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U.S. Department
of Transportation

**Urban Mass
Transportation
Administration**

Shared Ride Taxi Feeder Service in Memphis, TN

UMTA/TSC Evaluation Series

Final Report
March 1988

UMTA Technical Assistance Program

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16. Abstract

From May 1983 through October 1984, the Memphis Area Transit Authority (MATA) conducted the Taxi Feeder Demonstration Project. It entailed the operation of fixed-route feeder services through three low-density neighborhoods and one industrial park, connecting them to the public bus system. These feeder services, called the "Neighborhood Shuttle," were operated by private suppliers, who were selected by competitive bid on a route-by-route basis, under contract to the transit authority. The private contractors operated a total of five to ten passenger vehicles along the system of shuttle routes. A grant received from the U.S. Department of Transportation under its Service and Methods Demonstration Program funded the project.

Neighborhood Shuttle service was implemented as a low-cost way to provide minimal transit service to low-demand, low-density areas. Total costs (includes administrative, operating, and capital) and cost per passenger were compared between each shuttle route and an average systemwide MATA bus. Based on available information, it would appear that privately contracted shuttle service is less costly to operate than conventional MATA fixed-route bus on a total cost basis, but more expensive on a cost per passenger basis.

Following the expiration of UMTA demonstration funds, MATA elected to continue operation of only one shuttle route (Presidents Island). The remainder were terminated for productivity reasons, and replaced by modest extensions of existing fixed-routes.

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PREFACE

This report was prepared by COMSIS Corporation under contract to the the Transportation Systems Center (TSC) of the U.S. Department of Transportation (DOT). The demonstration project, which was conducted from May 1983 through October 1984, was funded by the Urban Mass Transportation Administration (UMTA) of the DOT under its Service and Methods Demonstration (SMD) Program. The TSC Office of Systems Assessment had prime responsibility for evaluation of the project, and Nancy G. Cooper of COMSIS authored the report.

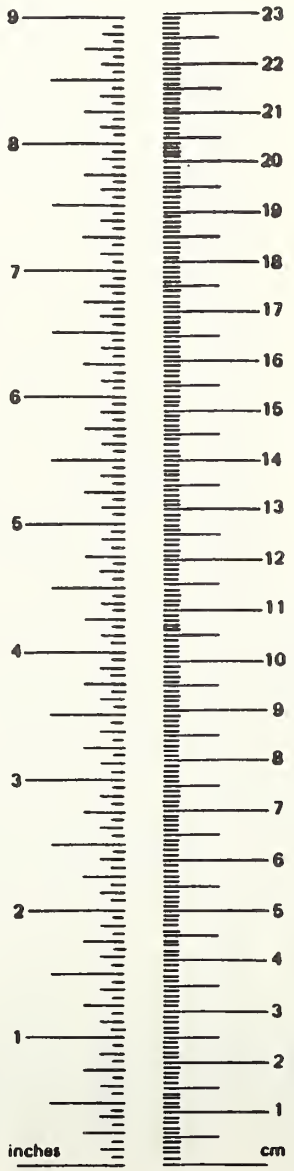
The Memphis Area Transit Authority (MATA), the project grant recipient, provided extensive assistance in preparation of this report. We appreciate the help provided by Kerry Roby and Lew May of MATA, who served as major sources of information, and helped us understand the key issues and inner workings of the project. Thanks are also offered to Robert Waksman, the TSC evaluation manager, for his assistance in review of the report and interpretation of the findings.

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

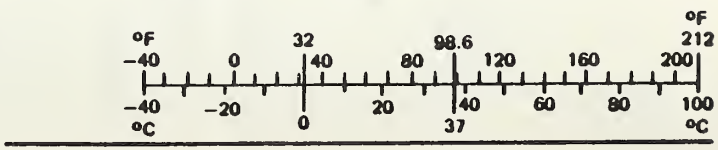
Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
in	inches	*2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
AREA				
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
MASS (weight)				
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
VOLUME				
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.96	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
TEMPERATURE (exact)				
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

*1 in. = 2.54 cm (exactly). For other exact conversions and more detail tables see NBS Misc. Publ. 286, Units of Weight and Measures. Price $2.25 SD Catalog No. C13 10 286.



Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
AREA				
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10,000 m^2)	2.5	acres	
MASS (weight)				
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
VOLUME				
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	querts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	36	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
TEMPERATURE (exact)				
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



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EXECUTIVE SUMMARY

The Memphis Area Transit Authority (MATA) Taxi Feeder Demonstration project entailed the provision of privately operated feeder services to various Memphis neighborhoods where conventional fixed-route services had been discontinued for cost reasons. These feeder services, marketed as the "neighborhood shuttles", connected the neighborhoods to the regional public transit system. A goal of this project was to test whether the contracting of the service to private taxi operators represented the least-cost method of providing basic transportation service to low-demand transit service areas. The demonstration showed that the net cost per service area of privately-contracted service was less than average MATA-operated systemwide bus service; however, lower ridership levels resulted in a net cost per passenger that was higher than regular MATA bus service.

MATA, the recipient of a $140,000 Federal Section 6 Service and Methods Demonstration grant, planned and managed the operation of the eighteen-month demonstration. The demonstration officially ran from May 1983 to October 1984, although demonstration funds were still being expended through November 1986. Local funding in the amount of $100,000 supported the actual operation of the service, while the Federal funds covered planning, administration, and marketing functions. The U.S. Department of Transportation (DOT) Office of Service and Methods Demonstrations funded the demonstration, and the Transportation Systems Center, the research arm of DOT, was responsible for project evaluation.

After the demonstration officially ended, remaining Federal demonstration funds were used to continue operation of some of the feeder routes. This provided MATA additional time to determine both financially and operationally how to continue transit service to the neighborhoods served by the shuttle. Shuttle service on Presidents Island operated with remaining Federal demonstration funds until they were depleted in November 1986. Since that time, MATA has continued the shuttle with local funds. Demonstration funds supported operation of the Bethel Grove and Boxtown shuttle routes through the summer/fall of 1985, after which MATA restored limited bus service to these two neighborhoods through minor route extensions of existing bus service, since this ultimately proved less costly than operating the shuttle. MATA determined that the fourth shuttle service area, Spring Valley, did not have sufficient ridership to continue any type of service.

Although MATA contracted out the feeder routes, it maintained planning and route design responsibilities, as well as operational supervision throughout the demonstration. In addition, other MATA responsibilities included marketing the service, and determining the nature and timing of productivity-oriented service changes to be implemented by the contractors.

As part of the shuttle service planning effort, MATA had to consider whether this service violated Section 13(c) of the Urban Mass Transportation Act of 1964 (as amended), which protects the jobs of public transit employees when Federal funds are used to provide a replacement service. In this situation, the U.S. Department of Labor ruled that the shuttle service did not

violate Section 13(c) provisions. Primarily, service operation was to be funded by local, not Federal, funds. Since Federal demonstration funds were to support planning and marketing activities, and not provide any capital or operating funds, the requirements of the regulation did not pertain. Second, because at least a year had passed since bus service to these neighborhoods was terminated, the shuttle was considered a new service, and not a replacement of former bus service. The former reason stated was sufficient to meet the 13(c) requirements, while in this instance the latter reason was not sufficient by itself.

MATA held bids open to all qualified transportation suppliers prior to awarding shuttle contracts. The awards were primarily based on cost, although experience and availability of the required vehicles were prerequisites. Three to four operators participated each of the three times the bidding process was conducted during the demonstration. Although two routes were under consideration each time, the bids were awarded separately by route.

The MATA contract with the private contractor specified reimbursement on the bid price of cost per service hour. Contractor responsibilities included punctual service in a well maintained vehicle, painted and signed according to MATA specifications, with the vehicle following the route and schedule developed by MATA. In addition, the contractor was required to implement any route or schedule changes requested by MATA.

During the demonstration, private contractors operated four shuttle routes. Three served residential neighborhoods (Bethel Grove/Barron-Rhodes, Boxtown, and Spring Valley), and one an industrial park (Presidents Island). In general, MATA selected these sites based on prior demand for transit service in low-density areas, which had lost former bus service during recent service cutbacks resulting from local budgetary constraints.

Service coordination between MATA and the contractors appeared to be smooth throughout the demonstration. This was evidenced by lack of citizen complaints received by MATA, and responses to community and on-board survey questions asking how the shuttle service could be improved. In addition, performance checks conducted by MATA on two separate occasions revealed that shuttle and bus vehicles were on-time (within 5 minutes of scheduled time) over 90 percent of the time. Two mechanisms were implemented by MATA to reduce the incidence of missed transfers. First, the shuttle contract specified a penalty for late or inoperable service of five dollars per minute up to twenty-five dollars per incident. Second, both bus and shuttle drivers were required to contact the MATA supervisor via radio if they were running late, so that the other driver could be notified to wait at the transfer point for passengers.

Impacts analyzed by the evaluation include level of service comparisons with former bus service, demand for the shuttle service, and economic benefits of contracted versus public operated services. To compare former bus service with that

provided by the shuttle, trip frequency, travel time, and hours of operation were evaluated between the two modes. In general, former bus service provided a superior service in some respects, particularly with regard to service hours and because the shuttle always required a transfer to travel downtown, which involved additional wait time on the street and a $.10 transfer per one-way trip. Depending on the route, the shuttle provided a higher quality of service in other respects, specifically, a more personalized service and occasionally shorter travel times. Therefore, shuttle service did not improve neighborhood mobility compared to previous service, but instead restored a minimal provision of service at reduced cost to MATA.

One shuttle vehicle operated in scheduled fixed-route service along each shuttle route, with 30 to 40 minute headways. Only peak period service was provided, between 6 to 9 a.m. and 3 to 6 p.m. The shuttles transported passengers to regular MATA bus stops on major arterials, where riders could transfer to buses traveling downtown, with a scheduled wait time between modes of two to four minutes. The regular fare for the shuttle and bus combination trip was $0.95, the same as a regular bus trip requiring a transfer. Special fares for students, elderly, and handicapped individuals are also comparable. Shuttle vehicles are typically smaller than regular buses, ranging from a five-passenger sedan to a ten-passenger van, depending on the route.

During October 1984, the last month of the shuttle demonstration, the shuttle routes averaged five to twenty-five

passengers per day, or 0.1 to 4 riders per trip. This translates into a per-passenger subsidy, or net cost (hourly contracted cost minus revenue), of between $2 and $17, which is significantly higher than the MATA average systemwide net cost per passenger (administrative, operating, and capital costs minus revenue) of $0.60 for conventional bus service. This assumes that base fare revenue collected from shuttle riders, whether by shuttle or bus driver, is attributed to the shuttle operation; otherwise the shuttle subsidies would be even larger.

Although cost per passenger is less for average systemwide MATA bus service than for shuttle service, it is important to note that the shuttle may be the less costly service when comparing the total cost to operate--including capital, operating, and administrative costs. The total hourly cost for shuttle service at $16 to $21 is approximately one-half the $38 hourly cost (operating and capital cost) to MATA of furnishing an average fixed-route bus.

If a comparison could be made between shuttle and bus under equivalent service conditions, the difference in per passenger costs between the two service types would probably be less. The fixed-route bus would need to carry 40 passengers per hour in order to cover its costs with farebox revenues, while the shuttle would need to carry 18 passengers to cover its costs.

This demonstration indicated that for those situations where a transit agency needs to provide service to a low demand area, the operation of such services by private suppliers may provide the least cost solution, provided that total net cost is the

criterion. If, on the other hand, net cost per passenger is the measure of effectiveness, privately-contracted services as deployed in Memphis are not clearly superior.

In order to implement and operate a successful service under contract to a private supplier, certain conditions should exist. First, there must be suppliers interested in providing the service. When negotiating contract terms with the suppliers, the transit authority should consider which type of arrangement would be most cost-effective, whether payment to the provider on a cost per hour basis like Memphis, a cost per passenger basis, or some combination of the two. The quality of service provided is mainly dependent on the control maintained by the transit authority over the contractors. The specifications written into the contract between the parties is the primary mechanism for control. Second, transit authority staff should be interested in operating a cost-effective system that serves the needs of the public and be willing to consider alternate service provisions in order to achieve that goal. Last, public support is vital in terms of willingness to use the service. In addition, approval of the service by the general public as a reasonable use of funds is desirable.

CHAPTER ONE

INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 Description of Project

The Neighborhood Shuttle service was a demonstration project conducted by the Memphis Area Transit Authority (MATA) to test the feasibility and cost-effectiveness of operating fixed-route transit service in low-density neighborhoods with service supplied by private contractors. Forced to cut back on many of its transit routes as a result of major budget cutbacks in 1982, MATA elected to restore service in several areas where there appeared to be an established need for transportation service. The proposal was supported by the Urban Mass Transportation Administration (UMTA) as a demonstration under the Service and Methods Demonstration (SMD) program.

The Neighborhood Shuttle services were operated as feeder services, connecting the low-density neighborhoods to the regional bus system at a major transfer node. Service on each route was supplied by taxi vehicles operating on a fixed route between 6-9 a.m. and 3-6 p.m., and were presented as a MATA service. The original plan was to operate shuttle services in two areas--Bethel Grove and Boxtown--for a period of 12 months. However, favorable usage of funds made it possible to eventually operate four services over a project life of 18 months.

Although the shuttle did provide cost-savings to MATA compared to conventional bus service, MATA reassessed the situation after the demonstration ended. They found that, by

implementing minor fixed-route routing and schedule changes to extend existing bus service into the neighborhoods served by the shuttles, the areas could be supplied with minimal service at even less cost than the shuttles. Although this alternative eliminated the need for a transfer to bus for shuttle users, the extended bus service offered reduced coverage and access compared to the shuttle system.

1.1.2 Project Objectives

The major objectives of this demonstration project were to determine:

- The feasibility of a private transportation provider operating feeder routes under contract to a transit authority;
- The cost-effectiveness of such an operation; and
- The transferability of this experience to other localities.

1.1.3 Overview of Evaluation Issues

This report discusses planning and implementation issues and three major areas of impact: level of service, demand, and productivity/economics.

The discussion of planning and implementation issues covers:

- major planning and implementation decisions and their rationale;
- the contracting process;
- coordination between MATA and the private contractor in terms of operation and revenue collection;
- marketing efforts;
- the relationship of the concept to Section 13(c) of the Urban Mass Transportation Act regarding treatment of public transit employees.

The main source of information on planning and implementation issues was interviews with knowledgeable participants.

The discussion of level of service impacts concentrates on how the service provided by the taxi-feeder compared to former bus service in terms of:

- hours,
- frequency,
- trip time,
- fare,
- transfer requirements,
- comfort,and
- safety.

The sources of information for level of service impact assessment included interviews, on-time performance checks, on-board surveys and community surveys.

The discussion of demand impacts covers the following issues:

- how the shuttle affected bus and regular taxi ridership;
- how frequently the service is used;
- how ridership compares to prior bus service;
- the types of trips made;
- characteristics of taxi-feeder service users; and
- the characteristics of individuals who use the shuttle service compared to the community as a whole.

The source of information for assessment of demand impacts included shuttle ridership counts, former bus ridership counts, on-board surveys, and community surveys. Finally, the discussion of productivity and economic issues covers the following topics:

- o the cost-effectiveness of providing taxi-feeder service compared to the cost of providing comparable bus service;
- o a comparison of the operating cost/deficit per hour between taxi-feeder and bus;
- o a comparison of the cost/subsidy per passenger between taxi-feeder and bus;
- o shuttle occupancy rates (vehicle productivity); and
- o whether operating cost per hour or cost per passenger is the better measure of service productivity.

This information was derived from MATA operating cost and budget records.

1.2 ORGANIZATIONAL ROLES AND FUNDING

1.2.1 Organizational Roles

The demonstration grant recipient for the taxi feeder project was the Memphis Area Transit Authority (MATA). The transit system was responsible for planning, implementing, and administering the shuttle service. In addition, the MATA had major data collection responsibilites for the demonstration; it collected performance and evaluation data according to the specifications of the evaluation contractor.

The Urban Mass Transportation Administration (UMTA), which is part of the U.S. Department of Transportation, sponsored this demonstration under its Service and Methods Demonstration (SMD) Program. Accordingly, UMTA had overall supervisory and management responsibility for this project.

The Transportation Systems Center (TSC), the research arm of the U.S. Department of Transportation, was responsible to UMTA for the evaluation of this project.

Under contract to TSC, COMSIS Corporation, a private consulting firm, was assigned to undertake the evaluation of the feeder demonstration. The evaluation contractor developed the methodological plan for the evaluation, designed and oversaw the data collection, evaluated the survey results, conducted the impact analyses, and prepared the final report.

1.2.2 Project Funding

The UMTA Office of Service and Methods Demonstrations contributed $140,000 in Section 6 funds for project administration, planning and marketing, while the City of Memphis contributed $100,000 to support feeder operating costs.

1.3 PROJECT HISTORY

In 1981 and 1982 transit service in Memphis underwent significant service cutbacks due to MATA budgetary constraints. Service was reduced to major thoroughfares and collector streets, leaving many sections of the city unserved. The number of vehicles in peak hour service fell from 240 to 140, total route miles were reduced by 46 percent, and total weekday service hours were cut by over 50 percent. In addition, Sunday and evening service was entirely eliminated. Following the service reductions, ridership levels fell by about 40 percent.

At the time of the reduction in service, members of the city council and MATA staff became interested in pursuing transit service alternatives. The private taxi shuttle concept readily emerged as the most promising option for restoring transportation service to some of the cutback areas.

CHAPTER TWO

SITE DESCRIPTION

2.1 MATA HISTORY

The Memphis transit system began in the 1870's as a private transit company called the Memphis Street and Rail Way. The City of Memphis took over the bus company in 1961 due to the financial difficulties of the private transit company, and began public operation of the transit system. This situation was similar to that occurring elsewhere in the country during the 1960's. From 1961 to 1974, a private management company managed and operated the system. In February 1973, for the first time in the system's history, operating expenses became greater than farebox revenue. During 1974 and 1975 an independent manager ran the transit system. Then, in 1976 the Memphis Area Transit Authority Board, composed of citizens appointed by the Mayor and approved by the City Council, hired ATE, a private management company, to run the system.

MATA is currently managed by two ATE employees who serve as General Manager and Assistant General Manager. The remainder of staff involved in operating the transit system are employees of Mid-South Transportation Management, a private subsidiary of ATE. The ATE managers are directly responsible to the MATA Board, which holds primary responsibility for the MATA transit system.

In the 1980's, MATA was forced to initiate transit service cutbacks due to financial difficulties. The first service reduction occurred in the spring of 1981, and involved the elimination of approximately five percent of existing service.

Then a few months later in September 1981, service was further reduced by approximately 18 percent. The last and largest service reduction occurred in April 1982, with a 28 percent cutback of existing service.

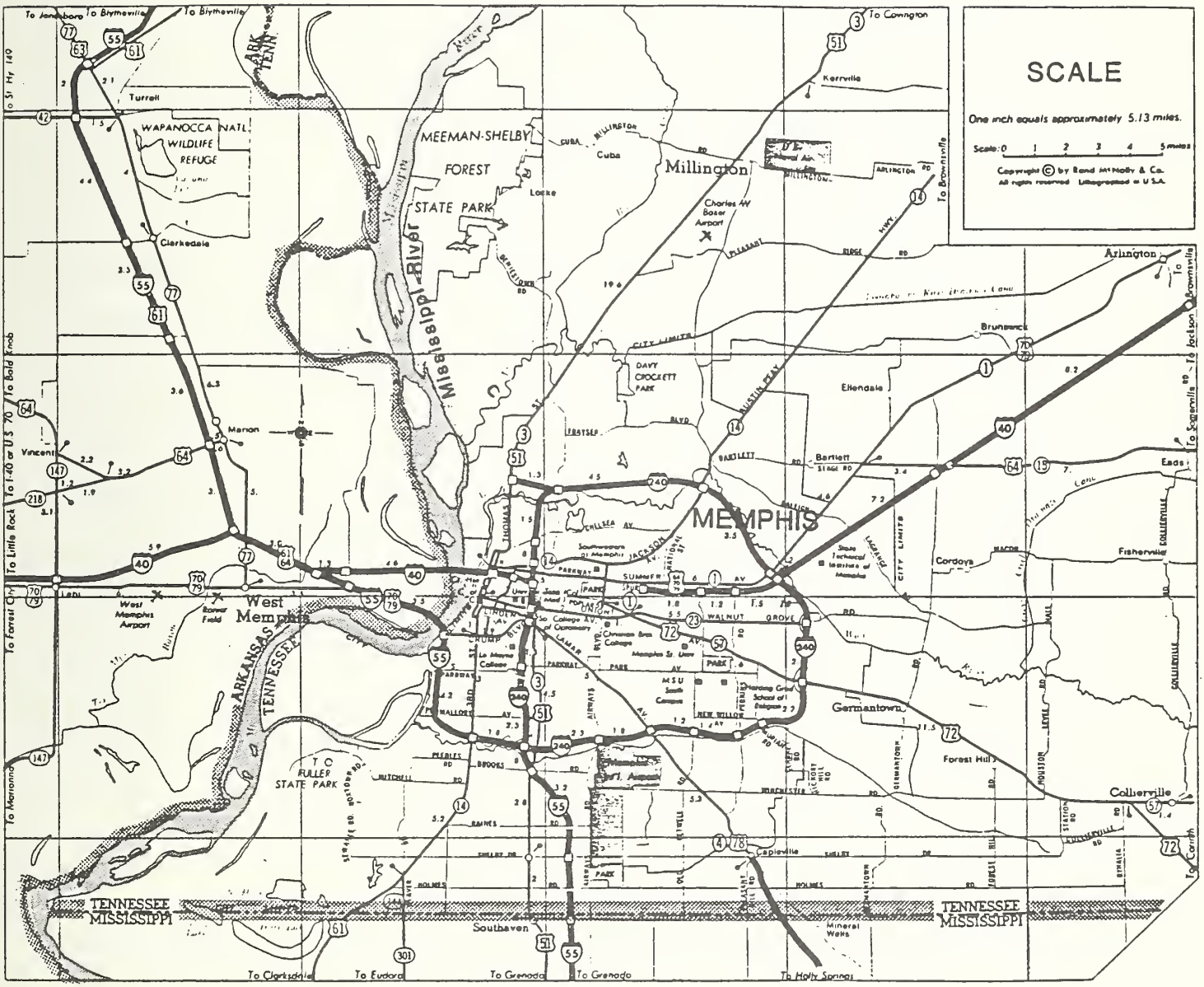
2.2 SOCIOECONOMIC CHARACTERISTICS OF MEMPHIS

2.2.1 Population

The City of Memphis is located in Shelby County, Tennessee. Memphis has a population of 646,456 within an area of 286 square miles, and Shelby County has a population of 777,113 within 722 square miles. Thus, 83 percent of the Shelby County population lives in Memphis, on 37 percent of the land. The City of Memphis has a large proportion of the population, due to its history of aggressively annexing new growth areas. Shelby County includes the City of Memphis and six incorporated areas beyond the city limits. Three of these, Bartlett, Collierville, and Germantown are just east of the city. The three other incorporated areas, Arlington, Lakeland, and Millington, lie much further out. Arlington and Lakeland are located in the north-east section of the county, close to the border, while Millington is situated on the northern boundary of Shelby County. Figure 2-1 displays a map of Shelby County.

The Memphis SMSA has a population of 924,000 on 2,308 square miles of land. Seventy percent of the SMSA population lives in Memphis on 12 percent of the land, and 84 percent live in Shelby County on one-third of the land (772 square miles). The other three counties, in addition to Shelby, which compose the Memphis SMSA are:

FIGURE 2-1
MAP OF SHELBY COUNTY



- Tipton County, directly north of Shelby with 454 square miles;
- DeSoto County, Mississippi south of Memphis with 483 square miles; and
- Crittenden County, Arkansas directly west of Memphis with 599 square miles.

Table 2-1 displays the population and area of the City of Memphis, Shelby County, and the SMSA.

2.2.2 Employment

Employment in Memphis totals approximately 240,000. The two major employment centers are the downtown, with predominantly financial and governmental employment, and the Medical Center, located one mile east of the central business district. Both employ approximately 25,000 workers. All feeder routes developed as part of the SMD Demonstration have been primarily designed to connect with buses heading downtown. Smaller employment concentrations include the airport and related industry, the 3,000 acre industrial park on Presidents Island, and Memphis State University. In addition, Memphis has pockets of retail activity and industrial plants spread throughout the city.

2.3 MEMPHIS AREA TRANSIT AUTHORITY SYSTEM

During the feeder demonstration period, from May 1983 through November 1984, MATA provided transit service along 24 to 25 bus routes in addition to the 2 to 4 shuttle routes. Seven of the bus routes are interlined, or double routes which are joined

TABLE 2-1

MEMPHIS AREA POPULATION AND SIZE

Area	1980 Population	Area in Square Miles	Persons Per Square Mile
Memphis	646,456	286	2,260
Shelby County*	777,113	772	1,007
Tipton County	32,747	454	72
De Soto County	53,930	483	112
Crittenden County	49,097	599	82
Memphis SMSA**	924,000	2,308	400

*Includes the City of Memphis

**Includes Shelby County, Tennessee; Tipton County, Tennessee; De Soto County, Mississippi; and Crittenden County, Arkansas.

Source: 1980 Census

in the downtown area. This means that a single bus alternates between 2 bus routes, changing route designations in the downtown area. Approximately 313 vehicles and 406 employees supply the MATA fixed-route service.

Service operates weekdays from 5 a.m. to midnight, weekends from 8:30 a.m. to 5 p.m. Since the 1981 and 1982 service cutbacks, transit service operates only on major thoroughfares. During the peak periods, buses operate on 15-minute headways, with 30 to 40-minute headways during the off-peak. Approximately 60 percent of all MATA's trips occur during the morning and afternoon peak periods.

Table 2-2 presents annual ridership figures for the MATA system from fiscal year 1980 through 1984. Between 1980 and 1983 ridership decreased, with decreases of approximately 30 percent and 16 percent following the 1981 and 1982 service cutbacks. Then in fiscal year 1984, MATA ridership increased by 5 percent. The shuttles probably had a negligible impact on this increase, since most shuttle riders previously used the bus but accessed the service by a different mode, such as walking or receiving a ride, as indicated by one of the evaluation surveys.

