Metro Mobility: The Metro-Area Handicapped Transportation Demonstration

First Year Review

Prepared for
Minnesota Department of Transportation

October 1980

by

multisystems, inc.
1050 Massachusetts Avenue, Cambridge, MA. 02138

The Metro Area Handicapped Transportation Project, a Mn/DOT paratransit demonstration project, began operations on April 2, 1979. Because of the central role this project can play in meeting the mobility needs of the handicapped, it is important that it be monitored closely and evaluated, in order that the most effective overall service can be provided. This report documents the first year of operation.

This report was prepared by Multisystems, Inc., which has been working with Mn/DOT on the Paratransit Demonstration Program since its inception. The opinions expressed here are solely those of Multisystems, and may not represent those of Mn/DOT.

CHAPTER 1

SERVICE DESCRIPTION

1.1 Project Background

The Metro-Area Handicapped Demonstration Project was mandated in State legislation governing the Minnesota Department of Transportation (Section 174.31) which called for the implementation of a special project demonstrating the coordination of special transportation service in the metropolitan area. The project was developed through a cooperative effort on the part of the Minnesota Department of Transportation (Mn/DOT), the Metropolitan Council, and the Metropolitan Transit Commission (MTC), with Mn/DOT having primary responsibility for its development. The project, which is composed of three major elements, was designed to meet the following basic objectives, as stated in the legislation:

(a) To provide greater access to transportation for the elderly, handicapped and others with special transportation needs in the metropolitan area and particularly to fill all unmet needs for that transportation...and

(b) To develop an integrated system of special transportation service providing transportation tailored to meet special individual needs in the most cost-efficient manner using existing public and private providers of service.

The first element and major focus of the demonstration was the implementation of the "Metro Mobility Transportation Center" as a mechanism for coordinating handicapped transportation services. The specific functions of the control center are to:

1. certify eligible handicapped persons;

2. receive and match trip requests with the appropriate participating transportation providers and develop passenger tours; and

3. maintain records for reimbursement, evaluation, and future plans and improvements.

Initially, the Transportation Center was responsible for developing passenger tours for two services: Project Mobility and the "Metropolitan Shared-Ride Taxi Service." The latter was initiated in April 1979 as the second element of the overall demonstration. This project has been designed to complement Project Mobility and allow additional service for the handicapped, through the "purchase" of shared-ride service from participating taxi companies. The project is intended to demonstrate the following innovative concepts:

1. The introduction of economies through public sector contracts with private transportation providers.

2. The coordination and cooperation of different taxicab companies.

3. The coordination of private taxi companies with a component of a public transit system, including integration of control functions.

4. The use of different service modes to serve handicapped persons with different travel problems and needs.

The concept of centralized control for this project, with control effected by the public sector, is intended to ensure that the maximum efficiencies are achieved in the scheduling of vehicles.

The Metro Mobility Transportation Center (MMTC), which is operated by the Metropolitan Transit Commission under contract to Mn/DOT, also interfaces with the third element of the overall demonstration, "Coordinated Private Provider Handicapped Service." This project, which formally began on November 1, 1980, is aimed at determining the effectiveness of utilizing other private providers to serve the handicapped. Metro Mobility Transportation Center receives and screens all calls for service. Trips in areas served by these carriers are scheduled by a staff member employed by one of the operators and assigned specifically for that purpose.

These three demonstration elements were also originally integrated with another paratransit demonstration: "Metropolitan Paratransit Consumer Outreach Project," which was

aimed at encouraging handicapped persons to utilize available transportation services. This project officially ended in April 1980, having been funded for one year. However, outreach activities are still carried out, though on a less active basis. The current activities include consumer education/ information and handling consumer problems.

The overall demonstration, which has become known simply as "Metro Mobility" (MM), has taken on greater importance since its initiation. The final U.S. Department of Transportation "Section 504" regulations, requiring that transit systems be made fully accessible, also require an interim service to be provided (at least) until such time as the fixed route service is made accessible. Metro Mobility has been proposed as the key element of that interim service.

1.2 Description of the Services

Project Mobility (PM) is a service that has been operated by the Metropolitan Transit Commission since 1976. PM uses lift-equipped vehicles to transport eligible handicapped persons door-to-door within a designated service area. Passengers must request service at least two hours in advance. This service feature is somewhat unique, since most similar systems require 24-hour advance notice. Eligibility classifications adopted under the Metro Mobility project are shown in Table 1.1. Passengers are charged 35¢ per trip and are able to bring along up to 3 (non-eligible) companions. (The first companion is charged 35¢, while additional companions are charged $1.00.) Service was initially provided in a target area near downtown Minneapolis; this was expanded in July 1978, but still limited to a portion of the city. In July 1979, PM service was expanded into St. Paul, and in August 1979 was expanded to include all of Minneapolis. Expansion of the taxi service into St. Paul is currently under consideration. Figure 1.1 shows the current service areas.

The shared-ride taxi service is virtually identical to PM service from the passengers' point of view, with the exception

Table 1.1

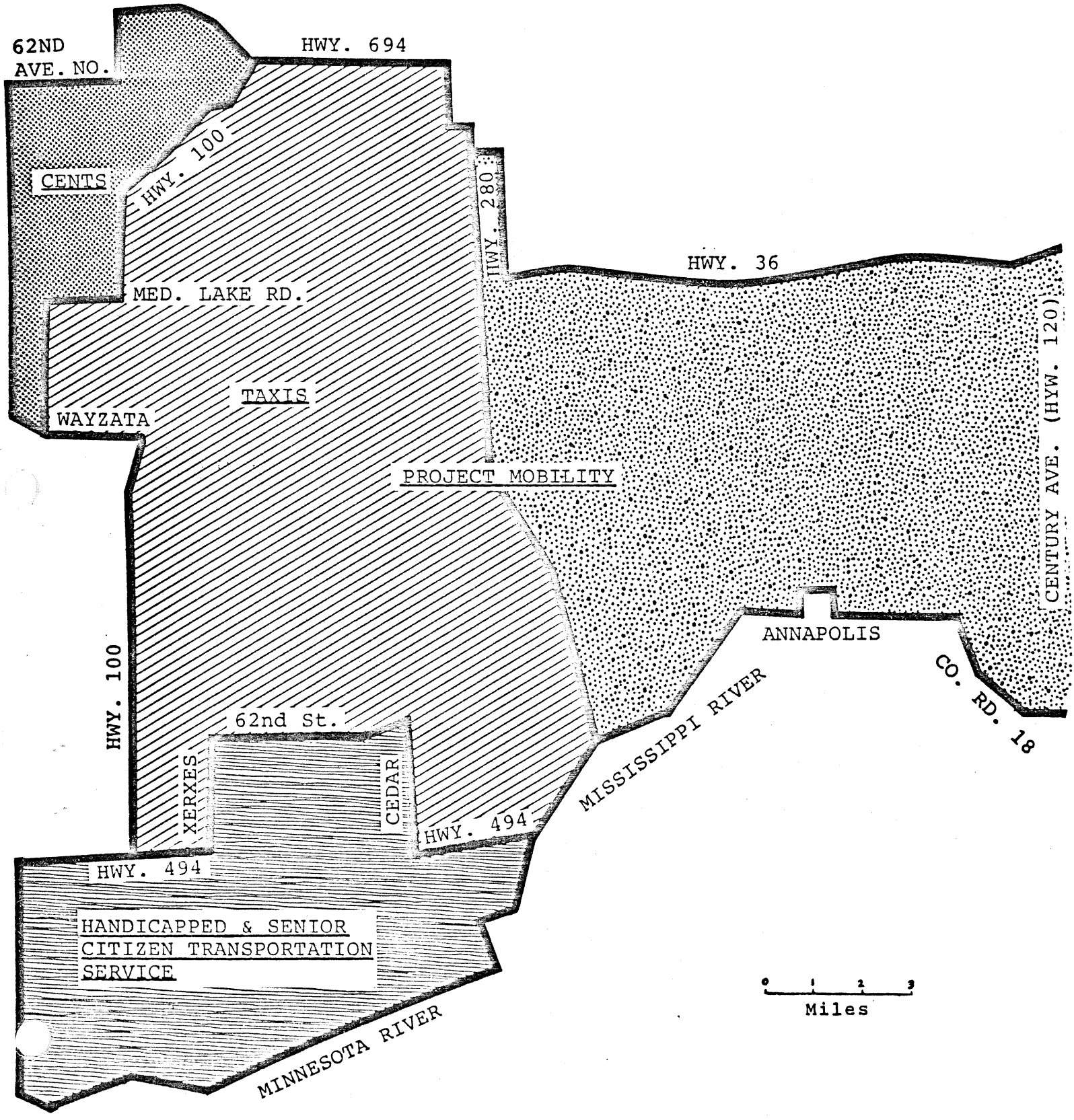
Handicap Classification Scheme

Classification / Vehicle Type	Ambulance	Vehicles With Lifts or Ramps	Autos, Vans and Taxis
Persons requiring an ambulance type vehicle with life support equipment and operators trained to administer this equipment or offer personal assistance which is necessary	10 *		
Persons using a wheelchair, require an accessible type vehicle and do not need an escort		21	
Persons using a wheelchair, require an accessible type vehicle and require an escort		22	
Persons using an orthopedic device, require an accessible type vehicle but do not need an escort		23	
Persons using an orthopedic device, require an accessible type vehicle and require an escort		24	
Persons using a wheelchair, are able to use an auto, van or taxi (with or without driver assistance getting in and out of the vehicle) and do not require an escort			31
Persons using a wheelchair, are able to use an auto, van or taxi and require an escort			32
Persons using an orthopedic device, are able to use an auto, van or taxi (with or without driver assistance getting in and out of the vehicle) and do not require an escort			33
Persons using an orthopedic device, are able to use an auto, van or taxi and require an escort			34
Persons who do not require an orthopedic device, are able to use an auto, van or taxi and do not require an escort			35
Persons who do not require an orthopedic device, are able to use an auto, van or taxi and require an escort			36
Nonhandicapped elderly residing more than 1/4 mile from fixed route transit			37 *
Elderly persons that are unable to walk to a bus stop closer than 1/4 mile			38 **

* Persons in this category are not being certified
** Persons in this category are no longer being certified

FIGURE 1.1

MM SERVICE AREA



that the vehicles are different and service is limited to six-mile trips within the city of Minneapolis. The service is operated by all three Minneapolis taxi-cab companies, under contract to Mn/DOT. Passenger pick-ups are transmitted to the taxi companies on a rotating basis in proportion to the number of taxicab licenses held.

The taxi-cab companies are reimbursed on a tour by tour basis, with the tour cost calculated to approximate meter rates. The service area is divided into half-mile zones. The cost of a trip was initially established as:

- a 75¢ "flag drop" charge at the time of the first scheduled passenger pick-up
- 40¢ for each zone, including the first zone travelled through in the course of the tour (equivalent to a 80¢-per-mile rate plus 10¢ wait time for each mile)
- 25¢ for each pickup stop after the first (based on a 2-minute wait time)

The above figures were increased to 85¢, 50¢, and 30¢, respectively when taxi fares were increased in July 1979. The reimbursement is set at the above costs, less fares received. (For passenger no-shows, the taxis are currently paid $1.15 per no-show.) The taxi companies maintain records on trips taken, while the Transportation Center maintains its own records as a check.[1]

---

[1] The taxi companies ran tests to compare the present rate structure with a straight meter structure in April 1979 (the first month of the taxi service) and again in August 1979 to see which would generate greater revenue. They ran their meters during the entire month of April and for 3 days in August (after the exclusive-ride taxi meter rates were increased). The results for one of the companies are shown below. From this table, it would appear that the zone fare structure was a little on the high side at first (the taxi companies stopped testing the rate structure after the initial results), but was subsequently extremely close to the meter rates.

(Footnote continued on next page.)

