have benches
Uniformed officers may be on the vehicles
Drivers announce all stops and routes
Drivers don't complain when a consumer needs help

Table 2-8. Improved System Descriptions (Continued)

Improved System J

Service Feature
Trip costs between $1.01 and $2.00
There are no uphill portions on the way to the vehicle
A consumer can always leave and arrive when he/she wants
A consumer always has a seat or wheelchair position
Stops have large, covered shelters
A consumer is not exposed to crime on the vehicle
Drivers announce all stops and routes
Drivers don't complain when a consumer needs help

Improved System K

Service Feature
Trip is free
There are no uphill portions on the way to the vehicle
Arrangements are made for consumers if the vehicle or lift breaks down
Vehicle is clean
Stops are clearly labeled
A consumer feels safe waiting for the vehicle
Vehicle is close to the ground and has no steps
Drivers don't complain when a consumer needs help

Improved System L

Service Feature
Trip is free
There are no curbs or steps on the way to the vehicle
Vehicle stops near the consumer's home and goes where the consumer wants
A consumer always has a seat or wheelchair position
Stops have benches
Uniformed officers may be on the vehicles
Vehicle is close to the ground and has no steps
Drivers know how to communicate with consumers

Table 2-8. Improved System Descriptions (Continued)

Improved System M

Service Feature
Trip is free
There are no curbs or steps on the way to the vehicle
Vehicle stops near the consumer's home and goes where the consumer wants
A consumer always has a seat or wheelchair position
Stops have benches
Uniformed officers may be on the vehicles
Vehicle is close to the ground and has no steps
Drivers know how to communicate with consumers

Improved System N

Service Feature
Trip costs between $2.01 and $3.00
A consumer has a short traveling distance to and from the vehicle
A consumer doesn't have to call ahead to make arrangements
A consumer always has a seat or wheelchair position
Stops are clearly labeled
A consumer feels safe traveling to and from the vehicle
Mobility or other equipment can be stored near the consumer
Drivers drive safely

Improved System O

Service Feature
Trip is free
There are no curbs or steps on the way to the vehicle
A consumer doesn't have to call ahead to make arrangements
Vehicle is clean
Schedules a consumer can use are at the stops
Vehicle stops have security cameras
Vehicle is close to the ground and has no steps
Drivers move people out of the front seats when a consumer with a disability asks

Table 2-8. Improved System Descriptions (Continued)

Improved System P

Service Feature
Trip costs over $3.00
There are sidewalks between a consumer and the vehicle
A consumer doesn't have to call ahead to make arrangements
Vehicle is a comfortable temperature
Stops have benches
Vehicle stops have security cameras
Consumers can be trained on using the transit system
Drivers move people out of the front seats when a consumer with a disability asks

Improved System Q

Service Feature
Trip costs between $2.01 and $3.00
A consumer has a short traveling distance to and from the vehicle
A consumer doesn't have to call ahead to make arrangements
Vehicle is clean
Stops are clearly labeled
A consumer feels safe waiting for the vehicle
Consumers can be trained on using the transit system
Drivers understand boarding and securing wheelchairs

Improved System R

Service Feature
Trip costs between $2.01 and $3.00
There are sidewalks between a consumer and the vehicle
A consumer doesn't have to call ahead to make arrangements
Other passengers don't complain when a consumer needs extra time
Stops are clearly labeled
Uniformed officers may be on the vehicles
Consumers can be trained on using the transit system
Drivers know how to communicate with consumers

Table 2-8. Improved System Descriptions (Continued)

Improved System S

Service Feature
Trip costs between $1.01 and $2.00
There are no uphill portions on the way to the vehicle
A consumer can always leave and arrive when he/she wants
Vehicle is clean
Schedules a consumer can use are at the stops
A consumer is not exposed to crime on the vehicle
Consumers can be trained on using the transit system
Drivers understand boarding and securing wheelchairs

Improved System T

Service Feature
Trip costs over $3.00
There are sidewalks between a consumer and the vehicle
The schedules are reliable
Vehicle is a comfortable temperature
Shelters are lighted
A consumer feels safe waiting for the vehicle
Mobility or other equipment can be stored near the consumer
Drivers drive safely

Table 2-9.   Percent of Paratransit Consumers and People With Disabilities Who Prefer Each Current or Improved System

CURRENT SYSTEMS	Current Design	IMPROVED SYSTEMS																			
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Current A - Free	3.3	5	2.9	2.9	2	4.8	5.7	7.2	13.6	3.3	4.6	2.7	3.1	4.9	9.3	2.3	2.7	7.9	3.8	5.9	2.2
Current A - to $1.00	5.5	4.8	2.4	3	2	4.8	5.7	7.2	13.8	3.3	4.6	2.8	3.1	4.8	8.6	2.3	2.9	8	2.7	5.7	2.2
Current A - $1.00 to $2.00	4.8	5	2.8	3	1.9	4.8	5.7	7.2	13.6	3.1	4.5	2.8	3.1	4.8	8.8	2.3	2.8	7.6	3.7	5.6	2.2
Current A - $2.00 to $3.00	4	5.1	2.9	3.1	2	4.9	5.7	7.2	13.5	3.2	4.5	2.8	3.2	4.9	8.9	2.3	2.8	7.7	3.7	5.5	2.2
Current A - over $3.00	3.3	5.1	2.9	3.1	2	4.9	5.8	7.3	13.8	3.3	4.6	2.8	3.2	4.9	8.7	2.3	2.8	7.5	3.7	5.7	2.2
Current B - Free	2.8	5.1	2.9	3.1	2	4.9	5.8	7.3	13.8	3.3	4.6	2.8	3.2	4.9	9	2.3	2.8	7 7	3.8	5.7	2.2
Current B - to $1.00	5.1	4.8	2.4	3	1.9	4.8	5.8	7.2	13.8	3.3	4.5	2.7	3.2	4.8	8.8	2.1	2.8	8.3	2.8	5.7	2.3
Current B - $1.00 to $2.00	4.6	5	2.8	3	1.9	4.8	5.7	7 1	13.6	3.2	4.5	2.7	3.2	4.8	9	2.2	2.7	7.8	3.8	5.6	2.2
Current B - $2.00 to $3.00	3.7	5.1	2.9	3.1	1.9	4.9	5.7	7.2	13.5	3.3	4.5	2.8	3.2	4.9	9.1	2.2	2.7	7.9	3.8	5.5	2.2
Current B - over $3.00	3.2	5.1	2.9	3.1	1.9	4.9	5.7	7.3	13.8	3.3	4.5	2.8	3.2	4.9	8.9	2.2	2.7	7.9	3.7	5.7	2.2
Current C - Free	2.6	5.1	2.9	3.1	1.9	4.9	5.8	7.3	13.8	3.3	4.6	2.8	3.2	4.9	9.1	2.2	2.6	8	3.8	5.7	2.2
Current C - to $1.00	3.8	4.8	2.4	3	1.9	4.8	5.8	7.2	14.2	3.3	4.6	2.8	3.2	4.9	8.9	2.3	2.9	8.3	2.9	5	2.3
Current C - $1.00 to $2.00	3.4	5	2.9	3	1.9	4.9	5.7	7.2	13.9	3.2	4.5	2.8	3.2	4.9	9.1	2.3	2.7	7.8	3.9	5.5	2.2
Current C - $2.00 to $3.00	2.7	5.2	2.9	3.1	1.9	5	5.7	7 1	13.9	3.3	4.5	2.8	3.2	4.9	9.2	2.3	2.8	7.9	3.9	5.3	2.3
Current C - over $3.00	2.3	5.2	2.9	3.1	1.9	5	5.8	7.2	14.1	3.3	4.6	2.8	3.2	4.9	9	2.3	2.8	7.8	3.9	5.6	2.3
Current D - Free	1.9	5.2	2.9	3.1	2	5	5.8	7.3	14 1	3.3	4.6	2.8	3.2	5	9.2	2.3	2.7	7.9	3.9	5.6	2.2
Current D - to $1.00	6.5	4.6	2.3	2.8	2	4.6	5.6	7	13.4	3.3	4.6	2.6	3	4.7	8.9	2.2	2.9	8.2	2.8	5.9	2.2
Current D - $1.00 to $2.00	5.6	4.8	2.8	2.7	2	4.6	5.6	7	13.3	3.2	4.5	2.7	3	4.8	9.1	2.3	2.7	7 7	3.8	5.8	2.2
Current D - $2.00 to $3.00	4.8	4.9	2.9	2.9	2	4.8	5.6	7	13.1	3.3	4.5	2.7	3.1	4.8	9.2	2.3	2.7	7.8	3.8	5.7	2.2
Current D - over $3.00	4 1	5	2.9	2.9	2	4.8	5.7	7 1	13.5	3.3	4.6	2.7	3.1	4.8	9.1	2.3	2.8	7.7	3.7	5.8	2.2
Current E - Free	9 7	4.6	2.2	2.8	1.9	4.6	5.5	6.9	13	2.9	4.4	2.6	2.9	4.6	8.4	2.2	2.7	7.5	2.7	5.5	2.3
Current E - to $1.00	8	4.9	2.7	2.9	1.9	4.7	5.5	7	13	2.8	4.4	2.7	3	4.6	8.8	2.3	2.6	7.2	3.5	5.4	2.2
Current E - $1.00 to $2.00	6.7	5	2.8	3	2	4.8	5.6	7	12.8	3	4.4	2.7	3	4 7	8.9	2.3	2.6	7.3	3.6	5.4	2.3
Current E - $2.00 to $3.00	5.5	5.1	2.8	3	2	4.9	5.7	7.2	13.3	3.1	4.5	2.7	3.1	4.8	8.8	2.3	2.7	7.1	3.4	5.6	2.3
Current E - over $3.00	4.8	5.1	2.9	3	2	4.9	5.7	7.2	13.4	3.1	4.6	2.7	3.1	4.8	9	2.4	2.6	7.4	3.6	5.6	2.3

Table 2-10.   Percent of People in Market Segment 1 (People With Disabilities Who Use Fixed-Route Transit) Who Prefer Each Current or Improved System