2.4 PRIVATE TRANSPORTATION PROVIDERS

2.4.1 Taxicab Companies

The Taxicab Office in the City of Memphis Department of Public Service regulates all taxicab companies in the City of Memphis. In January 1983, a few months prior to initiation of shuttle service, all taxicab companies in Shelby County were

TABLE 2-2

MATA ANNUAL PATRONAGE

Fiscal Year	Reduction In Service Route Miles	Annual Patronage*	Percent Change From Previous Year
1980		25,129,038	--
1981	5%	24,427,613	- 2.8%
1982	46%	17,227,363	- 29.5%
1983		14,520,662	- 15.7%
1984		15,282,354	+ 5.2%

* Unlinked Trips

regulated by the City of Memphis. Since the county does not have a taxi ordinance, a taxi company could operate in the county without registering in the city, but then would be unable to operate within the city limits.

Memphis cab fares are regulated by the City Council, which sets a maximum rate. Although every cab meter must be set at the specified maximum rate, taxi companies can offer discounts on the meter rate. However, discounts are seldom offered. In January 1983 the maximum fare was $0.95 for the first 1/9 of a mile and $0.10 for each additional 1/9 of a mile.

The city has one taxi ordinance regarding shared-ride taxi trips. It states that shared riding, defined as groups organized by the driver and not the passengers, is not allowed at the airport. However, there are no restrictions on shared riding anywhere else in the city.

In January 1983 the City of Memphis had six licensed taxi companies. Independent taxis are not allowed in Memphis. Each company has an authorized limit on the number of vehicle licenses they are allowed. Since companies need to pay a license fee for each of their cabs on the road starting January 1 of each year, they tend to begin the year with a minimum number of licensed vehicles, and then increase as necessary throughout the year. After July 1 operators only pay half of the required $65 license fee per additional taxi vehicle put into service. The two largest operators, Veterans Cab and Yellow Cab (the only two companies awarded shuttle service contracts during the demonstration), are authorized to have a maximum of 150 licensed cabs

each. On January 12, 1983 one had 66 licensed cabs and the other 40. The other four taxi operators are authorized to have 125, 50, 40 and 8 licensed cabs, and on January 12 had 9, 17, 32, and 8 respectively. Therefore, on January 12, 1983 the City of Memphis had a total of 172 licensed taxis operating on its streets, or 0.3 taxis per 1,000 residents.

2.4.2 Private Bus Companies

No private bus companies presently operate regular fixed-route or charter service in Memphis during the peak periods. Approximately five private bus companies do provide charter service during the day, evenings, and weekends for special trips and occasions.

A national vanpool vendor called Vanpool Services, Inc. (VPSI) has contracted with the City of Memphis to establish vanpools of commuters living and working in close proximity.

2.5 SITE DESCRIPTIONS

Figure 2-2 shows the location of the neighborhoods (Bethel Grove/Barron-Rhodes, Boxtown, Spring Valley and Presidents Island) served by the shuttle routes in relation to the rest of the city. The areas and the services are described briefly below.

2.5.1 Bethel Grove/Barron-Rhodes

The Bethel Grove/Barron-Rhodes shuttle, shown in Figure 2-3, alternates service between these two neighborhoods. Both neighborhoods have a common shuttle/bus transfer point on Lamar Avenue, a major thoroughfare with commercial strip development

FIGURE 2-2

AREAS SERVED BY THE MEMPHIS SHUTTLE ROUTES

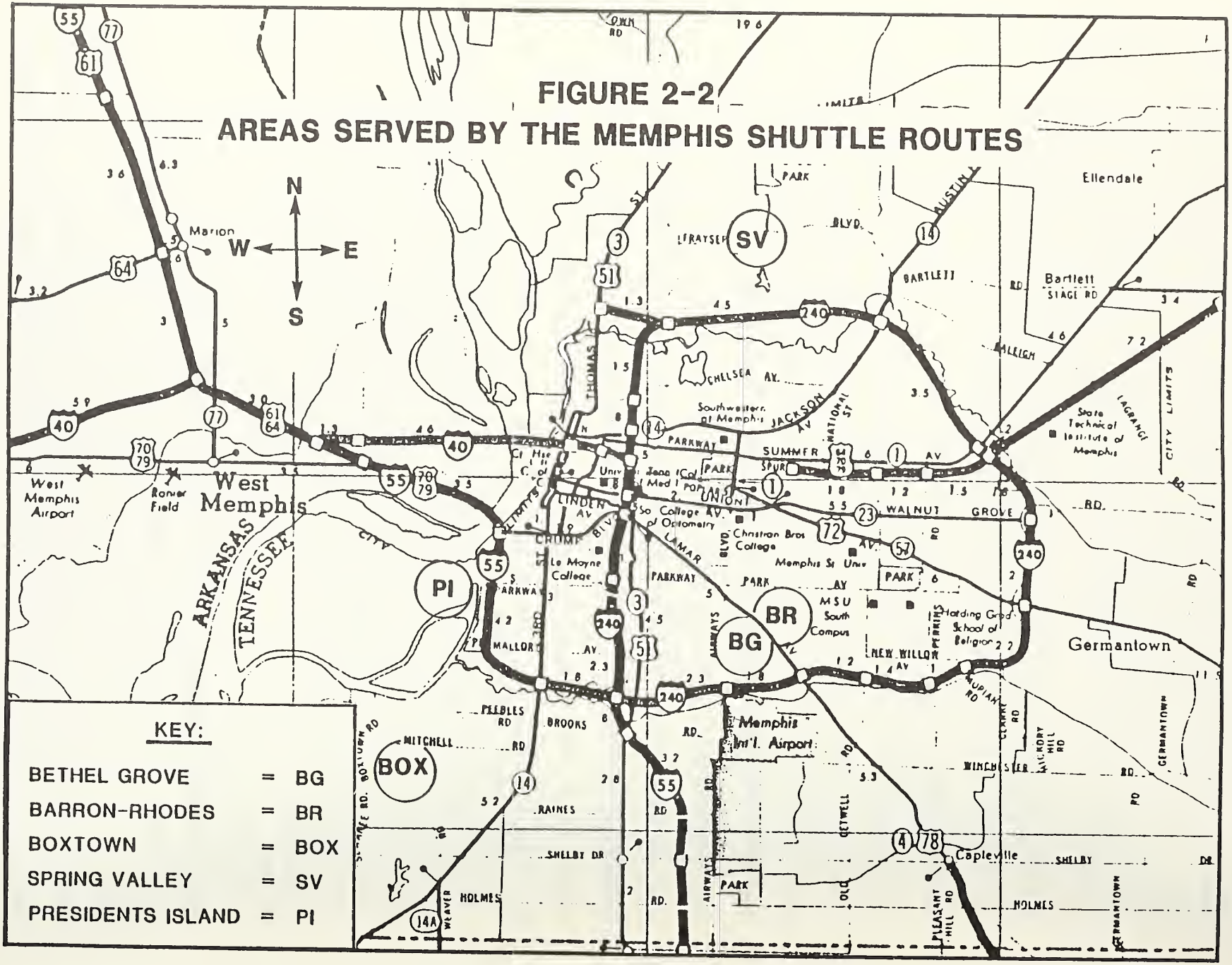
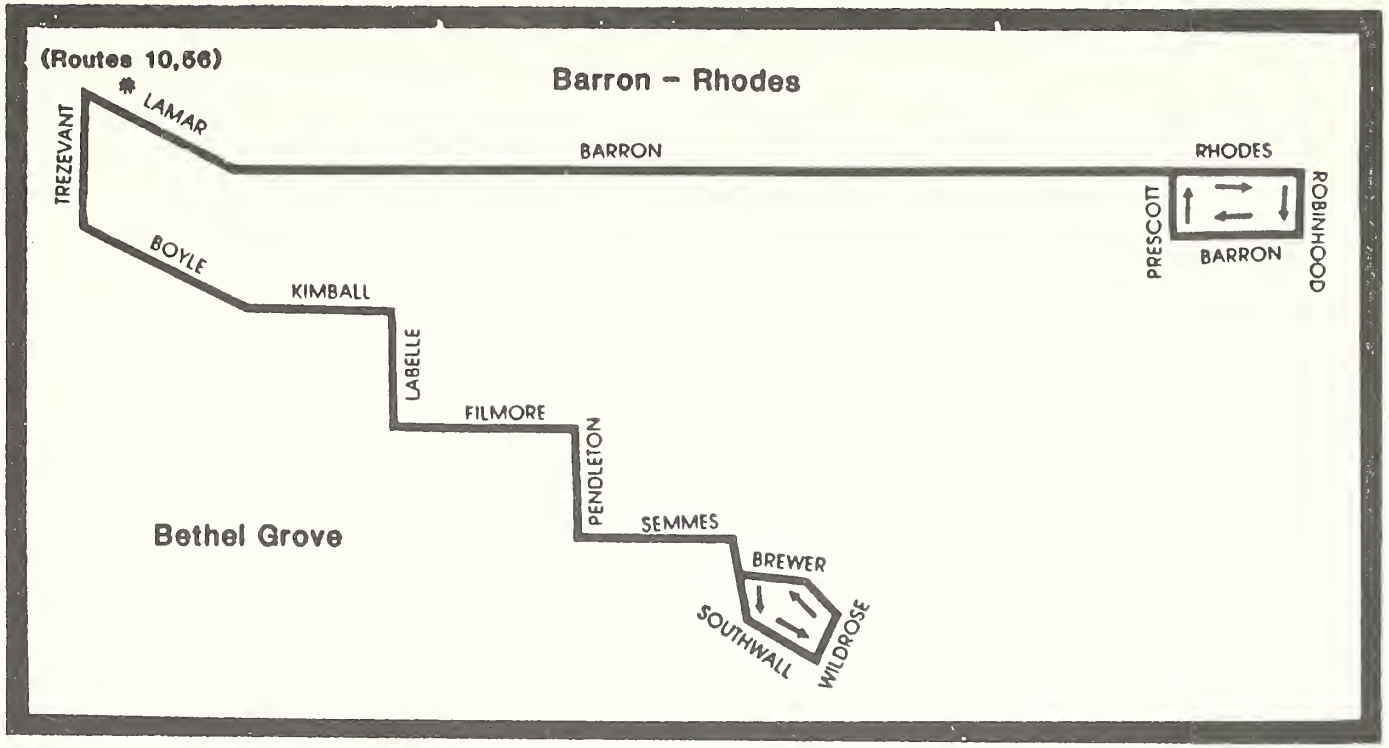


FIGURE 2-3
BETHEL GROVE/ BARRON-RHODES SHUTTLE ROUTE



KEY: * TRANSFER POINT

located between the two areas. The Bethel Grove neighborhood, which is located southeast of downtown, just north of I-240, has both low and middle income residents, and is racially mixed. The Bethel Grove shuttle travels approximately 3 miles (one direction) along Wildrose Street, Southwall Street, Brewer Street, Semmes Street, Pendleton Avenue, Filmore Street, Labell Street, Kimball Street, Boyle Street, Tresevant Street and Lamar Avenue. Passengers are dropped off at the intersection of Lamar and Barron Avenues. They can then transfer to either bus number 56, which travels approximately 4 miles to downtown, or bus number 10, which runs through downtown to North Memphis, or walk one block west on Lamar Avenue to Airways Boulevard to pick up route 32, which travels north and south on Airways Boulevard.

The Barron-Rhodes portion of the shuttle route serves a neighborhood adjacent to Bethel Grove, located east of the shuttle/bus transfer points on Lamar Avenue. Like Bethel Grove, Barron-Rhodes is southeast of downtown and north of I-240. It also has both low and middle-income residents, and is racially mixed. The Barron-Rhodes portion of the shuttle route travels approximately 3 miles (one direction) along Barron Road, Rhodes Road, Prescott Road, and Robinhood Lane. It shares the same shuttle/bus transfer point with the Bethel Grove portion of the route, and connects with the same bus routes, although different trips.

2.5.2 Boxtown

Boxtown is a predominantly black, low-income neighborhood southwest of the central business district. The Boxtown shuttle,

shown in Figure 2-4, travels south of I-55 and west of Third Street for approximately 5 miles (one direction) along Boxtown Road, Sewanee Street, Fields Road, Cook Road, Mitchell Road, and Third Street. Passengers are dropped off at the intersection of Brooks Road and Third Street, which connects passengers with bus numbers 11, 12, or 19, which run approximately 5 miles to downtown, or bus number 30, which travels crosstown and then north. Bus number 11 continues from downtown to North Memphis.

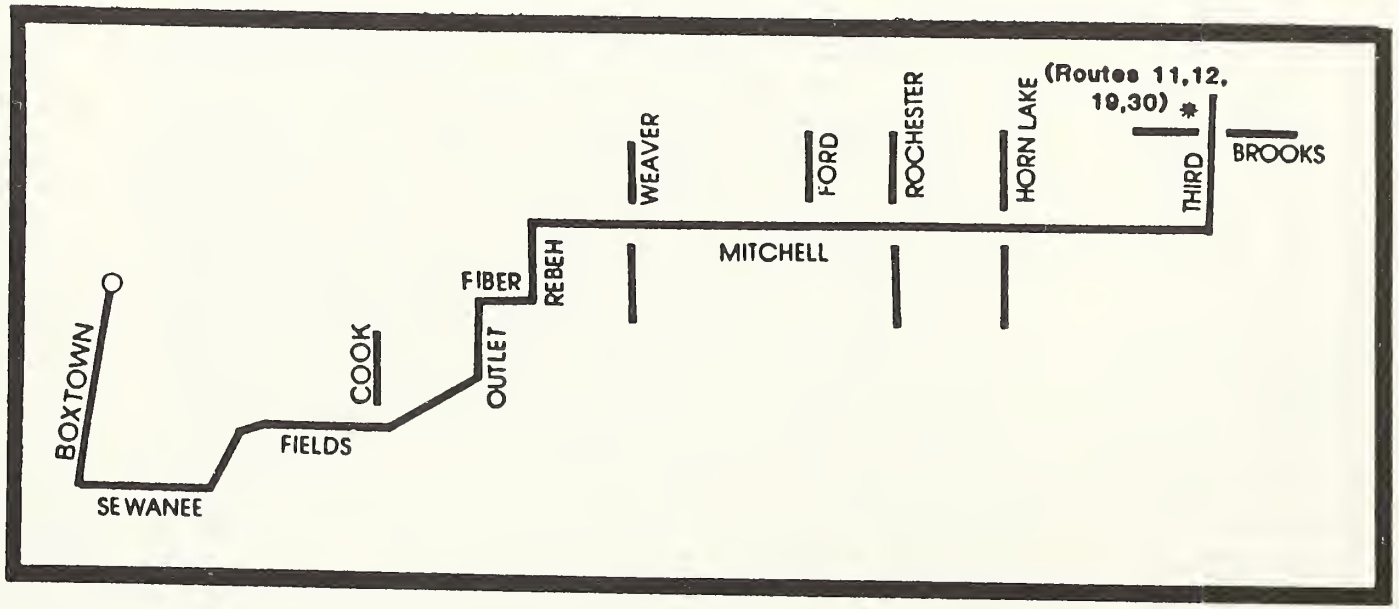
2.5.3 Spring Valley

Residents of the Spring Valley/Carver Heights neighborhood northeast of the CBD have lower then average income, and over 50 percent are black. This residential area is predominantly comprised of single family houses, except at the route terminus where several apartment and townhouse complexes are located. As shown in Figure 2-5, the shuttle runs approximately 5 miles (one direction) along Frayser Boulevard, Warford Street, Peggy Road, Redcoat Road, New Allen Road, Ridgemont Road, Old Allen Road, Egypt Central Road, Bluffwood Drive, and Royal Ridge Drive. It drops off passengers at the intersection of Frayser Boulevard and Watkins Street. They can then transfer to bus number 10, which travels south and then west for approximately 6 miles to the downtown area, or bus number 11, which travels slightly west and then south for approximately 6 miles to the CBD.

2.5.4 Presidents Island

Presidents Island is a 3,000-acre industrial park located on an island southwest of the Memphis CBD, with approximately 120 employers and 4,500 employees. As illustrated in Figure 2-6, the

FIGURE 2-4
BOXTOWN SHUTTLE ROUTE



KEY: * TRANSFER POINT

FIGURE 2-5

SPRING VALLEY/CARVER HEIGHTS SHUTTLE ROUTE

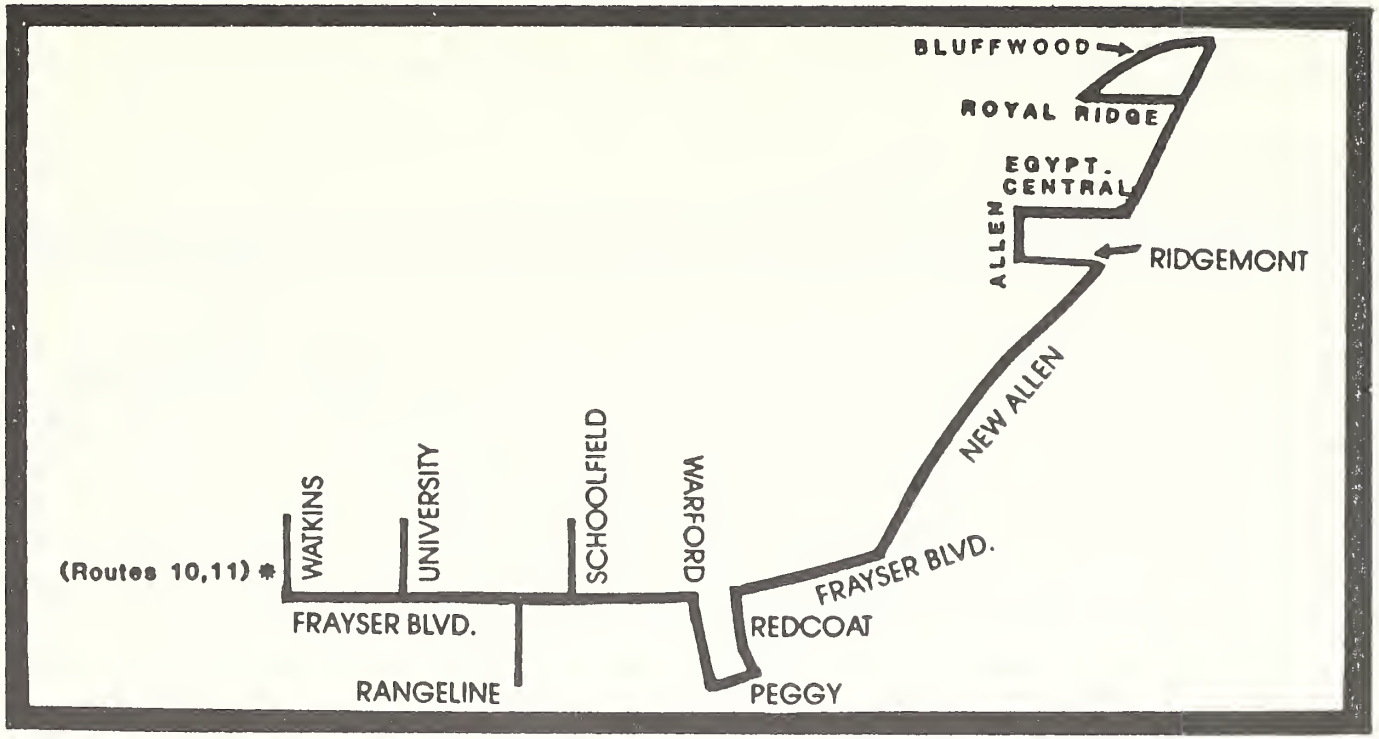


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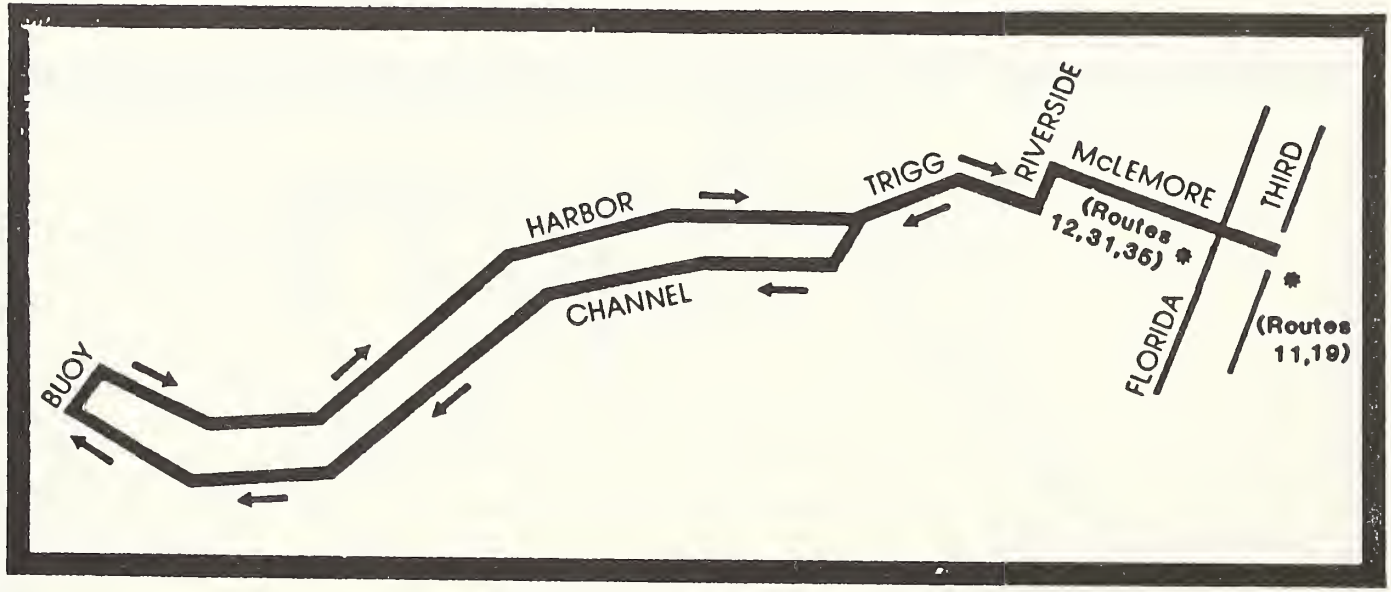
FIGURE 2-6
PRESIDENTS ISLAND SHUTTLE ROUTE



KEY: * TRANSFER POINT

shuttle travels approximately 6 miles (one direction) through the center of the industrial park along McLemore Avenue, Riverside Boulevard, Trigg Avenue, Channel Avenue, Buoy Street, and Harbor Avenue. Passengers connect with bus numbers 12, 31, and 35 at the intersection of McLemore Avenue and Florida Street, and with bus numbers 11, 19 and 31 at the intersection of McLemore Avenue and Third Street. Bus numbers 12, 19, and 35 travel approximately 2 miles northward to the downtown area or southward along Florida and Third Streets. Route 11 runs north on Third Street through downtown and continues north of the CBD, as well as south on Third Street outbound from downtown. Route 31 runs either south on Florida Street, or heads initially east before circling the downtown area and terminating north of the CBD.

CHAPTER THREE

PLANNING AND IMPLEMENTATION

3.1 INTRODUCTION

This chapter describes the process by which the shuttle services were planned and implemented. Important planning steps included selection of areas to be served by the shuttles, development of route and operating plans, and development of the contracting process. Activities documented with regard to implementation include selection of private contractors to operate the shuttle routes, refinement of contractual agreements, driver training, service and route modifications, and marketing activities.

3.2 PLANNING DECISIONS

3.2.1 Choice of Shuttle Routes

MATA staff investigated a number of potential areas as sites for shuttle services. The ATE Management Company, which manages MATA, reviewed and approved the eight possible areas for feeder service initially recommended by MATA. MATA restored bus service to two of these areas, Binghampton and High Point, due to the number of citizen requests received at public hearings to reinstate service.

From the remaining sites under consideration, MATA staff selected the Boxtown and Bethel Grove neighborhoods for the two initial shuttle project routes. The criteria for choosing these two areas were prior ridership levels when former conventional bus service operated through the neighborhood, citizen requests, low-density land use, and proximity to existing MATA bus routes.

The third and fourth sites where shuttle service was initiated, Spring Valley and Presidents Island, were selected some what later based on the same criteria.

3.2.2 The Selection of a Private Rather Than a Public Transit Provider To Operate the Shuttles

MATA decided that contracting out the shuttle routes to a private transportation provider would be cost-effective, since the private operator was expected to be able to operate the shuttle at a lower cost than MATA. The reasons why private suppliers may operate at a lower cost than a public provider like MATA include lower-cost (non-union) employees, and the high cost to a transit authority of purchasing a new-sized vehicle, training mechanics to maintain the vehicle, and purchasing spare parts for repairs.

As part of the planning process for the shuttle, MATA had to determine whether such a contract with a private operator was consistent with and allowable under Section 13(c) of the Urban Mass Transportation Act of 1964 (as amended). Section 13(c) states that:

> It shall be a condition of any assistance under this Act that fair and equitable arrangements are made to protect the interests of employees affected by such assistance. Such protective arrangements shall include assurances of employment to employees of acquired mass transportation systems and priority of reemployment of employees terminated or laid off.

The MATA transit union protested the use of private contractors to operate the shuttles. It believed that formerly laid-off members, rather than outsiders, should become the shuttle drivers. The protest, however, was ineffective because the U.S.

Department of Labor ruled that contracting a private operator to provide the shuttle services was not in violation of the 13(c) regulation. Since the shuttle operation was to be totally financed with local funds, while the Federal demonstration grant was to support planning and marketing functions, the feeder service was not applicable to UMTA Section 13(c) requirements, which pertain to Federal, but not to local, funds. In addition, since the shuttle initiated service at least a year after the MATA service cutbacks and related staff lay-offs, MATA management maintained that the shuttle provided a new service, instead of being a replacement of existing service. However, this latter reason would not have sufficed by itself, while the former reason involving the funding situation met the requirements of the regulation on its own merits.

3.2.3 Shuttle Contract Bidding Process

MATA contracted the operation of the shuttle routes to private transportation providers. In order to encourage cost competition and open the opportunity to all interested, qualified companies, MATA solicited sealed bids requesting the hourly cost of operating each shuttle route with a five-seat and an eight-seat sedan. In conjunction with the choice of contractors, MATA decided which of the two different sized vehicles would serve each route. Since each route was bid separately, a maximum of four contractors could have possibly operated the shuttles at any one time. However, during the demonstration, only two taxi operators were selected as shuttle contractors, and one of these

operated only a single route for the last five months of the demonstration.