The private providers currently operating within MM are CENTS (Center for Education of Non-Traditional Students) and HSCTS (Handicapped and Senior Citizens Transportation Service). Each provider operates two vehicles (there is a joint backup vehicle). CENTS provides service in a number of northwestern suburbs (New Hope, Crystal, and parts of Brooklyn Center and Golden Valley), HSCTS in southwestern suburbs (Bloomington and Richfield). (See Figure 1.1 for the service areas of the various MM component services.) Fares, hours of service, eligibility, and other policies are the same as those for PM and the taxis. Transfers are permitted (and scheduled) between the suburban services and the Minneapolis/St. Paul services.

The Metro Mobility Transportation Center is operated by the Metropolitan Transit Commission, under contract to Mn/DOT. Direction for the project comes from the Management Policy Committee, consisting of representatives from Mn/DOT, MTC, Metro Council, participating providers, and the elderly and handicapped community.

1.3 The Project Since its Inception

The Metro Mobility Transportation Center (MMTC) opened for operation on Monday, April 2, 1979, following a 2-week training session. The facility is located in the Midway area of St. Paul, convenient to both cities, and has been made fully

---

(cont. from previous page)

Comparison of Taxi Rate Structures

	Taxi Revenue	
	April	August
Meter	$1374	$446
Zone	$1567	$430
% diff.	+14%	-3.5%

accessible to the handicapped. When Metro Mobility operations began, some of the Project Mobility control staff shifted from the PM (Nicollet) garage to the MMTC. PM dispatchers who communicated with vehicles remained at Nicollet, and the control staff there continued to schedule and dispatch Community Centered Transit Service in White Bear Lake. Additional staff joined the MMTC, and shared-ride taxi service began, on April 2.

Metro Mobility was initially staffed by: a Project Manager and Assistant Project Manager, the latter having previously served as a PM dispatcher; two PM dispatchers who shifted over; eight "transit information representatives" who handled both call-taking and scheduling (two of these persons were formerly employed as MTC information operators); and a certifications secretary who had been fulfilling that function for PM. Initially, 5 of the staff members (including the certifications secretary) were handicapped. That number has subsequently grown to 7.

The first significant change in Metro Mobility operations came on July 14, 1979, when PM was expanded to St. Paul. The second change took place on August 4, when PM expanded to the remainder of Minneapolis. Another major change occurred on September 4, 1979, when all PM control functions (plus those for White Bear Lake) were moved into the MMTC. At this time, the transportation center was rearranged such that call-taking would take place in one room while scheduling and dispatching functions would take place in another room.

The staffing level changed significantly at this time (see Table 1.2 and Figure 1.2), since all PM dispatchers were now located at the MMTC, rather than just the two originally assigned there[1].

The next major operational change took place in November, when the first two components of the private provider network began operation. As mentioned above, CENTS provides service in

---

[1] These PM dispatchers are included in the "before 12/22/79" control staff totals in Table 1.2 and Figure 1.2.

Table 1.2

Staffing Level

Scheduled Control Staff* (Wednesday)

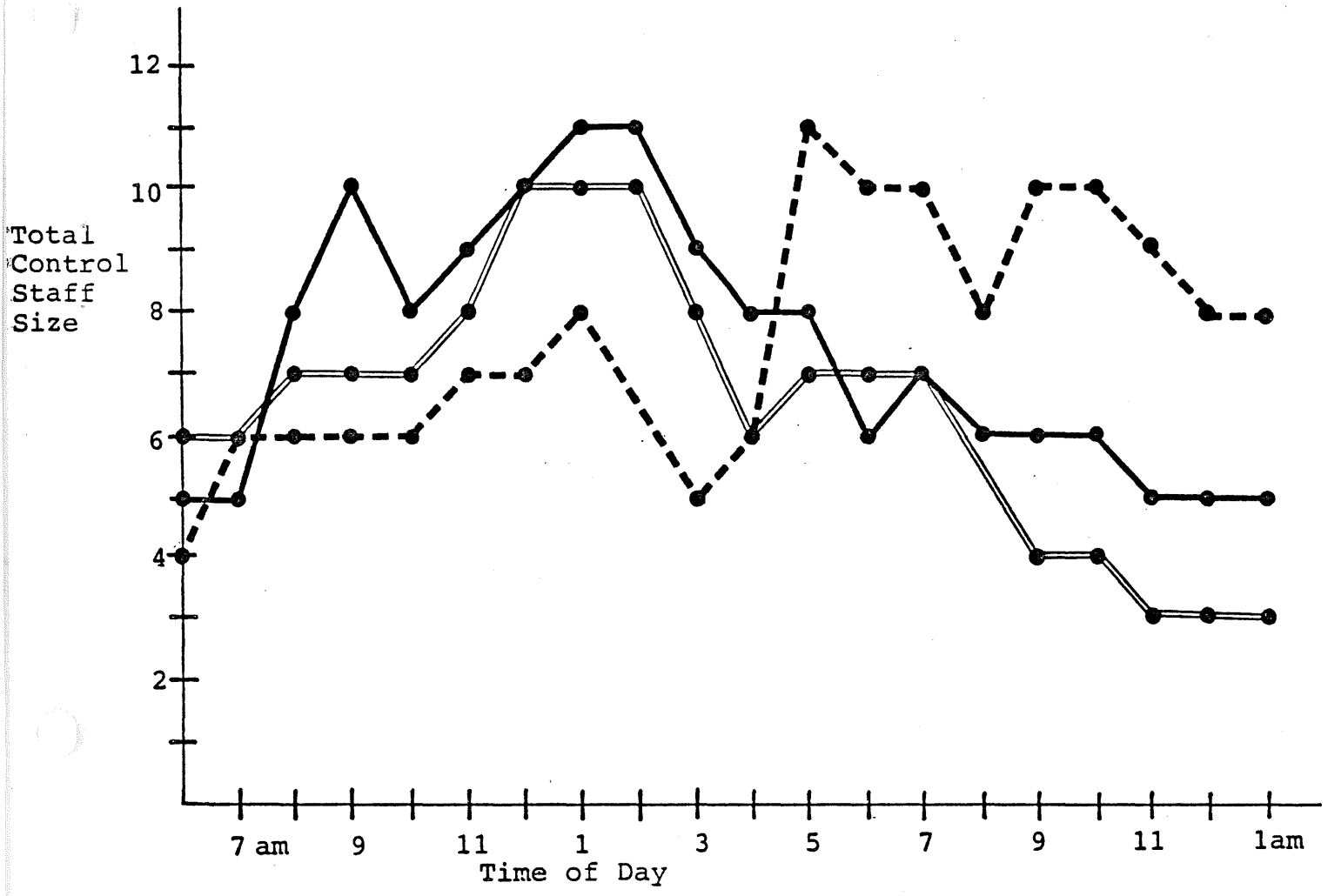
Time of Day	as of 5/17/80 Order-takers	Order-fillers	Super-visors	Total	as of 12/22/79 Order-takers	Order-fillers	Super-visors	Total	before 12/22/79 Total Control Staff**
6-7 AM	2	2	1	5	2	3	1	6	4
7-8	2	2	1	5	2	3	1	6	6
8-9	3	4	1	8	2	4	1	7	6
9-10	3	5	2	10	3	2**	2	7	6
10-11	2**	4**	2	8	3	2**	2	7	6
11-12	2**	4**	3	9	2**	3**	3	8	7
12-1	3**	4**	3	10	3	4	3	10	7
1-2	4	5	2	11	3	5	2	10	8
2-3	4	5**	2	11	3**	5	2	10	5-8
3-4	3	4	2	9	2	4	2	8	5
4-5	3	4	1	8	2	3**	1	6	5-7
5-6	3	4	1	8	6	4**	1	11	7
6-7	2**	3**	1	6	5**	4**	1	10	7
7-8	3	3**	1	7	5	4**	1	10	7
8-9	2**	3**	1	6	4**	3**	1	8	5-6
9-10	2	3	1	6	4**	5	1	10	4
10-11	2	3	1	6	5	4	1	10	4
11-12	1	3	1	5	5	3	1	9	3
12-1	1	3	1	5	4	3	1	8	3

* does not include clerical staff, director, or administrative assistant.

** includes scheduled lunch/dinner breaks

*** prior to Dec.22, 1979, all control personnel were called "controllers."

Figure 1.2



Total Staff Size - Changes
(Wednesday)

the northwestern and western suburbs, while HSCTS provides service in the southwestern area. Calls for service in these areas are transferred to a dispatcher assigned solely to those services (employed by CENTS and HSCTS, and located in a separate room in the MMTC). The next change occurred in December 1979, when the personnel classification was completely reorganized. As of that time, all (non-supervisory) control staff members were classified as either order-takers or order-fillers, and the distinction between PM and taxi controllers was eliminated. Under the new classification, order-takers and fillers did not switch back and forth between answering the phones and scheduling/ dispatching, as had been the option previously. Order-fillers were assigned to either PM or the taxis (though not necessarily on a permanent basis) based on experience, typing ability, and interest, although all order fillers were expected to become familiar with both areas.

This reclassification prompted the filing of a union grievance on the part of the PM dispatchers, protesting that their positions were effectively being eliminated. (Salary levels before and after the recognization are shown in Table 1.3.) The grievance was submitted to arbitration, and a ruling was made in favor of the MTC. As a result, most of the original dispatchers returned to being drivers (positions they held before becoming dispatchers). The PM dispatching was, as described above, assumed by MMTC order-fillers.

Also, in connection with the above reclassification, the position of shift supervisor was instituted. This position carries the responsibility of day-to-day supervision of the control staff and the MMTC operations, and includes data collection duties as well as communication with consumers. (The role of the supervisor is discussed further in Chapter 3.) The creation of this position, as well as the selection of a new project manager, came largely in response to early difficulties in the operations of the MMTC, as identified in the six-month review of Metro Mobility.

Table 1.3

MMTC Control Staff Salary Levels

Job Title	Hourly Wage (before December 1979)	Hourly Wage (after December 1979)
controller/call-taker	$4.79 - $7.57*	-
dispatcher (PM)	$9.21	-
order-filler	-	$4.93-$7.95*
order-taker	-	$4.93-$7.80*

* exact level depends on length of time on staff

As shown in Table 1.2, the size of the MMTC staff grew considerably as a result of the December reorganization. Much of this growth can be attributed to the addition of supervisors; the size of the actual control staff did not change dramatically, except for the evening hours (after 5 PM), when the number of controllers increased by between 2 and 5 persons (depending on the hour).

The third change in staff level was less significant, in that job classifications were not altered. In mid-May 1980, a new job "pick" resulted in a schedule as shown in Table 1.2. As can be seen in Figure 1.2, the current schedule calls for a larger control staff during most of the morning and early afternoon, but a smaller staff after 4 PM.

The results of the first 15 months of operation are summarized and evaluated in the following chapters.

CHAPTER 2

SYSTEM BENEFITS

2.1 Certification

MTC began the process of recertifying users of PM (from an older 3-level PM classification to the more disaggregate classification illustrated in the previous chapter) and certifying new potential users a few months prior to the initiation of Metro Mobility.

Certification by handicapped classification for both Minneapolis and St. Paul (including some suburbanites) is shown in Table 2.1, which compares the figures with those included in the six-month review. Of the total of 13,524 persons certified by May 1980, approximately 40% (5400) live in St. Paul; most of the remainder are located in Minneapolis. As shown in the table, 28.9% of the total registrants use wheelchairs (i.e., are classified under numbers 21, 22, 31, or 32), 38.9% use orthopedic aids (numbers 23, 24, 33, and 34), and 31.2% do not use aids.[1] The figures cited in the six-month interim evaluation (as of September 1979) were 25.8%, 42.6%, and 31.6%, respectively. Thus, the overall percentages have remained fairly consistent, although the relative percentages of individual classification categories have shifted somewhat (e.g., the significant increase in the percentage of persons classified 22 and 36, and the significant decrease in those classified 35).