CURRENT SYSTEMS	Current Design	IMPROVED SYSTEMS																			
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Current A - Free	6	5.2	3.1	3.5	2	4.7	5.3	7.9	12.5	3.2	4.8	3	3.1	4.8	8.1	2.3	2.5	7	3.7	5.1	2.2
Current A - to $1.00	5.2	5.2	3.1	3.4	2.1	4.7	5.4	7.9	12.6	3.1	4.9	3.1	3.2	5	8.2	2.4	2.6	7	3.8	5.2	2.2
Current A - $1.00 to $2.00	4	5.3	3.2	3.5	2.1	4.8	5.4	7.9	12.6	3.2	4.9	3.1	3.2	5	8.3	2.4	2.6	7 1	3.8	5.1	2.3
Current A - $2.00 to $3.00	3.3	5.3	3.2	3.6	2.1	4.9	5.5	8.1	12.9	3.3	5	3.1	3.2	5.1	8.1	2.4	2.6	7	3.7	5.3	2.3
Current A - over $3.00	2.9	5.3	3.2	3.6	2.1	4.9	5.5	8.1	12.9	3.3	5	3.1	3.2	5.1	8.4	2.4	2.6	7.2	3.8	5.3	2.2
Current B - Free	6	5.2	3.1	3.4	2	4.7	5.3	7.8	12.5	3.2	4.8	2.9	3.1	4.8	8.3	2.1	2.4	7.2	3.8	5.1	2.2
Current B - to $1.00	5.4	5.1	3.1	3.4	2	4.6	5.4	7.9	12.5	3.2	4.8	3	3.2	4.9	8.3	2.2	2.4	7.3	3.8	5.2	2.2
Current B - $1.00 to $2.00	4.1	5.3	3.2	3.5	2.1	4.8	5.4	7.9	12.5	3.3	4.8	3.1	3.2	5	8.5	2.3	2.5	7.4	3.9	5.1	2.2
Current B - $2.00 to $3.00	3.5	5.3	3.2	3.5	2.1	4.8	5.5	8	12.8	3.3	4.9	3.1	3.3	5	8.3	2.3	2.5	7.3	3.8	5.3	2.3
Current B - over $3.00	2.9	5.3	3.2	3.5	2.1	4.8	5.5	8.1	12.9	3.3	4.9	3.1	3.3	5.1	8.5	2.3	2.4	7.4	3.9	5.3	2.2
Current C - Free	4.1	5.3	3.2	3.5	2	4.8	5.4	7.9	12.9	3.2	4.9	3	3.2	4.9	8.4	2.3	2.5	7.2	3.9	5.1	2.2
Current C - to $1.00	3.7	5.2	3.1	3.4	2.1	4.8	5.5	7.9	13	3.2	4.9	3.1	3.3	5	8.5	2.4	2.6	7.3	4	5.1	2.2
Current C - $1.00 to $2.00	2.7	5.4	3.2	3.6	2.1	4.9	5.5	7.9	13	3.3	4.9	3.1	3.3	5.1	8.6	2.4	2.6	7.3	4	5	2.3
Current C - $2.00 to $3.00	2.3	5.4	3.2	3.6	2.1	4.9	5.5	8	13.2	3.3	4.9	3.1	3.3	5.1	8.4	2.4	2.6	7.2	4	5.2	2.3
Current C - over $3.00	1.9	5.4	3.2	3.6	2.1	4.9	5.5	8	13.2	3.3	4.9	3.1	3.3	5.1	8.6	2.4	2.5	7.4	4	5.2	2.2
Current D - Free	7.8	4.9	3	3.2	2	4.5	5.2	7.6	12.1	3.2	4.8	2.8	2.9	4.7	8.4	2.2	2.5	7 1	3.8	5.3	2.2
Current D - to $1.00	7	4.8	2.9	3	2.1	4.4	5.3	7 7	12.3	3.2	4.8	2.9	3.1	4.8	8.5	2.3	2.5	7.2	3.8	5.3	2.2
Current D - $1.00 to $2.00	5.6	5.1	3.1	3.3	2.1	4.6	5.3	7.7	12.1	3.3	4.8	3	3.1	4.9	8.6	2.3	2.5	7.2	3.9	5.3	2.2
Current D - $2.00 to $3.00	4.7	5.1	3.1	3.3	2.1	4.6	5.4	7.8	12.5	3.3	4.9	3	3.1	4.9	8.5	2.3	2.5	7.1	3.8	5.4	2.2
Current D - over $3.00	3.8	5.2	3.2	3.3	2.2	4.7	5.4	7.9	12.6	3.3	4.9	3	3.2	5	8.6	2.4	2.5	7.3	3.9	5.5	2.2
Current E - Free	9.4	5	3	3.4	2	4.6	5.2	7.6	11.9	2.9	4.7	2.8	2.9	4.6	8.1	2.3	2.4	6.6	3.5	5	2.2
Current E - to $1.00	8	5	2.9	3.3	2.1	4.6	5.3	7 7	12.1	2.8	4.8	2.9	3.1	4.8	8.2	2.3	2.4	6.7	3.6	5.1	2.2
Current E - $1.00 to $2.00	6.6	5.2	3.1	3.5	2.1	4.7	5.3	7.8	12	3	4.8	3	3.1	4.9	8.3	2.4	2.5	6.8	3.6	5	2.3
Current E - $2.00 to $3.00	5.4	5.3	3.1	3.5	2.1	4.8	5.4	8	12.5	3	4.9	3	3.1	4.9	8.3	2.4	2.5	6.6	3.5	5.2	2.3
Current E - over $3.00	4.6	5.3	3.2	3.5	2.1	4.8	5.4	8	12.5	3.1	4.9	3.1	3.2	4.9	8.4	2.4	2.4	6.9	3.7	5.2	2.3

Table 2-11. Percent of People in Market Segment 2 (People With Disabilities Who Use Paratransit) Who Prefer Each Current or Improved System

CURRENT SYSTEMS	Current Design	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
									IMPROVED SYSTEMS											
Current A - Free	5.2	5.2	3	3.2	1.8	5	5.9	7	13.3	3.1	4.5	2.7	2.9	4.8	9	2.2	2.6	7.7	3.5	5.3	2.3
Current A - to $1.00	4.6	5.1	2.9	3.2	1.8	4.9	5.9	7	13.3	3.1	4.5	3	2.9	5	9	2.3	2.5	7.9	3.5	5.4	2.2
Current A - $1.00 to $2.00	3.8	5.3	3	3.3	1.9	5	5.9	7	13.3	3.2	4.5	2.8	3	4.9	9.2	2.3	2.6	7.8	3.6	5.2	2.3
Current A - $2.00 to $3.00	3.1	5.3	3	3.3	1.9	5.1	6	7.2	13.6	3.2	4.6	2.8	3	5	9	2.3	2.6	7.7	3.5	5.4	2.3
Current A - over $3.00	2.7	5.3	3	3.3	1.9	5.1	6	7.2	13.6	3.2	4.6	2.8	3	5	9.2	2.3	2.6	7.9	3.6	5.4	2.3
Current B - Free	4.7	5.2	3	3.2	1.8	5	5.9	7	13.3	3.2	4.5	2.7	3	4.8	9.2	2	2.5	8	3.6	5.3	2.3
Current B - to $1.00	4.4	5.1	2.9	3.2	1.8	4.9	5.9	7	13.3	3.1	4.5	3	3	5	9.2	2.2	2.4	8.2	3.6	5.4	2.2
Current B - $1.00 to $2.00	3.5	5.3	3	3.3	1.8	5	5.9	7	13.3	3.2	4.5	2.8	3	4.9	9.4	2.2	2.5	8.1	3.6	5.2	2.3
Current B - $2.00 to $3.00	3	5.3	3	3.3	1.8	5.1	6	7.1	13.6	3.2	4.6	2.8	3.1	4.9	9.2	2.2	2.5	8	3.6	5.4	2.3
Current B - over $3.00	2.5	5.3	3	3.3	1.9	5.1	6	7.2	13.6	3.2	4.6	2.8	3.1	5	9.4	2.2	2.5	8.1	3.7	5.4	2.3
Current C - Free	3.6	5.3	3	3.3	1.8	5	6	7	13.7	3.2	4.5	2.7	3	4.8	9.3	2.2	2.6	7.9	3.7	5.2	2.3
Current C - to $1.00	3.2	5.2	2.9	3.2	1.8	4.9	6	7	13.6	3.1	4.5	3	3	5.1	9.3	2.3	2.5	8.1	3.7	5.3	2.3
Current C - $1.00 to $2.00	2.6	5.3	3	3.3	1.9	5.1	6	7	13.7	3.2	4.5	2.8	3.1	5	9.4	2.3	2.6	8.1	3.7	5.1	2.3
Current C - $2.00 to $3.00	2.2	5.4	3	3.3	1.9	5.1	6.1	7.1	13.9	3.2	4.6	2.8	3.1	5	9.3	2.3	2.6	7.9	3.7	5.3	2.3
Current C - over $3.00	1.8	5.4	3	3.3	1.9	5.1	6.1	7 1	13.9	3.2	4.6	2.8	3.1	5	9.5	2.3	2.6	8.1	3.7	5.3	2.3
Current D - Free	6.4	5	2.9	3	1.8	4.8	5.8	6.9	12.9	3.1	4.5	2.6	2.8	4.6	9.3	2.1	2.5	7.8	3.5	5.4	2.3
Current D - to $1.00	5.7	4.9	2.9	2.9	1.8	4.7	5.8	6.9	13	3.1	4.5	2.9	2.9	4.9	9.3	2.2	2.5	8	3.5	5.5	2.2
Current D - $1.00 to $2.00	4.8	5.1	3	3.1	1.9	4.9	5.8	6.9	12.8	3.2	4.5	2.7	2.9	4.8	9.4	2.2	2.6	7.9	3.6	5.5	2.3
Current D - $2.00 to $3.00	4	5.1	3	3.1	1.9	4.9	5.9	7	13.3	3.2	4.6	2.7	2.9	4.9	9.3	2.2	2.6	7.8	3.6	5.6	2.3
Current D - over $3.00	3.4	5.2	3	3.1	1.9	4.9	5.9	7.1	13.3	3.2	4.6	2.7	3	4.9	9.5	2.2	2.5	8	3.6	5.6	2.2
Current E - Free	8.9	5	2.8	3.1	1.8	4.8	5.7	6.8	12.6	2.9	4.4	2.6	2.7	4.5	8.9	2.2	2.4	7.2	3.3	5.1	2.3
Current E - to $1.00	7.9	5	2.8	3.1	1.8	4.8	5.7	6.8	12.7	2.8	4.4	2.9	2.8	4.8	8.9	2.3	2.4	7.4	3.3	5.2	2.2
Current E - $1.00 to $2.00	6.6	5.2	2.9	3.2	1.9	4.9	5.8	6.9	12.6	3	4.5	2.7	2.9	4.8	9.2	2.3	2.5	7.4	3.4	5.1	2.4
Current E - $2.00 to $3.00	5.4	5.3	2.9	3.3	1.9	5	6	7.1	13.2	3	4.6	2.7	2.9	4.8	9 1	2.3	2.5	7.2	3.3	5.3	2.4
Current E - over $3.00	4.7	5.3	3	3.3	1.9	5	6	7.1	13.2	3	4.6	2.7	2.9	4.8	9.3	2.3	2.4	7.5	3.4	5.3	2.3

**Table 2-12.   Percent of People in Market Segment 3 (Others Who Use Paratransit)
Who Prefer Each Current or Improved System**