Since MATA wanted to maintain overall control of the shuttle operation to ensure quality service and timely shuttle-to-bus and bus-to-shuttle transfers, the contract specified that MATA would schedule the shuttle runs and determine the routing, with the ability to change the schedule or route at any time in order to increase vehicle productivity. MATA judged that such changes would not adversely affect the private operators, since their payment was based on hours of service. Consequently, MATA, rather than the shuttle operators, held responsibility for designing and maintaining a productive service. Other arrangements found in cities such as San Diego have provided the private provider with monetary incentives, in addition to a flat contract reimbursement rate, to initiate operational adjustments as necessary to increase route productivity.

Without a productivity clause in their contract, the operators generally do not have the incentive to maximize service or ridership. They would, of course, still want to provide a satisfactory service, in the hope of receiving a new contract when the current one expires. The shuttle contractors did provide a satisfactory service, perhaps due in part to the strict oversight of the operation by MATA staff and penalties imposed for running behind schedule. The on-board surveys confirm this by the lack of passenger complaints concerning service operation, vehicles or drivers. The major passenger complaint involved low

service frequency and too few hours--service variables under MATA's control.

In addition to specifying how the service would be provided, the contract also required that shuttle vehicles be painted white, and that each shuttle route have a spare back-up vehicle. This could affect the operator's flexibility, since it may restrict the use of the vehicles when the shuttle service is not operating. However, Veterans Cab, the predominant shuttle operator, did use the 10-passenger van from the Presidents Island route for occasional weekend charter service. According to Veterans Cab, the shuttle service hours, rather than the vehicles' appearance, restricted the use of the vehicles during non-shuttle hours.

During the demonstration, the bidding process was conducted three times, approximately every six months, although the routes under consideration varied. Each time, three to four providers competed, with bids considered separately by route. Generally, the bids were competitive. Two routes were under consideration at each of the bids.

A total of six companies submitted bids during the demonstration: four of the six local taxi companies, one inter-city bus charter company, and one national vanpool vendor. A more detailed list of the carriers and a comparison of their bids is provided in Table A-1 of the Appendix. One taxi company, Veterans Cab, was awarded five out of six routes bid during the demonstration on the basis of cost.

The MATA criteria for selecting the contractor to operate the shuttle routes were:

- o cost;
- o operating experience; and
- o availability of required vehicles.

Cost was not the sole determining factor, although it was the first factor considered. It was also important that the contractor be able to provide a reliable service. If the lowest bidder could also meet the other specifications, that contractor was selected. During the demonstration, the lowest bidder on a particular route was always chosen. In addition, none of the bidders was perceived as unable to provide a reliable service.

3.2.4 Choice of Shuttle Hours

It was decided that the neighborhood shuttles would initially serve work trips during the peak travel hours (6 to 9 a.m. in the morning and 3 to 6 p.m. in the afternoon), since average hourly peak hour transit trips exceed average hourly non-peak hour transit trips in Memphis. It was anticipated that over time it might prove necessary to change or extend the initial choice of hours. However, during the entire demonstration all four shuttle routes operated only during the morning and afternoon peak periods, as there was not sufficient service demand to warrant extending the hours.

3.2.5 Choice of Shuttle Route Frequency

The frequency of the shuttle service along each route was determined by several factors:

- o design of the route
- o layout of the neighborhood
- o proximity to bus lines

- schedule coordination with connecting buses
- MATA's desire to have only one vehicle per route
- MATA's desire to have a shuttle frequency of 40 minutes or less

Originally, MATA had considered having a demand-responsive service, but decided to implement scheduled fixed-route operation instead. MATA wanted the timing of the shuttle to be closely coordinated with the connecting buses in order to minimize wait time at the transfer point, and felt this would be possible only with a scheduled route service.

3.2.6 Scheduling of Shuttle Routes

In order to schedule the shuttle runs, the annual MATA Comprehensive Operational Analysis (COA) bus ridership counts were used to determine how ridership varies throughout the day, and the appropriate time for the first and last shuttle trips. In general, the scheduling of the morning feeder routes was geared to work shifts downtown and on Presidents Island beginning on the hour and half-hour between 7 and 9 a.m., although not every shift could be met by each of the shuttle routes. The goal of the shuttle schedule was to allow passengers to catch a bus that would get them to work on time. The scheduling of return trips followed a comparable method. Hence, each of the shuttles made three to five trips each morning, and three to seven each afternoon, on 30 to 50-minute headways, depending on the route. There was a two to four minute wait time when transferring between each shuttle route and the most frequent and heavily traveled bus route to which it connected. Passengers

transferring to other bus routes had slightly longer wait times of up to ten minutes.

3.2.7 Shuttle Driver Training

The shuttle drivers who initially drove the shuttle routes for Veterans Cab, the first company to operate the shuttle route, were current cab driver employees of the company. Shuttle driver turnover was low, and few chose to continue regular taxi service during the off-hours. According to the company, the drivers were chosen for their professional competence, neatness, cleanliness, and conscientiousness.

The Veterans Cab manager trained his drivers for their shuttle assignments by riding the route with them a few weeks prior to service initiation and during the first two weeks of operation. MATA also provided training assistance for the drivers. First, MATA staff approved the drivers sent to them by the selected shuttle contractor. Then drivers attended a one-day training seminar on MATA rules and procedures, which stressed the importance of courtesy toward passengers. In addition, MATA staff rode the route with the drivers prior to passenger service, and again during the first week of operation.

3.3 CONTRACTING HISTORY

On March 30, 1983, Veterans Cab (also called Memphis Transportation Company), a Memphis firm, was awarded the first contract to operate both the Boxtown and Bethel Grove shuttle routes. Since all three proposers were considered qualified to provide the shuttle services, the contract for each route was

awarded to the lowest bidder. This bid offered to provide the service on both routes at a cost of $14 per hour, using a five-passenger sedan. Throughout the demonstration, bids were furnished for both five-passenger and eight-passenger vehicles, with MATA choosing the size in conjunction with its choice of contractor. The other two competitors were United Cab and Yellow Cab. Service began on the Boxtown shuttle route on May 2, 1983, and on the Bethel Grove shuttle route on May 9, 1983.

In January 1984, Veterans Cab was also awarded the contract to operate both the Spring Valley and Presidents Island shuttle routes. It was again the lowest bidder of both routes out of three competitors--itself, Yellow Cab, and Tri-State Trailways (intercity charter bus company)--at $17 per hour for a five-passenger sedan to serve Spring Valley and $21 per hour for an eight-passenger van to serve Presidents Island. The contract ran through the end of October 1984, the end of the demonstration.

When the initial Boxtown and Bethel Grove shuttle contracts expired in May 1984 after one year of operation, four companies bid for the new contract. These were Veterans Cab (Memphis Transportation Company), Vanpool Services, Inc. (national vanpool vendor), Little John Taxi Service, and Yellow Cab (Southern Cab Company). Veterans Cab Company, the original operator of the Boxtown and Bethel Grove routes, and at the time, the current operator of the Spring Valley and Presidents Island routes, was awarded the contract on the Bethel Grove route as the low bidder at $16 per hour for a five-passenger sedan. At the same time, Yellow Cab was awarded the contract to operate the Boxtown route

as the low bidder at $17.25 per hour. Yellow Cab operated a van in the morning and a sedan in the afternoon along the Boxtown route, due to the higher ridership levels experienced during the morning peak period. These Boxtown and Bethel Grove contracts operated from May 30, 1984 through the end of the demonstration on October 31, 1984.

3.4 SHUTTLE OPERATION

In the actual operation of the neighborhood shuttle routes, one vehicle covers each of the four routes. The shuttle vehicle travels through a neighborhood along a designated, although unmarked, route carrying passengers to and from MATA bus stops, where they can transfer to and from buses heading towards downtown or in the opposite direction. Passengers can hail the shuttle from any point along the shuttle route, as there are no designated shuttle stops. The shuttle is recognizable from the green and white temporary shuttle signs located on the top and sides of the vehicle. In addition, the shuttle vehicles have been painted entirely white to make them distinctive. Figure 3-1 shows two pictures of a five-passenger shuttle sedan.

Passengers boarding a shuttle vehicle pay the same fare to the driver as if they were on an MATA bus, which is $0.85 for regular passengers, $0.50 for students, and $0.40 for senior citizens and handicapped passengers (upon presentation of a special MATA identification card). Those who plan to transfer from the shuttle to the bus pay in addition the regular MATA $0.10 transfer fee in exchange for a paper transfer noting the approximate time of payment. On boarding the bus, the transfer

FIGURE 3-1

TYPICAL FIVE PASSENGER SHUTTLE VEHICLE

is presented to the bus driver as payment for the bus portion of the trip. The opposite occurs when transferring from the bus to the shuttle. Then the bus driver receives the fare and transfer fee and distributes the transfer to the passenger, who presents it to the shuttle driver upon boarding.

Prior to shuttle operation, MATA had only one type of transfer ticket for bus-to-bus transfers. With shuttle implementation, three additional transfers were initiated for transfers from the shuttle to the bus. For transfers from the bus to the shuttle, all passengers still received the original MATA bus transfer. The three new transfers were only distributed by the shuttle drivers. Regular fare passengers, students, and elderly/handicapped individuals each received one of the three shuttle transfers, differentiated by color and fare payment, so that MATA could closely monitor the number of riders in each fare category.

The shuttle operators turn over to MATA all revenue collected. To control against possible fraud by the drivers, shuttle transfers collected by MATA drivers are compared with revenue received from the operator. In addition, the drivers are required to contact MATA supervisors at the end of each trip to report number of passengers carried.

The transfer wait time experienced by passengers between the shuttle and the bus was scheduled to be between two and four minutes, depending on the shuttle and bus routes involved. Although the shuttle routes were designed to connect with more than one MATA bus route, the timing of the shuttle routes was planned around the arrival and departure times of the most

frequent and heavily used bus route at the transfer point. The wait time between the shuttle and the other buses stopping at the transfer point would be less than ten minutes. Both shuttle and bus drivers were in contact with the MATA area supervisor via radio. If either was running so late as to jeopardize the transfer between shuttle and bus or vice versa, communication between both drivers and the supervisor would ensure that the on-time vehicle would wait for the delayed one.

Vehicle layover time ranged from two to five minutes, depending on the route. Except for the Bethel Grove/Barron-Rhodes route, where the layover occurred at the end of the line in the Bethel Grove neighborhood, the layovers occurred at the transfer point. This gave the bus to shuttle connection additional leeway in case a bus was running late.

In addition, the MATA contract specified that inoperable or delayed shuttle vehicles would be fined five dollars per minute, up to twenty-five dollars for each incident. This encouraged the private operator to quickly replace problem vehicles with the contractually-required spare. In the meantime, the MATA bus supervisor for that area would continue the run with his/her vehicle until the replacement vehicle arrived. Since survey responses did not indicate any passenger complaints of missed transfers, it is assumed that this system worked well.

3.5 ROUTE CHANGES

In September 1983, MATA began to consider whether the Bethel Grove route should be discontinued, due to its low ridership of approximately eight trips per day after four months of operation.

MATA eventually decided not to eliminate service to Bethel Grove residents who rode the shuttle, but instead modified the route on January 16, 1985 to reduce the frequency and cost of providing service to the area. This was implemented by extending the route northeast into an adjacent neighborhood (Barron-Rhodes), whose community group had previously requested transit service. The new route was called the Bethel Grove/Barron-Rhodes shuttle. This modified route increased operating headways on the original Bethel Grove portion by approximately 50 percent. After the change, both segments of the route experienced 40 minute headways and had the same bus transfer points, with the shuttle alternating trips between the two route segments.

In January 1984, MATA initiated two new shuttle routes: the Spring Valley-Carver Heights shuttle, located in the north-east area of Memphis, and the Presidents Island shuttle, which serves the 3,000-acre, 5,000-employee Industrial Park located southwest of the downtown. Service was initiated on January 16 for the Spring Valley shuttle and on January 23 for the Presidents Island shuttle.

In response to a petition of approximately 20 residents, the northern end of the Spring Valley shuttle route was modified on April 23, 1984. The MATA had hoped this modification would increase the route's low ridership levels (average of seven passengers per day). However, this change was not successful in increasing ridership. A half-mile section serving single-family detached houses and few passengers was replaced by a 1-1/4 mile section serving several apartment complexes. This route

modification did not increase scheduled hours or operating costs because the shuttle traveled faster on parts of the new route than it had on the replaced section.

3.6 MARKETING

A variety of marketing activities were conducted by MATA staff to promote the neighborhood shuttle feeder service and encourage its use. Prior to the initiation of each shuttle route, meetings in the neighborhood with community residents were conducted to explain the service; mailings with a schedule and a two-for-one discount ticket were sent to each household in the neighborhood; and businesses in the area were presented with brochures to post in their stores advertising the service. Since the Presidents Island route operated in an industrial park, and not a neighborhood, packets of brochures and schedules were delivered to each company for distribution to their employees. In addition, shuttle schedules were distributed to passengers on all bus routes which would connect with the shuttles.

A large proportion of residents living in neighborhoods served by the shuttles were aware of the service. According to the results of the community surveys, over 40 percent of Bethel Grove residents and over 60 percent of Boxtown residents had heard of the neighborhood shuttle being operated in their respective neighborhoods. The most common way residents first learned of the shuttle was by seeing it on the street (43 percent in Bethel Grove and over 1/3 in Boxtown). Others learned about the shuttle through word of mouth, brochures sent through the mail, and from a television news spot. Only a small proportion of

residents aware of the shuttle had used it. Eight percent of total Bethel Grove residents surveyed had ridden the shuttle, compared to 13 percent of all Boxtown residents surveyed.

3.7 SERVICE CONTINUATION AFTER THE DEMONSTRATION

MATA and the City of Memphis demonstrated a commitment to providing service to these neighborhoods by contributing $100,000 in local funds to operate the shuttles during the demonstration. After the demonstration ended, MATA requested UMTA's permission to continue operation of three of the shuttles (Bethel Grove, Boxtown, and Presidents Island) with the remaining Federal demonstration funds appropriated for planning purposes. These funds supported operation of the Bethel Grove and Boxtown shuttle routes through the summer/fall of 1985, when MATA extended existing bus service into these neighborhoods to provide minimal coverage, since this was less costly than operating shuttle or former bus service throughout the neighborhood. The Federal demonstration funds supported the Presidents Island shuttle until depleted in November 1986. Since that time, MATA has continued the service with local funds.

CHAPTER FOUR

LEVEL OF SERVICE IMPACTS

4.1 INTRODUCTION

This chapter discusses the level of service provided by the shuttle and compares it to the level of service provided by the former fixed-route bus service in the same neighborhoods. Shuttle and former bus service are compared in terms of operating hours, headways, trip times, and fares. In addition, other aspects of shuttle service are discussed, such as service reliability, mode of access, convenience, comfort, and safety.

4.2 COMPARISON OF SHUTTLE/BUS AND FORMER BUS SERVICE

This section compares the level of service provided by the shuttle/bus combination trip and former MATA bus service, which was terminated during the April 1982 service cuts in all shuttle neighborhoods except Boxtown, whose service ended in 1980. Since the shuttle/bus and former bus service routings did not correspond exactly for any of the routes, the values presented are for comparable route segments as defined by this evaluation. Since both shuttle and former bus in Bethel Grove, Boxtown and Presidents Island follow similar, though not always identical paths through the neighborhoods, their entire routes within the neighborhoods are considered comparable route segments. In Barron-Rhodes and Spring Valley, one and one-and-a-half mile segments, respectively, traveled by both shuttle and bus, and which comprise only a small section of the service within the neighborhood, are considered comparable route segments. Comparative hours, headways and trip times based on shuttle and bus

schedules published by MATA are displayed in Table 4-1. Headways and trip times are based on travel from a similar starting location in the neighborhood to downtown. The trip times presented are for the point furthest from downtown which is served by both the shuttle and the former bus. Shuttle trip times include the transfer wait time between the shuttle and the bus plus the bus travel time downtown. The precision of trip time comparisons is limited by the nature of the MATA route schedules, which only list the scheduled time for selected points. Service hours are based on scheduled shuttle and former bus hours of operation.

4.2.1 Bethel Grove/Barron-Rhodes Service

The former Bethel Grove bus served the same neighborhood area as the shuttle, although they did not operate on all the same streets (see Figure 4-1). The Bethel Grove shuttle provided the neighborhood with slightly more service miles than did the former bus service, only because it made a small loop at the end of the route, while the bus re-emerged on a major arterial before heading south. It took approximately 10 minutes (or 29 percent of the total in-vehicle travel time from the neighborhood to downtown) for the former bus to travel the three miles of the shuttle route. Bus service operated 13 hours throughout the day, while the shuttle ran for a total of 6 hours during the morning and afternoon peak periods only. During the peak periods, both services ran on a 40-minute headway. The shuttle/bus combination trip took approximately one minute longer than the former bus, 39 minutes and 38 minutes respectively. Therefore, except for the transfer penalty, the level of service provided by the Bethel

TABLE 4-1

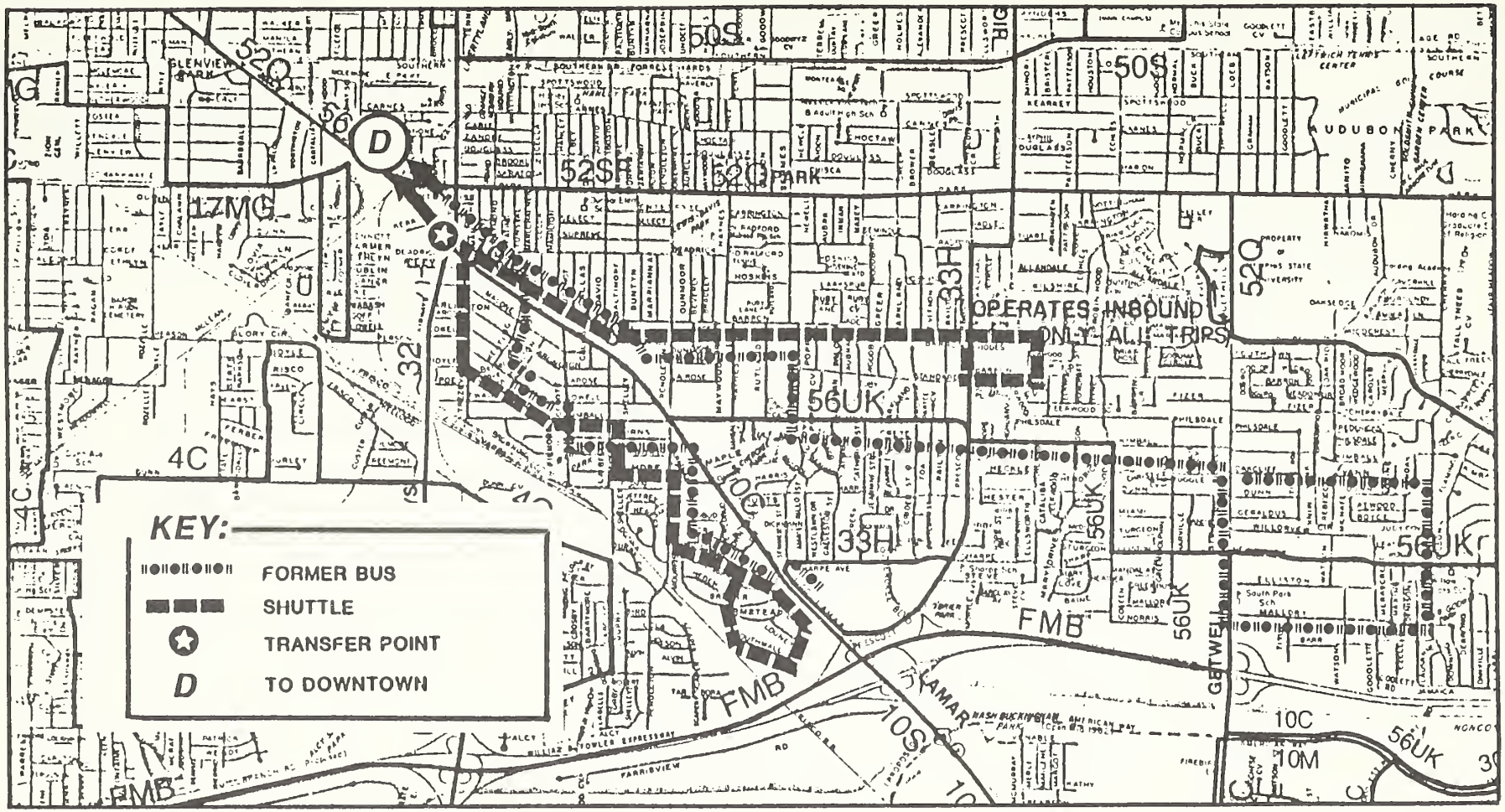
COMPARISON OF SHUTTLE/BUS AND FORMER BUS SERVICE

Neighborhood (Former Bus Route)	Shuttle/Bus Service			Former Bus Service		
	Hours	Peak Headways	Trip Time	Hours	Peak Headways	Trip Time
Bethel Grove (36 Oakville)	6-9 a.m. 3-6 p.m.	40 min.	39 min.**	5:30 a.m.- 6:30 p.m.	40 min.	38 min.
Barron-Rhodes (Lamar Blazer)	6-9 a.m. 3-6 p.m.	40 min. (16 daily trips*)	39 min.**	7:15-7:45 a.m. 4:30-5:00 p.m.	2 daily runs*	32 min.
Boxtown (37 Boxtown)	6-9 a.m. 3-6 p.m.	30 min.	36 min.**	6 a.m.-7 p.m.	44 min.	20 min.
Spring Valley (52 Jackson Spring Valley)	6-9 a.m. 3-6 p.m.	50 min.	56 min.**	5:30-9:30 a.m. 2-7 p.m.	30 min.	62 min.
Presidents Island (15 Presidents Island)	6:30-8 a.m. 3:30-5 p.m.	35 min. (6 daily trips*)	30 min.**	6-8 a.m. 3-5 p.m.	60 min. (4 daily runs*)	35 min.

*A trip is one-directional from either the neighborhood to downtown or from downtown to the neighborhood.

**Includes a 4 minute transfer wait-time for the Bethel Grove/Barron-Rhodes and Boxtown shuttles and a 2 minute transfer wait-time for the Spring Valley and Presidents Island shuttles.

FIGURE 4-1
BETHEL GROVE / BARRON-RHODES SHUTTLE AND FORMER BUS ROUTES



Scale: One inch equals 0.6 miles.

Grove portion of the Bethel Grove/Barron-Rhodes shuttle is comparable to former bus service in terms of wait time and travel time, but not service hours, since the shuttle did not provide mid-day service.

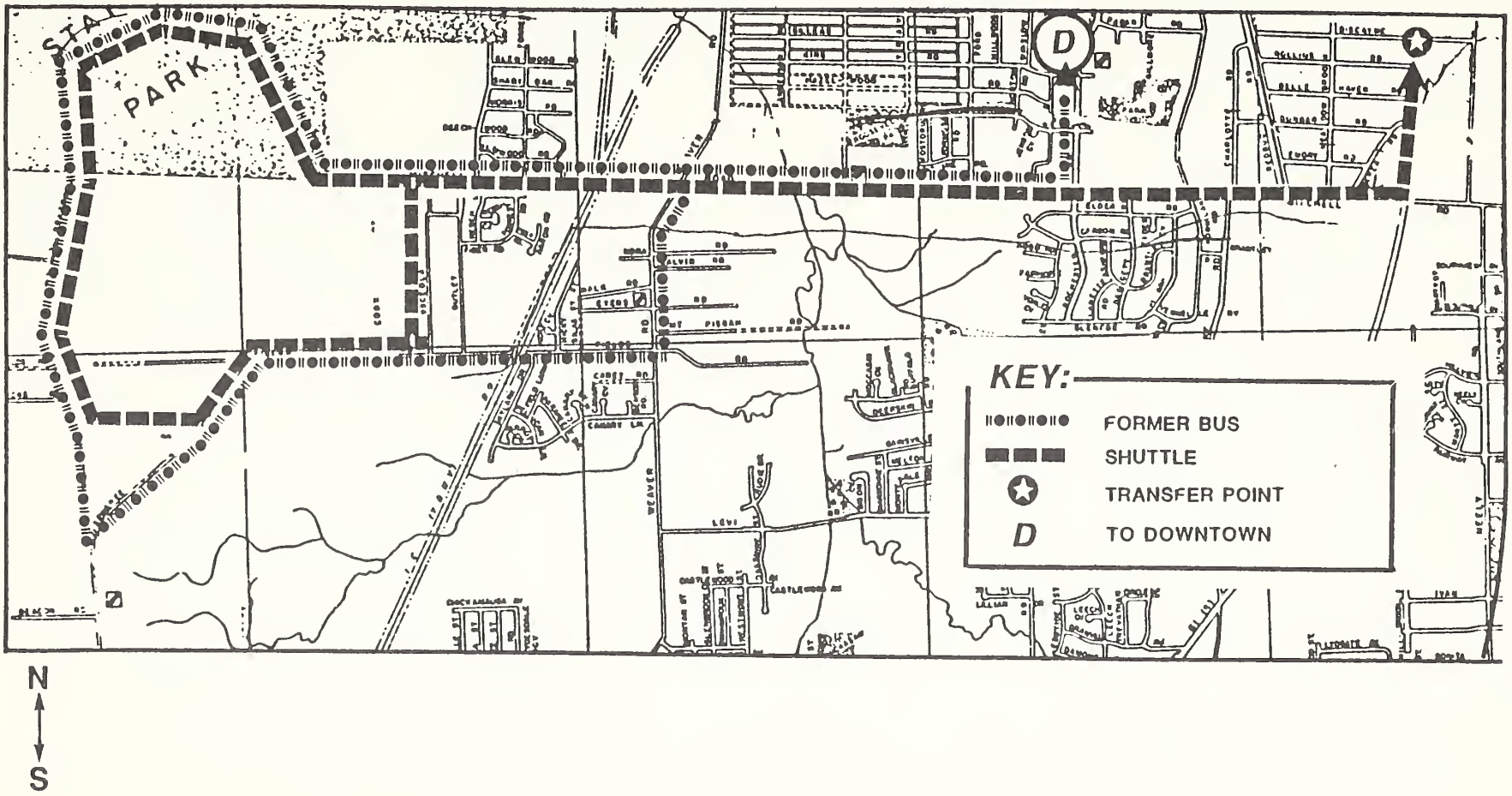
The former Barron-Rhodes express bus and the shuttle had only about a one-mile route segment in common (see Figure 4-1). It took approximately five minutes, or 14 percent of the total in-vehicle trip time from the comparable route segment to downtown, to travel this one mile. The Barron-Rhodes neighborhood had peak hour service only with both the former bus and the shuttle service. Former bus service operated approximately one hour daily with one morning and one afternoon run, while the shuttle made 7 daily runs and had 40-minute headways during its 6 hours of operation. Trip time on the former bus took approximately 32 minutes, while the shuttle/bus combination trip took approximately 39 minutes. Therefore, the shuttle provided expanded service in terms of operating hours and number of trips, but required a transfer and about a 22 percent longer trip time.