As discussed in the six-month evaluation, certification began to pick up rapidly in June 1979, when the addition of a full-time secretary to support the certification secretary enabled the processing of the initial backlog. Certification continued to accelerate over the next several months, up to a point at which the handicapped community was virtually

---

[1] Of those currently registered, 1% are unclassified.

Table 2.1

Certification by Handicap Type

Handicap Classification		Number		Percent of Total	
		Sept., '79	May, '80	Sept., '79	May, '80
21	wheelchair + accessible vehicle	513	937	7.1%	6.9%
22	wheelchair + accessible vehicle + escort	700	2458	9.6%	18.2%
23	orthopedic device + accessible vehicle	102	163	1.4%	1.2%
24	orthopedic device + accessible vehicle + escort	82	15	1.1%	0.1%
31	wheelchair	227	348	3.1%	2.6%
32	wheelchair + escort	257	161	3.5%	1.2%
33	orthopedic device	1854	3272	25.5%	24.2%
34	orthopedic device + escort	760	1814	10.4%	13.4%
35	unable to walk to bus stop	1249	2448	17.3%	18.1%
36	unable to walk to bus stop + escort	699	470	9.6%	3.5%
38	elderly unable to walk to bus stop	369	1304	5.2%	9.6%
	unclassified*	445	134	6.2%	1.0%
	total	7257	13524	100.0%	100.0%

* These apparently are persons who were classified within the original 3-tiered PM classification and have not yet been reclassified.

saturated. The Consumer Outreach Project officially ended April 30, 1980 (the project was funded for one year), although outreach functions are still being carried out by the MMTC Project Assistant. She currently handles various consumer problems, does referral work on available services/agencies, and spends time educating nurses, social workers, and others who work with the handicapped on the availability of specialized transporation services. Despite the fact that new registrants are no longer actively being sought, there are still nearly 30 requests for certification per day.

2.2 Ridership

Table 2.2 lists total ridership by month by service from January 1979 through April 1980. As can be seen from this table, shared-ride taxi ridership was significantly below that of PM during the first month of official Metro Mobility operation. Within two months, however, shared-ride taxi ridership had actually surpassed that of PM in Minneapolis.

During the first month of operation of Metro Mobility, it appears that shared-ride taxi diverted a fair number of passengers from PM. By August, however, PM (Minneapolis) reached an all time record ridership, albeit in an area significantly larger than that served before the start of the Metro Mobility demonstration (the current MM service area is approximately 100 sq. mi.; the original PM service area was 6.3 sq. mi.). System ridership has grown considerably since then, although, as can be seen in Table 2.2, it has not necessarily increased every month. The latest figure - April 1980, for instance, is lower than that for March. However, ridership on both PM and the taxis has remained quite high for a system of this type (MM is compared to other similar services in Chapter 4). Total first year ridership for the taxi service was approximately 123,000; the total for PM during that same year was 140,000. Although there is room for a ridership increase in the system as it currently operates, Metro Mobility has certainly been successful in significantly increasing the

Table 2.2

Ridership Figures for Metro Mobility Services

	Taxi	PM:Mpls	PM:St. Paul	PM:Total	CENTS	HSCTS	System Total
January, '79	-	6503		6503			6503
February	-	5803		5803			5803
March	-	7051		7051			7051
April[1]	2931	5686		5686			8617
May	5757	6067		6067			11824
June	6728	5900		5900			12628
July[2]	7957	6216	311	6527			14484
August[3]	8480	7192	4192	11384			19864
September	8882	7846	4443	12289			21171
October	10189	8501	5262	13763			23952
November[4]	9625	7929	5255	13184	349	429	23587
December	10518	7448	5026	12474	566	798	24356
January, '80	12358	7764	5324	13088	841	1049	27336
February	12031	8419	5482	13901	1250	1223	28405
March	13584	8813	5605	14418	1292	1251	30545
April	13884	8423	5441	13864	1234	1209	30191
Total	122924	115561	46341	161902	4296	4750	296317
Total (just for first 3 months of MM)	122924	96204		142545	4296	4750	276960

[1] Start of Metro Mobility

[2] PM expansion to St. Paul

[3] PM expansion to remainder of Minneapolis

[4] Introduction of private non-profit service

amount of service being offered to and used by the handicapped community. Ridership in Minneapolis alone increased by 317% between March 1979 (the month before the introduction of the taxi service) and March 1980. (Of course, the service area also increased over this period.)

On a daily basis, PM and the taxi service are currently each averaging approximately 550 riders per weekday. At the time of the six-month evaluation, these figures were 340 for taxi and 420 for PM. As is discussed later, the current ridership level may be somewhat constrained by the limits of the call-taking process. In addition, ridership on PM is constrained during peak hours by a limited number of vehicles. Some trip requests for peak hour travel (predominantly for work trips) have to be denied, although the actual number of denials is not great, because people apparently seldom call back if they have been turned down once. Table 2.2(a) shows PM trip denials for February, March, and April 1980 (this information is not available for other months). It is interesting to note the consistency of the figures.

The addition of the private non-profit providers (in suburban areas) has expanded the service being offered, and has served to further increase total system ridership. The suburban ridership has grown from 778 during November 1979, when these services joined Metro Mobility, to 2441 in April. Of the April total, 125 (5%) included transfers to or from PM or taxi service. The number of transfers has grown slightly - from 115 (4.5%) in March and 111 (4.5%) in February.

The integration of the suburban and urban components of MM is an important aspect of the overall project. This represents the first real demonstration of this type of "feeder" service for the handicapped. The transfer capability has not been widely used, as evidenced by the above figures. This may be partly due to relatively few users needing to travel between the service areas. In addition, the taxi operators have suggested (see Chapter 3) that many riders do not like to

Table 2.2a

Trip Denials, PM

	Month		
	February, '80	March	April
Minneapolis	236 (2.7%)	306 (3.3%)	264 (3.0%)
St. Paul	355 (6.1%)	340 (5.7%)	307 (5.3%)
Total	591 (4.1%)	646 (4.3%)	571 (4.0%)

transfer, and frequently try to convince the cab drivers to take them all the way to their destination (this requires the cab to go into the suburbs, and produces a no-show for the waiting suburban vehicle). Since the users are often willing to pay the driver the additional fare, some drivers have done so. MM and the taxi companies are attempting to cut down on the incidence of this, but it is unclear how successful they have been. Nevertheless, the fact that feeder ridership is as high as it is is encouraging, as there have been concerns expressed regarding the ability of handicapped individuals to transfer at all. This aspect of the project should continue to be monitored, as it may provide an indication of the feasibility of a feeder service to accessible line haul service.

Of the current ridership totals, approximately 33% of PM trips represent standing orders, while the remainder are trips booked at least two hours before the desired trip time. For the taxi services, approximately 35% are standing orders. Standing order tables (by day of week) are shown in Table 2.3. Standing orders for PM service are limited due to a lack of available capacity during peak hours. It should be noted that the percentage of standing orders on PM has decreased considerably since the time of the six-month review; the figure was 49% at that time. The total for taxis has remained fairly constant; the six-month figure was 34%.

In terms of productivity, PM carried 2.3 passengers per vehicle-hour for April 1980 (down from 2.5 in March). The productivity may be somewhat limited by the two-hour advance notice feature, which might constrain the ability to group trips; however, there is no evidence to support such an assumption.

Productivity on the taxi service cannot be measured in passengers per vehicle-hour, since vehicles are not assigned to the system and no vehicle-hour records are maintained. (The lack of dedicated vehicles makes the taxi service inherently more flexible than PM.) Rather, taxi productivity can only be measured in terms of passengers per tour. The figure for April

Table 2.3

Standing Orders
(as of 5/14/80

	Taxi	Taxi S.O.'s on PM	Taxi: Total	PM: Mpls	PM: St. Paul	PM: Total	Total
Monday	208	34	242	123	94	217	459
Tuesday	184	32	216	111	90	201	417
Wednesday	209	33	242	137	89	226	468
Thursday	185	33	218	117	88	205	423
Friday	217	34	251	118	95	213	464
Saturday	21	-	21	10	2	12	33
Sunday	24	-	24	27	4	31	55
Total	1048	166	1214	643	462	1105	2319

1980 is 1.46 passengers per tour. This has remained remarkably constant over the past ten months; the figure averaged 1.21 over the first three months of the taxi service. There is obviously room for improvement in scheduling efficiency; the problems related to tour formation are discussed in Chapter 3.

Ridership by Handicap Classification

In evaluating the benefits of Metro Mobility, it is instructive to examine the ridership by handicap classification. This information is not compiled on a regular basis by the Transportation Center. Thus, for the purpose of this evaluation, we computed this distribution for three "sample" days: Monday, March 31; Thursday, March 13; and Saturday, March 22 (all in 1980). A composite total distribution was generated by weighting the individual days' results.[1] The adjusted distribution is shown in Table 2.4.

In examining Table 2.4, we see that, as should be the case, the taxi service is carrying very few persons classified 21-24. Since all persons in these categories should require an accessible vehicle, those served by taxi were either misclassified or incorrectly assigned to a taxi. Based on this sample distribution, 20% of all riders are in wheelchairs. This includes 46% of PM riders and 4% of taxi riders. (In Minneapolis, 63% of PM users are in wheelchairs.) Thus, the taxi service appears to have been successful in allowing PM to concentrate on those persons with the most severe mobility problems. In St. Paul, non-wheelchair users comprise 75% of passengers. The introduction of taxi service in St. Paul would, obviously, significantly alter this breakdown.

---

[1] The results were weighted as follows: the March 31 and 13 results were each weighted by 2.5 and the March 22 results by 2 to create a representative "week" (of 5 weekdays and 2 weekend days).

Table 2.4

Handicap Type Classification

Service	Class 21	22	23	24	31	32	33	34	35	36	38	Total
Taxi			.4% 9		3.2% 68	.5% 10	38.4% 818	2.6% 56	41.1% 876	2.4% 52	11.4% 243	2132
PM:Mpls	45.8% 352	4.4% 34	7.8% 60	.4% 3	12.2% 94	.4% 3	15.2% 117	.7% 5	10.2% 78	0% -	2.9% 22	768
PM:St. Paul	18.6% 112	4.2% 25	0% -	0% -	1.7% 10	.8% 5	39.3% 236	2.5% 15	22.3% 134	.8% 5	9.8% 59	601
PM:total	33.8% 464	4.3% 59	4.4% 60	0.2% 3	7.6% 104	0.6% 8	25.7% 353	1.5% 20	15.8% 212	0.4% 5	5.9% 81	1369
Total	13.2% 464	1.7% 59	2.0% 69	0% 3	4.9% 172	0.5% 18	33.4% 1171	2.2% 76	31.2% 1093	1.6% 57	9.2% 324	3501

2.3 Travel Impacts

Trip Purpose Distribution

In evaluating the benefits produced by Metro Mobility, it is useful to examine the distribution of trip purposes. This information has been collected by order-takers when users call to request service. Since it is not maintained on a regular basis, we have computed sample distributions for March 13, 22, and 31. (The composite results are weighted as they are for handicap classification, as discussed above.) The individual days and composite distribution are shown in Table 2.5.

Unfortunately, these figures do not reveal anything especially meaningful. The preponderance of "other" responses indicates either that respondents are generally not inclined to indicate their trip purposes or that order-takers often do not request trip purpose from callers and simply fill in the "other" response. The only observations that can be made are that recreation is the most common trip purpose on Saturdays, while medical trips are the most common during the week.

User Satisfaction: Complaints

The degree to which Metro Mobility users are satisfied with the service can truly be revealed only through a user survey. However, satisfaction, as well as service reliability, is revealed in part through the number and nature of complaints reported to the Transportation Center. The Center did not begin keeping records of complaints until March (1980); thus, we have data from only two months to report. Table 2.6 shows the various types of complaints received by the Center and the numbers of each type for March and April.