CURRENT SYSTEMS	Current Design	IMPROVED SYSTEMS																			
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Current A - Free	5	5.4	3.7	2.9	2	6.1	5.3	6.1	15.1	3.7	3.4	2.4	2.9	5.5	8.2	2.8	2.3	6.7	3.7	4.7	2.1
Current A - to $1.00	5	5.4	3.6	2.9	2.1	6	5.3	6.1	15.1	3.6	3.4	2.5	2.9	5.5	8.3	2.8	2.3	6.8	3.7	4 7	2.1
Current A - $1.00 to $2.00	3.5	5.6	3.7	3	2.1	6.2	5.3	6.1	15.1	3.8	3.4	2.5	3	5.6	8.4	2.9	2.4	6.9	3.8	4.6	2.1
Current A - $2.00 to $3.00	3.2	5.9	3.8	3.1	2	6.4	5.4	6.2	15.4	3.9	3.5	2.5	2.9	5.5	8.2	2.9	2.4	6.7	3.7	4.7	2.1
Current A - over $3.00	2.3	5.6	3.7	3	2.1	6.3	5.4	6.2	15.5	3.8	3.5	2.5	3	5.7	8.5	2.9	2.4	6.9	3.8	4.8	2.1
Current B - Free	4.8	5.5	3.6	2.9	2	6.1	5.3	6.1	15.1	3.7	3.4	2.4	2.9	5.5	8.4	2.6	2.2	7	3.8	4.7	2.1
Current B - to $1.00	4.9	5.4	3.6	2.9	2	6	5.3	6.1	15.1	3.7	3.4	2.4	3	5.5	8.4	2.7	2.2	7	3.8	4.7	2.1
Current B - $1.00 to $2.00	3.4	5.6	3.7	3	2	6.2	5.3	6.1	15.1	3.8	3.4	2.5	3	5.6	8.6	2.8	2.3	7.1	3.8	4.6	2.1
Current B - $2.00 to $3.00	3.3	5.8	3.7	3	2	6.4	5.3	6.2	15.3	3.9	3.4	2.4	3	5.5	8.3	2.7	2.3	6.9	3.7	4.7	2.1
Current B - over $3.00	2.3	5.6	3.7	3	2.1	6.3	5.4	6.2	15.5	3.8	3.5	2.5	3	5.7	8.6	2.8	2.2	7.1	3.9	4.8	2.1
Current C - Free	3.5	5.5	3.7	3	2	6.2	5.3	6.1	15.5	3.7	3.4	2.4	3	5.5	8.5	2.7	2.3	7	3.9	4.6	2.1
Current C - to $1.00	3.5	5.5	3.6	2.9	2	6.1	5.3	6.1	15.5	3.6	3.4	2.5	3	5.6	8.5	2.8	2.3	7	3.9	4.6	2.1
Current C - $1.00 to $2.00	2.4	5.6	3.7	3	2.1	6.3	5.3	6.1	15.5	3.8	3.4	2.5	3	5.7	8.7	2.9	2.4	7.1	3.9	4.5	2.2
Current C - $2.00 to $3.00	2.3	5.9	3.8	3.1	2	6.4	5.4	6.1	15.7	3.9	3.4	2.4	3	5.5	8.4	2.8	2.3	6.9	3.9	4.6	2.1
Current C - over $3.00	1.6	5.6	3.8	3	2.1	6.3	5.4	6.2	15.8	3.8	3.5	2.5	3	5.7	8.7	2.9	2.3	7.1	4	4.7	2.1
Current D - Free	6.3	5.3	3.6	2.7	2	5.9	5.2	6	14.7	3.7	3.4	2.3	2.8	5.4	8.5	2.7	2.3	6.8	3.7	4.8	2.1
Current D - to $1.00	6.3	5.1	3.5	2.6	2.1	5.7	5.2	6	14.7	3.6	3.4	2.4	2.8	5.5	8.5	2.8	2.3	6.8	3.8	4.8	2.1
Current D - $1.00 to $2.00	4.7	5.4	3.7	2.8	2.1	6	5.2	6	14.6	3.8	3.4	2.4	2.9	5.6	8.6	2.8	2.3	6.9	3.8	4.8	2.1
Current D - $2.00 to $3.00	4.4	5.6	3.7	2.9	2.1	6.1	5.2	6	15	3.9	3.4	2.4	2.9	5.4	8.5	2.8	2.3	6.7	3.7	4.8	2.1
Current D - over $3.00	3.2	5.4	3.7	2.8	2.1	6.1	5.3	6.1	15.2	3.8	3.5	2.4	2.9	5.6	8.7	2.9	2.3	7	3.9	4.9	2.1
Current E - Free	7.4	5.3	3.5	2.9	2	6	5.2	6	14.5	3.4	3.4	2.4	2.7	5.3	8.3	2.8	2.2	6.4	3.5	4.6	2.1
Current E - to $1.00	7.9	5.2	3.4	2.8	2	5.8	5.2	6	14.4	3.2	3.4	2.4	2.8	5.4	8.3	2.8	2.2	6.5	3.6	4.6	2.1
Current E - $1.00 to $2.00	5.1	5.5	3.6	3	2.1	6.2	5.3	6.1	14.6	3.5	3.4	2.5	2.9	5.5	8.5	2.9	2.3	6.6	3.6	4.6	2.2
Current E - $2.00 to $3.00	4.7	5.8	3.7	3	2.1	6.3	5.3	6.1	14.9	3.6	3.4	2.4	2.9	5.4	8.3	2.9	2.3	6.4	3.5	4.7	2.2
Current E - over $3.00	3.6	5.5	3.7	3	2.1	6.2	5.4	6.2	15.1	3.6	3.5	2.5	2.9	5.6	8.6	2.9	2.2	6.7	3.7	4.8	2.2

Table 2-13. Percent of People in Market Segment 4 (People With Disabilities Who Normally Do Not Use Transit) Who Prefer Each Current or Improved System

CURRENT SYSTEMS	Current Design	IMPROVED SYSTEMS																		
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Current A - Free	5.6	4.8	2.7	2.8	1.9	4.7	5.6	7	13.6	3.2	4.5	2.7	3.1	4 7	8.8	2.3	2.8	7.6	3.7	5.8	2.1
Current A - to $1.00	4.9	4.8	2.7	2.8	1.9	4.7	5.6	7.1	13.7	3.2	4.5	2.7	3.2	4.8	8.9	2.3	2.9	7.6	3.8	5.8	2.1
Current A - $1.00 to $2.00	4.1	4.9	2.8	2.9	2	4.8	5.6	7.1	13.6	3.3	4.5	2.8	3.2	4.8	9	2.3	2.9	7.7	3.8	5.7	2.2
Current A - $2.00 to $3.00	3.3	5	2.8	2.9	2	4.8	5.7	7.2	14	3.3	4.6	2.8	3.2	4.9	8.8	2.4	2.9	7.6	3.7	5.9	2.2
Current A - over $3.00	2.9	5	2.8	2.9	2	4.8	5.7	7.2	14	3.3	4.6	2.8	3.2	4.9	9	2.4	2.9	7.8	3.8	5.9	2.1
Current B - Free	5.1	4.9	2.7	2.8	1.8	4.7	5.6	7.1	13.7	3.3	4 4	2.6	3.1	4.7	9	2.1	2.7	7.9	3.8	5.8	2.1
Current B - to $1.00	4.6	4.8	2.7	2.8	1.9	4.7	5.6	7 1	13.7	3.2	4.4	2.7	3.2	4.8	9.1	2.2	2.8	7.9	3.8	5.8	2.1
Current B - $1.00 to $2.00	3.8	4.9	2.8	2.9	1.9	4.8	5.6	7.1	13.6	3.3	4.4	2.7	3.2	4.8	9.2	2.2	2.8	8	3.9	5.7	2.2
Current B - $2.00 to $3.00	3.2	5	2.8	2.9	1.9	4.8	5.7	7.2	13.9	3.3	4.5	2.7	3.3	4.8	9	2.2	2.8	7.9	3.8	5.9	2.2
Current B - over $3.00	2.6	5	2.8	2.9	1.9	4.8	5.7	7.2	14	3.3	4.5	2.7	3.3	4.9	9.2	2.3	2.7	8	3.9	5.9	2.1
Current C - Free	3.8	4.9	2.8	2.9	1.9	4.8	5.7	7.1	14	3.3	4.5	2.7	3.2	4.8	9.1	2.2	2.8	7.9	3.9	5.7	2.2
Current C - to $1.00	3.4	4.9	2.8	2.8	1.9	4.7	5.7	7.1	14.1	3.2	4.5	2.7	3.2	4.8	9.2	2.3	2.9	7.9	3.9	5.7	2.2
Current C - $1.00 to $2.00	2.8	5	2.8	2.9	1.9	4.9	5.7	7 1	14.1	3.3	4.5	2.8	3.3	4.9	9.3	2.3	2.9	8	4	5.6	2.2
Current C - $2.00 to $3.00	2	5	2.8	2.9	2	4.9	5.8	7.4	14.3	3.2	4.5	2.8	3.1	5	9	2.4	2.9	7.8	3.8	6	2.3
Current C - over $3.00	2	5	2.8	2.9	1.9	4.9	5.8	7.2	14.3	3.3	4.6	2.8	3.3	4.9	9.3	2.3	2.8	8	4	5.8	2.1
Current D - Free	6.3	4 7	2.7	2.7	1.9	4.5	5.5	6.9	13.3	3.3	4 4	2.5	3	4.6	9.1	2.2	2.8	7.7	3.8	5.9	2.1
Current D - to $1.00	5.3	4.6	2.7	2.6	2	4.5	5.6	7	13.5	3.2	4.5	2.6	3.1	4.7	9.2	2.3	2.8	7.8	3.8	6	2.2
Current D - $1.00 to $2.00	4.7	4.8	2.8	2.7	2	4.6	5.5	6.9	13.2	3.3	4.5	2.7	3.1	4.8	9.3	2.3	2.9	7.9	3.9	6	2.2
Current D - $2.00 to $3.00	3.9	4.8	2.8	2.7	2	4.7	5.6	7.1	13.7	3.3	4.6	2.7	3.1	4.8	9.2	2.3	2.9	7.8	3.8	6.1	2.2
Current D - over $3.00	3.2	4.8	2.8	2.7	2	4.7	5.7	7.1	13.7	3.4	4.6	2.7	3.2	4.8	9.4	2.3	2.8	8	3.9	6.1	2.1
Current E - Free	9.5	4.7	2.6	2.7	1.9	4.6	5.4	6.8	12.9	2.9	4.3	2.5	2.9	4.4	8.7	2.2	2.6	7.1	3.5	5.6	2.1
Current E - to $1.00	8	4 7	2.6	2.7	1.9	4.6	5.5	6.9	13.1	2.8	4 4	2.6	3	4.6	8.8	2.3	2.7	7.2	3.5	5.7	2.2
Current E - $1.00 to $2.00	6.9	4.8	2.7	2.8	1.9	4.7	5.5	6.9	13	3.1	4.4	2.7	3.1	4.7	9	2.3	2.7	7.4	3.6	5.6	2.2
Current E - $2.00 to $3.00	5.6	4.9	2.7	2.9	2	4.8	5.6	7.1	13.5	3.1	4.5	2.7	3.1	4.7	8.9	2.4	2.8	7.2	3.5	5.8	2.2
Current E - over $3.00	4.9	4.9	2.7	2.9	2	4.8	5.7	7 1	13.5	3.1	4.5	2.7	3.1	4.7	9.1	2.4	2.7	7.5	3.7	5.8	2.2

Table 2-14. Market Segment Sizes Based on Survey Results of Five Mid-Sized U.S. Cities

Market Segment	Number of Respondents	Percent of All Respondents
1	75	10
2	169	23
3	31	4
4	392	54
Total	**667**	**92**

PROBABILITY OF PURCHASE

To estimate the probability that people will actually use the system configuration they prefer, planners should follow a simple procedure using Tables 2-15 and 2-16. Table 2-15 shows the probability of purchase of the current systems for all respondents and for each of the market segments. Table 2-16 shows the probability of purchase of the improved systems for all respondents and for each of the market segments. These figures can be interpreted as percentage of likelihood of using the system. For example, a 61.6% probability of purchase can be interpreted as "a 61.6% likelihood" that the respondents who prefer the system would actually use it. This may mean that the people would choose it for 61.6% of their trips or that 61.6% of the people would use it all the time or that there is one chance in three that no one would use it at all. To estimate the probability of purchase and subsequent ridership, planners should take the number of people preferring a particular system configuration and multiply it by the appropriate factor in Tables 2-15 or 2-16.