4.2.2 Boxtown Service

Former Boxtown bus service traveled a similar path to the shuttle service within the neighborhood, with a few minor deviations (see Figure 4-2). It took approximately 13 minutes, or 40 percent of the total in-vehicle trip time for the neighborhood-to-downtown trip, to travel the five miles of the shuttle route. The bus operated 13 hours throughout the day, while the shuttle ran for 6 hours during the morning and afternoon peak periods only. During the peak periods, the former bus averaged a 44-

FIGURE 4-2

BOXTOWN SHUTTLE AND FORMER BUS ROUTES

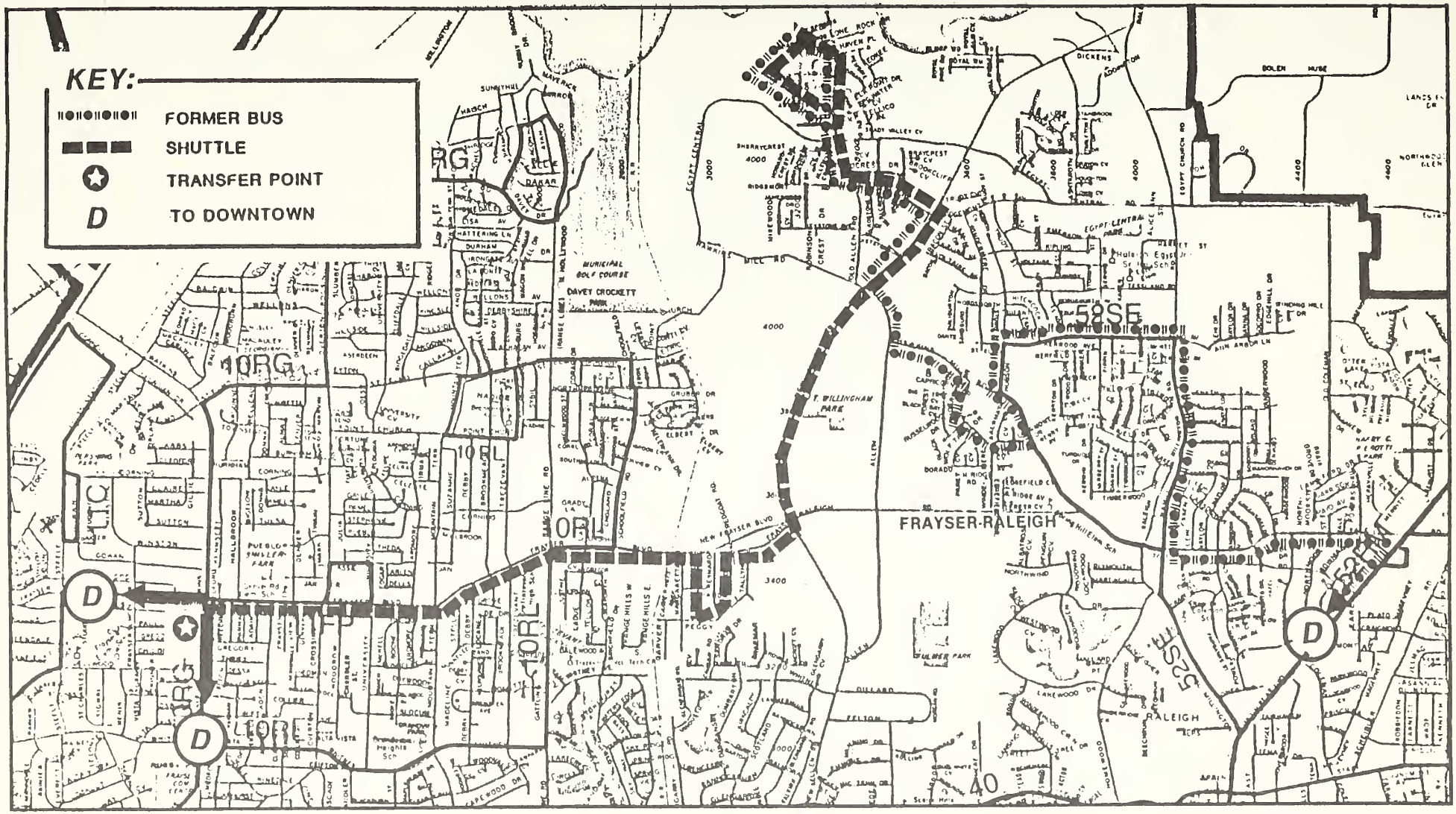


minute headway, while the shuttle operated on a 30-minute headway. In terms of trip time, the former bus took approximately 20 minutes to travel downtown, while the shuttle took approximately 36 minutes. In addition, the shuttle required a transfer, while the bus did not. Therefore, while the shuttle provided more frequent service, former bus provided a higher level of service in terms of service hours and trip time.

4.2.3 Spring Valley Service

Former Spring Valley bus service and the shuttle only shared a one-and-a-half mile section of route at the terminus of both lines. From there, both routes initially ran in opposite directions before heading downtown. While the bus headed eastward and then in a southwesterly direction to downtown, the shuttle traveled to the west, connecting to a bus route that traveled southward to downtown (see Figure 4-3). It took the bus approximately 25 minutes, or 46 percent of the total in-vehicle trip time for the neighborhood to downtown trip, to travel the five miles of the shuttle route. The bus operated for 9 hours daily, from 5:30 to 9:30 in the morning and from 2:00 to 7:00 in the afternoon, compared to the shuttle's 6 daily hours of operation, from 6:00 to 9:00 a.m. and from 3:00 to 6:00 p.m. During the peak periods, the former bus averaged 30-minute headways, while the shuttle averaged 50 minutes. Trip time on the former bus took approximately 1 hour and 2 minutes, while the more direct shuttle/bus combination trip took approximately 56 minutes, including the transfer. Hence, the shuttle provided a higher level of service in terms of travel time, with approximately an

FIGURE 4-3
SPRING VALLEY SHUTTLE
AND FORMER BUS ROUTES



N

S

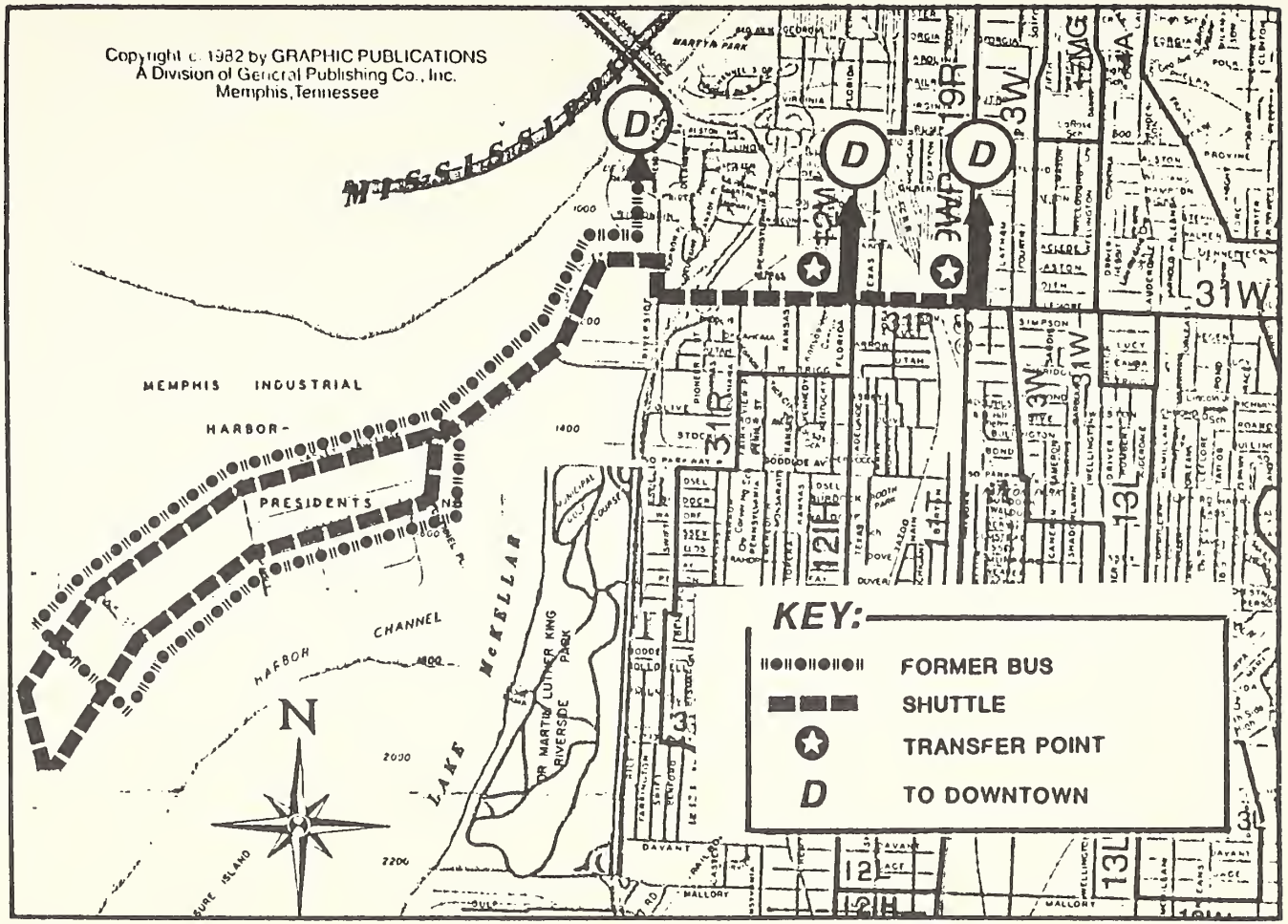
Scale: One inch equals 0.6 miles.

8-minute shorter trip, but introduced longer headways and shorter operating hours.

4.2.4 Presidents Island Service

The former Presidents Island bus and the shuttle service follow the same route in the industrial park, except that the bus route circled one block less than the shuttle (see Figure 4-4). It took approximately 15 minutes, or 54 percent of the total in-vehicle trip time for the neighborhood to downtown trip, to travel the six miles of the shuttle route. Bus service operated for 4 hours daily, compared to the shuttle's 3 daily hours. However, the former bus made 4 daily runs at 60-minute intervals, compared to 6 daily runs at a 35-minute frequency operated by the shuttle. In addition, the shuttle/bus combination trip has the shorter trip time, approximately 30-minutes compared to 35 minutes for former bus. This is due to the slightly circuitous route taken by the bus through the residential neighborhood between Presidents Island and downtown. The buses to which shuttle passengers transferred did not travel through this neighborhood, but ran on major arterials directly downtown. Therefore, the shuttle provided a comparable, if not slightly improved, level of service to the bus, except for the transfer penalty, for passengers boarding or alighting on Presidents Island, but a lower level of service for passengers living in the neighborhood previously served by the bus.

FIGURE 4-4
PRESIDENTS ISLAND SHUTTLE AND FORMER BUS ROUTES



4.2.5 Shuttle/Bus and Former Bus Service

For each of the neighborhoods, the former bus provided a higher level of service than the shuttle in some aspects, while the shuttle provided better service than bus in others. In addition to the comparison of hours, headways, and trip times described above, it is important to note some other significant differences between the two types of services. One is the inconvenience and cost ($0.10 per trip) of the additional transfer required by the shuttle to travel downtown. Transportation studies have shown that passengers find traveling in a single vehicle less onerous than transferring between two vehicles, even when the trip on the single vehicle is longer. Those riders who did not transfer to a second bus to reach their destination with prior bus service, and now must transfer between the shuttle and bus, pay an additional $0.10 transfer fee per trip than formerly. The base trip fare is the same as for regular bus service. It is interesting to note that none of the general population surveys which encompassed both users and non-users, or the passenger surveys, uncovered negative feelings about the transfer required with the shuttles. However, several passengers on the on-board surveys made references about preferring bus service. This preference was articulated in the form of a desire to have a larger vehicle serve the neighborhood.

Although the shuttle transfer is a less desirable service characteristic, the Memphis shuttles compensate somewhat in providing a more personalized service than the former bus. Shuttle drivers tend to know their passengers and their habits,

and will wait an extra minute, when possible, if they expect to pick up a passenger at a specific spot.

4.3 SERVICE RELIABILITY

In general, Memphis shuttle service has operated reliably. When a shuttle vehicle experiences a problem which will cause a delay, such as a breakdown or an accident, the MATA supervisor for that area will pick up the passengers from the shuttle vehicle and continue the run until the shuttle operator sends out a replacement vehicle. This process has operated smoothly. One method used by the MATA to reinforce prompt attention on the part of the private operator, is a clause in the contract which specifies a five dollar fine for each minute the shuttle is inoperable for a maximum fine of $25 per incident. MATA fined the shuttle providers less than 10 times during the demonstration; the problem usually was caused by mechanical difficulties.

On-time performance checks performed by MATA staff for the shuttle and its connecting bus routes on Monday July 11, 1983 and Tuesday February 14, 1984 provide estimates of the degree of shuttle reliability. Table 4-2 displays the number of buses on schedule and the number late for each bus and shuttle route. During the July check, all shuttle runs and buses connecting with the Bethel Grove shuttle operated on-time, defined by the MATA as within 5 minutes of scheduled time. On this day, approximately eight percent (4 out of 53 runs) of the buses connecting with the Boxtown shuttle were considered late, while all Boxtown shuttles operated on-time. Only the Bethel Grove and Boxtown shuttles were in operation at this time.

TABLE 4-2

SHUTTLE AND BUS ON-TIME PERFORMANCE CHECKS

Monday, July 11, 1983

Route	Runs On-Time* (Percent)	Runs Late (Percent)	Total Runs
Bethel Grove Shuttle	19 (100%)	--	19
Bethel Grove Buses	52 (100%)	--	52
Boxtown Shuttle	13 (100%)	--	13
Boxtown Buses	49 (92%)	4 (8%)	53

Tuesday, February 14, 1984

Route	Runs On-Time* (Percent)	Runs Late (Percent)	Total Runs
Bethel Grove Shuttle	18 (100%)	--	18
Bethel Grove Buses	50 (96%)	2 (4%)	52
Boxtown Shuttle	13 (100%)	--	13
Boxtown Buses	51 (96%)	2 (4%)	53
Spring Valley Shuttle	8 (100%)	--	8
Spring Valley Buses	24 (96%)	1 (4%)	25
Presidents Island Shuttle	6 (100%)	--	6
Presidents Island Buses	91 (95%)	5 (5%)	96

*Within five minutes of scheduled time.

During the February on-time performance checks, all four shuttle routes were operating and ran on schedule for all runs. Approximately 4 percent of the buses connecting with the Bethel Grove, Boxtown, and Spring Valley shuttles and approximately 5 percent of the buses serving the Presidents Island shuttle were late. MATA has no record of the number of missed transfers that occurred during the demonstration, but would expect the number to be small since few complaints were received.

4.4 SHUTTLE MODE OF ACCESS

All shuttle passengers walk from their home to a point along the shuttle route. The shuttle will stop to collect anyone who waves it down along the route. As indicated by responses to the Bethel Grove and Boxtown on-board surveys, the shuttle route is only a short walk from the home of almost all shuttle riders.

Of those Bethel Grove passengers who responded to the question concerning how long it takes to walk to the shuttle:

- 39 percent said one minute or less
- an additional 36 percent said five minutes or less
- another 12 percent said ten minutes or less, and
- 13 percent said fifteen minutes or more.

Boxtown shuttle passengers responded to the same question by answering:

- 44 percent said one minute or less
- an additional 29 percent said 2 minutes or less
- another 9 percent said five minutes, and
- 6 percent said more than five minutes.

4.5 CONVENIENCE OF THE SHUTTLE TRIP

The shuttle trip is not quite as convenient as former bus service. Service hours are shorter, and an additional transfer is required than formerly to access the bus. Several respondents

to the on-board surveys stated that the shuttle service could be improved by extending service hours, operating more frequent service, and by extending the route.

The shuttle is easy to recognize due to the sign on the top of the roof (see Figure 3-1) stating "neighborhood shuttle," although the exact route location is not identified on the street. The shuttle will pick up passengers anywhere along its route. A successful marketing program, including MATA's use of mailers detailing route and schedule information, can successfully inform the community about the details of the service. Although no one mentioned having difficulty in locating the shuttle, occasional users who misplace or dispose of the fliers and later need them, may benefit by the placement of signs along the route.

According to MATA staff, the introduction of three shuttle transfers used by passengers to transfer from the shuttle to the bus, in addition to the existing single bus to bus transfer (each transfer has a different color), was not confusing to either bus drivers who collect and distribute them or shuttle passengers. The four types of transfers are:

- the original bus to bus transfer, also used to transfer from bus to shuttle,
- the one received by regular fare patrons on the shuttle to transfer to a bus,
- the one received by students on the shuttle to transfer to a bus, and
- the one received by elderly or handicapped individuals to transfer to a bus.

4.6 COMFORT

The shuttle provided a more personalized service than a typical bus. The drivers learned to know their passengers and become familiar with their routines, including knowledge of where they board and depart the shuttle.

The type of vehicle used on each shuttle route varied by the level of ridership on that route. Boxtown initially operated with a five passenger sedan, and then as demand increased after two months of operation (June 1983), switched to an eight passenger van. Beginning in June 1984, the Boxtown route operated a van in the morning and a sedan in the afternoon. Throughout the demonstration, Bethel Grove used a five-passenger sedan, Spring Valley an eight-passenger station wagon, and Presidents Island a ten-passenger van. All the vehicles are well maintained and clean on both the inside and outside.

No shuttle rider or neighborhood resident stated on any of the six surveys (when asked how the shuttle could be improved or what changes would convince him/her to use the shuttle) that they felt the shuttle was uncomfortable, although a few stated that they would prefer use of a larger vehicle.

4.7 SAFETY

During the demonstration a few minor accidents occurred. No one was hurt, and it is unclear who was at fault. When accidents or break-downs put the shuttle vehicle out of commission, passengers were picked up by the MATA bus supervisor, who was also the supervisor of the shuttle. The supervisor then drove his/her car

along the shuttle route and operated in place of the shuttle vehicle, until the private operator sent a replacement.

All shuttle vehicles met local safety standards. Since January 1984, all shuttle contractors were required to operate vehicles that were less than five years old.

CHAPTER FIVE

DEMAND IMPACTS

5.1 INTRODUCTION

This chapter explores demand-related impacts in conjunction with the neighborhood shuttle service. First, ridership on all four shuttle routes is analyzed, and compared to former bus service in the same area. Then, the impact of shuttle service on existing bus and taxicab service is evaluated. Additional demand issues included in this chapter are the impact on shuttle riders if the service were not available, the purpose of shuttle trips, public reaction to the service, and socioeconomic characteristics of shuttle users. This chapter also describes the survey methodologies and procedures for the surveys (community, employee, and on-board) conducted as part of the evaluation.

5.2 RIDERSHIP

Ridership on each of the four shuttle routes does not appear to have varied seasonally, weekly, or by day of the week. The remainder of this section describes ridership on each of the four shuttle routes. Table 5-1 displays average daily shuttle ridership by month and route.

5.2.1 Bethel Grove/Barron-Rhodes

Bus service was terminated in both the Bethel Grove and Barron-Rhodes neighborhoods during the last major service reduction in April 1982. Ridership figures are not available for the portion of the former bus route that provided all day service to

TABLE 5-1

AVERAGE DAILY SHUTTLE RIDERSHIP BY MONTH AND ROUTE*

Month	Average Daily Ridership
Boxtown	
May 1983	6.8
June	11.8
July	16.5
August	19.5
September	20.2
October	21.3
November	23.5
December	20.4
January 1984	24.3
February	24.8
March	21.9
April	19.6
May	20.1
June	20.1
July	21.2
August	21.4
September	23.2
October	24.5
Bethel Grove	
May 1983	7.4
June	8.0
July	8.2
August	6.7
September	8.5
October	8.1
November	9.9
December	8.8

*Number of passengers represent one-way trips only. Therefore passengers who make a round trip via the shuttle are counted twice.

TABLE 5-1. **AVERAGE DAILY SHUTTLE RIDERSHIP BY MONTH AND ROUTE** (Continued)

Month	Average Daily Ridership
Bethel Grove/Barron-Rhodes	
February 1984	12.6
March	12.4
April	11.5
May	10.4
June	12.8
July	13.2
August	14.3
September	17.7
October	14.5
Spring Valley-Carver Heights	
January 1984 (12 days)	4.8
February	5.5
March	7.4
April*	8.3
May	8.8
June	4.9
July	3.3
August	4.0
September	4.4
October	5.3
Presidents Island	
January 1984 (7 days)	10.3
February	10.3
March	15.0
April	13.9
May	15.4
June	15.6
July	17.1
August	18.4
September	24.4
October	20.7

*On April 23, the Spring Valley-Carver Heights route was altered, and was made 3/4 of a mile longer than previously.

Bethel Grove. In the Barron-Rhodes neighborhood, two runs of an express route (one in the morning peak period and one in the afternoon peak period) carried an average of 26 one-way passengers, compared to the 10 to 18 daily shuttle riders from the Bethel Grove and the Barron-Rhodes neighborhoods combined. A major reason for this difference in patronage can be attributed to the neighborhood's proximity to other bus routes. Even after the cutback of bus service in the Bethel Grove and Barron-Rhodes neighborhoods, many residents could still access unaffected bus routes with a walk of four blocks or less.

According to monthly ridership counts on the original route, the Bethel Grove shuttle route averaged between 6 to 9 daily riders, peaking at 9.9 average daily riders in November 1983 (see Table 5-1).

Ridership on the original Bethel Grove route never grew as expected. As a result, a decision was made by the MATA Department of Planning at the end of 1983, after eight months of operation, to modify the route to include service to the neighboring Barron-Rhodes area in an attempt to increase ridership levels. The plan, in effect, split the service, doubling the headway of the original service to Bethel Grove, and provided that reduced level of service to both communities. Both segments of the route had the same bus transfer points, with the shuttle alternating trips between the two neighborhoods.

Ridership did increase after the initiation of the Bethel Grove/Barron-Rhodes shuttle route. The route then averaged between 10 to 18 one-way daily riders, compared to 6 to 10

previously, peaking at 17.7 average daily riders in September 1984. Like the original Bethel Grove segment, ridership on the modified Bethel Grove route did not increase over time; it started off about as high as it ended.

5.2.2 Boxtown

Approximately three years prior to shuttle initiation, Boxtown bus service was terminated due to insufficient demand to support a bus. However, transit service in the form of the shuttle was reinstated in the Boxtown neighborhood, because MATA staff believed that the area could support a low demand feeder route based on prior ridership experience. Thus, Boxtown was selected as one of the shuttle demonstration sites. Unfortunately, no ridership information is available from MATA for the former Boxtown bus service to validate this claim. When Boxtown bus service was terminated in 1980, the Comprehensive Operational Analysis (COA) publication of annual ridership counts had not yet been implemented, and other records of informal counts have not been maintained.

From August 1983 to the end of the demonstration (the shuttle began operation in May 1983), the Boxtown shuttle averaged between 19 and 25 daily riders, according to monthly ridership counts (see Table 5-1). Ridership peaked in February 1984 with 24.8 average daily riders.

5.2.3 Spring Valley

The Spring Valley neighborhood previously had extended peak period bus service (9 hours daily), which was eliminated during the April 1982 service cuts. The bus carried approximately 34

riders per day from the Spring Valley neighborhood, compared to 5 average daily shuttle riders along the entire shuttle route during October 1984, the last month of the demonstration. Since the former bus service traveled a radically different route from the Spring Valley neighborhood to downtown than the shuttle, despite fairly comparable travel times of 56 minutes for the shuttle/bus trip and 62 minutes for the bus trip, it is possible that some bus riders were destined for points along the route other than downtown. This may explain in part the difference in ridership between the two types of service.

Based on monthly ridership counts, the Spring Valley shuttle averaged between 4 and 9 daily riders, peaking in May 1984 with 8.8 average daily riders (see Table 5-1). Ridership on the Spring Valley route did not increase over time.

5.2.4 Presidents Island

The former bus service on Presidents Island was eliminated in April 1982 during the service cuts. This peak hour service took a slightly circuitous route to downtown. Ridership figures are not available for the portion of the former bus route similar to the Presidents Island shuttle (approximately one-half the route). The bus carried approximately 80 passengers per day along the entire route, compared to the shuttle's 21 daily riders during October 1984, the last month of the demonstration. Since travel times are fairly comparable at 30 minutes for the shuttle/bus trip and 35 minutes for the bus trip, the difference in ridership between the two types of services may be attributable in part to the larger area served by the bus--a

residential neighborhood plus the Presidents Island industrial park--and the additional transfer associated with the shuttle for some passengers.

Since July 1984 (the shuttle began operation in January 1984), the Presidents Island shuttle averaged between 17 and 25 daily riders according to monthly ridership counts (see Table 5-1). The number of trips served grew over time, peaking in September 1984 with 24.4 average daily riders.

5.3 RIDERSHIP CHARACTERISTICS

This section describes trip and socioeconomic characteristics of shuttle passengers on each of the routes, as well as a brief description of on-board survey methodology, the source for this information.

5.3.1 Sources Of Information--Survey

On-board surveys served as the source of information on shuttle ridership characteristics. On-board surveys were conducted on the Bethel Grove, Boxtown, and Presidents Island shuttles. The Spring Valley shuttle did not have sufficient ridership levels to justify a survey effort. The surveys were designed to assess characteristics of users and their trips, and suggestions for service improvement.