In examining this table, several things must be kept in mind. First of all, many passenger complaints may never be reported to the Transportation Center; some people will be hesitant to call them in, others will simply complain to the driver, and others may simply not get through on the phone (i.e., give up in frustration).

Table 2.5

Trip Purpose Distribution

	Work	School	Medical	Recreation	Other	Not Avail.	Total
Sat., 3/22							
No.	9	1	30	115	91	35	281
%	3.2%	0.3%	10.7%	40.9%	32.4%	12.5%	100%
Mon., 3/31							
No.	42	31	164	33	228	45	543
%	7.7%	5.7%	30.2%	6.1%	42.0%	8.3%	100%
Thurs., 3/13							
No.	69	21	179	99	257	31	656
%	10.5%	3.2%	27.3%	15.1%	39.2%	4.7%	100%
Composite							
No.	296	132	918	560	1395	260	3561
%	8.3%	3.7%	25.8%	15.7%	39.2%	7.3%	100%

Table 2.6

Passenger Complaints

	Month	
	March, '80	April, '80
Total no.recorded	240	122
PM		
late vehicle	11	8
no vehicle	14	8
early vehicle	3	5
bus in poor condition	1	
bus breakdown	1	
driver-commendation	3	2
driver-complaint	11	4
driver-unsafe driving		4
other	2	
Total	46	31
Taxis		
late vehicle	136	61
no vehicle	8	8
early vehicle		
taxi in poor condition		
driver-commendation		
driver-complaint	8	9
wrong fare charged	3	3
other	4	
Total	159	81
Transportation Center		
order-takers/fillers-commendations		
order-takers/fillers-complaints	1	2
lost orders	3	1
trip denials	13	3
busy phones	9	2
certification problems	1	1
other	8	1
Total	35	10

Second, some complaints may result from passenger error (e.g., the passenger forgetting what time he/she is supposed to be picked up, or not waiting in the right place, and then complaining about not being picked up).

Third, some complaints result from order-takers' mistakes (e.g., incorrectly writing the address or time, or not getting the apartment entry code where it is necessary to gain access to a building). Thus, the number of complaints does not necessarily represent poor performance on the part of a driver or operator. All three of the taxi operators, for instance, claim[1] that most of the complaints concerning "late vehicle" or "no vehicle" stem from the would-be passenger not being in the right place at the designated pickup time, or from an inability on the part of the driver to locate the passenger (i.e., because of the aforementioned problems).

Bearing these caveats in mind, Table 2.6 shows some interesting results. First of all, the total number of complaints in April (1980) is nearly half that in March. Most of this difference is attributable to a 55% drop in taxi "late vehicle" complaints. This is quite significant, since that category represented over half of the total complaints in each month. The number of PM "no vehicle" and "driver complaint" reports also dropped noticeably, but these were quite low to begin with, considering the total system ridership. Complaints in other areas remained fairly constant from March to April, and all of these were also comparatively quite low. All in all, considering the volume of calls and rides provided, the number of complaints registered with the Transportation Center is quite low, and would seem to indicate that the service is fairly reliable.

---

[1] From interviews with owners and dispatchers of each company.

CHAPTER 3

SYSTEM COST AND PERFORMANCE

3.1 System Costs

The total cost of Metro Mobility/Project Mobility can be broken down into four basic components: 1) reimbursements to the taxi companies for the operation of shared-ride service; 2) reimbursements to the non-profit providers; 3) cost of Transportation Center operations; and 4) operating costs of PM (other than Transportation Center costs). Because of the overlapping of functions between the MMTC and the non-MMTC PM operations, true allocation of costs is rather difficult. The allocation by month also becomes confused due to changes in both the physical make-up and location of the different control operations and the classification of personnel. These issues are discussed below.

Total monthly operational costs for the Metro Mobility Transportation Center are summarized in Table 3.1. These figures have been taken from MTC data (available only through February at the time of this evaluation). Labor costs have been reformatted somewhat from the MTC Results of Operations reports. "Administrative" labor in Table 3.1 includes the following categories listed in the MTC reports: staff director, assistant, supervisors (beginning December 1979), other administrative labor, and marketing staff labor. "Controllers" includes controllers and dispatchers[1] (the "Dispatcher"

---

[1] The labor figures have been adjusted to account for the fact that certain PM dispatchers were located at the MMTC between April and August 1979, and all were moved there in September. Thus, the "controllers" figures for September, October, and November 1979 include all PM dispatchers; for April - August, 1979 only those PM dispatchers working out of the MMTC were added into the "controllers" figures. (This information was taken from payroll records.) Fringe benefits and indirect costs were then recomputed based on the adjusted labor figures.

Table 3.1

Operational Costs: Metro Mobility Control Center[4]

	April,'79	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.'80	Feb.	March	April	Total
Labor														
Administrative[1]	$3939	$3471	$3187	$4268	$3601	$3271	$3599	$5451	$7736	$11447	$10205	N/A	N/A	
Controllers[2]	14415	12274	16652	13250	16098	20524	21452	19918	25195	24134	25930			
Clerical[3]	684	733	733	1574	2022	1518	2157	1709	1335	2396	1294			
Total Labor	19038	16478	20572	19092	21721	25313	27208	27078	34266	37977	34463			
Fringes	7234	6262	7817	7255	8254	9619	10339	10290	13021	12912	15164			
Total Labor and Fringes	$26272	$22740	$29389	$26347	$29975	$34932	$37547	$37368	$47287	$50889	$49627			$392373
Other Operating Expenses														
Office Lease	1500	1500	1500	1500	1500	1620	1580	1580	1580	1580	2275			
Telephone	-	957	635	914	931	1378	3255	-	1669	1768	1687			
Supplies and Expenses	504	1044	1472	3224	542	877	410	172	481	1861	-			
Indirect Expenses	2833	2408	2397	2090	1327	3175	3900	4386	6879	5697	6203			
Advertising and Promotion	-	95	224	141	145	7796	27152	521	-	-	-			
Services	-	-	-	-	-	-	-	-	-	270	-			
Miscellaneous	-	-	-	-	-		-	-	-	-	18			
Total "Other Expenses"	$4837	$6004	$6228	$7869	$4445	$14846	$36297	$6659	$10609	$11176	$10183			$119153
Total Operating Cost	$31109	$28744	$35617	$34216	$34420	$49778	$73844[5]	$44027	$57896	$62065	$59810			$511526

[1] "Administrative" labor includes: director, administrative assistant, supervisors, other administrative labor, and marketing staff labor

[2] "Controllers" includes: dispatchers, order fillers, and order takers

[3] "Clerical" includes: clerk typist and certification secretary

[4] Data from MTC

[5] Icludes especially heavy marketing expenditure

(Note: April-Aug. "Contollers" figures include only those PM dispatchers working at the control center.)

category was dropped as of December 1979, following reclassification of MMTC control personnel; "clerical" includes clerk typist and certification secretary.

It should be noted in examining the monthly cost figures that the "advertising/promotion" costs vary considerably over the course of the year, the vast bulk of these expenditures coming in September and October ($7,796 and $27,152 respectively).

The costs of the MMTC are summarized in Table 3.2. (Advertizing and promotion costs have been recomputed for this table to reflect monthly averages, rather than cash flow as shown in Table 3.1.) It can be seen from Table 3.2 that costs remained fairly steady from the MMTC's beginning (April) until September, after PM service had been expanded into St. Paul and the remainder of Minneapolis. At that time, the cost increased by over 20%. The next significant change occurred in December, when the MMTC staff was reclassified and reorganized.[1] The addition of "supervisors" raised the labor cost significantly. Since December, the costs have remained quite steady.

3.2 System Performance

In order to better place these figures in perspective and assess system performance, it is necessary to examine the costs in connection with ridership figures. This section examines the performance results for each of the three components of MM: 1) shared-ride taxi; 2) PM; 3) private non-profit providers. (Table 3.3 summarizes the results of the three.)

---

[1] At that time, all "control" personnel - MM controllers and PM dispatchers - were placed under a single pay scale, and control personnel were divided into two categories: order-fillers and order takers. (The PM dispatchers unsuccessfully filed arbitration because their wages were effectively reduced by the reorganization.) In addition, a new position was created: "supervisor." At least one supervisor is on duty at all times.

Table 3.2

Operational Costs: MMTC

Month	Labor	Other Operating Expenses*	Total*
April 1979	$26,272	$8,116	$34,388
May	$22,740	$9,188	$31,928
June	$28,389	$9,283	$37,672
July	$26,347	$11,007	$37,354
August	$29,975	$7,579	$37,554
September	$34,932	$10,329	$45,261
October	$37,547	$12,464	$50,011
November	$37,368	$9,596	$46,964
December	$47,287	$13,888	$61,175
January 1980	$50,889	$14,455	$65,344
February	$49,627	$13,462	$63,089

* Advertising/promotion expenses have been averaged out on a monthly basis for this table.

Table 3.3

Summary: MM Costs and Performance Results*

	Taxi	PM	Non-profits**	Total
Ridership	9456	10137	1809	22452
Operating Cost/Passenger***	$3.44	$ 9.84	$11.57	$7.13
Admin. Cost/passenger****	$2.40	$2.83	$0.75	$2.26
Total Cost/Passenger	$5.84	$12.67	$12.32	$9.39
Net Cost/Passenger	$5.48	$12.33	$11.75	$9.03

* monthly average over first year of MMTC operation (April 1979 - March 1980)

** for 5 months

*** operating cost for the taxi and non-profit operations represents the reimbursement cost paid the taxi operators and the non-profit providers; operating cost for PM represents the non-MMTC cost of PM

**** administrative cost for each element represents the portion of MMTC cost allocated to that element.

Table 3.4 provides the basic analysis for the taxi operation on a month by month basis. In developing the "administrative cost" figures, MMTC costs were allocated to the taxi service on the basis of relative percentage of total ridership[1]. These figures were then added to reimbursement in computing total cost per passenger. Tables 3.5 and 3.6 provide similar breakdowns for PM and private provider costs, respectively.[2] (Individual figures for CENTS and HSCTS are given in the Appendix). The PM administrative costs were computed by subtracting the taxi totals from the Control Center totals (from Table 3.1); the PM operating totals were taken from MTC Results of Operation tables.

In examining these tables, certain observations can be made. First of all, we see that the cost per passenger for the taxi service is much lower than that for PM. In February, 1980, the latest month for which cost data are available, the net taxi cost per passenger was approximately half that of PM; in other months, the PM cost was as much as three times that of the taxis. This situation actually meets one of the initial objectives in setting up the taxi project - to provide supplementary service (to PM) at a significantly lower cost than that of PM itself. On the other hand, the creation of the MMTC and the inherent increase in administrative support have served to increase PM's costs, until recently. However, it should be noted that the cost dropped over the last couple of

---

1 This may slightly overstate the taxi costs (and understate PM costs) due to the uncertainty regarding the percentage of time PM dispatchers spent on taxi scheduling, and the percentage of time MM controllers spent on PM dispatching. However, this was judged to be the most reasonable method of allocating cost.

2 The administrative (ie., MMTC) cost to be allocated to CENTS and HSCTS was computed by MMTC. We feel that their figures represent a reasonable estimate of these costs.