Table 2-15.   Probability of Purchase by Market Segment for Each Current System

Current Systems	Market Segments				
	All Respondents	Segment 1	Segment 2	Segment 3	Segment 4
Current A - Free	0.533	0.529	0.527	0 557	0.536
Current A - to $1.00	0.497	0.491	0.499	0.548	0.496
Current A - $1.00 to $2.00	0.452	0.439	0 45	0.46	0.456
Current A - $2 00 to $3.00	0.403	0.391	0.401	0.436	0.406
Current A - over $3.00	0.357	0.343	0.355	0.351	0.361
Current B - Free	0.523	0.527	0.518	0.563	0.526
Current B - to $1.00	0.488	0.488	0.489	0.557	0.487
Current B - $1.00 to $2.00	0.443	0.441	0.442	0.466	0.447
Current B - $2.00 to $3.00	0.395	0.395	0.392	0.441	0.398
Current B - over $3.00	0.35	0.347	0.348	0.356	0.354
Current C - Free	0.449	0.447	0.444	0.478	0.453
Current C - to $1.00	0.415	0.409	0.417	0.474	0.417
Current C - $1.00 to $2.00	0.372	0.36	0.371	0.384	0.378
Current C - $2.00 to $3.00	0.327	0.316	0.325	0.359	0.341
Current C - over $3.00	0.285	0.272	0.284	0.281	0.29
Current D - Free	0.609	0.619	0.618	0.658	0.601
Current D - to $1.00	0.574	0.58	0.591	0.646	0.563
Current D - $1.00 to $2.00	0.529	0.531	0.544	0.565	0.521
Current D $2.00 to $3.00	0.48	0.48	0.494	0.541	0.471
Current D - over $3.00	0.432	0.433	0.447	0.455	0.424
Current E - Free	0.692	0.678	0.688	0.677	0.696
Current E - to $1.00	0.66	0.643	0.663	0.66	0.661
Current E - $1.00 to $2.00	0.617	0.593	0.618	0.59	0.622
Current E - $2.00 to $3.00	0.568	0.543	0.568	0.564	0.573
Current E - over $3.00	0.52	0.493	0.521	0.481	0.526

- Market Segment 1 - People with disabilities who use fixed-route transit
- Market Segment 2 - People with disabilities who use paratransit
- Market Segment 3 - Others who use paratransit
- Market Segment 4 - People with disabilities who normally do not use transit

Table 2-16. Probability of Purchase by Market Segments for Each Improved System

Improved Systems	Market Segments				
	All	**1**	**2**	**3**	**4**
A	0.588	0.589	0.60	0.646	0.58
B	0.408	0.432	0.455	0.497	0.432
C	0.449	0.464	0.469	0.473	0.437
D	0.326	0.336	0.318	0.372	0.325
E	0.568	0.554	0.579	0.638	0.563
F	0.606	0.584	0.62	0.629	0.604
G	0.658	0.663	0.661	0.657	0.656
H	0.754	0.727	0.758	0.795	0.756
I	0.428	0.424	0.437	0.457	0.425
J	0.568	0.576	0.572	0.527	0.568
K	0.411	0.423	0.417	0.422	0.408
L	0.435	0.431	0.432	0.479	0.435
M	0.561	0.551	0.568	0.587	0.559
N	0.674	0.641	0.688	0.698	0.676
O	0.365	0.353	0.362	0.439	0.367
P	0.387	0.364	0.383	0.382	0.393
Q	0.646	0.604	0.653	0.657	0.65
R	0.393	0.463	0.462	0.474	0.472
S	0.575	0.549	0.572	0.558	0.583
T	0.334	0.326	0.342	0.346	0.33

- Market Segment 1 - People with disabilities who use fixed-route transit
- Market Segment 2 - People with disabilities who use paratransit
- Market Segment 3 - Others who use paratransit
- Market Segment 4 - People with disabilities who normally do not use transit

Eastern location, medium density (suburban), hilly terrain and a moderate climate characterize System 11.

ESTIMATION OF RIDERSHIP DEMAND AND PREFERENCES FOR A LOCAL TRANSIT SYSTEM

To illustrate how to estimate ridership and preferences for an improved fixed-route system, the local study system described previously in this chapter will be used. Remember that the example study system has the following characteristics:

- Geographic location - Pennsylvania;
- Population density - 125 people per square mile;
- Topography - rolling terrain; and
- Climate - average yearly temperature of 57° F.

The system is, therefore, in the **East**, with a **Medium Density (Suburban)** in the service area, a **Hilly** terrain, and a **Moderate** climate, as shown in Figure 2-8.
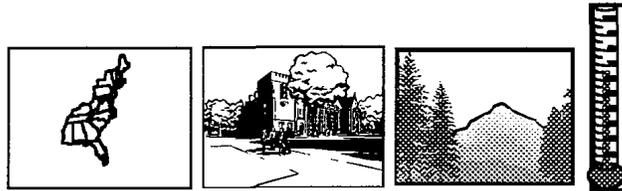
Figure 2-8.   Composite Description of Example Study System

TO ESTIMATE FOR ALL PATRONS

The composite system identification number is 11 and the peer systems tables are in Appendix A. Assume that the transit system follows Steps 1 and 2 for estimating demand by examining Table 2-7 and deciding that their fixed-route system is best described by Current System A as shown in Table 2-17.

**Table 2-17.   Current Example Study System is
Best Described by Current System A**

Current System A

Service Feature
A consumer has a short traveling distance to and from the vehicle
The schedules are reliable
Other passengers don't complain when a consumer needs extra time
Schedules a consumer can use are at the stops
Uniformed officers may be on the vehicles
Mobility or other equipment can be stored near the consumer
Drivers understand boarding and securing wheelchairs

Find appropriate "current" system and "improved" system descriptions.

Transit system personnel then examine Table 2-8 and decide that, after making improvements to the fixed-route service, the system will best be described by Improved System H (Steps 3 and 4). This system is shown in Table 2-18.

In Step 5, the transit system determines that the base fixed-route fare is $1.50. Using this information and Table 2-9, planners for the Example Study System follow Steps 6 and 7 to find the appropriate row in Table 2-9; Current System A with a $1.50 fare corresponds with the third row in Table 2-9. In Steps 8 and 9, planners locate the column for Improved H as well as the "current" column and compare these with the results of Steps 6 and 7 as shown in Figure 2-9.

Table 2-18.   After Improvements are Made, Current Example Study System is Best Described by Improved System H.

Improved System H

Service Feature
Trip costs between $1.01 and $2.00
A consumer has a short traveling distance to and from the vehicle
Vehicle stops near the consumer's home and goes where the consumer wants
The consumer doesn't have to transfer vehicles and trips are short
Stops have benches
A consumer feels safe traveling to and from the vehicle
A consumer can board in his/her wheelchair and be secured in it
Drivers move people out of the front seats when a consumer with disabilities asks

Percent of Paratransit Patrons and People With Disabilities Who Prefer Each Current or Improved System

CURRENT SYSTEMS	Current Design	IMPROVED SYSTEMS																			
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Current A - Free	3.3	5	2.9	2.9	2	4.8	5.7	7.2	13.6	3.3	4.6	2.7	3.1	4.9	9.3	2.3	2.7	7.9	3.8	5.9	2.2
Current A - to $1.00	5.5	4.8	2.4	3	2	4.8	5.7	7.2	13.8	3.3	4.6	2.8	3.1	4.8	8.6	2.3	2.9	8	2.7	5.7	2.2
Current A - $1.00 to $2.00	4.8	5	2.8	3	1.9	4.8	5.7	7.2	13.6	3.1	4.5	2.8	3.1	4.8	8.8	2.3	2.8	7.6	3.7	5.6	2.2
Current A - $2.00 to $3.00	4	5.1	2.9	3.1	2	4.9	5.7	7.2	13.5	3.2	4.5	2.8	3.2	4.9	8.9	2.3	2.8	7.7	3.7	5.5	2.2
Current A - over $3.00	3.3	5.1	2.9	3.1	2	4.9	5.8	7.3	13.8	3.3	4.6	2.8	3.2	4.9	8.7	2.3	2.8	7.5	3.7	5.7	2.2
Current B - Free	2.8	5.1	2.9	3.1	2	4.9	5.8	7.3	13.8	3.3	4.6	2.8	3.2	4.9	9	2.3	2.8	7.7	3.8	5.7	2.2
Current B - to $1.00	5.1	4.8	2.4	3	1.9	4.8	5.8	7.2	13.8	3.3	4.5	2.7	3.2	4.8	8.8	2.1	2.8	8.3	2.8	5.7	2.3
Current B - $1.00 to $2.00	4.6	5	2.8	3	1.9	4.8	5.7	7.1	13.6	3.2	4.5	2.7	3.2	4.8	9	2.2	2.7	7.8	3.8	5.6	2.2
Current B - $2.00 to $3.00	3.7	5.1	2.9	3.1	1.9	4.9	5.7	7.2	13.5	3.3	4.5	2.8	3.2	4.9	9.1	2.2	2.7	7.9	3.8	5.5	2.2
Current B - over $3.00	3.2	5.1	2.9	3.1	1.9	4.9	5.7	7.3	13.8	3.3	4.5	2.8	3.2	4.9	8.9	2.2	2.7	7.9	3.7	5.7	2.2
Current C - Free	2.6	5.1	2.9	3.1	1.9	4.9	5.8	7.3	13.8	3.3	4.6	2.8	3.2	4.9	9.1	2.2	2.6	8	3.8	5.7	2.2
Current C - to $1.00	3.8	4.8	2.4	3	1.9	4.8	5.8	7.2	14.2	3.3	4.6	2.8	3.2	4.9	8.9	2.3	2.9	8.3	2.9	5.7	2.3
Current C - $1.00 to $2.00	3.4	5	2.9	3	1.9	4.9	5.7	7.2	13.9	3.2	4.5	2.8	3.2	4.9	9.1	2.3	2.7	7.8	3.9	5.5	2.2
Current C - $2.00 to $3.00	2.7	5.2	2.9	3.1	1.9	5	5.7	7.1	13.9	3.3	4.5	2.8	3.2	4.9	9.2	2.3	2.8	7.9	3.9	5.3	2.3
Current C - over $3.00	2.3	5.2	2.9	3.1	1.9	5	5.8	7.2	14.1	3.3	4.6	2.8	3.2	4.9	9	2.3	2.8	7.8	3.9	5.6	2.3
Current D - Free	1.9	5.2	2.9	3.1	2	5	5.8	7.3	14.1	3.3	4.6	2.8	3.2	5	9.2	2.3	2.7	7.9	3.9	5.6	2.2
Current D - to $1.00	6.5	4.6	2.3	2.8	2	4.6	5.6	7	13.4	3.3	4.6	2.6	3	4.7	8.9	2.2	2.9	8.2	2.8	5.9	2.2
Current D - $1.00 to $2.00	5.6	4.8	2.8	2.7	2	4.6	5.6	7	13.3	3.2	4.5	2.7	3	4.8	9.1	2.3	2.7	7.7	3.8	5.8	2.2
Current D - $2.00 to $3.00	4.8	4.9	2.9	2.9	2	4.8	5.6	7	13.1	3.3	4.5	2.7	3.1	4.8	9.2	2.3	2.7	7.8	3.8	5.7	2.2
Current D - over $3.00	4.1	5	2.9	2.9	2	4.8	5.7	7.1	13.5	3.3	4.6	2.7	3.1	4.8	9.1	2.3	2.8	7.7	3.7	5.8	2.2
Current E - Free	9.7	4.6	2.2	2.8	1.9	4.6	5.5	6.9	13	2.9	4.4	2.6	2.9	4.6	8.4	2.2	2.7	7.5	2.7	5.5	2.3
Current E - to $1.00	8	4.9	2.7	2.9	1.9	4.7	5.5	7	13	2.8	4.4	2.7	3	4.6	8.8	2.3	2.6	7.2	3.5	5.4	2.2
Current E - $1.00 to $2.00	6.7	5	2.8	3	2	4.8	5.6	7	12.8	3	4.4	2.7	3	4.7	8.9	2.3	2.6	7.3	3.6	5.4	2.3
Current E - $2.00 to $3.00	5.5	5.1	2.8	3	2	4.9	5.7	7.2	13.3	3.1	4.5	2.7	3.1	4.8	8.8	2.3	2.7	7.1	3.4	5.6	2.3
Current E - over $3.00	4.8	5.1	2.9	3	2	4.9	5.7	7.2	13.4	3.1	4.6	2.7	3.1	4.8	9	2.4	2.6	7.4	3.6	5.6	2.3