Each of the on-board surveys was conducted during a one week period. Surveys were distributed to each passenger using the shuttle during that week, to be completed while on-board the vehicle. Passengers who rode more than once during this period received a survey form to complete each time they boarded the

vehicle, whether the outbound or inbound direction. In order to distinguish between those taking their first shuttle trip for the week from repeat passengers, the survey form asked whether a passenger had previously completed a survey earlier in the week. This enabled the development of a composite picture of the population of shuttle riders. Since the entire weekly population of shuttle riders was surveyed and the response rate was close to 100 percent, it was not necessary to weight the results.

5.3.2 Trip Purpose

Since the shuttle operates during the morning and afternoon peak periods when people are commuting to and from work, almost all shuttle trips are work-related. According to on-board survey responses, all trips on the Bethel Grove and Presidents Island shuttles are work-related, while the Boxtown shuttle also carries non-work trips. Boxtown shuttle passengers use the shuttle for the following trip purposes:

- 40 percent work trips
- 29 percent school trips
- 23 percent personal business trips
- 6 percent medical trips
- 1 percent shopping trips

Since the Spring Valley shuttle was not surveyed, it is difficult to characterize those trips, although it is known that the shuttle carried some intra-neighborhood trips to a school along the route.

In addition to acting as feeders by carrying passengers to and from regular bus stops, the shuttles also transported residents to points within the neighborhood. Although the design and marketing of the shuttle was directed towards potential shuttle/

bus combination trips, intra-neighborhood trips not requiring a transfer were allowed. Table 5-2 presents the percentages of intra-neighborhood shuttle trips by route based on the on-board surveys. Approximately one-third of all Boxtown survey respondents indicated that they were making an intra-neighborhood trip. The majority of these indicated that they were infrequent riders who took the shuttle less than once weekly. According to MATA ridership counts, only 14 percent of all Boxtown trips took place entirely within the neighborhood. Less than 10 percent of all Bethel Grove and Spring Valley trips occurred entirely within the neighborhood. All passengers on the Presidents Island shuttle transferred to a bus.

5.3.3 Characteristics Of Shuttle Passengers

According to the on-board surveys conducted, the typical shuttle passenger who lives in the Bethel Grove* and Boxtown neighborhoods is transit-dependent, low income, black, female, and under 35 years of age. Socioeconomic characteristics of shuttle passengers are shown in Table 5-3. Although the number of respondents is relatively small, 18 in Bethel Grove and 36 in Boxtown, the entire population of passengers during a one-week period was surveyed, resulting in a response rate of close to 100 percent. This typical rider has no driver's license and rides the shuttle at least once a week for transport to work or school. Approximately one-half of the Bethel Grove passengers

*At the time of the Bethel Grove surveys, only the Bethel Grove portion of the later Bethel Grove/Barron-Rhodes shuttle route was being served.

TABLE 5-2

NUMBER OF RIDERS WHO MAKE INTRA-NEIGHBORHOOD SHUTTLE TRIPS BY ROUTE

Route	Percent Riders Who Make Intra-Neighborhood Trips	Number of Riders Who Make Intra-Neighborhood Trips	Total Riders Who Responded
Bethel Grove	6%	1	17
Boxtown	36%	13	36
Presidents Island	0%	0	30

Source: Week-long on-board shuttle survey

TABLE 5-3

CHARACTERISTICS OF BETHEL GROVE, BOXTOWN, AND PRESIDENTS ISLAND PASSENGERS

Response	BETHEL GROVE On-Board Survey Response Sample Size = 18	BOXTOWN On-Board Survey Response Sample Size = 36	PRESIDENTS ISLAND On-Board Survey Response Sample Size = 30
Possession of a Driver's License:			
Yes	25%	56%	59%
No	75%	44%	41%
Age:			
Under 14	0%	0%	0%
14-17	0%	9%	0%
18-24	33%	34%	66%
25-34	33%	34%	66%
35-44	8%	9%	
45-54	25%	6%	35%
55-64	0%	3%	
65+	0%	6%	0%
Sex:			
Male	8%	34%	89%
Female	92%	66%	11%
Race:			
White	0%	-	26%
Black	100%	100%	74%
Other	-	-	0%
Employment Status:			
Employed Full-Time	75%	31%	59%
Employed Part-Time	17%	6%	37%
Student	0%	28%	4%
Homemaker	0%	3%	0%
Retired	0%	6%	0%
Unemployed	8%	19%	0%
Other	0%	6%	0%

Source: On-Board Surveys

and one-third of the Boxtown riders live in households without a car. Of those few who do have driver's licenses and household vehicles, the majority have fewer cars than drivers in their households. Since an on-board survey was not conducted for the Spring Valley shuttle, the evaluation cannot characterize shuttle passengers using this route.

Unlike the other areas with shuttle service, the Presidents Island shuttle serves passengers from a number of Memphis neighborhoods whose place of employment is located in the same industrial park. According to the on-board survey conducted, the only socioeconomic characteristic of passengers which differs from the riders on the other shuttles is the preponderance of male, rather than female riders. Presidents Island shuttle riders tend to be low income, transit-dependent, black males less than 35 years old who use transit to commute to work. Almost all passengers ride the shuttle at least once a week. Approximately 40 percent live in households without a car. Of those who have driver's licenses (over one-half), most have fewer cars than drivers in their households.

5.3.4 Impact On Riders If No Shuttle Service

According to the on-board survey responses, most shuttle riders would continue to take the bus downtown, even without the shuttle service. As shown in Table 5-4, a majority of riders in Bethel Grove (65 percent) and in Boxtown (74 percent) would walk to the nearest bus stop, while few of the Presidents Island passengers would walk due to the distance involved.

TABLE 5-4

HOW SHUTTLE PASSENGERS WOULD MAKE TRIP WITHOUT THE SERVICE (Based on Responses to On-Board Surveys)

Alternate Way To Travel	Bethel Grove	Boxtown	Presidents Island
Walk To or From Bus	11 (65%)	26 (74%)	2 (7%)
Walk To or From Destination	1 (6%)	1 (3%)	2 (7%)
Be Driven To or From Bus	1 (6%)	3 (9%)	0 (0%)
Be Driven To or From Destination	2 (12%)	2 (6%)	12 (40%)
Drive To or From Destination	0 (0%)	0 (0%)	6 (20%)
Go Somewhere Else For Same Purpose	0 (0%)	1 (3%)	5 (17%)
Not Make This Trip	2 (12%)	2 (6%)	3 (10%)

Other passengers would drive or be driven directly to their destinations if shuttle service did not exist. While none of the Bethel Grove or Boxtown shuttle riders would drive themselves, twelve percent and six percent, respectively, would receive rides to their destination. On the other hand, without the shuttle, twenty percent of the Presidents Island riders (six respondents) would drive themselves to work. Another 40 percent of the passengers using the Presidents Island shuttle would receive a ride to work.

The surveys also indicate that 12 percent (two respondents) of the Bethel Grove riders, ten percent (three respondents) of the Presidents Island riders, and six percent (two respondents) of the Boxtown riders would not make the trip without the shuttle service.

5.4 COMMUNITY IMPACTS

This section compares characteristics of shuttle passengers with non-user community residents or employees, as well as a brief description of the survey methodology used to collect the information. In addition, non-user support for the shuttle service is evaluated.

5.4.1 Survey Of Non-Users

Two community surveys were conducted in the Bethel Grove and Boxtown neighborhoods, in addition to a survey of employees on Presidents Island, an industrial park. These surveys served as the source of information on characteristics of non-users and their trips. They were also designed to assess community

awareness and perception of the shuttle, as well as reasons why non-users do not use the service.

The community surveys (Bethel Grove and Boxtown) were conducted among a random sample of community residents, defined as those residing within two blocks of the shuttle route. The sample was compiled from the local Polk Directory, which lists names and phone numbers, when available, by street address for all city households. Households which comprised the sample were pulled from the directory at specific intervals, such as every 5th or 10th neighborhood listing, depending on the size of the neighborhood population, in order to attain a sample size per neighborhood of approximately 200. Attempts were first made to contact each household by phone. For those unable to be reached by phone or without a phone number listed in the directory, a relatively high percentage in some areas, surveyors visited the house and conducted a personal interview. Based on responses to the first few questions, the surveyor requested to speak to a particular household member for the remainder of the survey. An attempt was made to oversample respondents without cars available to use, the group the shuttles were predominantly designed to serve, than would occur normally in the population. The community survey results presented in this report were adjusted to eliminate this bias in the survey sample. Questions pertaining to individual characteristics were adjusted to reflect actual population auto availability. Since households were randomly selected, no adjustments were required for household-related questions.

A separate effort was made to determine how well the respondents to the community surveys resembled the populations in those communities. Table 5-5 displays the results of this effort, based on the community and census data shown in Table 5-6. The community survey results generally appear to be a good representation of actual population characteristics, when compared to data from the 1980 Census.

Six of the seven chi-square and t-tests conducted on the Bethel Grove data show an insignificant difference. This means that the sample parameters tested are not significantly different from the population, and thus are reliable representations of the population. Only household income shows a statistically significant difference between the sample and the population.

Five of the seven Boxtown tests show an insignificant difference. Two tests, one for household distribution, the other for income, indicate a significant difference between the sample and the population.

The Presidents Island survey of employees was distributed to a randomly selected group of employers, representing a range of company sizes. The employers were then responsible for distributing the questionnaires to all of their employees. This survey serves the same function as the community surveys, providing information on travel habits and socioeconomic characteristics of the population living or working in an area served by the shuttle. Two hundred and thirty-one surveys were returned from a total of 1,057 employees, a 22 percent response rate. Out

TABLE 5-5

STATISTICAL COMPARISON OF COMMUNITY SURVEY RESPONSES WITH CENSUS DATA

Socioeconomic Characteristics	Test Statistics	Significance Level*
BETHEL GROVE		
Persons Per Household	t = 1.08	10%
Retirement Age Population	t = 2.09	2%
Race	t = 0.60	10%
Sex	t = -0.70	10%
Household Income	t = -5.40	significantly different
Household Size Distribution	chi-square = 9.59 (5 d.f.)	5%
Distribution of Cars Per Household	chi-square = 7.08 (3 d.f.)	5%
BOXTOWN		
Persons Per Household	t = 0.32	10%
Retirement Age Population	t = -0.61	10%
Race	t = 0.90	10%
Sex	t = 2.58	1%
Household Income	t = -7.85	significantly different
Household Size Distribution	chi-square = 41.93 (5 d.f.)	significantly different
Distribution of Cars Per Household	chi-square = 3.37 (3 d.f.)	10%

*The higher the significance level, the less likely a Type II error could occur, when the hypothesis of no significant difference is erroneously accepted. Correspondingly, the lower the significance level, the less likely a Type I error could occur, when the hypothesis of no significant difference is erroneously rejected.

TABLE 5-6

COMPARISON OF CENSUS AND SURVEY SOCIOECONOMIC INFORMATION

	Bethel Grove Census	Bethel Grove Survey (n=95)	Boxtown Census	Boxtown Survey (n=155)
CENSUS INFO BY BLOCK:				
Persons per Household	3.100	3.253	3.400	3.452
No. of Retirement Age of Those Over 27	12.5%	20.0%	18.0%	20.0%
Race: White	16.1%	13.8%	1.8%	2.8%
Black	83.9%	86.2%	98.2%	97.2%
Population Surveyed		0.9%		4.2%
Households Surveyed		2.8%		14.5%
CENSUS INFO BY TRACT:				
1 Person Households	18.5%	22.1%	11.5%	16.1%
2 Person Households	23.6%	18.9%	12.9%	20.0%
3 Person Households	15.6%	11.6%	12.8%	25.2%
4 Person Households	14.0%	18.9%	19.4%	11.0%
5 Person Households	9.7%	15.8%	18.3%	11.0%
6+ Person Households				
Households with 1 Car	49.6%	36.8%	40.7%	37.7%
Households with 2 Car	26.5%	34.7%	26.0%	31.8%
Households with 3+ Car	8.8%	8.4%	11.9%	9.1%
Households with No Car	15.1%	20.0%	21.4%	21.4%
Mean Household Income	$14,764	$10,393	$13,631	$9,292
Males	44.8%	41.1%*	45.0%	34.6%*
Females	55.2%	58.9%*	55.0%	65.4%*

*The proportion of individuals by sex has been weighted to reflect the population.

of these, only 32, or 14 percent lived where they could travel to work via the shuttle/bus combination trip if they chose. This group was defined as those who live within one-third mile from a bus stop of a bus which connects to the shuttle. Since such a small number met this criterion, the survey results are not representative of the population of employees able to use the shuttle, but only describe the characteristics of these 32 employees.

5.4.2 Comparison Of Shuttle Non-Users and Users

In some respects shuttle passengers tend to differ from their neighbors or other industrial park employees. The Presidents Island employee survey includes only the responses of employees who live within a third of a mile from a bus which connects to the shuttle. Since only 32 employees surveyed met this condition, their responses may not represent the population of possible users, but only describe characteristics of the responding employees. Table A-2 in the appendix compares characteristics of neighborhood residents and industrial park employees to those of shuttle users based on community, employee, and on-board survey responses. The more significant differences include:

- Shuttle riders are more likely to live in households without cars.
- Shuttle passengers are more likely not to have driver's licenses.
- Shuttle users are more likely to be under 35 years of age.
- Boxtown and Presidents Island shuttle riders are more likely to have household incomes of $5,000 or less.

- Bethel Grove shuttle passengers are more likely to be employed and earn more than $5,000.

5.4.3 Non-User Support Of the Shuttle

The neighborhoods served by the shuttles appear to be supportive of this service. Out of the community residents surveyed in Bethel Grove, 45 percent believe the shuttle provides a needed service, and 35 percent stated that they liked the shuttle. Two percent stated that they disliked the shuttle, while another two percent said they would rather have buses.* Out of the residents surveyed in Boxtown, approximately 50 percent said that they liked the shuttle, and over one-third said they think it provides a needed service. One percent think the shuttle is a waste of money, and 5 percent stated they would rather have buses.*

In addition, approximately one-half of the Bethel Grove and Boxtown residents stated on the Community surveys that having the shuttle operate in their neighborhood did benefit them indirectly, even though they did not use it. Out of the 63 percent non-shuttle users in Bethel Grove who responded that the shuttle benefited them:

- 41 percent said it was there if they should ever need it,
- 6 percent said he/she didn't need to purchase a second car, and
- 4 percent said it takes a family member to his/her destination.

*A single respondent could have made more than one of these responses. Percentages reflect individuals and not the proportion of total responses. Therefore all responses to this question totaled together could equal over 100 percent.

Out of the 40 percent non-shuttle users in Boxtown who responded that the shuttle benefited them, even though they did not use it:

- 15 percent said it was there should they ever need it,
- 17 percent said a family member uses it, and
- 5 percent said they do not need a car.

According to MATA, some individuals living in adjacent neighborhoods are aware of the service. They have indicated their acceptance of the shuttles by calling MATA to request similar service for their neighborhoods.

CHAPTER SIX

PRODUCTIVITY AND ECONOMIC IMPACTS

6.1 INTRODUCTION

This chapter evaluates the cost and productivity of shuttle versus bus operation, as well as the impact of the shuttle service on conventional MATA bus service and on regular taxicab service. The analysis is based on costs and ridership for the shuttles and an average systemwide MATA bus during October 1984, the last month of the demonstration. All costs presented in this chapter are in 1984 dollars.

The MATA neighborhood shuttle demonstration indicates that privately-contracted shuttle service has lower operating costs per vehicle hour than an average systemwide MATA bus, while costing more per passenger served. Since route-specific costs of shuttle service are being compared with average systemwide MATA bus costs, rather than comparable route specific costs for bus service, a definitive conclusion cannot be drawn. However, based on the size of the differences in cost displayed in Table 6-1 between the individual shuttle routes and an average systemwide MATA bus, it is reasonable to assume that the hourly cost of operating the shuttle would be significantly less than operating a bus for the routes under study. On the other hand, when comparing the cost per passenger between the shuttle and a typical MATA bus, the bus operates more efficiently with a lower cost per passenger.

TABLE 6-1

REGULAR BUS AND SHUTTLE COSTS PER HOUR AND PER PASSENGER

Service	Average Cost Per Hour*	Average Net Cost Per Hour*/**	Average Cost Per Passenger*	Average Net Cost Per Passenger*/**
Regular Bus (MATA systemwide average)	$37.76	$19.31	$ 1.07	$ 0.57
Bethel Grove/ Barron-Rhodes Shuttle	$16.00	$13.62	$ 6.46	$ 5.61
Boxtown Shuttle	$17.25	$13.45	$ 4.32	$ 3.56
Spring Valley Shuttle	$17.00	$16.14	$18.21	$17.32
Presidents Island Shuttle	$21.00	$14.44	$ 3.05	$ 2.13

*During October 1984, the last month of the feeder demonstration. Values include operating, administration, and amortized capital costs.

**Assumes total revenue collected from shuttle riders (base fare and transfer fee) is attributed to the shuttle operation.

6.2 OPERATING COST PER HOUR

The privately-contracted shuttle service operated at a lower total cost per hour than an average systemwide MATA bus (includes operating, administration, and amortized capital costs). Table 6-1 compares the hourly cost and net cost (cost minus revenue) between an average systemwide MATA bus and each of the shuttle routes. If route-specific bus costs rather than average systemwide costs were available for comparison with the route-specific shuttle costs, the difference in operating costs between the two vehicle types would probably be larger than what is shown in Table 6-1. The total cost of the privately-contracted feeder service ranged from $16 to $21 per hour, which is approximately one-half the cost to MATA of operating an average systemwide fixed-route bus ($37.76). The MATA net cost (total cost less farebox revenue) for contracting privately-operated feeder service ranged from $13.45 to $16.14 per hour, which is approximately two to four dollars, or about 23 percent, less per hour than the deficit to MATA of operating a regular bus ($19.31). This assumes that all the revenue collected from shuttle passengers ($0.95 fare with transfer) is attributed to the shuttle service.

6.3 COST PER PASSENGER

The shuttle service had higher per passenger costs than an average systemwide MATA bus. Table 6-1 compares the cost and net cost (cost minus revenue) per passenger between an average systemwide MATA bus and each of the shuttle routes. If route-specific bus costs rather than average systemwide costs were

available for comparison with the route-specific shuttle costs, the difference in cost per passenger between the two vehicle types would probably be less than what is shown here. In fact, the cost per bus passenger could even be more than the cost per shuttle passenger for some low density routes.

The average systemwide MATA bus cost per passenger is $1.07, which is significantly less than the cost per passenger of the privately-contracted shuttle service, which ranges from $3.05 to $18.21. In addition, the MATA subsidy (net cost) per shuttle passenger ranges from $2.13 to $17.32, which is 4 to 30 times more than the systemwide bus service average of $0.57 per passenger, assuming the total fare paid by shuttle riders is attributable to the shuttle service. These differences are the result of the typical passenger loads carried on each type of service. Since the shuttle routes were designed to serve less productive routes, low-density neighborhoods with low transit demand, it would be expected that the per-passenger costs would be higher than for an average systemwide MATA bus, which services higher density corridors.

6.4 SERVICE CRITERIA: OPERATING COST PER HOUR OR COST PER PASSENGER

An important question involves which measure, total or net cost per hour, or total or net cost per passenger, should determine whether it is cost-effective to provide service to a particular area. The appropriate measure depends on the circumstances and the particular transit system. If policy decrees that an area have the most efficient service, then total or net

cost-per-passenger should be used as the service criterion. If, on the other hand, the transit authority wishes to provide minimal service to low-demand areas at least cost, then total or net cost-per-hour best reflects budgetary constraints in supplying service. Frequently, both sets of measures enter into the analysis.

MATA wanted to provide a minimal level of service to neighborhoods with low transit demand in the least costly manner possible. Therefore, total hourly operating cost was the more appropriate measure of cost-effectiveness for Memphis. A comparison of the total cost of shuttle and average systemwide bus service shows that MATA satisfied its objective with the shuttle concept to provide some service at minimal total cost.

6.5 PRODUCTIVITY

As would be expected, since the shuttle vehicles serve low-demand, low-density Memphis neighborhoods, the shuttle occupancy rate of 0.1 to 4.0 passengers per trip and the number of shuttle passengers per hour (1 to 7) is much lower than for average systemwide bus service (36.9 passengers per hour). Table 6-2 displays the average occupancy rate and the number of passengers per hour for each shuttle route.

The productivity of the shuttle routes may have been affected by the terms of the contract between MATA and the shuttle contractors. MATA retained the responsibility to make operational changes to the service, such as hours of operation, service frequency, and routing. If the contract had specified

TABLE 6-2

SHUTTLE PATRONAGE BY DAY, HOUR, AND TRIP

Shuttle Route	Average Riders* Per Day	Average Riders* Per Hour	Average Riders* Per Trip
Bethel Grove/ Barron-Rhodes	14.5	2.5	1.7
Boxtown	24.5	4.0	2.0
Spring Valley	5.3	0.9	0.1
Presidents Island	20.7	6.9	4.0

*Riders defined as one-way person trips.

Source: MATA ridership counts for October 1984.

reimbursement on other than an hourly basis, the contractor may have had an incentive to identify and carry out service changes that would have increased productivity.

MATA did attempt to improve shuttle service productivity by making adjustments to the routing of two services, Bethel Grove and Spring Valley. After the changes, ridership did improve slightly on the Bethel Grove route, but did not change significantly along the Spring Valley route.

In general, it would have been difficult to increase the productivity of the Memphis shuttle routes by changing service frequency or number of service hours. A reduction in service frequency would have lowered the level of service provided, and correspondingly would probably have reduced total shuttle ridership. In addition, it would have been difficult to reduce service hours, since the shuttles only operated a few hours a day during peak periods, and contractors often request a minimum number of daily service hours.

During the renegotiation of the Presidents Island shuttle contract after the demonstration ended, the contractor insisted that the hours of the shuttle be increased from three to four daily hours. The other three shuttle routes had always operated for six daily hours.

6.6 IMPACT OF FEEDER SERVICE ON BUS SERVICE

The neighborhood shuttles had an insignificant impact on the buses to and from which passengers transfer in terms of ridership. As indicated from the on-board ridership surveys, the majority of the shuttle riders previously walked or received a

ride to the connecting bus stops, and therefore were already included as bus riders. In addition, shuttle ridership volumes were small overall relative to existing ridership on the main bus routes.

Those shuttle riders who were new additions to MATA service since the 1982 service cutbacks were predominantly Spring Valley and Presidents Island shuttle users. Unlike the Bethel Grove and Boxtown neighborhoods, these areas are too far from existing bus stops for many individuals to have walked to them previously. Again, however, the absolute number of persons using the shuttle in these places was sufficiently small that they did not have a significant effect on MATA ridership levels.

6.7 IMPACT OF FEEDER SERVICE ON TAXICAB SERVICE

According to Veterans Cab, who at some time operated each of the shuttle routes, its taxicab patronage in the areas served by the shuttles was not affected by the existence of the shuttle operation. The company does not believe that it lost business to the shuttle, nor gained business due to its position as shuttle operator.

MATA attempted to reduce the possible advertising benefits to the shuttle contractor from operating the service. Through the contract agreement, MATA specified that the shuttle vehicles be painted white, with removable neighborhood shuttle signs on the top and sides. This was expected to eliminate references on the shuttle vehicle to the private operator. However, the requirement to paint the vehicle might have increased the cost of the service.

Although the operators could have used the shuttle vehicles for other transportation services during non-shuttle hours, Veterans Cab, who operated all the shuttle routes during the demonstration except for five months of one route, only used the 10-passenger van for occasional weekend charter service. According to Veterans Cab, the shuttle service hours, rather than vehicle appearance, restricted vehicle use during non-shuttle hours. Previously, the shuttle vehicles had been used for charter, rather than regular taxi service.

6.8 MATA OPERATION VERSUS CONTRACTING

If MATA had operated the shuttle routes itself, its costs would include the purchase or lease of vehicles, along with the prerequisite spare parts and spare vehicles necessary to maintain service when vehicle breakdowns occur. In addition, it would need to train employees to supply the service and to properly maintain the new vehicles. Since MATA staff did not believe these additional expenses to be cost-effective for vehicles that would only be used on a few selected routes, they decided to contract out the service. However, another transit system may find such a cost expenditure worthwhile, depending on its arrangements with labor and the allowability of part-time drivers, the types of vehicles it owns, the number of routes involved, and the service areas.

CHAPTER SEVEN

CONCLUSIONS AND TRANSFERABILITY

The Memphis shared-ride taxi demonstration showed the feasibility of private operation of selective transit routes under contract to the transit authority. It indicated that for some areas where the transit authority wants to provide minimal service, the operation of routes by private suppliers may provide the least cost option.

Between May 1983 and October 1984, MATA operated two to four shuttle routes as part of the demonstration. These routes served low-density, low-demand areas which generally had bus service prior to the extensive service cutbacks in 1982. At that time, the least productive routes were eliminated--those with the fewest number of passengers. Since it had become too costly to provide service to all areas, MATA sought through this demonstration to test a potentially less costly means of providing minimal transit to low-density areas in need of service.

This project demonstrated that private suppliers under contractual arrangements with the public transit authority can serve low-demand areas at less total cost or less net total cost (total cost minus total revenue) than the authority. During October 1984, the last month of the shared-ride taxi demonstration, the total cost of operating (includes administrative, operating, and capital costs) shuttle service ranged from $16 to $21 per hour, compared to an average hourly systemwide MATA bus cost of $38, approximately twice as much. Total net cost varies slightly less between the two modes, with shuttle hourly costs

ranging from $13 to $16, and average systemwide bus costs at $19. However, the net bus cost of serving a low density area would probably be higher than the systemwide average, causing a larger difference than shown between shuttle and bus net operating costs for the routes in the demonstration. When a decision has been made to provide a minimal level of service to an area, type of service provision should be based on the criterion of least net total cost.

Other cost measures, which may be considered when determining the most efficient service for a particular area, are cost per passenger and net cost per passenger. The shuttle routes resulted in a higher net cost per passenger served at $2 to $17, compared to an average systemwide MATA bus at $0.57. Cost per passenger and net cost per passenger are the more appropriate criterion when the decision on type of service is based on which operates most efficiently.