Ta 3.4

Shared-Ride Taxi Data

	% Total Pax	No. of Tours	No. of Pax	Pax per Trip	Tour Cost	Reim. Cost	Admin. Cost	Reim. cost per pass.	Tour cost per pass.	Admin. cost per pass.	Total cost per pass.	Net cost per pass.
April,'79	34%	2455	2931	1.19	$8747	$7721	$10577	$2.63	$2.98	$3.61	$6.59	$6.24
May	49%	4753	5757	1.21	$17103	$15087	$14085	$2.62	$2.97	$2.44	$5.41	$5.06
June	53%	5515	6728	1.22	$19573	$17209	$18347	$2.56	$2.91	$2.73	$5.64	$5.29
July	51%	5823	7957	1.37	$25531	$22731	$17450	$2.86	$3.21	$2.19	$5.40	$5.05
August	43%	5980	8480	1.42	$29949	$26965	$14800	$3.18	$3.53	$1.75	$5.29	$4.93
Sept.	42%	6529	8882	1.36	$31434	$28318	$20907	$3.19	$3.54	$2.35	$5.89	$5.53
Oct.	43%	7139	10189	1.43	$35717	$32134	$31770	$3.15	$3,51	$3.12	$6.63	$6.27
Nov.	41%	6641	9625	1.45	$32986	$29597	$18124	$3.08	$3.43	$1.88	$5.31	$4.96
Dec.	43%	7162	10518	1.47	$36000	$32296	$26006	$3.07	$3.42	$2.47	$5.89	$5.54
Jan., '80	45%	8546	12358	1.47	$43742	$38420	$29772	$3.11	$3.54	$2.41	$5.96	$5.52
Feb.	42%	8367	12031	1.44	$43167	$38870	$26887	$3.23	$3.59	$2.23	$5.82	$5.46
March	44%	8896	13584	1.53	$48350	$43626	N/A	$3.21	$3.56	N/A	N/A	N/A
April	46%	9527	13884	1.46	$50093	$45234	N/A	$3.26	$3.61	-	N/A	-
Avg.	47%	6718	9456	1.41	$32492	$29093	$20793	$3.08	$3.44	$2.40	$5.84	$5.48
Total	47%	87333	122924	-	$422392	$378208	$228725	-	-	-	-	-

Table 3.5
PM Data

	% Total Pax	No. of Pax	Operating Cost	Admin. Cost	Operating Cost/pass.	Admin. Cost/pass.	Total Cost/pass.	Net Cost/pass.	Net Cost/mi.	Net Cost/hr.	Pax/ hr.
Jan.,'79	100%	6503	$44821	$27032	$6.89	$4.16	$11.05	$10.70	$2.75	$27.13	2.54
Feb.	100%	5803	$36944	$21185	$6.37	$3.65	$10.02	$9.66	$2.30	$23.65	2.45
March	100%	7051	$49292	$28917	$6.99	$4.10	$11.09	$10.75	$2.51	$28.28	2.63
April	66%	5686	$57592	$20532	$10.13	$3.61	$13.74	$13.40	$2.94	$27.07	2.01
May	51%	6067	$58925	$14659	$9.72	$2.42	$12.14	$11.79	$2.68	$25.20	2.14
June	47%	5900	$55047	$16270	$9.33	$2.76	$12.09	$11.76	$2.55	$24.11	2.05
July	49%	6527	$92106	$16766	$14.11	$2.59	$16.68	$16.35	$2.62	$17.58	1.07
August	57%	11384	$121318	$19620	$10.66	$1.72	$12.38	$12.06	$1.98	$20.75	1.72
Sept.*	58%	12289	$117607	$28871	$ 9.57	$2.35	$11.92	$11.55	$2.02	$23.25	2.00
Oct.*	57%	13763	$156185	$42114	$11.35	$3.06	$14.41	$14.06	$2.13	$26.15	1.86
Nov.	56%	13184	$131855	$26082	$10.00	$1.98	$11.98	$11.65	$1.78	$21.49	1.84
Dec.	51%	12474	$157276	$31155	$12.60	$2.50	$15.10	$14.95	$2.20	$29.62	1.96
Jan., '80	48%	13088	$140077	$31572	$10.70	$2.41	$13.11	$12.76	$1.96	$21.90	1.67
Feb.	49%	13901	$130024	$32188	$9.36	$2.32	$11.67	$11.32	$1.82	$23.26	1.99
March	47%	14418	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.07
April	46%	13864	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.97
Total	49%	161902	$1349069**	$356963**		-	-	-	-	-	-
Avg.	49%	10119	$96362	$25497	$ 9.84	$2.83	$12.69	$12.33	$2.30	$24.25	2.01

* very heavy marketing expenditure these months
** total does not include March and April

Table 3

Combined CENTS and HSCTS Data

Month	No. of Tours	No. of Pax	Pax per Trip	Tour Cost	Reim. Cost	Admin. Cost	Reim. Cost per Pass.	Tour Cost per Pass.	Admin. Cost per Pass.	Total Cost per Pass	Net Cost per Pass
Nov. '79	N/A	778	N/A	$21066	$20142	$1361*	$25.89	$27.07	$1.75	$28.82	$27.64
Dec.	N/A	1364	N/A	$19614	$18792	$1361	$13.78	$14.38	$1.00	$15.38	$14.78
Jan. '80	N/A	1890	N/A	$21676	$20582	$1361	$10.89	$11.47	$.72	$12.19	$11.61
Feb.	N/A	2473	N/A	$20196	$18949	$1361	$7.66	$8.17	$.55	$8.72	$8.21
March	N/A	2541	N/A	$22119	$20916	$1361	$8.23	$8.70	$.54	$9.24	$8.77
April	N/A										
Average	-	1809	-	$20934	$19876	$1361	$10.99	$11.57	$.75	$12.32	$11.75
Total	-	9046	-	$104671	$99381	$6805	-	-	-	-	-

* Average monthly cost, computed by MMTC (see Appendix for MMTC computation of CENTS/HSCTS administrative costs); this represents MMTC - related costs only, and does not include other administrative costs associated with these operations.

Table 3.6 (Cont.)

Combined CENTS and HSCTS Data (cont.)

Month	Total cost	Revenue	Net cost	Miles	Net cost per mi.	Total Hours	Net cost per hr.	Pax per hr.
Nov. 1979	$22427	$796	$21631	8574	$2.52	850	$25.45	.92
Dec.	$20975	$823	$20152	11383	$1.77	1606	$12.55	.85
Jan. 1980	$23037	$1094	$21943	14798	$1.48	1336	$16.42	1.41
Feb.	$21557	$1246	$20311	17818	$1.14	2866	$7.09	.86
March	$23480	$1205	$22275	19101	$1.17	1662	$13.40	1.58
April	N/A	$991	N/A	18809	N/A	1740	N/A	N/A
Avg.*	$22295	$1033	$21262	14335	$1.48	1664	$12.78	1.09
Total*	$111476	$5164	$106312	71674	-	8320	-	-

*does not include April

months as ridership has grown; the figure for February is the lowest since the beginning of Metro Mobility. Allocating certain cost increases to inflation, it is possible that the expansion and coordination of service through Metro Mobility may yet serve to decrease the costs of PM service as well.

The second important observation concerns the taxi service operational costs. In this component, the administrative cost represents a rather high percentage of total costs. On average, the administrative cost per passenger represents over 38% of the total cost per passenger. This percentage has not declined appreciably over the course of the project, although it has also not increased with the rise in total administrative costs brought about by the December reorganization; this is because the cost hike has coincided with a significant increase in ridership. This suggests that, if ridership continues to rise and the administrative cost remains fairly steady, the ratio of administrative cost to total cost should decline. Whether this will happen remains to be seen.

In any event, the currently high administrative-operating cost ratio raises the question as to whether the shared-ride taxi service is a more cost-effective alternative than simply subsidizing passengers to use exclusive-ride taxis. This question was addressed in the six-month evaluation, and the cost of exclusive-ride service was estimated at that time (for a "typical" day) to be $4.44 per passenger trip. This is, of course, considerably lower than the $5.84 per passenger cost for shared-ride service. Thus, as it is currently operating, the taxi service is not cost-effective, compared to a user-side subsidy.

A related question is whether there are opportunities to reduce the cost of the shared-ride service through improving the efficiency of the MMTC functions (i.e., as opposed to simply increasing ridership). This would seem to be an achievable goal. The issue of improving efficiency is addressed later in this chapter, under Transportation Center Performance.

Finally, another contributor to inefficient operation and high costs is passenger "no-shows." Would-be passengers occasionally fail to show up at the appointed time and place. Drivers are instructed to wait at the designated locations for five minutes before leaving without a passenger. As shown in Table 3.7, the relative percentage of no-shows is 2-3 times as great for the taxis as for PM. This is largely attributable to the nature of the respective users of the two services. PM users tend to be more severely handicapped than taxi users, and thus have fewer (if any) alternative options; taxi users, on the other hand can (and sometimes do) call a cab on their own or get a ride from someone else after they have called MM. In addition, some no-shows result from driver error (e.g., showing up at the wrong place or time), or taxi driver unwillingness to accept Metro Mobility trips. The reasons for no-shows are difficult to document. It is interesting to note that the percentages of no-shows have dropped slightly over the last couple of months (March, April 1980), despite significant ridership gains during the months.

In examining the data for the private non-private providers (Table 3.6), we see that, as the ridership has grown, the cost per passenger has generally dropped considerably (although the cost actually increased from February to March, due to a drop in ridership). The net cost per passenger for Feburary was $8.21, almost exactly midway between that of the taxis and PM. It is interesting to note that the CENTS/HSCTS costs are substantially lower than those of PM, despite the fact that the latter has achieved significantly higher productivities: an average of 1.77 passengers per hour for PM, as compared to 1.09 for the non-profits. (It is not possible to calculate this measure for the taxis, since hours are not recorded.) This is due to the fact that PM has much higher labor costs. Besides drivers, the major difference lies in the relative sizes of the control staff associated with the two services; the CENTS/HSCTS control staff consists of a single full-time person, with part-time assistance. (This is discussed further later in this chapter, under Transportation Center Performance.) (Drivers

Table 3.7

No-Shows

	Taxi	PM:Mpls	PM:St. Paul	PM:Total	Total
April, '79	193 (6.6%)	169 (3%)	-	169 (3%)	362 (4.2%)
May	380 (6.6%)	223 (3.7%)	-	223 (3.7%)	603 (5.1%)
June	363 (5.4%)	250 (4.2%)	-	250 (4.2%)	613 (4.9%)
July	533 (6.7%)	225 (3.6%)	46 (3.5%)	271 (3.6%)	804 (5.2%)
August	432 (5.1%)	476 (3.4%)	143 (3.4%)	619 (5.2%)	1051 (4.9%)
Sept.	1065 (12%)	365 (4.7%)	168 (3.8%)	533 (4.3%)	1598 (7.6%)
Oct.	751 (7.4%)	389 (4.6%)	219 (4.2%)	608 (4.4%)	1359 (5.4%)
Nov.	730 (7.6%)	309 (3.9%)	192 (3.7%)	501 (3.9%)	1231 (5.1%)
Dec.	832 (7.9%)	306 (4.1%)	251 (5.0%)	557 (4.3%)	1389 (5.7%)
Jan., '80	1009 (8.2%)	233 (3.0%)	304 (4.7%)	537 (4.1%)	1537 (5.7%)
Feb.	963 (8%)	188 (2.2%)	167 (3.1%)	355 (2.6%)	1318 (4.8%)
March	853 (6.3%)	178 (2%)	141 (2.5%)	319 (2.2%)	1172 (4.2%)
April	896 (6.5%)	195 (2.3%)	144 (2.6%)	339 (2.4%)	1235 (4.5%)

and mechanics are also a major cost component of PM, of course, accounting for much of the cost difference between PM and the taxis.) In light of the relative cost efficiency of the non-profit operation, it would seem that, as ridership increases, greater grouping of rides should be possible, thereby lowering costs even further.

3.3 Transportation Center Performance

The basic functions of the Transportation Center have been certification and vehicle control (i.e., trip scheduling and dispatching). The certification process (discussed in the previous two chapters) is not a major component in determining the efficiency of the MMTC, and currently is not a major activity. The evaluation of the MMTC performance, thus, consists essentially of examining the efficiency and effectiveness of vehicle control functions: call-taking, tour-making, and dispatching. These areas are addressed below.

As discussed in Chapter 1, the control functions are currently carried out under two employee classifications: order-taker and order-filler. Unlike the situation at the time of the six-month evaluation, the functions are not always interchangeable among all control personnel; order-takers only take calls, while order-fillers carry out all scheduling and dispatching (and can fill in for order-takers when requested by the supervisor to do so).