Figure 2-9.   Results of Steps 5 through 9 for Example Study System Illustrated on a Sample Table 2-9

This interface resulted in two percentage figures, 13.6% and 4.8%. The 13.6% represents the percent of paratransit patrons and individuals with disabilities in the example study system who would prefer Improved System H over all other improved systems. In other words, if Current System A with a $1.50 fare is enhanced to Improved System H, 13.6% of paratransit patrons and individuals with disabilities would prefer Improved System H. The 4.8% represents the percent of paratransit patrons and individuals with disabilities in the example study system who would prefer the current system (in this case, Current System A) over all other improved systems. In other words, if Current System A with a $1.50 fare is enhanced to Improved System H, then 4.8% of paratransit patrons and individuals with disabilities would still prefer the current fixed-route system.

Some paratransit patrons may prefer the original fixed-route system over the "improved" system.

This is an important point to keep in mind when evaluating different alternatives for improving the fixed-route system in order to attract paratransit patrons and individuals with disabilities. In some cases, when changes are made to the fixed-route system, some people may prefer the original system to the improved system. For example, if the improvements chosen result in the example study system best described by Current System A with a $1.50 fare changing to a system best described by Improved System D with no fare, 1.9% of paratransit patrons and individuals with disabilities would prefer Improved System D with no fare while 4.8% would prefer the current fixed-route system. Therefore, the improvements included in Improved System D with no fare may not be most effective in attracting individuals with disabilities to fixed-route services. This is shown in Figure 2-10.

Improved systems may be combined to provide all planned improvements.

If more than one Improved System description includes features which resemble the planned improvements, the percentages shown in Table 2-9 can be combined. For example, if the improvements that are planned are described in both Improved System H and Improved System I, the percentage of people who would prefer both can be added. If all the service features included in both Improved System H and Improved System I are planned for implementation, then, compared to Current System A at a $1.50 fare, the improved system would be preferred by 13.3% (Improved System H) plus 3.2% (Improved System I), for a total of 16.5% who would prefer a system with all the service features of both systems. This is shown in Figure 2-11.

Percent Who Prefer Each Current or Improved System

CURRENT SYSTEMS	Current Design	IMPROVED SYSTEMS																			
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Current A - Free	3.3	5	2.9	2.9	2	4.8	5.7	7.2	13.6	3.3	4.6	2.7	3.1	4.9	9.3	2.3	2.7	7.9	3.8	5.9	2.2
Current A - to $1.00	5.5	4.8	2.4	3	2	4.8	5.7	7.2	13.8	3.3	4.6	2.8	3.1	4.8	8.6	2.3	2.9	8	2.7	5.7	2.2
Current A - $1.00 to $2.00	4.8	5	2.8	3	1.9	4.8	5.7	7.2	13.6	3.1	4.5	2.8	3.1	4.8	8.8	2.3	2.8	7.6	3.7	5.6	2.2
Current A - $2.00 to $3.00	4	5.1	2.9	3.1	2	4.9	5.7	7.2	13.5	3.2	4.5	2.8	3.2	4.9	8.9	2.3	2.8	7.7	3.7	5.5	2.2
Current A - over $3.00	3.3	5.1	2.9	3.1	2	4.9	5.8	7.3	13.8	3.3	4.6	2.8	3.2	4.9	8.7	2.3	2.8	7.5	3.7	5.7	2.2
Current B - Free	2.8	5.1	2.9	3.1	2	4.9	5.8	7.3	13.8	3.3	4.6	2.8	3.2	4.9	9	2.3	2.8	7.7	3.8	5.7	2.2
Current B - to $1.00	5.1	4.8	2.4	3	1.9	4.8	5.8	7.2	13.8	3.3	4.5	2.7	3.2	4.8	8.8	2.1	2.8	8.3	2.8	5.7	2.3
Current B - $1.00 to $2.00	4.6	5	2.8	3	1.9	4.8	5.7	7 1	13.6	3.2	4.5	2.7	3.2	4.8	9	2.2	2.7	7.8	3.8	5.6	2.2
Current B - $2.00 to $3.00	3.7	5.1	2.9	3.1	1.9	4.9	5.7	7.2	13.5	3.3	4.5	2.8	3.2	4.9	9.1	2.2	2.7	7.9	3.8	5.5	2.2
Current B - over $3.00	3.2	5.1	2.9	3.1	1.9	4.9	5.7	7.3	13.8	3.3	4.5	2.8	3.2	4.9	8.9	2.2	2.7	7.9	3.7	5.7	2.2
Current C - Free	2.6	5.1	2.9	3.1	1.9	4.9	5.8	7.3	13.8	3.3	4.6	2.8	3.2	4.9	9.1	2.2	2.6	8	3.8	5.7	2.2
Current C - to $1.00	3.8	4.8	2.4	3	1.9	4.8	5.8	7.2	14.2	3.3	4.6	2.8	3.2	4.9	8.9	2.3	2.9	8.3	2.9	5.7	2.3
Current C - $1.00 to $2.00	3.4	5	2.9	3	1.9	4.9	5.7	7.2	13.9	3.2	4.5	2.8	3.2	4.9	9.1	2.3	2.7	7.8	3.9	5.5	2.2
Current C - $2.00 to $3.00	2.7	5.2	2.9	3.1	1.9	5	5.7	7.1	13.9	3.3	4.5	2.8	3.2	4.9	9.2	2.3	2.8	7.9	3.9	5.3	2.3
Current C - over $3.00	2.3	5.2	2.9	3.1	1.9	5	5.8	7.2	14.1	3.3	4.6	2.8	3.2	4.9	9	2.3	2.8	7.8	3.9	5.6	2.3
Current D - Free	1.9	5.2	2.9	3.1	2	5	5.8	7.3	14.1	3.3	4.6	2.8	3.2	5	9.2	2.3	2.7	7.9	3.9	5.6	2.2
Current D - to $1.00	6.5	4.6	2.3	2.8	2	4.6	5.6	7	13.4	3.3	4.6	2.6	3	4 7	8.9	2.2	2.9	8.2	2.8	5.9	2.2
Current D - $1.00 to $2.00	5.6	4.8	2.8	2.7	2	4.6	5.6	7	13.3	3.2	4.5	2.7	3	4.8	9.1	2.3	2.7	7.7	3.8	5.8	2.2
Current D - $2.00 to $3.00	4.8	4.9	2.9	2.9	2	4.8	5.6	7	13.1	3.3	4.5	2.7	3.1	4.8	9.2	2.3	2.7	7.8	3.8	5.7	2.2
Current D - over $3.00	4.1	5	2.9	2.9	2	4.8	5.7	7.1	13.5	3.3	4.6	2.7	3.1	4.8	9.1	2.3	2.8	7.7	3.7	5.8	2.2
Current E - Free	9.7	4.6	2.2	2.8	1.9	4.6	5.5	6.9	13	2.9	4.4	2.6	2.9	4.6	8.4	2.2	2.7	7.5	2.7	5.5	2.3
Current E - to $1.00	8	4.9	2.7	2.9	1.9	4.7	5.5	7	13	2.8	4.4	2.7	3	4.6	8.8	2.3	2.6	7.2	3.5	5.4	2.2
Current E - $1.00 to $2.00	6.7	5	2.8	3	2	4.8	5.6	7	12.8	3	4.4	2.7	3	4.7	8.9	2.3	2.6	7.3	3.6	5.4	2.3
Current E - $2.00 to $3.00	5.5	5.1	2.8	3	2	4.9	5.7	7.2	13.3	3.1	4.5	2.7	3.1	4.8	8.8	2.3	2.7	7 1	3.4	5.6	2.3
Current E - over $3.00	4.8	5.1	2.9	3	2	4.9	5.7	7.2	13.4	3.1	4.6	2.7	3.1	4.8	9	2.4	2.6	7.4	3.6	5.6	2.3

Note 1.9% for Improved D is significantly less than the 4.8% for the Current A

Figure 2-10. Results of Steps 5 through 9 if Improved System D Was Chosen Instead of Improved System H for the Example Study System as Illustrated on a Sample Table 2-9
Percent Who Prefer Each Current or Improved System