Taxi-feeder service or other arrangements by the transit authority with private providers to operate public transit service must comply with the requirements of Section 13(c) of the Urban Mass Transportation Act, which limits the use of Federal funds to replace active public transit services with those of a private operator. However, if the transit authority reaches an agreement with its labor union that approves the new service, that is sufficient compliance with the Act. The Memphis shuttle service did not violate the Act for two distinct reasons. Primarily, service operation was to be funded by local, and not Federal, funds. Since Federal demonstration funds were to support planning and marketing activities, and not provide any

capital or operating funds, the requirements of the regulation did not pertain. Second, it was considered a new service, rather than a replacement of former bus service, because at least a year had passed between the two types of operations. The former reason stated was sufficient on its own merits to meet the Section 13(c) requirements, while in this instance the latter reason was not sufficient by itself.

In order to implement and operate a successful service under contract to a private supplier, certain conditions must exist. First, there must be an interested group of service suppliers. The larger the number of suppliers, the more competitive the arrangements offered the public provider. Although the contract should be attractive to the operator, transit systems should also attempt to negotiate the most cost-effective arrangement possible. At this stage, public officials and planners should consider different types of contracting arrangements. One is the contractual agreement used in Memphis, where the transit authority reimburses the contractor according to the number of service hours, and thereby remains in charge of planning service operational characteristics and implementing productivity-based service changes. Another method might involve contractor reimbursement according to number of passengers served. Under this arrangement, the contractor has a monetary incentive to modify the service to increase productivity. Other contracting arrangements may involve combinations of reimbursement on an hourly and per passenger basis.

The quality of service is mainly dependent on the control maintained by the transit authority over contractors. One mechanism for such control is the contract document signed by both parties. It should specify penalties the transit authority can enact for specific contractor actions, such as late service or a poorly maintained vehicle. The contract should also indicate under what conditions the contractor can be dismissed.

In addition, the transit authority should be interested in operating a cost-effective system that serves the needs of the public. To achieve that end, staff should be willing to consider alternate means of providing service. MATA displayed this willingness by selecting the low cost method to continue service to three of the four areas previously served by the shuttle.

Necessary public support includes approval from community residents, both service users and non-users. Obviously, there must be public interest in using the service. In addition, the general public would hopefully consider such service a reasonable use of limited public resources. Residents living in the neighborhoods served by the shuttle supported the service, as evidenced by community survey responses, stating service availability in case of need, use by other family members, or reduced need to purchase an additional family car. Approximately one-half of the Bethel Grove and Boxtown non-user residents stated that the shuttle benefited them, even though they did not use it. Since this evaluation did not include surveys of communities not served by the shuttle, it cannot describe their opinion of the shuttle or of the shuttle concept.

APPENDIX

COMMUNITY SURVEYS

TABLE A-1

BIDS ON SUPPLYING SHUTTLE SERVICE

Company	Route	Vehicle Size	Bid (Cost per Hour)
May 2, 1983			
Littlejohn Taxi Service	Bethel Grove	5 passenger sedan	$21.00
		8 passenger sedan	$29.00
	Boxtown	5 passenger sedan	$21.00
		8 passenger sedan	$29.00
Veterans Cab Company	Bethel Grove	5 passenger sedan	$14.00
		8 passenger sedan	$18.00
	Boxtown	5 passenger sedan	$14.00
		8 passenger sedan	$18.00
Yellow Cab Company	Bethel Grove	5 passenger sedan	$17.25
		8 passenger sedan	$19.25
	Boxtown	5 passenger sedan	$17.25
		8 passenger sedan	$19.25
Van Pool Services, Inc.	Bethel Grove	15 passenger van	$21.35*
	Boxtown	15 passenger van	$21.35*
December 9, 1983			
Tri-State Trailways	Spring Valley	5 passenger sedan	$20.00
		10 passenger van	$25.00
	Presidents Isl.	5 passenger sedan	$20.00
		10 passenger van	$25.00
Yellow Cab Company	Spring Valley	5 passenger sedan	$18.75
		10 passenger van	$22.74
	Presidents Isl.	5 passenger sedan	$23.44
		10 passenger van	$28.44
Veterans Cab Company	Spring Valley	5 passenger sedan	$17.00
		10 passenger van	$21.00
	Presidents Isl.	5 passenger	$17.00
		10 passenger van	$21.00

*For an eight-hour day.

TABLE A-1. **BIDS ON SUPPLYING SHUTTLE SERVICE** (Continued)

Company	Route	Vehicle Size	Bid (Cost per Hour)
May 3, 1984			
Veterans Cab Company	Boxtown	5 passenger sedan	$16.00
		8 passenger van	$20.00
	Bethel Grove/ Barron Rhodes	5 passenger sedan	$16.00
		8 passenger van	$20.00
Yellow Cab Company	Boxtown	5 passenger sedan	$16.75
		8 passenger van	$17.75
	Bethel Grove/ Barron Rhodes	5 passenger sedan	$16.75
		8 passenger van	$17.75
United Transportation Co.	Boxtown	5 passenger sedan	$24.00
		8 passenger van	$24.00
	Bethel Grove/ Barron Rhodes	5 passenger sedan	$24.00
		8 passenger van	$24.00

TABLE A-2. COMPARISON OF SOCIOECONOMIC RESPONSES TO THE BETHEL GROVE COMMUNITY, BUXTOWN COMMUNITY, PRESIDENTS ISLAND EMPLOYEE AND ON-BOARD SURVEYS

	BETHEL GROVE		BOXTOWN		PRESIDENTS ISLAND	
Question	Community Survey Response* Sample Size = 95 Pop. = 3400 Households	On-Bosrd Survey Responae Sample Size = 18	Community Survey Response* Sample Size = 155 Pop. = 1070 Households	On-Board Survey Response Sample Size = 36	Employee Survey Response** Sample Size = 32 Pop. = 4600 Households	On-Board Survey Response Sample Size = 30
Number of People in Household:						
1	22%	25%	16%	3%	-	-
2	19%	17%	20%	19%	-	-
3	12%	8%	25%	13%	-	-
4	19%	8%	11%	13%	-	-
5	16%	17%	11%	19%	-	-
6	8%	17%	10%	9%	-	-
7	2%	8%	3%	6%	-	-
8	-	-	3%	6%	-	-
9	2%	-	1%	0%	-	-
10	-	-	-	9%	-	-
11	-	-	-	-	-	-
12	-	-	1%	3%	-	-
Number of People in Household 14 Years or Older:						
1	34%	25%	23%	3%	-	-
2	36%	33%	35%	34%	-	-
3	12%	25%	21%	9%	-	-
4	9%	-	13%	19%	-	-
5	3%	17%	5%	25%	-	-
6	6%	-	2%	9%	-	-
7	-	-	1%	-	-	-
8	-	-	1%	-	-	-
9	-	-	-	-	-	-
10	-	-	-	-	-	-
11	-	-	1%	-	-	-
Number of Vehicles Available to Household:						
0	20%	50%	21%	36%	3%	40%
1	37%	17%	38%	33%	27%	36%
2	35%	25%	32%	27%	57%	16%
3	7%	8%	7%	3%	10%	8%
4	-	-	2%	-	3%	-
5	-	-	-	-	-	-
6	-	-	-	-	-	-
7	-	-	-	-	-	-
8	-	-	-	-	-	-
9	1%	-	-	-	-	-

*Responses that indicate individual characteristics are weighed, while household charscteristics are not.

**Only the responses from Presidents Island employeea who live within a third of a mile from a bus which connects to the shuttle have been included. Since only 32 employees surveyed met this condition, the employee responses do not necessarily represent the entire population of possible users, but only describe the characteristica of a few employees.

TABLE A-2. COMPARISON OF SOCIOECONOMIC RESPONSES TO THE BETHEL GROVE COMMUNITY, BOXTOWN COMMUNITY, PRESIDENTS ISLAND EMPLOYEE AND ON-BOARD SURVEYS (CONTINUED)

Question	BETHEL GROVE		BOXTOWN		PRESIDENTS ISLAND	
	Community Survey Response* Sample Size = 95 Pop. = 3400 Households	On-Board Survey Response Sample Size = 18	Community Survey Response* Sample Size = 155 Pop. = 1070 Households	On-Board Survey Response Sample Size = 36	Employee Survey Response** Sample Size = 32 Pop. = 4600 Households	On-Board Survey Response Sample Size = 30
Possession of a Driver's License:						
Yes	71%	25%	67%	56%	94%	59%
No	29%	75%	33%	44%	7%	41%
Number of Others in Household with Driver's License:						
0	38%	42%	40%	31%	13%	26%
1	38%	25%	34%	25%	47%	19%
2	16%	17%	15%	31%	27%	30%
3	3%	-	8%	9%	10%	11%
4	2%	-	2%	3%	-	15%
5	4%	-	1%	-	-	-
6	-	-	-	-	3%	-
7	-	-	-	-	-	-
8	-	-	-	-	-	-
9	-	-	-	-	-	-
10	-	-	1%	-	-	-
Age:						
Under 14	0%	0%	0%	0%	0%	0%
14-17	5%	0%	6%	9%	0%	0%
18-24	5%	33%	9%	34%	31%	66%
25-34	29%	33%	24%	34%	31%	66%
35-44	14%	8%	8%	9%		
45-54	16%	25%	16%	6%	66%	35%
55-64	12%	0%	18%	3%		
65+	18%	0%	19%	6%	3%	0%
Sex:						
Male	41%	8%	35%	34%	66%	89%
Female	59%	92%	65%	66%	35%	11%
Race:						
White	14%	0%	3%	-	40%	26%
Black	86%	100%	97%	100%	53%	74%
Other	-	-	-	-	7%	0%

*Responses that indicate individual characteristics are weighed, while household characteristics are not.

**Only the responses from Presidents Island employees who live within a third of a mile from a bus which connects to the shuttle have been included. Since only 32 employees surveyed met this condition, the employee responses do not necessarily represent the entire population of possible users, but only describe the characteristics of a few employees.

TABLE A-2. COMPARISON OF SOCIOECONOMIC RESPONSES TO THE BETHEL GROVE COMMUNITY, BOXTOWN COMMUNITY, PRESIDENTS ISLAND EMPLOYEE AND ON-BOARD SURVEYS (CONTINUED)

	BETHEL GROVE		BOXTOWN		PRESIDENTS ISLAND	
Question	Community Survey Response* Sample Size = 95 Pop. = 3400 Households	On-Board Survey Response Sample Size = 18	Community Survey Response* Sample Size = 155 Pop. = 1070 Households	On-Board Survey Response Sample Size = 36	Employee Survey Response** Sample Size = 32 Pop. = 4600 Households	On-Board Survey Response Sample Size = 30
General Description:						
Employed Full-Time	44%	75%	35%	31%	100%	59%
Employed Part-Time	6%	17%	11%	6%	-	37%
Student	6%	0%	9%	28%	-	4%
Homemaker	8%	0%	12%	3%	-	0%
Retired	18%	0%	20%	6%	-	0%
Unemployed	18%	8%	12%	19%	-	0%
Other			-	6%	-	0%
Income:						
$ 5,000 or less	34	0%	31%	47%		
5,001 to 10,000	16	67%	35%	16%		
10,001 to 15,000	25	17%	19%	21%		
15,001 to 20,000	20	17%	11%	16%		
20,001 to 25,000	3%	0%	2%	-		
25,001 to 30,000	0%	0%	2%	-		
30,000 +	2%	0%	1%	-		
Income:						
$ 5,000 or less					11%	25%
5,001 to 15,000					17%	46%
15,001 to 25,000					28%	30%
25,001 to 35,000					22%	0%
35,001 to 45,000					6%	0%
45,000 +					17%	0%

*Responses that indicate individual characteristics are weighed, while household characteristics are not.

**Only the responses from Presidents Island employees who live within a third of a mile from a bus which connects to the shuttle have been included. Since only 32 employees surveyed met this condition, the employee responses do not necessarily represent the entire population of possible users, but only describe the characteristics of a few employees.

BETHEL GROVE COMMUNITY SURVEY

ADDRESS _____

PHONE NUMBER _____

CONTACT RECORD

	DATE	TIME	RESULT*	SURVEYOR	TYPE OF INTERVIEW**	WHEN TO CALL AGAIN
FIRST ATTEMPT						
SECOND ATTEMPT						
THIRD ATTEMPT						
FOURTH ATTEMPT						
FIFTH ATTEMPT						

PLEASE NOTE: A BUSY SIGNAL DOES **NOT** COUNT AS AN ATTEMPT. CALL BACK A HALF HOUR OR MORE LATER.

*Code:

Need to Call Again, If Fewer Than Five Attempts Have Been Made
1 = Specified person not at home
2 = No answer
3 = Only spoke with someone who doesn't live there

Need to Make an In Person Visit
0 = Need to make an in person visit
10 = Phone number and address don't correspond
20 = Phone number disconnected or changed
30 = Is a business phone number

No More Attempts Necessary
11 = Completed interview
12 = Specified person physically unable to come to the phone
13 = First person I spoke to refused to cooperate
14 = Specified person refused to cooperate
15 = An in person visit confirms a vacant house

**Code:

T = Telephone
P = In Person

Note: Individual responses are weighted, while household responses are not.

INTRODUCTION TO PERSON ANSWERING THE PHONE (DOOR):

Hello. My name is _____, and I'm from Memphis State University. I am conducting a survey for the City of Memphis to learn opinions on transportation in Memphis. This survey will take less than 5 minutes. We have selected your household at random to participate in this survey.

IF A TELEPHONE SURVEY, **GO TO QUESTION** A

IF AN IN PERSON SURVEY, **GO TO QUESTION** B

A. First, I'd like to make sure I have the right house. Could you tell me if you live at (CITE STREET NUMBER AND STREET)?

_____ YES **GO TO QUESTION** B

_____ NO SAY: I'm sorry to have disturbed you. Good-bye.

REMINDER: COMPLETE CONTACT RECORD ON THE FRONT OF THIS SURVEY.

B. Could you tell me how many people live in your home, including yourself?

21 (22%)	one person	15 (16%)	five person
18 (19%)	two persons	8 (8%)	six persons
11 (12%)	three persons	2 (2%)	seven persons
18 (19%)	four persons	2 (2%)	nine persons

C. Of those, how many are 14 years old or older?

32 (34%)	one person	9 (9%)	four persons
34 (36%)	two persons	3 (3%)	five persons
11 (12%)	three persons	6 (6%)	six persons

IF THE ANSWER IS ONE, **GO TO QUESTION L**

D. CIRCLE CORRECT ROW IN DECISION TABLE.

E. Could you also tell me how many people usually have a car, van, or truck available to use when they want it?

19 (20%)	zero person	1 (1%)	four persons
36 (38%)	one person	0 (0%)	five persons
31 (33%)	two persons	1 (1%)	six persons
7 (7%)	three persons		

F. CIRCLE CORRECT COLUMN IN DECISION TABLE

DECISION TABLE 1

		Number of Household Members Who Usually Have a Vehicle Available				
		0	1	2	3	4+
Number of People in the Household 14 Years Or Older	2	The oldest person in your home	The person who doesn't have a car available among those who are 14 years old or older	The 2nd oldest person in your home	X	X
	3	The 2nd oldest person in your home	The oldest person who doesn't have a car available	The younger of the 2 people who have a car available	The oldest person in your home	X
	4	The youngest of the 4 people who are 14 years old or older	The 2nd oldest person who doesn't have a car available	The oldest person who has a car available	The person who is 14 years old or older and doesn't have a car available	The 3rd oldest person
	5	The youngest of the 5 people who are 14 years old or older	The 2nd oldest person who doesn't have a car available	The oldest person who has a car available	The oldest person who doesn't have a car available	The 4th oldest person
	6+	The youngest person among those who are 14 years old or older	The 2nd oldest person who doesn't have a car available	The oldest person who has a car available	The oldest person who doesn't have a car available	The 2nd youngest person, among those who are 14 years old or older

F. CIRCLE CORRECT COLUMN IN DECISION TABLE

DECISION TABLE 2

Number of People in the Household 14 Years Or Older	Number of Household Members Who Usually Have a Vehicle Available					
	0	1	2	3	4+	
2	The 2nd oldest person in your home	The person who has a car available	The oldest person in your home	X	X	
3	The oldest person in your home	The younger of the 2 people who are 14 years old or older and don't have a car available	The person who is 14 years old or older and doesn't have a car available	The 2nd oldest person in your home	X	
4	The oldest person in your home	The oldest person who doesn't have a car available	The oldest person who doesn't have a car available	The youngest of the 3 people with a car available	The youngest of the 4 people who are 14 years old or older	
5	The oldest person in your home	The oldest person who doesn't have a car available	The oldest person who doesn't have a car avail-able	The youngest of the 3 people with a car available	The youngest of the 5 people who are 14 years old or older	
6+	The oldest person in your home	The oldest person who doesn't have a car available	The oldest person who doesn't have a car available	The youngest of the 3 people with a car available	The youngest person, among those who are 14 years old or older	

F. CIRCLE CORRECT COLUMN IN DECISION TABLE

DECISION TABLE 3

Number of People in the Household 14 Years Or Older	Number of Household Members Who Usually Have a Vehicle Available				
	0	1	2	3	4+
2	The oldest person in your home	The person who doesn't have a car available among those who are 14 years old or older	The 2nd oldest person in your home	X	X
3	The youngest of the 3 people who are 14 years old or older	The person who has a car available	The older of the 2 people who have a car available	The youngest of the 3 people who have a car available	X
4	The 2nd oldest person in your home	The youngest of the 3 people who are 14 years old or older and don't have a car available	The younger of the 2 people who are 14 years old or older and don't have a car available	The person who is 14 years old or older and doesn't have a car available	The 2nd oldest person in your home
5	The 2nd oldest person in your home	The youngest of the 4 people who are 14 years old or older and don't have a car available	The youngest of the 3 people who are 14 years old or older and don't have a car available	The younger of the 2 people who are 14 years old or older and don't have a car available	The 2nd oldest person in your home
6+	The 2nd oldest person in your home	The youngest person who doesn't have a car available, among those who are 14 years old or older	The youngest person who doesn't have a car available, among those who are 14 years old or older	The youngest person who doesn't have a car available, among those who are 14 years old or older	The 2nd oldest person in your home

F. CIRCLE CORRECT COLUMN IN DECISION TABLE

DECISION TABLE 4

Number of People in the Household 14 Years Or Older	Number of Household Members Who Usually Have a Vehicle Available				
	0	1	2	3	4+
2	The younger of the 2 people who are 14 years old or older	The person who is 14 years old or older and doesn't have a car available	The oldest person	X	X
3	The oldest person in your home	The oldest person without a car available	The person who is 14 years old or older and doesn't have a car available	The oldest person in your home	X
4	The third oldest person	The person who has a car available	The oldest person who doesn't have a car available	The oldest of the 3 people who have a car available	The oldest person in your home
5	The fourth oldest person	The person who has a car available	The oldest person who doesn't have a car available	The oldest of the 3 people who have a car available	The oldest person in your home
6+	The 2nd youngest person, among those who are 14 years old or older	The person who has a car available	The oldest person who doesn't have a car available	The oldest of the 3 people who have a car available	The oldest person in your home

G. CIRCLE CORRECT CELL IN DECISION TABLE

H. For the remainder of the survey, I would like to ask a few questions to (CITE PERSON SELECTED FROM TABLE).

H. (Continued) Is that person available to come to the phone (door)?

_____ YES, I'M THAT PERSON **GO TO QUESTION NO. 1**

_____ YES, I WILL GET THAT PERSON **GO TO QUESTION S**

_____ NO **GO TO QUESTION I**

I. When is the best time to reach that person? _____

J. Whom should I ask for when I call again? _____

K. Thank you. Good-bye.

REMINDER: COMPLETE CONTACT RECORD ON THE FRONT OF THIS SURVEY.

L. IF THE PERSON WHO ANSWERED THE PHONE IS DEFINITELY 14 YEARS OLD OR OLDER, **GO TO QUESTION NO. 1**

IF THE PERSON WHO ANSWERED THE PHONE MAY BE YOUNGER THAN 14, ASK:

May I speak with the oldest person in your home?

_____ YES, I'M THAT PERSON **GO TO QUESTION NO. 1**

_____ YES, I WILL GET THAT PERSON **GO TO QUESITON S**

_____ NO **GO TO QUESTION M**

M. When is the best time to reach that person?

_____

N. Whom should I ask for when I call again?

_____

0. Thank you. Good-bye.

REMINDER: COMPLETE CONTACT RECORD ON THE FRONT OF THIS SURVEY.

P. WHEN MAKING A SECOND, THIRD, FOURTH, OR FIFTH ATTEMPT TO REACH THE SPECIFIED PERSON, SAY:

MAY I SPEAK WITH _____?

_____ YES **GO TO QUESTION S**

_____ NO **GO TO QUESTION Q**

Q. When is the best time to reach him/her?

_____

R. Thank you. Good-bye.

REMINDER: COMPLETE CONTACT RECORD ON THE FRONT OF THIS SURVEY.

S. **TO PERSON WHO WILL ANSWER THE SURVEY QUESTIONS (IF NOT THE PERSON WHO ANSWERED THE PHONE/DOOR):**

Hello. My name is _____, and I'm from Memphis State University. I am conducting a survey for the City of Memphis to learn opinions on transportation in Memphis. This survey will take less than 5 minutes. We have selected you at random to participate in this survey.

GO TO QUESTION NO. 1

1. Have you heard of the Bethel Grove neighborhood shuttle being provided by the Memphis Area Transit Authority?

41 (43%) YES **GO TO QUESTION 2**

54 (57%) NO **GO TO QUESTION*11**

2. How did you first learn about it?

6 (14%) RECEIVED A BROCHURE IN THE MAIL

1 (2%) SAW A POSTER

18 (43%) SAW THE SHUTTLE ON THE STREET

5 (11%) FRIEND/RELATIVE MENTIONED IT

7 (16%) ON TELEVISION

0 (0%) I DON'T REMEMBER

6 (14%) OTHER, SPECIFY _____

3. What do you think about the neighborhood shuttle service? (CHECK AS MANY AS APPLY)

14 (35%) LIKE IT

19 (45%) THINK IT PROVIDES A NEEDED SERVICE

1 (2%) DON'T LIKE IT

0 (0%) THINK IT'S A WASTE OF THE CITY'S MONEY

1 (2%) WOULD RATHER HAVE BUSES

8 (19%) NO REACTION

2 (4%) OTHER, PLEASE SPECIFY _____

ELABORATION OF RESPONSE:

4A. Have you ever used the neighborhood shuttle?

3 (8%) YES **GO TO QUESTION 4B**

39 (92%) NO **GO TO QUESTION*8**

4B. How many trips have you made on the shuttle? Count each round trip as two trips.

1 (37%)	5 OR MORE; SPECIFY _____	GO TO QUESTION 5
2 (63%)	1 TO 4; SPECIFY _____	GO TO QUESTION*7
0 (0%)	MANY TIMES, I DON'T KNOW HOW MANY	GO TO QUESTION 5

5. How often do you ride the neighborhood shuttle? Count each round trip as two trips.

0 (0%)	TWICE A DAY (10 TIMES A WEEK) OR MORE
1 (100%)	ONCE A DAY (5 TIMES A WEEK)
0 (0%)	3 TO 4 TIMES A WEEK
0 (0%)	1 TO 2 TIMES A WEEK
0 (0%)	1 TO 3 TIMES A MONTH
0 (0%)	LESS THAN ONCE A MONTH

6. How could the neighborhood shuttle be improved?

0 (0%)	STOP CLOSER TO MY HOUSE
0 (0%)	RUN MORE FREQUENTLY
1 (100%)	RUN AT DIFFERENT HOURS; SPECIFY DESIRED TIME _____
0 (0%)	CHANGE IN DRIVER'S ATTITUDE, SPECIFY _____ _____
0 (0%)	CHANGE A PHYSICAL CHARACTERISTIC OF THE VEHICLE, SPECIFY _____
0 (0%)	NOTHING COULD IMPROVE IT
0 (0%)	NO RESPONSE
0 (0%)	OTHER, SPECIFY _____

GO TO QUESTION*18

*7. What changes would cause you to use it more?

0 (0%) STOP CLOSER TO MY HOUSE

0 (0%) RUN MORE FREQUENTLY

0 (0%) RUN AT DIFFERENT HOURS; SPECIFY DESIRED TIME _____

0 (0%) CHANGE IN DRIVER'S ATTITUDE, SPECIFY _____

0 (0%) CHANGE A PHYSICAL CHARACTERISTIC OF THE VEHICLE, SPECIFY _____

1 (40%) NOTHING COULD IMPROVE IT

0 (0%) NO RESPONSE

1 (60%) OTHER, SPECIFY _____

GO TO QUESTION 9

*8. What changes would cause you to use the shuttle?

1 (2%) STOP CLOSER TO MY HOUSE

1 (3%) RUN MORE FREQUENTLY

2 (5%) RUN AT DIFFERENT HOURS; SPECIFY DESIRED TIME _____

0 (0%) CHANGE IN DRIVER'S ATTITUDE, SPECIFY _____

0 (0%) CHANGE A PHYSICAL CHARACTERISTIC OF THE VEHICLE, SPECIFY _____

4 (11%) NOTHING WOULD CAUSE ME TO USE IT

9 (24%) NO RESPONSE OR I DON'T KNOW

22 (57%) OTHER, SPECIFY _____

9. Do you believe the neighborhood shuttle benefits you?

25 (63%) YES **GO TO QUESTION 10**

14 (37%) NO GO TO QUESTION 11

10. How does it benefit you?

1 (6%)	IT TAKES ME TO THE BUS
1 (4%)	IT TAKES ME TO OR FROM MY DESTINATION
0 (0%)	IT SAVES ME TIME
0 (0%)	IT SAVES ME MONEY
8 (41%)	IT'S THERE IF I SHOULD EVER NEED IT
0 (0%)	I DON'T NEED A CAR
1 (6%)	I DON'T NEED A SECOND CAR
0 (0%)	IT TAKES A FAMILY MEMBER TO OR FROM THE BUS
1 (4%)	IT TAKES A FAMILY MEMBER TO OR FROM THEIR DESTINATION
0 (0%)	IT TAKES SOMEONE TO OR FROM MY HOUSE
4 (19%)	NO RESPONSE
4 (19%)	OTHER, SPECIFY

*11. How often do you ride Memphis Area Transit Authority buses, if at all? Count each round trip as two trips.