At the time of the six-month evaluation, it was determined that the call-taking procedure was extremely inefficient - the typical caller (at least during the peak morning period) was on the phone an average of almost ten minutes, including hold time. All eight lines were found to be lit almost constantly. No extensive observation of the call-taking was undertaken for this evaluation, but occasional observations (at various times of the day, over several days) and discussions with supervisory staff indicated that the call-taking procedures are still rather inefficient. All eight lines are still apparently almost constantly lit, which would indicate that many callers

are receiving busy signals and thus not getting through to the order-takers. This obviously limits the number of trips which can be taken, and represents poor service to those attempting to request service. (Ridership continues to grow, however, indicating that a growing number of callers are getting through.)

At the time of the six-month evaluation, several basic problems were identified. Most involved the work/break habits and attitudes of the call-takers themselves. We cannot report on progress in these areas, since the call-takers were not carefully observed. One of the major contributors to the length of time callers are kept on hold is the procedure still being followed - of filling out the return trip form while persons are on hold. This practice takes on the order of 1 minute for each trip request, and significantly reduces the capacity of the call-taking process. It was recommended in the six-month evaluation that a carbon copy service request form be used, with the second copy used for the return trip. However, this recommendation was not implemented on the grounds that such slips of paper could not be used on the scheduling board (i.e., stiffer paper is needed).[1]

In an effort to improve the call-taking process, the MMTC manager would like to install a new phone system which would sequence calls, so that calls are answered in the order in which they come in. This system would also play a recorded message to each caller; the message would request that the caller hold on until a line opens up and would inform the caller that he/she should have the required trip (and certification) information ready. This would, hopefully, speed up the phone calls, as well as improve the completeness of the information given. Until such a system is installed, it would

---

[1] The use of carbon forms wherein the second sheet is the same heavy paper as the top sheet was rejected because of the feeling that certain of the handicapped order-takers would not be able to press hard enough for the second sheet to be legible. We believe that this is not true - that such forms do not necessarily require that the writer press hard. Such forms should at least be tried out by the MMTC.

seem that better training of order-takers, as well as some streamlining of the return trip request form completion procedure, could improve the call-taking process.

There has been one significant improvement which has helped the call-taking and scheduling procedures. A direct telephone line to the order-fillers for trip cancellations has been instituted. This reduces the number of calls coming in on the regular lines, and also greatly reduces the chances of a person wishing to cancel not being able to get through, which would result in a no-show. A similar line for callers inquiring about late vehicles has been proposed; this should result in further improvements.

Certain other aspects of the tour-making and dispatching functions have also improved considerably since the last evaluation. Several of the problems indentified in the six-month evaluation have been more or less rectified. These are as follows:

1) poor typing ability of schedulers - At the time of the six-month evaluation, the typing ability of several of the schedulers was observed to be rather deficient. This situation has apparently improved in that the original schedulers have now become more proficient with practice, and new schedulers (order-fillers) are required to possess "reasonable" typing capabilities. The Metro Mobility manager considers typing ability a "very important" job requirement. The situation is also helped by the fact that order-takers (who are not required to be able to type) do not switch off to perform the scheduling function.

2) requirement that schedulers call back every PM passenger to confirm pick-up time - This is no longer done.

3) inefficient set-up of control room - The scheduling/dispatching functions for PM and the taxi were previously located in a single room, directly beneath the call-taking room. This room was rather cluttered, with both equipment and personnel. The PM and taxi scheduling/dispatching functions

are now located in separate rooms, on the same floor as the phones. Whereas this eliminates any opportunity for the PM and taxi order-fillers to help each other out when one is busier than the other, there is now less movement and less overall sense of confusion within the scheduling/dispatching areas.

Of course, locating the scheduling rooms on the same floor as the order-taking has created a new problem: instead of simply dropping the trip requests down a chute, the order-takers must either get up and carry the cards into the other rooms, or wait for the shift supervisor to do that. This means that either: 1) requests can pile up, placing an added burden on the order-fillers to schedule trips within the two-hour advance notice limit; or 2) the order-takers are frequently leaving the phones, thereby worsening the already inefficient call-taking situation. It is recommended that the shift supervisor be encouraged/required to perform this intermediate function quite frequently (i.e., every 10 minutes at the most).

4) bad attitude on the part of staff - At the time of the six-month evaluation, a number of staff members felt that the Transportation Center was understaffed, and that they were overworked. This resulted in a negative attitude among the staff, which certainly did not encourage good work habits. The general attitude seems to have improved considerably over the past half year, and the control staff is apparently working somewhat more efficiently. (Of course, the staff size is somewhat larger now than it was at that time, as discussed in Chapter 1.)

5) poor supervision and administration - Before the staff reorganization (in December 1979), there was an obvious dearth of active supervision, guidance, and encouragement of the control staff. The MM manager was often absent from the MMTC, and his assistant apparently did an inadequate job of carrying out supervisory functions. The introduction of shift supervisors was an attempt at improving this situation, and the current MM manager is taking a more active role than his predecesor in day-to-day supervision of the overall system.

The stipulated role of the shift supervisors is quite varied and includes data recording and transporting of trip requests (as discussed above), as well as general supervisory duties. Since there are as many as three supervisors on duty at one time (between 11 AM and 1 PM), their duties should be spelled out more specifically. Furthermore, it would seem that there need not be more than one supervisor on duty at a time, rather than the two (or three) scheduled between the hours of 9 AM and 4 PM (during the week).

As suggested above, the overall management of MM has seemingly improved considerably since the last evaluation. The current project manager has a good understanding of the importance of the project and has demonstrated a strong desire to improve its operation, both on an administrative and operational level. He has made a concerted effort to exercise proper control over the project, has suggested and implemented various procedural changes, and has upgraded the record-keeping process. An administrative assistant helps out in the latter activity and also handles passenger complaints. There are still certain inefficiencies within the project (e.g., in order-taking and tour-making), but the overall administration is much more active in, and concerned with, both the day-to-day and longer range operation of the project.

Besides the above-mentioned problems with the order-taking procedure, the major area of inefficiency in vehicle control lies in the scheduling of shared-rides for taxi services (no analysis has been made of PM tour making). Whereas the amount of (taxi) shared-riding increased during the first third of the year, it has leveled off over the last 10 months and is still below its potential. The amount of shared-riding is very important in that it represents the key to the cost-effectiveness of the taxi service. As shown in Table 3.5, the number of passengers per tour, a good indication of scheduling efficiencies, jumped from 1.19 in April 1979 (the first month of the taxi service) to 1.37 in July, following some intensive training. However, the figure for April 1980 is 1.46 and the

average for the first year of operation is 1.41, indicating that there has been only modest improvement. This indicates that schedulers have not been creating tours as efficiently as they might. While this should be the focus of the schedulers' job, it appears to have been underemphasized in the initial training. This has been corrected somewhat during subsequent training sessions, but the evidence suggests that there is still insufficient attention being payed to this aspect of scheduling. The schedulers have claimed throughout that there was insufficient time for effective scheduling. (They sometimes run behind in dispatching tours, which they blame on the work load.) While there is clearly some truth to their assertion, the fact remains that the time constraints are in part the result of the inefficient Transportation Center procedures (e.g., the transferring of trip request cards from the order-takers to the scheduling rooms); furthermore, increased staffing has reduced some of the earlier time constraints.

As an indication of the potential improvement in grouping rides, Multisystems analyzed tours on several occasions. During the first week of service, Multisystems analyzed the tours generated on April 2, 1979. The results indicated that the reimbursement cost could have been decreased by 6.5%. As ridership increases, the potential for sharing rides increases. However, an analysis of some of the tours on May 18th indicated that costs could have been decreased by at least 12%. As a result of these analyses, it was decided to hold a special scheduling training session in mid-June (1979), conducted by Multisystems. The results suggest that the training (together with greater awareness of the problem on the part of management) was at least somewhat effective. As mentioned earlier, the ratio of passengers to tours jumped significantly in July (from 1.22 in June to 1.37). A third tour analysis, undertaken for September 14, 1979, revealed that costs could have been reduced by at least 4%. An analysis of tours for March 31, 1980 reveal that the potential cost

reductions was at least 5.5%.[1] Thus, the tour-making procedure does not appear to have improved significantly. The impact of the potential reductions is not insignificant. On an annual basis (based on March figures), the potential savings are over $28,000, or 17¢ per passenger. Thus, taxi tour costs could be reduced somewhat.

One of the basic goals in terms of system efficiency in the taxi service should be to group rides efficiently enough for the MMTC to at least "break even" as compared to subsidizing exclusive-ride taxi service. As stated earlier, the cost of subsidizing exclusive rides would average $4.44 per passenger-trip. Since the average cost of a shared-ride taxi tour has been $8.23 ($5.60/passenger x 1.41 passengers/tour), the number of passengers per tour required to equal the exclusive-ride cost is 1.85 ($8.23/4.44), under current ridership levels. It would not appear, therefore, that "break-even" operation is feasible without either reduced Transportation Center costs or increased ridership.

3.4 Taxi Industry Reaction

One important "measure" of the performance of MM and the TC is the viewpoint of the taxi operators participating in the system. The owners of all three companies and the chief dispatchers of Yellow and Blue and White were interviewed in mid-May (1980) to get their impressions about the following basic concerns:

- o general feelings about MM (i.e., successful or not)
- o major problems with the system
- o suggestions for sytem improvements/changes

Their views are summarized below:

1) general feelings - The general feeling among all those interviewed was that MM is an excellent system. Those at Yellow and Red and White felt that it is working very well, and

---

[1] This analysis was performed without information on standing orders; hence, greater savings might yet be possible.

is, in fact the "best such system in the country." Those at Blue and While felt that it is "theoretically, the best in the country," but that there exist a number of problems (discussed in the next subsection) "inhibiting achievement of greater potential." Yellow reported that 7-10% of its total trips are MM requests, while Blue and White cited a figure of 5% (Red and White did not indicate a figure). Yellow felt that the system had improved significantly since the current MM project manager had taken over.

2) major problems - Despite the generally positive reviews from the operators, several problems were identified. The operators reported that drivers sometimes have difficulties in trying to locate passengers because apartment numbers are incorrect (or missing), or because necessary access codes (to gain entrance to a building) are not taken. Standard pickup points were suggested as one way of avoiding this problem. One company felt that the number of no-shows was "horrendous" (8-10% of trip requests) - that this made drivers very unhappy, and that too many of the no-shows were repeaters; a significant cause of no-shows is apparently doctor appointments running late[1]. (The other companies, on the other hand, did not see no-shows as a significant problem; they represent about the same percentage as in premium taxi service - 5%). One of the major complaints concerning no-shows is the low reimbursement rate ($1.15 per no-show.) The operators feel that this should be higher.

One of the companies cited a number of other problems, including the following:

- the telephone system represents the single major problem; more call-takers are needed; the operator felt that its MM business could "double" if more calls could get through; some people call the taxi company directly because they cannot get through to the MMTC

[1] The number of no-shows may be partially attributable to drivers not showing up, but the nature of passenger complaints does not indicate this to be a significant problem (see Table 2.6).

- problems with transfers to the non-profit carriers in the suburbs: passengers attempt to convince cab drivers to take them to the final destination (which would then produce a no-show for the suburban service), so as to avoid having to transfer

- in proper certification: "a lot of people are riding MM who should not be"

- orders are sometimes mixed up by the MMTC: the operator receives orders intended for one of the other companies, or more than one company receives the same order; this occurs approximately once every two days. On the other hand, the teletype has been a significant boon, eliminating the need to manually transcribe the scheduling information, and producing a printed record of orders received

- communications with the MMTC have not been very good: one of the operators has called to suggest better tours, but the MMTC personnel are generally not interested; the same operator has offered to send its chief dispatcher to the MMTC for a couple of weeks to assist in training (i.e., in tour-making)

- problems with the police over stopping in no parking areas to make a pickup.