Percent Who Prefer Each Current or Improved System

CURRENT SYSTEMS	Current Design	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
							IMPROVED SYSTEMS														
Current A - Free	3.3	5	2.9	2.9	2	4.8	5.7	7.2	13.6	3.3	4.6	2.7	3.1	4.9	9.3	2.3	2.7	7.9	3.8	5.9	2.2
Current A - to $1.00	5.5	4.8	2.4	3	2	4.8	5.7	7.2	13.8	3.3	4.6	2.8	3.1	4.8	8.6	2.3	2.9	8	2.7	5.7	2.2
Current A - $1.00 to $2.00	4.8	5	2.8	3	1.9	4.8	5.7	7.2	13.6	3.1	4.5	2.8	3.1	4.8	8.8	2.3	2.8	7.6	3.7	5.6	2.2
Current A - $2.00 to $3.00	4	5.1	2.9	3.1	2	4.9	5.7	7.2	13.5	3.2	4.5	2.8	3.2	4.9	8.9	2.3	2.8	7.7	3.7	5.5	2.2
Current A - over $3.00	3.3	5.1	2.9	3.1	2	4.9	5.8	7.3	13.8	3.3	4.6	2.8	3.2	4.9	8.7	2.3	2.8	7.5	3.7	5.7	2.2
Current B - Free	2.8	5.1	2.9	3.1	2	4.9	5.8	7.3	13.8	3.3	4.6	2.8	3.2	4.9	9	2.3	2.8	7.7	3.8	5.7	2.2
Current B - to $1.00	5.1	4.8	2.4	3	1.9	4.8	5.8	7.2	13.8	3.3	4.5	2.7	3.2	4.8	8.8	2.1	2.8	8.3	2.8	5.7	2.3
Current B - $1.00 to $2.00	4.6	5	2.8	3	1.9	4.8	5.7	7.1	13.6	3.2	4.5	2.7	3.2	4.8	9	2.2	2.7	7.8	3.8	5.6	2.2
Current B - $2.00 to $3.00	3.7	5.1	2.9	3.1	1.9	4.9	5.7	7.2	13.5	3.3	4.5	2.8	3.2	4.9	9.1	2.2	2.7	7.9	3.8	5.5	2.2
Current B - over $3.00	3.2	5.1	2.9	3.1	1.9	4.9	5.7	7.3	13.8	3.3	4.5	2.8	3.2	4.9	8.9	2.2	2.7	7.9	3.7	5.7	2.2
Current C - Free	2.6	5.1	2.9	3.1	1.9	4.9	5.8	7.3	13.8	3.3	4.6	2.8	3.2	4.9	9.1	2.2	2.6	8	3.8	5.7	2.2
Current C - to $1.00	3.8	4.8	2.4	3	1.9	4.8	5.8	7.2	14.2	3.3	4.6	2.8	3.2	4.9	8.9	2.3	2.9	8.3	2.9	5.7	2.3
Current C - $1.00 to $2.00	3.4	5	2.9	3	1.9	4.9	5.7	7.2	13.9	3.2	4.5	2.8	3.2	4.9	9.1	2.3	2.7	7.8	3.9	5.5	2.2
Current C - $2.00 to $3.00	2.7	5.2	2.9	3.1	1.9	5	5.7	7.1	13.9	3.3	4.5	2.8	3.2	4.9	9.2	2.3	2.8	7.9	3.9	5.3	2.3
Current C - over $3.00	2.3	5.2	2.9	3.1	1.9	5	5.8	7.2	14.1	3.3	4.6	2.8	3.2	4.9	9	2.3	2.8	7.8	3.9	5.6	2.3
Current D - Free	1.9	5.2	2.9	3.1	2	5	5.8	7.3	14.1	3.3	4.6	2.8	3.2	5	9.2	2.3	2.7	7.9	3.9	5.6	2.2
Current D - to $1.00	6.5	4.6	2.3	2.8	2	4.6	5.6	7	13.4	3.3	4.6	2.6	3	4.7	8.9	2.2	2.9	8.2	2.8	5.9	2.2
Current D - $1.00 to $2.00	5.6	4.8	2.8	2.7	2	4.6	5.6	7	13.3	3.2	4.5	2.7	3	4.8	9.1	2.3	2.7	7.7	3.8	5.8	2.2
Current D - $2.00 to $3.00	4.8	4.9	2.9	2.9	2	4.8	5.6	7	13.1	3.3	4.5	2.7	3.1	4.8	9.2	2.3	2.7	7.8	3.8	5.7	2.2
Current D - over $3.00	4.1	5	2.9	2.9	2	4.8	5.7	7.1	13.5	3.3	4.6	2.7	3.1	4.8	9.1	2.3	2.8	7.7	3.7	5.8	2.2
Current E - Free	9.7	4.6	2.2	2.8	1.9	4.6	5.5	6.9	13	2.9	4.4	2.6	2.9	4.6	8.4	2.2	2.7	7.5	2.7	5.5	2.3
Current E - to $1.00	8	4.9	2.7	2.9	1.9	4.7	5.5	7	13	2.8	4.4	2.7	3	4.6	8.8	2.3	2.6	7.2	3.5	5.4	2.2
Current E - $1.00 to $2.00	6.7	5	2.8	3	2	4.8	5.6	7	12.8	3	4.4	2.7	3	4.7	8.9	2.3	2.6	7.3	3.6	5.4	2.3
Current E - $2.00 to $3.00	5.5	5.1	2.8	3	2	4.9	5.7	7.2	13.3	3.1	4.5	2.7	3.1	4.8	8.8	2.3	2.7	7.1	3.4	5.6	2.3
Current E - over $3.00	4.8	5.1	2.9	3	2	4.9	5.7	7.2	13.4	3.1	4.6	2.7	3.1	4.8	9	2.4	2.6	7.4	3.6	5.6	2.3

Note 13.3% + 3.2% = 16.5% for combination of Improved Systems H and I

Figure 2-11. Results of Steps 5 through 9 for Example Study System as Illustrated on a Sample Table 2-9

If all service features were implemented, nearly all people would prefer fixed-route services because it would virtually be door-to-door.

This implies that, if all the service features were implemented, nearly 100% of people with disabilities would prefer the new system. If all the service features were implemented, the fixed-route system would be completely secure, extremely convenient, virtually door-to-door, fully accessible to people with disabilities, and comfortable and easy to use. As long as the fare was also low, it is conceivable that all individuals would actually prefer it over other modes of transportation.

If the Improved Systems have a different fare from each other or from the Current System, it is probable that people would prefer the Improved System at a fare up to the highest preferred fare. A higher fare may yield lower percentages. At the same time, if the Current System fare is lower than the Improved System fare, the percent who prefer the Improved System can be anticipated to be maintained if fares are raised to the level shown in the Improved System.

Assume that the example study system has 1,500 ADA-eligible riders or expects 1,500 ADA-eligible riders in 1997. For Step 10, this number of clients is multiplied by the percentage found in Step 9, 13.6%. This results in 204 (1,500 * 13.6% = 204) paratransit patrons who would prefer Improved System H over all other improved systems. This is a potential 204 riders who would switch to a fixed-route system.

TO ESTIMATE BY MARKET SEGMENT

To estimate by market segment, the Current System A with a $1.50 fare row was interfaced with the Improved System H and "current" columns on Tables 2-10 through 2-13. This is shown in Figures 2-12 through 2-15.

CURRENT SYSTEMS	Current Design	IMPROVED SYSTEMS																		
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Current A - Free	6	5.2	3.1	3.5	2	4.7	5.3	7.9	12.5	3.2	4.8	3	3.1	4.8	8.1	2.3	2.5	7	3.7	5.1	2.2
Current A - to $1.00	5.2	5.2	3.1	3.4	2.1	4.7	5.4	7.9	12.6	3.1	4.9	3.1	3.2	5	8.2	2.4	2.6	7	3.8	5.2	2.2
Current A - $1.00 to $2.00	4	5.3	3.2	3.5	2.1	4.8	5.4	7.9	12.6	3.2	4.9	3.1	3.2	5	8.3	2.4	2.6	7.1	3.8	5.1	2.3
Current A - $2.00 to $3.00	3.3	5.3	3.2	3.6	2.1	4.9	5.5	8.1	12.9	3.3	5	3.1	3.2	5.1	8.1	2.4	2.6	7	3.7	5.3	2.3
Current A - over $3.00	2.9	5.3	3.2	3.6	2.1	4.9	5.5	8.1	12.9	3.3	5	3.1	3.2	5.1	8.4	2.4	2.6	7.2	3.8	5.3	2.2
Current B - Free	6	5.2	3.1	3.4	2	4.7	5.3	7.8	12.5	3.2	4.8	2.9	3.1	4.8	8.3	2.1	2.4	7.2	3.8	5.1	2.2
Current B - to $1.00	5.4	5.1	3.1	3.4	2	4.6	5.4	7.9	12.5	3.2	4.8	3	3.2	4.9	8.3	2.2	2.4	7.3	3.8	5.2	2.2
Current B - $1.00 to $2.00	4.1	5.3	3.2	3.5	2.1	4.8	5.4	7.9	12.5	3.3	4.8	3.1	3.2	5	8.5	2.3	2.5	7.4	3.9	5.1	2.2
Current B - $2.00 to $3.00	3.5	5.3	3.2	3.5	2.1	4.8	5.5	8	12.8	3.3	4.9	3.1	3.3	5	8.3	2.3	2.5	7.3	3.8	5.3	2.3
Current B - over $3.00	2.9	5.3	3.2	3.5	2.1	4.8	5.5	8.1	12.9	3.3	4.9	3.1	3.3	5.1	8.5	2.3	2.4	7.4	3.9	5.3	2.2
Current C - Free	4.1	5.3	3.2	3.5	2	4.8	5.4	7.9	12.9	3.2	4.9	3	3.2	4.9	8.4	2.3	2.5	7.2	3.9	5.1	2.2
Current C - to $1.00	3.7	5.2	3.1	3.4	2.1	4.8	5.5	7.9	13	3.2	4.9	3.1	3.3	5	8.5	2.4	2.6	7.3	4	5.1	2.2
Current C - $1.00 to $2.00	2.7	5.4	3.2	3.6	2.1	4.9	5.5	7.9	13	3.3	4.9	3.1	3.3	5.1	8.6	2.4	2.6	7.3	4	5	2.3
Current C - $2.00 to $3.00	2.3	5.4	3.2	3.6	2.1	4.9	5.5	8	13.2	3.3	4.9	3.1	3.3	5.1	8.4	2.4	2.6	7.2	4	5.2	2.3
Current C - over $3.00	1.9	5.4	3.2	3.6	2.1	4.9	5.5	8	13.2	3.3	4.9	3.1	3.3	5.1	8.6	2.4	2.5	7.4	4	5.2	2.2
Current D - Free	7.8	4.9	3	3.2	2	4.5	5.2	7.6	12.1	3.2	4.8	2.8	2.9	4.7	8.4	2.2	2.5	7.1	3.8	5.3	2.2
Current D - to $1.00	7	4.8	2.9	3	2.1	4.4	5.3	7.7	12.3	3.2	4.8	2.9	3.1	4.8	8.5	2.3	2.5	7.2	3.8	5.3	2.2
Current D - $1.00 to $2.00	5.6	5.1	3.1	3.3	2.1	4.6	5.3	7.7	12.1	3.3	4.8	3	3.1	4.9	8.6	2.3	2.5	7.2	3.9	5.3	2.2
Current D - $2.00 to $3.00	4.7	5.1	3.1	3.3	2.1	4.6	5.4	7.8	12.5	3.3	4.9	3	3.1	4.9	8.5	2.3	2.5	7.1	3.8	5.4	2.2
Current D - over $3.00	3.8	5.2	3.2	3.3	2.2	4.7	5.4	7.9	12.6	3.3	4.9	3	3.2	5	8.6	2.4	2.5	7.3	3.9	5.5	2.2
Current E - Free	9.4	5	3	3.4	2	4.6	5.2	7.6	11.9	2.9	4.7	2.8	2.9	4.6	8.1	2.3	2.4	6.6	3.5	5	2.2
Current E - to $1.00	8	5	2.9	3.3	2.1	4.6	5.3	7.7	12.1	2.8	4.8	2.9	3.1	4.8	8.2	2.3	2.4	6.7	3.6	5.1	2.2
Current E - $1.00 to $2.00	6.6	5.2	3.1	3.5	2.1	4.7	5.3	7.8	12	3	4.8	3	3.1	4.9	8.3	2.4	2.5	6.8	3.6	5	2.3
Current E - $2.00 to $3.00	5.4	5.3	3.1	3.5	2.1	4.8	5.4	8	12.5	3	4.9	3	3.1	4.9	8.3	2.4	2.5	6.6	3.5	5.2	2.3
Current E - over $3.00	4.6	5.3	3.2	3.5	2.1	4.8	5.4	8	12.5	3.1	4.9	3.1	3.2	4.9	8.4	2.4	2.4	6.9	3.7	5.2	2.3