9 (9%)	TWICE A DAY OR MORE	**GO TO QUESTION 12**
0 (0%)	ONCE A DAY	**GO TO QUESTION 12**
4 (4%)	4 TO 6 TIMES A WEEK	**GO TO QUESTION 12**
4 (4%)	1 TO 3 TIMES A WEEK	**GO TO QUESTION 12**
4 (5%)	1 TO 3 TIMES A MONTH	**GO TO QUESTION 12**
6 (6%)	LESS THAN ONCE A MONTH	**GO TO QUESTION 12**
67 (72%)	I DON'T RIDE THE BUS	**GO TO QUESTION 13**

12. What bus routes do you ride?

4 (14%) # 4: WALKER/CHELSEA/HYDE PARK/CASTALIA/ALCY

11 (41%) #10: WATKINS/LAMAR/RIDGEGROVE/RANGELINE/ COTTONWOOD/SCOTTSDALE/MALL OF MEMPHIS

1 (2%) #32: EAST PARKWAY/HOLLYWOOD/IRS/AIRPORT

12 (46%) #56: UNION/KIMBALL/MALL OF MEMPHIS

1 (5%) I DON'T KNOW

2 (8%) OTHER, SPECIFY

GO TO QUESTION 16

13. Was there a time in the past when you used to ride Memphis Area Transit Authority buses?

58 (87%) YES **GO TO QUESTION 14A**

8 (13%) NO **GO TO QUESTION 16**

14A. Do you remember which bus routes?

50 (86%) YES **GO TO QUESTION 14B**

8 (14%) NO **GO TO QUESTION 15**

14B. ONLY ASK IF RESPONDENT DID NOT ALREADY ANSWER THIS QUESTION WHILE RESPONDING TO QUESTION 14A:

Which bus routes did you used to ride?

9 (19%) #4: WALKER/WALKERALCY

3 (6%) #10: WATKINS/WATKINS RIDGE GROVE

0 (0%) #17: GLENVIEW

3 (6%) #20: AIRPORT

0 (0%) #30: CROMWELL

4 (9%) #32: EAST PARKWAY

5 (10%) #36: OAKVILLE/ PARKWAY VILLAGE

19 (38%) #56: LAMAR

0 (0%) #58: FOX MEADOWS

0 (0%) LAMAR BLAZER (Express Route)

18 (37%) OTHER, SPECIFY _____

15. How do you now make the trips you used to make by bus?

1 (2%) DO NOT MAKE THOSE TRIPS

0 (0%) GO SOMEWHERE ELSE FOR THE SAME PURPOSE

3 (6%) WALK

12 (21%) AM DRIVEN

2 (4%) RIDE WITH SOMEONE ELSE

39 (72%) DRIVE

0 (0%) TAKE THE SHUTTLE

0 (0%) TAKE A TAXI

0 (0%) OTHER, PLEASE SPECIFY _____

16. Do you ever use taxis?

20 (21%) YES **GO TO QUESTION 17**

74 (79%) NO **GO TO QUESTION 18**

17. How often do you use taxis? Count each round trip as two trips.

0 (0%)	TWICE A DAY OR MORE	4 (18%)	1 TO 3 TIMES A WEEK
0 (0%)	ONCE A DAY	4 (19%)	1 TO 3 TIMES A MONTH
1 (6%)	4 TO 6 TIMES A WEEK	11 (57%)	LESS THAN ONCE A MONTH

*18. READ TO RESPONDENT:

To conclude our interview, I'd like to ask you seven short answer census-type questions. All answers will remain confidential.

19. How many cars, vans, or trucks, if any, do the people in your home have available to use?

19 (20%)	0 vehicles	7 (7%)	3 vehicles
35 (37%)	1 vehicle	1 (1%)	9 vehicles
33 (35%)	2 vehicles		

20. Do you have a driver's license?

68 (71%)	YES	27 (29%)	NO

21. How many people in your home, not counting yourself, have a driver's license?

36 (38%)	0 persons	3 (3%)	3 persons
36 (38%)	1 person	1 (2%)	4 persons
15 (16%)	2 persons	3 (4%)	5 persons

22. Which of the following best describes your work situation? (READ THE ENTIRE LIST)

42 (44%)	Employed Full-Time	8 (8%)	Homemaker
6 (6%)	Employed Part-Time	17 (18%)	Retired
6 (6%)	Student	17 (18%)	Unemployed

23. Would you please tell me your race?

13 (14%)	WHITE
81 (86%)	BLACK
0 (0%)	OTHER, SPECIFY _____

24. Would you please tell me your age? _____

IF RESPONDENT DOESN'T WANT TO ANSWER, SAY:

I understand. Let me read a range of ages. Please stop me at the right one. (READ THE LIST UNTIL STOPPED BY RESPONDENT)

17 (18%)	65 or older	26 (29%)	25 to 34
11 (12%)	55 to 64	5 (5%)	18 to 24
14 (16%)	45 to 54	5 (5%)	14 to 17
12 (14%)	35 to 44	0 (0%)	under 14

25. What is the total yearly income of all the people living in your home? (BEFORE TAXES) I will list a range of amounts. Please stop me at the right one. (READ THE LIST UNTIL STOPPED BY RESPONDENT)

21 (34%)	5,000 dollars or less
10 (16%)	5,001 to 10,000 dollars
15 (25%)	10,001 to 15,000 dollars
12 (20%)	15,001 to 20,000 dollars
2 (3%)	20,001 to 25,000 dollars
0 (0%)	25,001 to 30,000 dollars
1 (2%)	more than 30,000 dollars

26. CONCLUDING REMARKS:

Thank you for participating in this survey. Your answers will help the City of Memphis plan transportation for your neighborhood in the future. Have a good evening (day).

27. CHECK SEX OF RESPONDENT

37 (41%)	MALE
53 (59%)	FEMALE

28. TYPE OF SURVEY CONDUCTED

47 (49%)	TELEPHONE
48 (51%)	IN PERSON

29. REMINDER: COMPLETE CONTACT RECORD ON THE FRONT OF THIS SURVEY.

BETHEL GROVE COMMUNITY SURVEY OPEN-ENDED RESPONSES

Question	Response (# of respondents if more than one)
2. How did you first learn about it (the neighborhood shuttle)?	1. Civic club 2. Word of mouth 3. Neighborhood meeting 4. Newspaper (2)
3. What do you think about the neighborhood shuttle service?	1. Would like it to operate beyond 9 AM during the week and on Saturdays.
6. How could the neighborhood shuttle be improved?	1. Operate between 9:30 AM and 3:30 PM.
7. What changes would cause you to use it more?*	1. Change the route.
8. What changes would cause you to use the shuttle?	1. Illness 2. Car problems (13) 3. Lost car (2) 4. No other transportation 5. No car available 6. Death in family 7. Had to walk
10. How does it benefit you?	1. It's safer. 2. It provides transportation to those who would otherwise not have any.
12. What bus routes do you ride?	1. #34 High Point 2. #36
14. Which bus routes did you used to ride?	1. #2 Fairgrounds (2) 2. #6 Lamar 3. #9 4. #13 Lauderdale (2) 5. #16 Forest Hill (2) 6. #19 Vallentine 7. #31 Crosstown 8. #44 Otisdale 9. #52 Jackson (2) 10. #54 Shelby Oaks 11. #57 Park (2) 12. Chelsea (2) 13. Hornlake, near Jeter School 14. Main St. (2) 15. White Haven, Elvis Presley, Airways

*Individuals who had used the shuttle one to four times were asked this question.

Date _____ Time _____

BETHEL GROVE NEIGHBORHOOD SHUTTLE SURVEY

This survey is sponsored by the Memphis Area Transit Authority (MATA), which is interested in your opinion of transit service in your neighborhood. MATA greatly appreciates your help in answering these questions.

1. Have you already filled out a survey this week while on the shuttle? (n=38)

20 (53%)	yes	Please answer questions 1 to 4
18 (47%)	no	Please answer all questions

2. How often do you usually ride the neighborhood shuttle? Count each round trip as two trips.

5 (28%)	two trips a day (daily round trip) or more	8 (44%)	1 to 2 trips a week
2 (11%)	one trip a day (5 trips a week)	0 (0%)	1 to 3 trips a month
3 (17%)	3 to 4 trips a week	0 (0%)	less than one trip a month

3a. How many shuttle trips have you made so far this week, not counting this trip? Count each round trip as two trips. (n=38)

15 (39%)	0 trips	3 (8%)	6 trips
4 (11%)	1 trip	2 (5%)	7 trips
3 (8%)	2 trips	2 (5%)	8 trips
6 (16%)	3 trips	1 (3%)	9 trips
2 (5%)	4 trips		

3b. How many more shuttle trips do you plan to make this week? Count each round trip as two trips. (n=38)

3 (8%)	0 trips	3 (8%)	5 trips
4 (11%)	1 trips	2 (5%)	6 trips
11 (29%)	2 trips	3 (8%)	9 trips
7 (18%)	3 trips		
5 (13%)	4 trips		

4. What is the purpose of this trip?

18 (100%)	work	0 (0%)	personal business
0 (0%)	school	0 (0%)	social/recreational
0 (0%)	medical	0 (0%)	other, please specify
0 (0%)	shopping		_____

5. Without neighborhood shuttle service, how would you make this trip? I would:

2 (12%)	not make this trip	2 (12%)	be driven to or from my dest.
0 (0%)	go somewhere else for the same purpose	0 (0%)	taxi to or from the bus
		0 (0%)	taxi to or from my dest.
11 (65%)	walk to or from the bus	0 (0%)	drive to or from the bus
1 (6%)	walk to or from my destination	0 (0%)	drive to or from my dest.
1 (6%)	be driven to or from the bus	0 (0%)	other, please specify
			_____

6. How long does it take you to walk to or from the neighborhood shuttle?

1 (4%)	0 minutes	2 (9%)	3 minutes
8 (35%)	1 minute	4 (18%)	5 minutes
2 (9%)	2 minutes	1 (4%)	8 minutes
1 (4%)	9 minutes	2 (9%)	15 minutes
1 (4%)	10 minutes	1 (4%)	38 minutes

7a. Do you plan to transfer to the bus, or have you just transferred from the bus?

11 (65%) yes (I will transfer to a bus) 1 (6%) no - SKIP TO QUESTION 8
5 (29%) yes (I did transfer from a bus)

7b. To or from which bus route do you transfer?

0 (0%)	none	7 (44%)	#56: Union/Kimball/Mall
3 (19%)	#10: Watkins/Lamar	2 (13%)	If other, which bus?
4 (25%)	#32: East Parkway/ Hollywood/IRS/Airport		

8. When you pay your fare, do you pay as:

16 (100%)	regular adult	0 (0%)	elderly
0 (0%)	student	0 (0%)	handicapped

9. How could the neighborhood shuttle be improved?

The next section asks census-type questions. All answers will remain confidential.

10. How many people live in your home, including yourself?

3 (25%)	1 person	2 (17%)	5 people
2 (17%)	2 people	2 (17%)	6 people
1 (8%)	3 people	1 (8%)	7 people
1 (8%)	4 people		

11. Of those, how many people are 14 years old or older?

3 (25%)	1 person	3 (25%)	3 people
4 (33%)	2 people	2 (17%)	5 people

12. How many cars, vans or trucks, if any, are available to people living in your home?

6 (50%)	0 vehicle	3 (25%)	2 vehicles
2 (17%)	1 vehicle	1 (8%)	3 vehicles

13. Do you have a driver's license? 3 (25%) yes 9 (75%) no

14. How many people in your home, not counting yourself, have a driver's license?

5 (42%)	0 persons	2 (17%)	2 persons
3 (25%)	1 person	2 (17%)	3 persons

15. In what age group do you belong?

0 (0%)	under 14	1 (8%)	35-44
0 (0%)	14-17	3 (25%)	45-54

4 (33%) 25-34 0 (0%) 65 or older

16. Are you:
1 (8%) male 11 (92%) female

17. Are you:
0 (0%) white 12 (100%) black 0 (0%) other

18. Check the one which describes you best:

9 (75%)	employed full-time	0 (0%)	retired
2 (17%)	employed part-time	1 (8%)	unemployed
0 (0%)	student	0 (0%)	other: _____
0 (0%)	homemaker		

19. What is your street address?

_____

20. What is the total yearly income before taxes of all the people living in your home?

0 (0%)	$5,000 or less	0 (0%)	$20,001 to $25,000
4 (67%)	$5,001 to $10,000	0 (0%)	$25,001 to $30,000
1 (17%)	$10,001 to $15,000	0 (0%)	more than $30,000
1 (17%)	$15,001 to $20,000		

Thank you for participating in this survey. Your answers will help us determine how well the neighborhood shuttle is serving your neighborhood.

BETHEL GROVE ON BOARD SURVEY OPEN-ENDED RESPONSES

Question	Response (# of respondents if more than one)
7b. To or from which bus route do you transfer?	1. #52 Park 2. Lamar Airways
9. How could the neighborhood shuttle be improved?	1. Extend the route to Ketchum and Pendleton Streets. 2. Shuttle operation at night. 3. Fine as is. (2) 4. Use of a larger vehicle. 5. Would like to transfer from the #33 Highland bus to the shuttle at Lamar and Semmes. 6. Shuttle operation at different hours. 7. Increase public awareness of the shuttle. (2)
19. What is your street address?	1. 2455 Browning 2. 2654 Browning 3. 2404 Boyle 4. 2463 Boyle 5. 2681 Dunn 6. 2565 Kimball 7. 2375 Lamar, Apt 4 8. 2746 Metire (Pendleton Arms) 9. 2165 Mourfield 10. 2161 Pendleton 11. 3008 Southware 12. 1804 Wildrose

BOXTOWN COMMUNITY SURVEY

ADDRESS _____

PHONE NUMBER _____

NAME OF SPECIFIED PERSON _____

CONTACT RECORD

	DATE	TIME	RESULT*	SURVEYOR	TYPE OF INTERVIEW**	WHEN TO CALL AGAIN
FIRST ATTEMPT						
SECOND ATTEMPT						
THIRD ATTEMPT						
FOURTH ATTEMPT						
FIFTH ATTEMPT						

PLEASE NOTE: A BUSY SIGNAL DOES **NOT** COUNT AS AN ATTEMPT. CALL BACK A HALF HOUR OR MORE LATER.

*Code:

Need to Call Again, If Fewer Than Five Attempts Have Been Made
1 = Specified person not at home
2 = No answer
3 = Only spoke with someone who doesn't live there

Need to Make an In Person Visit
10 = Phone number and address don't correspond
20 = Phone number disconnected or changed
30 = Is a business phone number

No More Attempts Necessary
11 = Completed interview
12 = Specified person physically unable ever to come to the phone
13 = First person I spoke to refused to cooperate
14 = Specified person refused to cooperate
15 = An in person visit confirms a vacant house
16 = An in person visit confirms a business

**Code:

T = Telephone
P = In Person

Note: Individual responses are weighted, while household responses are not.

IF YOU KNOW THE NAME OF THE SPECIFIED PERSON, SAY:

MAY I SPEAK WITH _____?

_____ YES **GO TO QUESTION N** (ON PAGE 5)

_____ NO

When is the best time to reach him/her?

_____

Thank you. Good-bye.

REMINDER: COMPLETE CONTACT RECORD ON THE FRONT OF THIS SURVEY.

IF YOU DO NOT KNOW THE NAME OF THE SPECIFIED PERSON, MAKE THE FOLLOWING INTRODUCTION TO PERSON ANSWERING THE PHONE (DOOR):

Hello. My name is _____, and I'm from Memphis State University. I am conducting a survey for the City of Memphis to learn opinions on transportation in Memphis. This survey will take less than 5 minutes. We have selected your household at random to participate in this survey.

IF A TELEPHONE SURVEY, **GO TO QUESTION A**

IF AN IN PERSON SURVEY, **GO TO QUESTION B**

A. First, I'd like to make sure I have the right house. Could you tell me if you live at (CITE STREET NUMBER AND STREET)?

_____ YES **GO TO QUESTION B**

_____ NO SAY: I'm sorry to have disturbed you. Good-bye.

REMINDER: COMPLETE CONTACT RECORD ON THE FRONT OF THIS SURVEY.

B. Could you tell me how many people live in your home, including yourself?

_____ PEOPLE

IF THE ANSWER IS ONE, **GO TO QUESTION NO. 1** (ON PAGE 6)

25 (16%)	one person	15 (10%)	six persons
31 (20%)	two persons	5 (3%)	seven persons
39 (25%)	three persons	4 (3%)	eight persons
17 (11%)	four persons	1 (1%)	nine persons
17 (11%)	five persons	1 (1%)	twelve persons

C. Of those, how many are 14 years old or older?
_____ PEOPLE CIRCLE CORRECT ROW IN DECISION TABLE.

35 (23%)	one person	3 (2%)	six persons
54 (35%)	two persons	1 (1%)	seven persons
33 (21%)	three persons	1 (1%)	eight persons
20 (13%)	four persons	1 (1%)	eleven persons
7 (5%)	five persons		

D. Could you also tell me how many people usually have a car, van, or truck available to use when they want it?
_____ PEOPLE CIRCLE CORRECT COLUMN IN DECISION TABLE

33 (21%)	zero person	5 (3%)	four persons
55 (35%)	one persons	1 (1%)	five persons
50 (32%)	two persons	1 (1%)	eleven persons
10 (6%)	three persons		

E. CIRCLE CORRECT CELL IN DECISION TABLE

DECISION TABLE 1

Number of People in the Household 14 Years Or Older	Number of Household Members Who Usually Have a Vehicle Available				
	0	1	2	3	4+
2	The oldest person in your home	The person who doesn't have a car available among those who are 14 years old or older	The 2nd oldest person in your home	X	X
3	The 2nd oldest person in your home	The oldest person who doesn't have a car available	The younger of the 2 people who have a car available	The oldest person in your home	X
4	The youngest of the 4 people who are 14 years old or older	The 2nd oldest person who doesn't have a car available	The oldest person who has a car available	The person who is 14 years old or older and doesn't have a car available	The 3rd oldest person
5	The youngest of the 5 people who are 14 years old or older	The 2nd oldest person who doesn't have a car available	The oldest person who has a car available	The oldest person who doesn't have a car available	The 4th oldest person
6+	The youngest person among those who are 14 years old or older	The 2nd oldest person who doesn't have a car available	The oldest person who has a car available	The oldest person who doesn't have a car available	The 2nd youngest person, among those who are 14 years old or older

DECISION TABLE 2

Number of People in the Household 14 Years Or Older	Number of Household Members Who Usually Have a Vehicle Available				
	0	1	2	3	4+
2	The 2nd oldest person in your home	The person who has a car available	The oldest person in your home	X	X
3	The oldest person in your home	The younger of the 2 people who are 14 years old or older and don't have a car available	The person who is 14 years old or older and doesn't have a car available	The 2nd oldest person in your home	X
4	The oldest person in your home	The oldest person who doesn't have a car available	The oldest person who doesn't have a car available	The youngest of the 3 people with a car available	The youngest of the 4 people who are 14 years old or older
5	The oldest person in your home	The oldest person who doesn't have a car available	The oldest person who doesn't have a car available	The youngest of the 3 people with a car available	The youngest of the 5 people who are 14 years old or older
6+	The oldest person in your home	The oldest person who doesn't have a car available	The oldest person who doesn't have a car available	The youngest of the 3 people with a car available	The youngest person, among those who are 14 years old or older

DECISION TABLE 3

Number of People in the Household 14 Years Or Older	Number of Household Members Who Usually Have a Vehicle Available				
	0	1	2	3	4+
2	The oldest person in your home	The person who doesn't have a car available among those who are 14 years old or older	The 2nd oldest person in your home	X	X
3	The youngest of the 3 people who are 14 years old or older	The person who has a car available	The older of the 2 people who have a car available	The youngest of the 3 people who have a car available	X
4	The 2nd oldest person in your home	The youngest of the 3 people who are 14 years old or older and don't have a car available	The younger of the 2 people who are 14 years old or older and don't have a car available	The person who is 14 years old or older and doesn't have a car available	The 2nd oldest person in your home
5	The 2nd oldest person in your home	The youngest of the 4 people who are 14 years old or older and don't have a car available	The youngest of the 3 people who are 14 years old or older and don't have a car available	The younger of the 2 people who are 14 years old or older and don't have a car available	The 2nd oldest person in your home
6+	The 2nd oldest person in your home	The youngest person who doesn't have a car available, among those who are 14 years old or older	The youngest person who doesn't have a car available, among those who are 14 years old or older	The youngest person who doesn't have a car available, among those who are 14 years old or older	The 2nd oldest person in your home

DECISION TABLE 4

Number of People in the Household 14 Years Or Older	Number of Household Members Who Usually Have a Vehicle Available				
	0	1	2	3	4+
2	The younger of the 2 people who are 14 years old or older	The person who is 14 years old or older and doesn't have a car available	The oldest person	X	X
3	The oldest person in your home	The oldest person without a car available	The person who is 14 years old or older and doesn't have a car available	The oldest person in your home	X
4	The third oldest person	The person who has a car available	The oldest person who doesn't have a car available	The oldest of the 3 people who have a car available	The oldest person in your home
5	The fourth oldest person	The person who has a car available	The oldest person who doesn't have a car available	The oldest of the 3 people who have a car available	The oldest person in your home
6+	The 2nd youngest person, among those who are 14 years old or older	The person who has a car available	The oldest person who doesn't have a car available	The oldest of the 3 people who have a car available	The oldest person in your home

1. Have you heard of the Boxtown neighborhood shuttle being provided by the Memphis Area Transit Authority?

93 (60%) YES **GO TO QUESTION 2**

62 (40%) NO **GO TO QUESTION 11** (ON PAGE 9)

2. How did you first learn about it?

15 (16%) RECEIVED A BROCHURE IN THE MAIL

2 (2%) SAW A POSTER

35 (37%) SAW THE SHUTTLE ON THE STREET

17 (19%) FRIEND/RELATIVE MENTIONED IT

10 (11%) ON TELEVISION

6 (7%) I DON'T REMEMBER

8 (9%) OTHER, SPECIFY _____

3. What do you think about the neighborhood shuttle service? (CHECK AS MANY AS APPLY)

45 (48%) LIKE IT

33 (36%) THINK IT PROVIDES A NEEDED SERVICE

0 (0%) DON'T LIKE IT

1 (1%) THINK IT'S A WASTE OF THE CITY'S MONEY

4 (5%) WOULD RATHER HAVE BUSES

12 (13%) NO REACTION

5 (6%) OTHER, PLEASE SPECIFY _____

ELABORATION OF RESPONSE:

4A. Have you ever used the neighborhood shuttle?

12 (13%) YES **GO TO QUESTION 4B**

81 (87%) NO **GO TO QUESTION 8** (ON PAGE 8)

4B. How many trips have you made on the shuttle? Count each round trip as two trips.

4 (31%) 5 OR MORE; SPECIFY _____ **GO TO QUESTION 5**

4 (31%) 1 TO 4; SPECIFY _____ **GO TO QUESTION 7**

5 (38%) MANY TIMES, I DON'T KNOW HOW MANY **GO TO QUESTION 5**

5. How often do you ride the neighborhood shuttle? Count each round trip as two trips.

1 (11%) TWICE A DAY (10 TIMES A WEEK) OR MORE

2 (21%) 6 TO 9 TIMES A WEEK

2 (21%) ONCE A DAY (5 TIMES A WEEK)

0 (0%) 3 TO 4 TIMES A WEEK

2 (20%) 1 TO 2 TIMES A WEEK

2 (25%) 1 TO 3 TIMES A MONTH

0 (0%) LESS THAN ONCE A MONTH

6. How could the neighborhood shuttle be improved?

1 (11%) STOP CLOSER TO MY HOUSE

2 (21%) RUN MORE FREQUENTLY

3 (31%) RUN AT DIFFERENT HOURS; SPECIFY DESIRED TIME _____

0 (0%) CHANGE IN DRIVER'S ATTITUDE, SPECIFY _____

0 (0%) CHANGE A PHYSICAL CHARACTERISTIC OF THE VEHICLE, SPECIFY _____

1 (11%) NOTHING COULD IMPROVE IT

1 (13%) NO RESPONSE

2 (24%) OTHER, SPECIFY _____

GO TO QUESTION 17 (ON PAGE 11)

7. What changes would cause you to use it more?

1 (23%) STOP CLOSER TO MY HOUSE

1 (23%) RUN MORE FREQUENTLY

0 (0%) RUN AT DIFFERENT HOURS; SPECIFY DESIRED TIME _____

0 (0%) CHANGE IN DRIVER'S ATTITUDE, SPECIFY _____

0 (0%) CHANGE A PHYSICAL CHARACTERISTIC OF THE VEHICLE, SPECIFY _____

1 (23%) NOTHING COULD IMPROVE IT

0 (0%) NO RESPONSE

1 (27%) OTHER, SPECIFY _____

GO TO QUESTION 9

8. What changes would cause you to use the shuttle?

13 (16%) STOP CLOSER TO MY HOUSE

5 (7%) RUN MORE FREQUENTLY

1 (1%) RUN AT DIFFERENT HOURS; SPECIFY DESIRED TIME _____

1 (1%) CHANGE IN DRIVER'S ATTITUDE, SPECIFY _____

0 (0%) CHANGE A PHYSICAL CHARACTERISTIC OF THE VEHICLE, SPECIFY _____

6 (8%) NOTHING WOULD CAUSE ME TO USE IT

16 (20%) NO RESPONSE OR I DON'T KNOW

37 (45%) CAR BROKE DOWN OR UNAVAILABLE

4 (5%) OTHER, SPECIFY _____

9. Do you believe the neighborhood shuttle benefits you?

34 (40%) YES **GO TO QUESTION 10**

50 (60%) NO **GO TO QUESTION 11**

10. How does it benefit you?

2 (7%)	IT TAKES ME TO THE BUS
0 (0%)	IT TAKES ME TO OR FROM MY DESTINATION
2 (7%)	IT SAVES ME TIME
1 (4%)	IT SAVES ME MONEY
4 (15%)	IT'S THERE IF I SHOULD EVER NEED IT
2 (5%)	I DON'T NEED A CAR
0 (0%)	I DON'T NEED A SECOND CAR
4 (12%)	IT TAKES A FAMILY MEMBER TO OR FROM THE BUS
1 (5%)	IT TAKES A FAMILY MEMBER TO OR FROM THEIR DESTINATION
0 (0%)	IT TAKES SOMEONE TO OR FROM MY HOUSE
14 (48%)	NO RESPONSE
1 (3%)	OTHER, SPECIFY

11. How often do you ride Memphis Area Transit Authority buses, if at all? Count each round trip as two trips.

4 (2%)	TWICE A DAY OR MORE	**GO TO QUESTION 12**
2 (1%)	ONCE A DAY	**GO TO QUESTION 12**
11 (8%)	4 TO 6 TIMES A WEEK	**GO TO QUESTION 12**
14 (10%)	1 TO 3 TIMES A WEEK	**GO TO QUESTION 12**
11 (8%)	1 TO 3 TIMES A MONTH	**GO TO QUESTION 12**
20 (14%)	LESS THAN ONCE A MONTH	**GO TO QUESTION 12**
85 (58%)	I DON'T RIDE THE BUS	**GO TO QUESTION 13**

12. Which bus routes do you ride?

0 (0%)	#11:	THOMAS/HODGE
0 (-0%)	#11T:	THOMAS/HODGE/TULANE
0 (0%)	#11C:	THOMAS/HODGE/CORNING
0 (0%)	#11FP:	THOMAS/HODGE/FRAYSER PLAZA
0 (0%)	#11N:	THOMAS/HODGE/NORTHGATE
7 (12%)	#12:	FLORIDA
32 (52%)	#12W:	FLORIDA/WEAVER
5 (9%)	#12IH:	FLORIDA/INDIAN HILLS
4 (7%)	#12L:	FLORIDA/LEVI
11 (17%)	#19:	VOLLINTINE/THIRD ST.
3 (5%)	#19R:	VOLLINTINE/THIRD ST./RAINES
2 (2%)	#19WP:	VOLLINTINE/THIRD ST./WESTERN PARK
0 (0%)	#19D:	VOLLINTINE/THIRD ST./DOUGLASS
0 (0%)	#19NC:	VOLLINTINE/THIRD ST./NATIONAL CEMETERY
0 (0%)	#30PB:	PERKINS/BROOKS/CROSSTOWN
4 (7%)	I DON'T KNOW	
0 (0%)	OTHER, SPECIFY_____	

13. Do you ever use taxis?

12 (8%) YES **GO TO QUESTION 14**

135 (92%) NO **GO TO QUESTION 15**

14. How often do you use taxis? Count each round trip as two trips.

0 (0%)	TWICE A DAY OR MORE	1 (12%)	1 TO 3 TIMES A WEEK
0 (0%)	8 TO 13 TIMES A WEEK	3 (28%)	1 TO 3 TIMES A MONTH
0 (0%)	ONCE A DAY	7 (60%)	LESS THAN ONCE A MONTH
0 (0%)	4 TO 6 TIMES A WEEK		

15. How often, if at all, do you go downtown?

31 (21%) NEVER **GO TO QUESTION 17**

41 (28%) LESS THAN ONCE A MONTH

38 (25%) 1 TO 3 TIMES A MONTH

22 (15%) 1 TO 3 TIMES A WEEK

15 (11%) 4 TIMES A WEEK OR MORE

16A. How do you usually get downtown?