3) suggestions for system improvements/changes - The operators recommended the following improvements/changes:

- the entire system should be computerized

- a non-profit agency (e.g., CENTS) or another organization (other than MTC or the taxi operators) should be running the MMTC instead of MTC; it is currently far too expensive; they (the taxi companies) would actually prefer to form their own tours, but this would eliminate any chance to group tours on a larger basis

- the fare for MM should be pegged to that for conventional transit

- teletyped orders shoud contain symbols indicating type of handicap (i.e., wheelchair-bound, blind, etc.)

- regular riders should be encouraged to schedule appointments during off-peak hours, whenever possible

- persons wanting return trips should call for pick-up when they are ready to leave, so as to cut down on no-shows (e.g., resulting from doctors' appointments running late)

- the taxi fare system should be shifted from a zonal basis to a meter.

Finally, a couple of cab drivers (one from Yellow, one from Red and White) were interviewed concerning MM. They both liked the system, basically because it gave them work during a generally slow period for premium taxi service. They also reported that MM passengers were even beginning to give them tips - an unexpected bonus, as far as they are concerned.

CHAPTER 4

CONCLUSIONS/RECOMMENDATIONS

This chapter evaluates the overall results of the project in terms of several basic goals and in comparsion with the results of similar systems, and presents recommendations concerning improvements to the current operation.

4.1 Overall Conclusions

In assessing the first full year of operation, we find that the Metro Area Transportation Handicapped Demonstration has been generally successful in meeting the following goals:

- o expanding the services available to the handicapped comunity;
- o demonstrating the potential economies of private sector operation; and
- o demonstrating the feasibility of coordinating public and private sector services.

These areas are addressed in turn below.

Expanding the Services available to the Handicapped Community - In terms of improving the availability of specialized transportation services to the handicapped community, Metro Mobility has been quite successful. With the assistance of one of the system's original components - the Consumer Outreach Project - MM was able, during its first year of operation, to certify over 13,000 persons with various types of handicaps. Among the total registrants, 29% use wheelchairs, 39% use orthopedic aids, and 31% do not use aids. Despite the fact that MM is no longer actively seeking new certifications, approximately 30 persons call wishing to be certified each day.

As originally intended, Project Mobility and the private providers have served different segments of the handicapped community. In Minneapolis, where both PM and taxi services are available, 63% of PM passengers are wheelchair-bound, while

only 4% of taxi riders are in wheelchairs. In St. Paul, where MM taxi service is not available, only 25% of passengers are in wheelchairs. Thus, the taxi service has been successful in allowing PM to concentrate on those persons with the most severe mobility problems.

In terms of service availability, the addition of the non-profit providers (CENTS and HSCTS) has further increased specialized transportation opportunities, by expanding service into several suburban areas, thereby allowing travel between the cities and some suburbs.

Patronage of MM has grown steadily during the first year of operation. Ridership in Minneapolis alone grew by over 300% between March 1979 (the month before the introduction of the taxi service) and March 1980. Total system ridership is currently over 30,000 per month, placing it among the highest of any specialized transportation system in the country (MM is compared to several other systems in the next section of this chapter). Furthermore, judging by the constant saturation of the telephone lines (and the presumed considerable number of callers unable to get through to the Control Center), the demand for service may be significantly greater than the number of persons actually served. Thus, Metro Mobility has definitely met the goal of expanding the availability of specialized services to the handicapped community.

Demonstrating the Potential Economies of Private Sector Operation - Project Mobility was, and continues to be, a very expensive service, on a per passenger basis. Any service focusing on the severely handicapped will be more costly than a more general paratransit service (due to factors such as the longer time necessary to assist persons on and off of a vehicle and lower demand densities). It has been found that public (i.e., transit authority) operation of such services is generally considerably more expensive than operation by a private provider; this is due primarily to a significant difference in wage scales between the two sectors. Thus, to

cut expenses, a number of transit authorities have decided to contract out specialized service (in total, or in part) to local private providers.

Metro Mobility has utilized this approach quite effectively. The cost of the taxi operation has been much lower than that of the publicly-operated PM. PM's per passenger cost has been as high as three times that of the taxis; the ratio is currently approximately 2:1 ($11.70 to $5.94). Furthermore, the introduction of the private providers has reduced the overall system cost per passenger from $11.00 (for pre-MM PM) to $8.75. (The addition of the private non-profit providers has not significantly reduced the overall system cost, due to the relatively small percentage of total system ridership and cost represented by these services. However, these providers have provided service at a cost lower than that of PM, and are thus helping to achieve the goal of demonstrating the economies of private sector operation.)

On the other hand, the cost of providing the taxi service has been quite high when compared to the (alternative) cost of subsidizing exclusive-ride taxi trips. The administration (i.e., management and control) cost represents over 38% of the total cost per passenger, whereas in a user-side subsidy program (i.e., without centralized call-taking and dispatching), administrative costs should be very low. At the current administrative cost, in order for the average MM taxi subsidy to drop below that which would be necessary for a user-side subsidy of premium taxi rides, the amount of ride-sharing would have to increase from the current level of 1.41 passengers/tour to 1.83 passengers per tour. Alternatively, the administrative cost level would have to drop considerably. These issues are addressed later.

Thus, although, there may be potential for reducing costs further, the taxi (and non-profit) services have already clearly demonstrated the potential economies of private sector operation.

Demonstrating the Feasibility of Coordinating Public and Private Sector Operation - Finally, the third basic goal of the project - closely related to the second - has been to demonstrate the feasibility of coordination of public and private sector operations. Judging from the system results, as summarized in the preceding discussion, MM has been quite successful in achieving this goal. In fact, Metro Mobility represents one of the more ambitious attempts at such coordination. MM has not only coordinated three different types of providers, but has also managed to coordinate several different providers of one type (e.g., the three taxi operators).

The coordination of private and public operators has progressed to the point where each sector is currently carrying virtually the same number of passengers; actually, this represents a shift from the original plan, which was to have the private providers merely "supplement" PM, rather than comprise an equivalent component. All three system elements have operated quite smoothly (i.e., no serious problems or complaints) to date, and all of the participating operators are farely pleased with the system.

The nucleus of the coordinated system is, of course, the Transportation Center (MMTC). All requests for service and scheduling of trips take place there, making it the key component in terms of system effectiveness and efficiency. The MMTC represents a greater degree of coordination than is found in most specialized systems. In the elderly/handicapped systems in Portland, Oregon and Pittsburgh, Pennsylavnia, for instance, actual trip scheduling is performed by the individual providers. (These systems are compared to MM in the following section). The added level of centralized control represented by MM introduces the opportunity for potentially greater service coordination and flexibility than is possible in a decentralized operation. However, it also introduces an added level of administration and offers additional potential for inefficiencies.

That there may be some inefficiencies in MMTC operations is suggested by two primary system characteristics: relatively high administrative costs (as compared to operating costs) and a fairly low level of grouping of taxi rides. These issues reflect the following basic "problem" areas: 1) call-taking/ processing, 2) tour scheduling, and 3) staff size/work schedule. The telephone lines remain constantly lit and callers are kept on hold for long periods of time, because call-takers are not processing the calls and completing trip request cards fast enough to keep up with demand. As for tour scheduling, an analysis of tours revealed the potential for increased grouping of rides, and thereby reduced costs per passenger. Finally, an administrative cost decrease may also be feasible if staffing can be reduced at certain times of day. (Specific recommendations concerning these issues are presented later in this chapter).

Although the control functions are still somewhat inefficient, the operation of the MMTC improved considerably over the second half of MM's first year. Various problems identified in the six-month evaluation have been solved, or at least substantially diminished. The most important of these relate to improved supervision of control staff and overall management.

Finally, in addition to the administrative coordination of the different services, MM has achieved a certain level of physical integration - i.e., the transfer arrangement between the urban and suburban services. This represents a rather unique structure, in that few if any, handicapped services have utilized transfers. While the use of transfers has been limited, and there have been some problems associated with the system, the results to date are relatively encouraging. This aspect of the service should be monitored closely, to help determine the potential for feeder to accessible line haul service.

Thus, Metro Mobility has shown that coordination of public and private sector operations is certainly feasible. The

project has successfully achieved both administrative and physical coordination of six different providers (representing public, private for-profit, and private non-profit operators). Although there may still be opportunities for increasing operating efficiency, the project has gone a long way towards meeting the needs of the handicapped community of the Twin Cities area.

4.2 Comparison with Other Systems

In assessing the performance of Metro Mobility, it is instructive to compare the operating results with those of similar systems. We have, therefore, developed some comparisons with three other systems: Community Responsive Transit (CRT) and Extra Lift in Cleveland, Ohio; LIFT and other coordinated special services in Portland, Oregon; and ACCESS in Pittsburgh, Pennsylvania. These services are comparable to Metro Mobility in that they are systems operated by transit authorities. In the former two, services are provided by both the authority and private operators under contract, as in Metro Mobility; in ACCESS, all service is provided under contract to taxi companies and non-profit providers.[1] These systems are also located in metropolitan areas with populations similar to that of the Twin Cities. A comparison of results appears in Table 4.1; system characteristics are compared in Table 4.2.

In terms of ridership, Metro Mobility is doing extremely well. As shown in Table 4.1, the total monthly ridership is nearly as high as that in Cleveland (which thus ranks it near the top among this type of system in the country). The ridership on the private services is exceeded (among those systems included here) only by that of Portland, where the public service is being phased out.

---

[1] In Portland, however, the publicly-operated LIFT is being terminated at the end of June 1980. At that time, all specialized elderly and handicapped services will be provided by private non-profit agencies and a taxi company.

The overall system cost of MM is fairly high, as shown in Table 4.1. The average overall cost per passenger ($8.75) is exceeded only by that of ACCESS. The publicly-operated Project Mobility has a higher cost than the other two public operations - the LIFT and part of CRT. The cost of CRT's public operation is less than half that of PM, although Clevelands Extra Lift - a service exclusively for wheelchair users - costs $17.00 per passenger. Portland's LIFT currently costs $10.50 per passenger, which is comparable to PM. Of course, as mentioned earlier, Portland's Tri-Met (the transit authority) is dropping the LIFT service because of its high cost; one of the non-profit providers will serve that area now served by the LIFT.

Privately-operated service (taxis and non-profit) under Metro Mobility is more expensive than Cleveland's private service, but less expensive than that of Portland and Pittsburgh. The Cleveland system exhibits relatively high productivities (approximately 5.3 passengers/vehicle-hour) for a service of its kind. One reason for this would seem to be that service is provided within a set of pre-specified zones. ACCESS theoretically operates on an areawide basis, but the majority of rides tend to fall within designated "zones;" the average trip length is 5-6 miles. Portland's system also operates on a zonal basis and has been able to achieve a very respectable productivity - 4.1 passengers/vehicle-hour). (It should be noted that, in Cleveland and Pittsburgh, private operators are paid on a per hour, rather than per tour, basis. Hourly payment magnifies the importance of ride-sharing to the funding agency. In Portland, the private operators are paid a flat rate of $6.50 per passenger.)