Figure 2-12. Results of Steps 10 and 11 for Market Segment 1 for the Example Study System as Illustrated on a Sample Table 2-10

CURRENT SYSTEMS	Current Design	IMPROVED SYSTEMS																			
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Current A - Free	5.2	5.2	3	3.2	1.8	5	5.9	7	13.3	3.1	4.5	2.7	2.9	4.8	9	2.2	2.6	7.7	3.5	5.3	2.3
Current A - to $1.00	4.6	5.1	2.9	3.2	1.8	4.9	5.9	7	13.3	3.1	4.5	3	2.9	5	9	2.3	2.5	7.9	3.5	5.4	2.2
Current A - $1.00 to $2.00	3.8	5.3	3	3.3	1.9	5	5.9	7	13.3	3.2	4.5	2.8	3	4.9	9.2	2.3	2.6	7.8	3.6	5.2	2.3
Current A - $2.00 to $3.00	3.1	5.3	3	3.3	1.9	5.1	6	7.2	13.6	3.2	4.6	2.8	3	5	9	2.3	2.6	7.7	3.5	5.4	2.3
Current A - over $3.00	2.7	5.3	3	3.3	1.9	5.1	6	7.2	13.6	3.2	4.6	2.8	3	5	9.2	2.3	2.6	7.9	3.6	5.4	2.3
Current B - Free	4.7	5.2	3	3.2	1.8	5	5.9	7	13.3	3.2	4.5	2.7	3	4.8	9.2	2	2.5	8	3.6	5.3	2.3
Current B - to $1.00	4.4	5.1	2.9	3.2	1.8	4.9	5.9	7	13.3	3.1	4.5	3	3	5	9.2	2.2	2.4	8.2	3.6	5.4	2.2
Current B - $1.00 to $2.00	3.5	5.3	3	3.3	1.8	5	5.9	7	13.3	3.2	4.5	2.8	3	4.9	9.4	2.2	2.5	8.1	3.6	5.2	2.3
Current B - $2.00 to $3.00	3	5.3	3	3.3	1.8	5.1	6	7.1	13.6	3.2	4.6	2.8	3.1	4.9	9.2	2.2	2.5	8	3.6	5.4	2.3
Current B - over $3.00	2.5	5.3	3	3.3	1.9	5.1	6	7.2	13.6	3.2	4.6	2.8	3.1	5	9.4	2.2	2.5	8.1	3.7	5.4	2.3
Current C - Free	3.6	5.3	3	3.3	1.8	5	6	7	13.7	3.2	4.5	2.7	3	4.8	9.3	2.2	2.6	7.9	3.7	5.2	2.3
Current C - to $1.00	3.2	5.2	2.9	3.2	1.8	4.9	6	7	13.6	3.1	4.5	3	3	5.1	9.3	2.3	2.5	8.1	3.7	5.3	2.3
Current C - $1.00 to $2.00	2.6	5.3	3	3.3	1.9	5.1	6	7	13.7	3.2	4.5	2.8	3.1	5	9.4	2.3	2.6	8.1	3.7	5.1	2.3
Current C - $2.00 to $3.00	2.2	5.4	3	3.3	1.9	5.1	6.1	7.1	13.9	3.2	4.6	2.8	3.1	5	9.3	2.3	2.6	7.9	3.7	5.3	2.3
Current C - over $3.00	1.8	5.4	3	3.3	1.9	5.1	6.1	7.1	13.9	3.2	4.6	2.8	3.1	5	9.5	2.3	2.6	8.1	3.7	5.3	2.3
Current D - Free	6.4	5	2.9	3	1.8	4.8	5.8	6.9	12.9	3.1	4.5	2.6	2.8	4.6	9.3	2.1	2.5	7.8	3.5	5.4	2.3
Current D - to $1.00	5.7	4.9	2.9	2.9	1.8	4.7	5.8	6.9	13	3.1	4.5	2.9	2.9	4.9	9.3	2.2	2.5	8	3.5	5.5	2.2
Current D - $1.00 to $2.00	4.8	5.1	3	3.1	1.9	4.9	5.8	6.9	12.8	3.2	4.5	2.7	2.9	4.8	9.4	2.2	2.6	7.9	3.6	5.5	2.3
Current D - $2.00 to $3.00	4	5.1	3	3.1	1.9	4.9	5.9	7	13.3	3.2	4.6	2.7	2.9	4.9	9.3	2.2	2.6	7.8	3.6	5.6	2.3
Current D - over $3.00	3.4	5.2	3	3.1	1.9	4.9	5.9	7.1	13.3	3.2	4.6	2.7	3	4.9	9.5	2.2	2.5	8	3.6	5.6	2.2
Current E - Free	8.9	5	2.8	3.1	1.8	4.8	5.7	6.8	12.6	2.9	4 4	2.6	2.7	4.5	8.9	2.2	2.4	7.2	3.3	5.1	2.3
Current E - to $1.00	7.9	5	2.8	3.1	1.8	4.8	5.7	6.8	12.7	2.8	4.4	2.9	2.8	4.8	8.9	2.3	2.4	7.4	3.3	5.2	2.2
Current E - $1.00 to $2.00	6.6	5.2	2.9	3.2	1.9	4.9	5.8	6.9	12.6	3	4.5	2.7	2.9	4.8	9.2	2.3	2.5	7.4	3.4	5.1	2.4
Current E - $2.00 to $3.00	5.4	5.3	2.9	3.3	1.9	5	6	7.1	13.2	3	4.6	2.7	2.9	4.8	9.1	2.3	2.5	7.2	3.3	5.3	2.4
Current E - over $3.00	4.7	5.3	3	3.3	1.9	5	6	7.1	13.2	3	4.6	2.7	2.9	4.8	9.3	2.3	2.4	7.5	3.4	5.3	2.3

Figure 2-13. Results of Steps 10 and 11 for Market Segment 2 for the Example Study System as Illustrated on a Sample Table 2-11

CURRENT SYSTEMS	Current Design	IMPROVED SYSTEMS																		
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Current A - Free	5	5.4	3.7	2.9	2	6.1	5.3	6.1	15.1	3.7	3.4	2.4	2.9	5.5	8.2	2.8	2.3	6.7	3.7	4.7	2.1
Current A - to $1.00	5	5.4	3.6	2.9	2.1	6	5.3	6.1	15.1	3.6	3.4	2.5	2.9	5.5	8.3	2.8	2.3	6.8	3.7	4.7	2.1
Current A - $1.00 to $2.00	3.5	5.6	3.7	3	2.1	6.2	5.3	6.1	15.1	3.8	3.4	2.5	3	5.6	8.4	2.9	2.4	6.9	3.8	4.6	2.1
Current A - $2.00 to $3.00	3.2	5.9	3.8	3.1	2	6.4	5.4	6.2	15.4	3.9	3.5	2.5	2.9	5.5	8.2	2.9	2.4	6.7	3.7	4.7	2.1
Current A - over $3.00	2.3	5.6	3.7	3	2.1	6.3	5.4	6.2	15.5	3.8	3.5	2.5	3	5.7	8.5	2.9	2.4	6.9	3.8	4.8	2.1
Current B - Free	4.8	5.5	3.6	2.9	2	6.1	5.3	6.1	15.1	3.7	3.4	2.4	2.9	5.5	8.4	2.6	2.2	7	3.8	4.7	2.1
Current B - to $1.00	4.9	5.4	3.6	2.9	2	6	5.3	6.1	15.1	3.7	3.4	2.4	3	5.5	8.4	2.7	2.2	7	3.8	4.7	2.1
Current B - $1.00 to $2.00	3.4	5.6	3.7	3	2	6.2	5.3	6.1	15.1	3.8	3.4	2.5	3	5.6	8.6	2.8	2.3	7.1	3.8	4.6	2.1
Current B - $2.00 to $3.00	3.3	5.8	3.7	3	2	6.4	5.3	6.2	15.3	3.9	3.4	2.4	3	5.5	8.3	2.7	2.3	6.9	3.7	4.7	2.1
Current B - over $3.00	2.3	5.6	3.7	3	2.1	6.3	5.4	6.2	15.5	3.8	3.5	2.5	3	5.7	8.6	2.8	2.2	7.1	3.9	4.8	2.1
Current C - Free	3.5	5.5	3.7	3	2	6.2	5.3	6.1	15.5	3.7	3.4	2.4	3	5.5	8.5	2.7	2.3	7	3.9	4.6	2.1
Current C - to $1.00	3.5	5.5	3.6	2.9	2	6.1	5.3	6.1	15.5	3.6	3.4	2.5	3	5.6	8.5	2.8	2.3	7	3.9	4.6	2.1
Current C - $1.00 to $2.00	2.4	5.6	3.7	3	2.1	6.3	5.3	6.1	15.5	3.8	3.4	2.5	3	5.7	8.7	2.9	2.4	7.1	3.9	4.5	2.2
Current C - $2.00 to $3.00	2.3	5.9	3.8	3.1	2	6.4	5.4	6.1	15.7	3.9	3.4	2.4	3	5.5	8.4	2.8	2.3	6.9	3.9	4.6	2.1
Current C - over $3.00	1.6	5.6	3.8	3	2.1	6.3	5.4	6.2	15.8	3.8	3.5	2.5	3	5.7	8.7	2.9	2.3	7.1	4	4.7	2.1
Current D - Free	6.3	5.3	3.6	2.7	2	5.9	5.2	6	14.7	3.7	3.4	2.3	2.8	5.4	8.5	2.7	2.3	6.8	3.7	4.8	2.1
Current D - to $1.00	6.3	5.1	3.5	2.6	2.1	5.7	5.2	6	14.7	3.6	3.4	2.4	2.8	5.5	8.5	2.8	2.3	6.8	3.8	4.8	2.1
Current D - $1.00 to $2.00	4.7	5.4	3.7	2.8	2.1	6	5.2	6	14.6	3.8	3.4	2.4	2.9	5.6	8.6	2.8	2.3	6.9	3.8	4.8	2.1
Current D - $2.00 to $3.00	4.4	5.6	3.7	2.9	2.1	6.1	5.2	6	15	3.9	3.4	2.4	2.9	5.4	8.5	2.8	2.3	6.7	3.7	4.8	2.1
Current D - over $3.00	3.2	5.4	3.7	2.8	2.1	6.1	5.3	6.1	15.2	3.8	3.5	2.4	2.9	5.6	8.7	2.9	2.3	7	3.9	4.9	2.1
Current E - Free	7.4	5.3	3.5	2.9	2	6	5.2	6	14.5	3.4	3.4	2.4	2.7	5.3	8.3	2.8	2.2	6.4	3.5	4.6	2.1
Current E - to $1.00	7.9	5.2	3.4	2.8	2	5.8	5.2	6	14.4	3.2	3.4	2.4	2.8	5.4	8.3	2.8	2.2	6.5	3.6	4.6	2.1
Current E - $1.00 to $2.00	5.1	5.5	3.6	3	2.1	6.2	5.3	6.1	14.6	3.5	3.4	2.5	2.9	5.5	8.5	2.9	2.3	6.6	3.6	4.6	2.2
Current E - $2.00 to $3.00	4.7	5.8	3.7	3	2.1	6.3	5.3	6.1	14.9	3.6	3.4	2.4	2.9	5.4	8.3	2.9	2.3	6.4	3.5	4.7	2.2
Current E - over $3.00	3.6	5.5	3.7	3	2.1	6.2	5.4	6.2	15.1	3.6	3.5	2.5	2.9	5.6	8.6	2.9	2.2	6.7	3.7	4.8	2.2