0 (0%) WALK **GO TO QUESTION 17**

34 (30%) TAKE THE BUS **GO TO QUESTION 16B**

2 (2%) TAKE THE SHUTTLE AND BUS **GO TO QUESTION 16C**

16 (14%) AM DRIVEN **GO TO QUESTION 17**

59 (53%) DRIVE **GO TO QUESTION 17**

1 (1%) TAKE A TAXI **GO TO QUESTION 17**

0 (0%) OTHER, SPECIFY _____ **GO TO QUESTION 17**

16B. How do you usually get from home to the bus?

31 (86%) WALK

3 (8%) TAKE THE SHUTTLE

2 (6%) AM DRIVEN

0 (0%) DRIVE

0 (0%) TAKE A TAXI

0 (0%) OTHER, SPECIFY _____

16C. How do you usually get from the bus back home?

34 (89%) WALK

3 (8%) TAKE THE SHUTTLE

1 (3%) AM DRIVEN

0 (0%) DRIVE

0 (0%) TAKE A TAXI

0 (0%) OTHER, SPECIFY _____

17. READ TO RESPONDENT:

To conclude our interview, I'd like to ask you seven short answer census-type questions. All answers will remain confidential.

18. How many cars, vans, or trucks, if any, do the people in your home have available to use?

_____ VEHICLES

33 (21%)	0 vehicles	11 (7%)	3 vehicles
58 (38%)	1 vehicle	3 (2%)	4 vehicles
49 (32%)	2 vehicles		

19. Do you have a driver's license?

99 (67%)	YES
48 (33%)	NO

20. How many people in your home, not counting yourself, have a driver's license?

_____ PEOPLE

60 (40%)	zero persons	3 (2%)	four persons
51 (34%)	one person	1 (1%)	five persons
23 (15%)	two persons	1 (1%)	ten persons
12 (8%)	three persons		

21. Which of the following best describes your work situation? (READ THE ENTIRE LIST)

51 (35%)	Employed Full-Time	18 (12%)	Homemaker
16 (11%)	Employed Part-Time	29 (20%)	Retired
13 (9%)	Student	18 (12%)	Unemployed

22. Would you please tell me your race?

4 (3%)	WHITE
138 (97%)	BLACK
0 (0%)	OTHER, SPECIFY _____

24. What is the total yearly income of all the people living in your home? (BEFORE TAXES) I will list a range of amounts. Please stop me at the right one. (READ THE LIST UNTIL STOPPED BY RESPONDENT)

35 (31%) 5,000 dollars or less

39 (35%) 5,001 to 10,000 dollars

22 (19%) 10,001 to 15,000 dollars

12 (11%) 15,001 to 20,000 dollars

2 (2%) 20,001 to 25,000 dollars

2 (2%) 25,001 to 30,000 dollars

1 (1%) more than 30,000 dollars

25. CONCLUDING REMARKS:

Thank you for participating in this survey. Your answers will help the City of Memphis plan transportation for your neighborhood in the future. Have a good evening (day).

26. CHECK SEX OF RESPONDENT

53 (35%) MALE
100 (65%) FEMALE

27. TYPE OF SURVEY CONDUCTED

84 (54%) TELEPHONE

71 (46%) IN PERSON

28. REMINDER: COMPLETE CONTACT RECORD ON THE FRONT OF THIS SURVEY.

BOXTOWN COMMUNITY SURVEY OPEN-ENDED RESPONSES

Question	Response (# of respondents if more than one)
2. How did you first learn about it (the neighborhood shuttle)?	1. Citizens United Resources and Energy (CURE) Meeting (3) 2. Community meeting (3) 3. Announcement on a MATA bus (2) 4. Tax Organization
3. What do you think about the neighborhood shuttle service?	1. Would like it to run closer to house. 2. Is not a useful service because there are few residents in the the area since most houses are vacant. 3. Would like the shuttle to start before 9 AM (It does). 4. The shuttle does not always follow the same route (Should).
6. How could the neighborhood shuttle be improved?	1. Encourage more riders. 2. Operate in the afternoon and on weekends. 3. Operate from 4:30 AM to 12 AM. 4. Operate in the evenings. 5. Operate until 10 AM in the morning.
7. What changes would cause you to use it more?*	1. If became ill.
8. What changes would cause you to use the shuttle?	1. If no one could drive me. (2) 2. In an emergency.

*Individuals who had used the shuttle one to four times were asked this question.

Date _____ Time _____

BOXTOWN NEIGHBORHOOD SHUTTLE SURVEY

This survey is sponsored by the Memphis Area Transit Authority (MATA), which is interested in your opinion of transit service in your neighborhood. MATA greatly appreciates your help in answering these questions.

1. Have you already filled out a survey this week while on the shuttle? (n=107)
   - 71 (66%) yes — Please answer questions 1 to 4
   - 36 (34%) no — Please answer all questions

2. How often do you usually ride the neighborhood shuttle? Count each round trip as two trips.
   - 3 (8%) two trips a day (daily round trip) or more
   - 4 (11%) 6 to 9 trips a week
   - 8 (22%) one trip a day (5 trips a week)
   - 5 (14%) 3 to 4 trips a week
   - 7 (19%) 1 to 2 trips a week
   - 5 (14%) 1 to 3 trips a month
   - 4 (11%) less than one trip a month

3a. How many shuttle trips have you made so far this week, (since Sunday), not counting this trip? Count each round trip as two trips. (n=104)

26 (24%)	0 trips	11 (11%)	5 trips
12 (12%)	1 trip	6 (6%)	6 trips
18 (17%)	2 trips	2 (2%)	7 trips
15 (14%)	3 trips	1 (1%)	8 trips
9 (9%)	4 trips	3 (3%)	9 trips
		1 (1%)	12 trips

3b. How many more shuttle trips do you plan to make this week (through Saturday)? Count each round trip as two trips. (n=97)

25 (26%)	0 trips	3 (3%)	5 trips
24 (25%)	1 trips	4 (4%)	6 trips
11 (11%)	2 trips	1 (1%)	8 trips
7 (7%)	3 trips	3 (3%)	9 trips
18 (19%)	4 trips	1 (1%)	10 trips

4. What is the purpose of this trip?
   - 14 (40%) work
   - 10 (29%) school
   - 2 (6%) medical
   - 1 (3%) shopping
   - 8 (23%) personal business
   - 0 (0%) social/recreational
   - 0 (0%) other, please specify _____

5. Without neighborhood shuttle service, how would you make this trip? I would:
   - 2 (6%) not make this trip
   - 1 (3%) go somewhere else for the same purpose
   - 26 (74%) walk to or from the bus
   - 1 (3%) walk to or from my destination
   - 3 (9%) be driven to or from the bus
   - 2 (6%) be driven to or from my dest.
   - 0 (0%) taxi to or from the bus
   - 0 (0%) taxi to or from my dest.
   - 0 (0%) drive to or from the bus
   - 0 (0%) drive to or from my dest.
   - 0 (0%) other, please specify _____

6. How long does it take you to walk to or from the neighborhood shuttle?
   - 2 (6%) 0 minutes
   - 1 (3%) .2 minutes
   - 2 (6%) 3 minutes
   - 1 (3%) 4 minutes

5 (15%)	.5 minutes	3 (9%)	5 minutes
6 (17%)	1 minute	1 (3%)	9 minutes
10 (29%)	2 minutes	1 (3%)	20 minutes

7a. Do you plan to transfer to the bus, or have you just transferred from the bus?

18 (50%) yes (I will transfer to a bus) 13 (36%) no - SKIP TO QUESTION 8

5 (14%) yes (I did transfer from a bus)

7b. To or from which bus route do you transfer?

0 (0%)	none	11 (48%)	#56: Vollintine/Third St.
3 (13%)	#11: Thomas/Hodge	3 (13%)	Perkins/Brooks/Crosstown
5 (22%)	#32: Florida/Indian Hills/Levi/Weaver	1 (4%)	If other, which bus?

8. When you pay your fare, do you pay as:

23 (66%)	regular adult	4 (11%)	elderly
6 (17%)	student	2 (6%)	handicapped

9. How could the neighborhood shuttle be improved?

The next section asks census-type questions. All answers will remain confidential.

10. How many people live in your home, including yourself?

1 (3%)	1 person	2 (6%)	7 people
6 (19%)	2 people	2 (6%)	8 people
4 (13%)	3 people	0 (0%)	9 people
4 (13%)	4 people	3 (9%)	10 people
6 (19%)	5 people	1 (3%)	12 people
3 (9%)	6 people		

11. Of those, how many people are 14 years old or older?

1 (3%)	1 person	6 (19%)	4 people
11 (34%)	2 people	8 (25%)	5 people
3 (9%)	3 people	3 (9%)	6 people

12. How many cars, vans or trucks, if any, are available to people living in your home?

12 (36%)	0 vehicles	9 (27%)	2 vehicles
11 (33%)	1 vehicles	1 (3%)	3 vehicles

13. Do you have a driver's license? 19 (56%) yes 15 (44%) no

14. How many people in your home, not counting yourself, have a driver's license?

10 (31%)	0 persons	3 (9%)	3 persons
8 (25%)	1 person	1 (3%)	4 persons
10 (31%)	2 persons		

15. In what age group do you belong?

0 (0%)	under 14	3 (9%)	35-44
2 (6%)	14-17	2 (6%)	45-54

11 (34%) 25-34 2 (6%) 65 or older

16. Are you:
11 (34%) male 21 (66%) female

17. Are you:
0 (0%) white 33 (100%) black 0 (0%) other

18. Check the one which describes you best:

10 (31%)	employed full-time	2 (6%)	retired
2 (6%)	employed part-time	6 (19%)	unemployed
9 (28%)	student	2 (6%)	other: _____
1 (3%)	homemaker		

19. What is your street address?

_____

20. What is the total yearly income before taxes of all the people living in your home?

9 (47%)	$5,000 or less	0 (0%)	$20,001 to $25,000
3 (16%)	$5,001 to $10,000	0 (0%)	$25,001 to $30,000
4 (21%)	$10,001 to $15,000	0 (0%)	more than $30,000
3 (16%)	$15,001 to $20,000		

Thank you for participating in this survey. Your answers will help us determine how well the neighborhood shuttle is serving your neighborhood.

BOXTOWN ON BOARD SURVEY OPEN-ENDED RESPONSES

Question	Response (# of respondents if more than one)
4. What is the purpose of this trip?	1. Community Center Gym on Mitchell St.
7b. To or from which bus route do you transfer?	1. #10 Watkins
9. How could the neighborhood shuttle be improved?	1. Use of a larger vehicle. 2. Operate weekends. (3) 3. Operate evenings. 4. Fine as is. (5) 5. Operate throughout the day. (3) 6. Operate additional shuttle runs. 7. Stop closer to my house. 8. Have the shuttle run downtown. 9. Reinstate the former #12 Weaver bus route.
19. What is your street address?	1. 1708 Boxtown 2. 1712 Boxtown (2) 3. 1754 Boxtown 4. 1790 Boxtown 5. 3574 Boxtown 6. 3637 Boxtown 7. 3755 Boxtown (3) 8. 1945 Browley 9. 3507 Cook 10. 1180 Elder (2) 11. 1185 Fiber (2) 12. 1196 Fiber 13. Fiber 14. 1702 Fields 15. 1715 Fields 16. 4436 Harbin Place 17. 1847 Hicks (2) 18. 196 Hillview 19. 526 N. Mitchell 20. 1184 Nora 21. 1208 Nora 22. Nora 23. 1205 Rebeh 24. 3413 Rebeh (2) 25. 3423 Rebeh 26. 3717 Sewanee 27. 3723 Sewanee

PRESIDENT'S ISLAND SURVEY

This survey is sponsored by the Memphis Area Transit Authority (MATA) to better understand your transportation needs and opinions. All answers will remain confidential. MATA greatly appreciates your help in answering these questions.

1. HOW DO YOU USUALLY GET TO WORK?

27 (84%)	drive by myself	0 (0%)	take the bus
5 (16%)	drive with others	0 (0%)	take the shuttle and bus
0 (0%)	take a taxi	0 (0%)	other, specify _____

2. HOW DO YOU USUALLY GET HOME FROM WORK?

27 (84%)	drive by myself	0 (0%)	take the bus
5 (16%)	drive with others	0 (0%)	take the shuttle and bus
0 (0%)	take a taxi	0 (0%)	other, specify _____

3. IF YOU DRIVE WITH OTHERS, HOW OFTEN DO YOU DRIVE THE VEHICLE?

0 (0%)	always	3 (60%)	never
2 (40%)	at least once a week	0 (0%)	do not travel by auto
0 (0%)	occasionally		

4. IF YOUR PRESENT MEANS OF TRAVEL TO WORK WAS UNAVAILABLE ON A PARTICULAR DAY, HOW WOULD YOU GET TO WORK?

6 (20%)	drive by myself	1 (3%)	take the bus
21 (70%)	drive with others	0 (0%)	take the shuttle and bus
1 (3%)	take a taxi	1 (3%)	other

5. WHAT TIME DO YOU USUALLY ARRIVE AT WORK?

5 (16%)	before 6:30 am, specify time _____
20 (63%)	6:30 am to 8:00 am
7 (22%)	after 8:00 am, specify time _____

6. WHAT TIME DO YOU USUALLY LEAVE WORK?

5 (16%)	before 3:15 pm, specify time _____
19 (59%)	3:15 pm to 4:45 pm
8 (25%)	after 4:45 pm, specify time _____

7. PLEASE CHECK THE DAYS YOU USUALLY WORK:

32 (100%)	Monday
31 (97%)	Tuesday
32 (100%)	Wednesday
31 (97%)	Thursday
30 (94%)	Friday
6 (19%)	Saturday
0 (0%)	Sunday
0 (0%)	varies

8. IN WHICH STATE DO YOU LIVE?

32 (100%)	Tennessee - Continue with Question 9
0 (0%)	Arkansas - Skip to Question 20
0 (0%)	Mississippi - Skip to Question 20

9. WHAT MAJOR STREET INTERSECTION IS NEAREST TO WHERE YOU LIVE?

_____

10. DO YOU KNOW THE LOCATION OF THE BUS STOP NEAREST TO YOUR HOME?

17 (53%) yes 15 (47%) no

11. HAVE YOU HEARD OF THE PRESIDENT'S ISLAND SHUTTLE WHICH CARRIES PASSENGERS BETWEEN PRESIDENT'S ISLAND AND MATA BUS STOPS SOUTH OF DOWNTOWN MEMPHIS (NEAR MCLEMORE AVENUE AND THIRD/FLORIDA STREETS)?

15 (52%) yes 14 (48%) no - SKIP TO QUESTION 19

12. HOW DID YOU FIRST LEARN ABOUT IT?

2 (14%)	saw a brochure
1 (7%)	saw a poster
4 (29%)	saw the shuttle on the street
5 (36%)	friend mentioned it
2 (14%)	I don't remember
0 (0%)	other, please specify _____

13. HAVE YOU EVER USED THE PRESIDENT'S ISLAND SHUTTLE?

0 (0%) yes 16 (100%) no - SKIP TO QUESTION 14

14. CHECK THE CATEGORY WHICH BEST DESCRIBES YOUR USE OF THE PRESIDENT'S ISLAND SHUTTLE:

0 (0%)	ride daily - SKIP TO QUESTION 18
0 (0%)	ride at least once a week - SKIP TO QUESTION 18
0 (0%)	ride more than once a month - SKIP TO QUESTION 15
0 (0%)	ride once a month or less - SKIP TO QUESTION 15
0 (0%)	no longer use it - CONTINUE WITH QUESTION 14

15. WHY DON'T YOU RIDE THE SHUTTLE?

16. HOW LONG DOES IT TAKE YOU TO TRAVEL FROM HOME TO WORK?

17 (94%)	30 minutes or less
1 (6%)	31 minutes to one hour
0 (0%)	more than one hour

17. APPROXIMATELY HOW LONG DO YOU THINK IT WOULD TAKE TO TRAVEL TO WORK BY BUS WITH A TRANSFER TO THE PRESIDENT'S ISLAND SHUTTLE? INCLUDE WALK TIME AND WAIT TIME.

2 (13%)	30 minutes or less
6 (40%)	31 minutes to one hour
7 (47%)	more than one hour

18. COMPARE YOUR PRESENT MODE OF TRAVEL TO AND FROM WORK WITH TRAVEL BY BUS AND THE PRESIDENT'S ISLAND SHUTTLE:

	Present Mode Preferable	Both About Equal	Bus and Shuttle Preferable	Don't Know
a) in terms of safety	4 (33%)	5 (42%)	1 (8%)	2 (17%)
b) in terms of comfort	4 (50%)	3 (38%)	1 (13%)	0 (0%)
c) in terms of reliability	4 (50%)	3 (38%)	0 (0%)	1 (13%)
d) in terms of cost	1 (14%)	4 (57%)	0 (0%)	2 (29%)
e) in terms of convenience	6 (67%)	3 (33%)	0 (0%)	0 (0%)

19. HOW COULD THE PRESIDENT'S ISLAND SHUTTLE BE IMPROVED TO BETTER SERVE YOU?

20. HOW MANY CARS, VANS OR TRUCKS, IF ANY, ARE AVAILABLE TO PEOPLE LIVING IN YOUR HOME?

1 (3%)	0 vehicles	3 (10%)	3 vehicles
8 (27%)	1 vehicles	1 (3%)	4 vehicles
17 (57%)	2 vehicles		

21. DO YOU HAVE A DRIVER'S LICENSE?

29 (94%)	yes
2 (7%)	no

22. HOW MANY PEOPLE IN YOUR HOME, NOT COUNTING YOURSELF, HAVE A DRIVER'S LICENSE?

4 (13%)	0 persons	3 (10%)	3 persons
14 (47%)	1 person	1 (3%)	6 persons
8 (27%)	2 persons		

23. HOW MANY PEOPLE IN YOUR HOME, NOT COUNTING YOURSELF, ARE EMPLOYED?

9 (31%)	0 persons	2 (7%)	3 persons
13 (45%)	1 person	1 (3%)	6 persons
4 (14%)	2 persons		

24. ARE YOU: 19 (66%) male 10 (35%) female

25. ARE YOU:

12 (40%)	white
16 (53%)	black
2 (7%)	other

26. IN WHAT AGE GROUP DO YOU BELONG?

0 (0%)	under 18
9 (31%)	18-34
19 (66%)	35-64
1 (3%)	65 or older

27. WHAT IS THE TOTAL YEARLY INCOME BEFORE TAXES OF ALL THE PEOPLE LIVING IN YOUR HOME?

2 (11%)	$5,000 or less
3 (17%)	$5,001 to $15,000
5 (28%)	$15,001 to $25,000
4 (22%)	$25,001 to $35,000
1 (6%)	$35,001 to $45,000
3 (17%)	above $45,000

Thank you for participating in this survey. Your answers will help the MATA plan transportation for President's Island in the future.

PRESIDENT'S ISLAND EMPLOYEE SURVEY OPEN-ENDED RESPONSES OF THOSE WHO LIVE IN AREAS ACCESSIBLE TO THE SHUTTLE

Question	Response (# of respondents if more than one)
4. If your present means of travel to work was unavailable on a particular day, how would you get to work?	1. Hitchhike
5. What time do you usually arrive at work?	1. 4:45am 2. 5:00am 3. 5:30am 4. 6:00am 5. 6:25am 6. 8:30am 7. 9:00am (2) 8. 3:00pm 9. 6:00pm 10. 11:30pm
6. What time do you usually leave work?	1. 2:00pm 2. 5:30pm 3. 6:00pm (2) 4. 7:30pm 5. 11:30pm 6. 5:30am 7. 7:00am 8. varies
9. What major street intersection is nearest to where you live?	1. Brooks & Third 2. Cimmaron & Park Rose 3. Cleveland and Poplar 4. Cleveland & Union 5. Crump & Third 6. Ford & Mitchell 7. Frayser 8. Frayser & Overton 9. Frayser & University 10. Frayser & Watkins 11. Hollywood and Chelsea 12. Holmes & I-61 (2) 13. Hornlake & Brooks 14. Hornlake & Third 15. Lauderdale & Parkway 16. Levi & Hornlake 17. Lamar & I-240 18. Mitchell Road 19. Mitchell & Third (2) 20. Moorhead & Chelsea 21. Neely & Raines

22. N. Watkins & I-51
23. Parkway & Florida
24. Peoples
25. Second & Chelsea
26. Third (3)
27. Third & I-55
28. Thomas & Whitney

15. Why don't you ride the shuttle?

1. I have a car available to drive to work. (5)
2. I need my car during the day at work.
3. It is too dangerous to wait at the bus stop early in the morning when I go to work. (2)
4. I would ride the bus if I could take it from 3rd & Mitchell directly to President's Island.

19. How could the President's Island Shuttle be improved to better serve you?

1. It's fine as is.
2. Provide more frequent service. (2)

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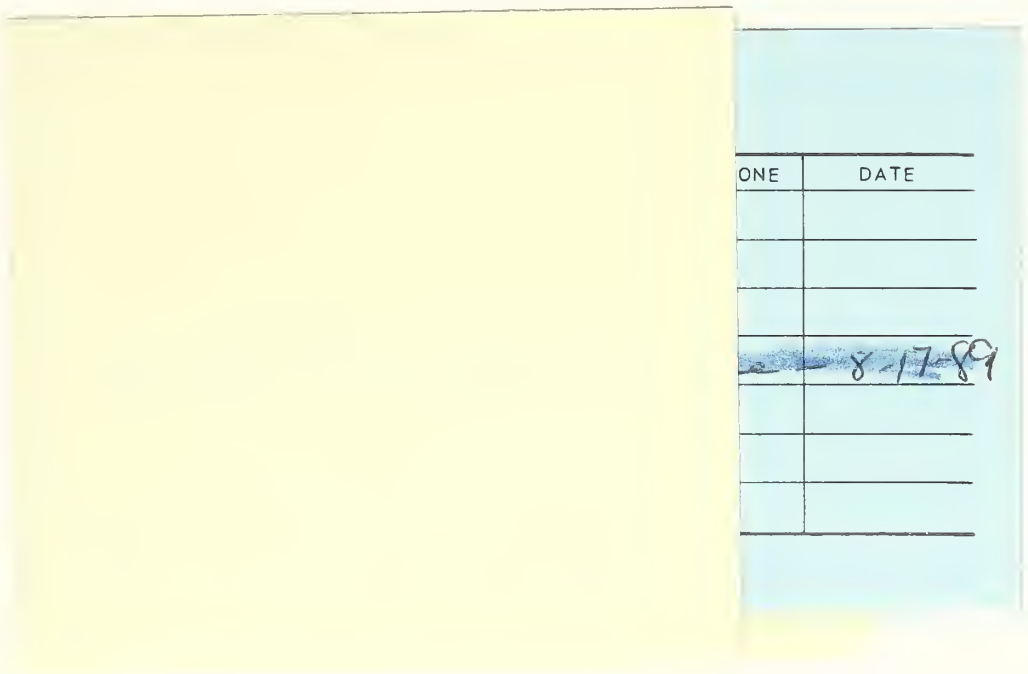
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