Figure 2-14. Results of Steps 10 and 11 for Market Segment 3 for the Example Study System as Illustrated on a Sample Table 2-12

CURRENT SYSTEMS	Current Design	IMPROVED SYSTEMS																		
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Current A - Free	5.6	4.8	2.7	2.8	1.9	4.7	5.6	7	13.6	3.2	4.5	2.7	3.1	4.7	8.8	2.3	2.8	7.6	3.7	5.8	2.1
Current A - to $1.00	4.9	4.8	2.7	2.8	1.9	4.7	5.6	7.1	13.7	3.2	4.5	2.7	3.2	4.8	8.9	2.3	2.9	7.6	3.8	5.8	2.1
Current A - $1.00 to $2.00	4.1	4.9	2.8	2.9	2	4.8	5.6	7.1	13.6	3.3	4.5	2.8	3.2	4.8	9	2.3	2.9	7.7	3.8	5.7	2.2
Current A - $2.00 to $3.00	3.3	5	2.8	2.9	2	4.8	5.7	7.2	14	3.3	4.6	2.8	3.2	4.9	8.8	2.4	2.9	7.6	3.7	5.9	2.2
Current A - over $3.00	2.9	5	2.8	2.9	2	4.8	5.7	7.2	14	3.3	4.6	2.8	3.2	4.9	9	2.4	2.9	7.8	3.8	5.9	2.1
Current B - Free	5.1	4.9	2.7	2.8	1.8	4 7	5.6	7.1	13.7	3.3	4.4	2.6	3.1	4.7	9	2.1	2.7	7.9	3.8	5.8	2.1
Current B - to $1.00	4.6	4.8	2.7	2.8	1.9	4.7	5.6	7.1	13.7	3.2	4.4	2.7	3.2	4.8	9.1	2.2	2.8	7.9	3.8	5.8	2.1
Current B - $1.00 to $2.00	3.8	4.9	2.8	2.9	1.9	4.8	5.6	7.1	13.6	3.3	4 4	2.7	3.2	4.8	9.2	2.2	2.8	8	3.9	5.7	2.2
Current B - $2.00 to $3.00	3.2	5	2.8	2.9	1.9	4.8	5.7	7.2	13.9	3.3	4.5	2.7	3.3	4.8	9	2.2	2.8	7.9	3.8	5.9	2.2
Current B - over $3.00	2.6	5	2.8	2.9	1.9	4.8	5.7	7.2	14	3.3	4.5	2.7	3.3	4.9	9.2	2.3	2.7	8	3.9	5.9	2.1
Current C - Free	3.8	4.9	2.8	2.9	1.9	4.8	5.7	7.1	14	3.3	4.5	2.7	3.2	4.8	9.1	2.2	2.8	7.9	3.9	5.7	2.2
Current C - to $1.00	3.4	4.9	2.8	2.8	1.9	4.7	5.7	7.1	14.1	3.2	4.5	2.7	3.2	4.8	9.2	2.3	2.9	7.9	3.9	5.7	2.2
Current C - $1.00 to $2.00	2.8	5	2.8	2.9	1.9	4.9	5.7	7.1	14.1	3.3	4.5	2.8	3.3	4.9	9.3	2.3	2.9	8	4	5.6	2.2
Current C - $2.00 to $3.00	2	5	2.8	2.9	2	4.9	5.8	7.4	14.3	3.2	4.5	2.8	3.1	5	9	2.4	2.9	7.8	3.8	6	2.3
Current C - over $3.00	2	5	2.8	2.9	1.9	4.9	5.8	7.2	14.3	3.3	4.6	2.8	3.3	4.9	9.3	2.3	2.8	8	4	5.8	2.1
Current D - Free	6.3	4.7	2.7	2.7	1.9	4.5	5.5	6.9	13.3	3.3	4.4	2.5	3	4.6	9.1	2.2	2.8	7.7	3.8	5.9	2.1
Current D - to $1.00	5.3	4.6	2.7	2.6	2	4.5	5.6	7	13.5	3.2	4.5	2.6	3.1	4.7	9.2	2.3	2.8	7.8	3.8	6	2.2
Current D - $1.00 to $2.00	4.7	4.8	2.8	2.7	2	4.6	5.5	6.9	13.2	3.3	4.5	2.7	3.1	4.8	9.3	2.3	2.9	7.9	3.9	6	2.2
Current D - $2.00 to $3.00	3.9	4.8	2.8	2.7	2	4 7	5.6	7.1	13.7	3.3	4.6	2.7	3.1	4.8	9.2	2.3	2.9	7.8	3.8	6.1	2.2
Current D - over $3.00	3.2	4.8	2.8	2.7	2	4.7	5.7	7.1	13.7	3.4	4.6	2.7	3.2	4.8	9.4	2.3	2.8	8	3.9	6.1	2.1
Current E - Free	9.5	4.7	2.6	2.7	1.9	4.6	5.4	6.8	12.9	2.9	4.3	2.5	2.9	4.4	8.7	2.2	2.6	7.1	3.5	5.6	2.1
Current E - to $1.00	8	4.7	2.6	2.7	1.9	4.6	5.5	6.9	13.1	2.8	4.4	2.6	3	4.6	8.8	2.3	2.7	7.2	3.5	5.7	2.2
Current E - $1.00 to $2.00	6.9	4.8	2.7	2.8	1.9	4.7	5.5	6.9	13	3.1	4 4	2.7	3.1	4.7	9	2.3	2.7	7.4	3.6	5.6	2.2
Current E - $2.00 to $3.00	5.6	4.9	2.7	2.9	2	4.8	5.6	7.1	13.5	3.1	4.5	2.7	3.1	4.7	8.9	2.4	2.8	7.2	3.5	5.8	2.2
Current E - over $3.00	4.9	4.9	2.7	2.9	2	4.8	5.7	7.1	13.5	3.1	4.5	2.7	3.1	4.7	9.1	2.4	2.7	7.5	3.7	5.8	2.2

Figure 2-15. Results of Steps 10 and 11 for Market Segment 4 for the Example Study System as Illustrated on a Sample Table 2-13

A market segment analysis gives the sizes of the four market segments.

Assume the planners for the example study system estimated each market segment size by completing a ridership survey, and market segment populations were determined to be as follows:

- Market Segment 1: 150 persons;
- Market Segment 2: 375 persons;
- Market Segment 3: 75 persons; and
- Market Segment 4: 900 persons.

Table 2-19 illustrates the application of patron-preferred percentages to the total population and market segment population.

Table 2-19. Calculations for Step 14 (Number of Persons Preferring an Improved System by Market Segment) for the Example Study System

Paratransit Patronage	Calculations	Persons Preferring Improved System H
Total Paratransit Patronage and Persons with Disabilities	1500 * 13.6%	204
Market Segment 1	150 * 12.6%	19
Market Segment 2	375 * 13.3%	50
Market Segment 3	75 * 15.1%	11
Market Segment 4	900 * 13.6%	122

For the final step, the number of persons preferring an improved fixed-route system is multiplied by trip generation rates. For the example study system, 204 paratransit patrons and persons with disabilities prefer the Improved System H. Suppose current ridership statistics show that the 1,500 paratransit patrons are making an average of two round-trips per month, or four one-way trips. Thus, the paratransit system supplies about 72,000 trips per year. If statistics such as these are not available, data for the number of ADA-paratransit-eligible persons and trip generation rates may be obtained from the peer systems tables.

Multiplying the 204 persons by a trip rate of 4 trips per month results in 816 trips per month or 9,792 trips per year that may be diverted to fixed-route services if improvements are made which result in a service similar to Improved System H. Assuming a net cost per trip of $2.00 on fixed-route and $15.00 on

paratransit, this could result in savings of $127,000. (This number does not take into account the capital or operating costs for implementing and maintaining the changes to the fixed-route service. Also, these numbers are simply for illustration. Actual numbers will result when actual operating figures from a local transit system are used.)

PROBABILITY OF PURCHASE

Using the example described in the above steps, 204 people would prefer Improved System H. Improved System H (see Table 2-16) indicates that there is a 75.4% likelihood that people who prefer the system will actually use it. This may mean that, for example: (1) all the people would choose it for 75.4% of their trips; or (2) 75.4% of the people would use it all the time; or (3) there is a 24.6% chance that no one would use it at all. This is shown in Figure 2-16.

In other words, in the first example, (204 people) $\times$ (4 trips/month) $\times$ (12 months/year) = 9,792 $\times$ (.754) = 7,383. In the second example, (204 people) $\times$ (.754) = 154 persons $\times$ (4 trips/month) $\times$ (12 months/year) = 7,392 trips per year.

Similarly, if no changes are made to the current fixed-route system (Current System A with a $1.50 fare), there would be 1,500 people eligible multiplied by 4.8% (Table 2-9) to get 72 people who would prefer the current system. Those 72 people times 4 trips per month times 12 months per year is 3,456 trips per year times 45.2% (Table 2-15) is 1,562 trips. Or, using the second scenario, 72 people times 45.2% is 33 people times 4 trips per month times 12 months per year is 1,584 trips per year. The differences in the results of the two scenarios are due to rounding of figures. A similar analysis can be completed for each market segment by using the proper population totals for each market segment.

Improved Systems	Market Segments				
	All	1	2	3	4
A	0 588	0.589	0.60	0.646	0.58
B	0 408	0 432	0.455	0.497	0.432
C	0.449	0.464	0.469	0.473	0.437
D	0.326	0.336	0.318	0.372	0.325
E	0.568	0.554	0.579	0.638	0.563
F	0.606	0.584	0.62	0.629	0.604
G	0.658	0.663	0.661	0.657	0.656
H	0.754	0.727	0.758	0.795	0.756
I	0.428	0 424	0.437	0.457	0.425
J	0.568	0.576	0.572	0.527	0.568
K	0 411	0.423	0.417	0.422	0.408
L	0.435	0.431	0.432	0.479	0.435
M	0.561	0.551	0.568	0.587	0.559
N	0.674	0.641	0.688	0.698	0.676
O	0.365	0.353	0.362	0.439	0.367
P	0 387	0.364	0.383	0 382	0.393
Q	0.646	0.604	0.653	0 657	0 65
R	0 393	0.463	0.462	0 474	0.472
S	0.575	0.549	0.572	0.558	0.583
T	0.334	0 326	0.342	0.346	0.33

- Market Segment 1 - People with disabilities who use fixed-route transit
- Market Segment 2 - People with disabilities who use paratransit
- Market Segment 3 - Others who use paratransit
- Market Segment 4 - People with disabilities who normally do not use transit

Figure 2-16. Results of Probability of Purchase Step for the Example Study System as Illustrated on a Sample Table 2-16