Another factor that may influence productivity is the amount of advance request required. Only Metro Mobility operates on a two hour advance request basis. However, it is more likely that the zonal structure has a more significant impact. The two hour advance notice appears to work reasonably well and, in any event, may be necessary to meet UMTA Section

Table 4.1

Comparison of Handicapped Transportation Services:
Operational Results

	Metro Mobility[1]	CRT[2]	LIFT/Coordinated Special Transportation[3]	ACCESS[4]
Monthly Ridership				
Public	13,901	20,709	4,033	-
Private	14,504	11,045	20,632	12,500
Total	28,405	31,754	24,665	12,500
Cost (per month)				
Public: Operations	$130,024	$ 87,000[6]	$ 42,347	-
Private: Operations[5]	$ 57,819	$ 23,750	$134,108	$103,000
Man. & Control	$ 59,810	$ 42,000	N/A	$ 20,050
Total	$248,279	$152,750	$176,455	$123,050
Cost/Passenger				
Public: Operations	$ 9.40	$4.20	N/A	-
Control	$ 2.30	$1.32	N/A	-
Total	$11.70	$5.52	$10.50	-
Private: Operations	$ 3.99	$2.15	N/A	$8.24
Control	$ 1.95	$1.32	N/A	$1.60
Total	$ 5.94	$3.47	$ 6.50	$9.84
Overall: Operations	$ 6.64	$3.46	N/A	$8.24
Control	$ 2.11	$1.32	N/A	$1.60
Total	$ 8.75	$4.78	$ 7.15	$9.84

[1] Based on February 1980 data.

[2] Based on March-May 1980; Extra Lift data: 2339 passengers, $17.00/passenger.

[3] Based on April 1980 data.

[4] Based on May-June 1980 data.

[5] Includes private non-profit providers.

[6] Estimated average monthly costs; exact cost breakdown not available.

504 requirements for interim service. Given the experience to date with transfers, MM may wish to consider the feasibility of introducing zones for PM (at least to the extent of separating Minneapolis and St. Paul into separate zones.)

In comparing ridership and operating costs, it must be kept in mind that these services differ considerably with respect to several other key characteristics, in addition to the aforementioned service design. As shown in Table 4.2, the service area, fare policy, nature of service providers, and market served vary by locale. The different characterisics combine to produce significant impacts on demand for service, unit operating cost, and, to a lesser extent, unit administrative costs. In particular, eligibility criteria plays a major role in determining ridership and productivity. For example, ACCESS has the most restrictive certification process; note that 40% of ACCESS riders are wheelchair users. This obviously impacts ridership. On the other hand, Cleveland's policies are the least restrictive, as evidenced by their percentage of riders in wheelchairs. Metro Mobility's achievements became even more dramatic when the number of wheelchair users served is taken into account.

Metro Mobility's management and control cost appear to be quite reasonable when compared to the total cost. The percentage of overall system cost is 24% for MM, as compared to 28% for CRT.[1] ACCESS' management and control represents only 16% of the overall total, but this is basically attributable to the fact that the ACCESS office does not itself perform any dispatching - all service is contracted out to private providers, who schedule their own trips. (The operating cost of ACCESS service is very high, however, especially considering that private operation is generally cheaper than public. This is a direct result of low productivities to-date.)

---

[1] A breakdown of operations/control costs for Portland was not available at the time of this report. However, a 1977 breakdown of costs revealed that control costs represented 29% of system costs.

Table 4.2

Comparison of Handicapped Transportation Services:
System Characteristics

	Metro Mobility	CRT	LIFT/ Coordinated Special Transportation Service	ACCESS
Beginning Date	April 1979 (PM-November, 1976)	July 1976	July 1976	March 1979
Location	Minneapolis/ St. Paul, MN	Cleveland, OH	Portland, OR	Allegheny CO., (Pittsburgh, PA)
Service Area (sq. mi.)	100	456	89	734
Population (millions)	2.0	2.0	1.1	1.6
Fare Policy	$.35	$0 (CRT) $1.25 (Extra Lift)	$0 (agency $.50 (others)	$.50 - $18.00/ trip (many agency sponsored)
Service Design	areawide (taxi trips are limited to 6 mi.)	zonal (CRT) areawide (Extra Lift)	zonal (basically by county)	areawide (but most trips zonal)
Scheduling Procedure	2 hr. advance notice	24 hr. advance notice	48 hr. advance notice	day before advance notice
Service Providers	MTC, 3 taxi companies, 2 non-profit providers	GCRTA[1] and 1 taxi company (CRT); GCRTA (Extra Lift)	Tri-Met (the LIFT), 1 taxi company and 3 non-profit providers	seven private operators
Percent Wheelchair Passengers	39%	2%	16%	40%
Eligibility	certified transportation handicapped	all elderly and handi-capped	certified handicapped	certified handicapped - unable to ride fixed-route buses

[1] Greater Cleveland Regional Transportation Authority

On the other hand, Metro Mobility's absolute unit management and control cost is quite high: it is $.80 higher than CRT's, and $.50 higher than ACCESS'. In light of CRT's low cost (ACCESS' low cost is explained above) there would seem to be room for reducing MM's administrative costs. The following section presents recommendations which may help accomplish this.

In conclusion, MM's results are not unreasonable when compared to other similar systems (and considering that MM is a first year demonstration; the others are more established projects). MM's monthly ridership is nearly as high as that of CRT - the highest of the systems examined (and probably the highest of such services in the country). On the other hand, MM's costs are also fairly high, although comparable with the costs of ACCESS and the LIFT. MM's costs are substantially greater than those of CRT, which most closely ressembles MM in service characteristics.

4.3 Recommendations

As discussed throughout this report, the administration and operation of Metro Mobility have improved significantly since the six-month evaluation. However, certain problems/ inefficiencies still exist. The administrative cost of the system remains quite high and the operating cost is higher than it could be with more extensive ride-sharing. The following recommendations are proposed as potential means of improving the efficiency of the MMTC, reducing the overall costs, and improving the level of service.

1. Improving the order-taking procedure

   - o Revise the call-taking process so that service request forms need only be filled out once (i.e., use carbon forms, with the copy serving as basic return trip request.) Although this recommendation has been rejected in the past, we feel that it is both important and feasible[1] and should at least be tried before being rejected again.

[1] Two-ply forms are available which include cards which are stiff enough to stand up in the wall file. These forms should not require extra pressure on the part of the order-taker.

- Upgrade the telephone system. Install a system which would sequence calls so that calls are answered in the order in which they come in, and which would play a recorded message to each caller (requesting that the caller hold on until a line opens up and informing the caller that he/she should have required trip and certification information ready).[1]

- Clearly establish who has responsibility for carrying the order cards from the telephone room to the scheduling rooms. It is recommended that the supervisors should be required to do this at regular intervals (e.g., at least every 10 minutes).

- Have persons checking up on late vehicles call the order-fillers directly, using the line installed for reporting cancellations.[1]

2. Improving the scheduling/order-filling procedure

- Institute a formal training program for new order-fillers, and provide ongoing training for present staff which emphasizes tour formation and shared-riding. Experienced taxi dispatchers may prove helpful in assisting in such training.

- Revise information included in orders transmitted to taxi companies to include symbols/letters indicating type of handicap (i.e., blind, deaf, etc.).

- Continue to explore the feasibility of providing computer assistance for basic control and data management functions. This could involve each order-taker having a terminal linked directly to a central computer. This would enable quick checking of certification information, as well as eliminate the problem of physically moving cards between the order takers and order fillers. A computer could also be used to help formulate tours, as well as to insure comprehensive data collection.

3. Improving the overall system operation/reducing costs

- Reduce the number of supervisors, so that there is only 1 on duty at any time, rather than the 2 (or 3) currently on duty between 9 and 4 (during the week). Furthermore, the duties of the supervisors should be spelled out more clearly (e.g., the above-mentioned procedure of transporting cards).

---

[1] This has been proposed by the MM Project Manager.

- Analyze the feasibility of further reducing staffing levels during evening hours. In particular: 1) consider stopping all requests for service at some point, e.g., 8:00pm; 2) alternatively, set-up the phones such that order fillers (whose contracts allow them to do so) answer the phones directly at a point at which demand levels permit.

In terms of the operation of the services, the following suggestions are offered.

- Do not switch from a zonal basis to a meter basis for taxi trips, as has been considered. Such a move will not reduce operating costs, since order-fillers will continue to calculate fares for an extended period, and will continue to "zone" trips (the most time-consuming part) for scheduling purposes beyond that period. Going to a meter rate merely creates an opportunity for driver cheating, with virtually no controls. Previous tests have shown the zonal fares to be relatively accurate. Zonal fares can (and should) be increased slightly to serve as an incentive to the operators (and the drivers) to continue to participate.

- Carefully analyze the feasibility of moving to a zonal system for PM. As suggested earlier, at a minimum, Minneapolis and St. Paul should be treated as (natural) separate zones, with transfers required for trips between zones. The increased scheduling complexity should be more than offset by the potential for higher productivities.

- Continue to try to identify private non-profit carriers to expand the suburban network.

- Continue to explore the feasibility of expanding taxi service to St. Paul.

- Begin to actively pursue the feasibility of human service agency support of service. In Pittsburgh, for example, the majority of trips are sponsored by human service agencies, who pay almost the full cost of service.

- Peg the MM fare to the regular MTC transit fare level (i.e., raise it whenever the transit fare is raised). (This should be done so that patrons who are capable of using conventional transit do not use MM simply because it is less expensive.)

APPENDIX: BACKGROUND DATA (CENTS/HSCTS)

Table A-1

HSCTS Data

Month	No. of Tours	No. of Pax	Pax per Trip	Tour Cost	Reim. Cost	Admin. Cost	Reim. Cost per Pass.	Tour Cost per Pass.	Admin. Cost per Pass.	Total Cost per Pass.	Net Cost per Pass.
Nov. '79	N/A	429	N/A	$11201	$10467	$749	$24.40	$26.10	$1.75	$27.85	$26.15
Dec.	N/A	798	N/A	$9713	$9047	$803	$11.34	$12.17	$1.00	$13.17	$12.34
Jan. '80	N/A	1049	N/A	$11012	$10162	$762	$9.69	$10.50	$.73	$11.23	$10.42
Feb.	N/A	1223	N/A	$10397	$9533	$667	$7.80	$8.50	$.55	$0.05	$8.35
March	N/A	1251	N/A	$10273	$9423	$667	$7.53	$8.21	$.53	$8.74	$8.06
April	N/A	1178	N/A	$10058	$9390	N/A					
Avg.	N/A	950	N/A	$10519	$9726	$730	$10.24	$11.07	$.77	$11.84	$11.00
Total	N/A	4750	N/A	$52596	$48632	$3648	-	-	-	-	-

Table A-1 (Cont.)

HSCTS Data (cont.)

Month	Total cost	Revenue	Net cost	Miles	Net cost per mi.	Total Hours	Net cost per hr.	Pax per hr.
Nov. 1979	$11950	$734	$11216	4756	$2.36	540	$20.77	.79
Dec.	$10516	$667	$9849	6563	$1.50	800	$12.31	1.00
Jan. 1980	$11774	$850	$10924	7782	$1.41	530	$20.61	1.98
Feb.	$11064	$864	$10200	9498	$1.07	1955	$5.22	.63
March	$10940	$851	$10089	10387	$.97	820	$12.30	1.53
April	N/A	$668	N/A	9771	N/A	900	N/A	N/A
Avg.*	$11249	$793	$10456	7786	$1.34	929	$11.25	1.02
Total*	$56244	$3966	$52278	38932	-	4645	-	-

* does not include April

Table A-2

CENTS Dat

Month	No. of Tours	No. of Pax	Pax per Trip	Tour Cost	Reim. Cost	Admin. Cost	Reim. Cost per Pass.	Tour Cost per Pass.	Admin. Cost per Pass.	Total Cost per Pass.	Net Cost per Pass.
Nov. '79	240	349	1.45	$9865	$9675	$612	$27.72	$28.26	$1.75	$30.01	$29.47
Dec.	451	566	1.25	$9901	$9745	$558	$17.22	$17.50	$.99	$18.49	$18.21
Jan. '80	655	841	1.28	$10664	$10420	$559	$12.40	$12.68	$.71	$13.39	$13.11
Feb.	1060	1250	1.18	$9799	$9416	$694	$7.53	$7.84	$.55	$8.39	$8.08
March	N/A	1290	N/A	$11846	$11493	$694	$8.91	$9.18	$.54	$9.72	$9.45
April	N/A	1234	N/A	$10880	$10556	N/A					
Avg.*	602	859	N/A	$10415	$10150	$631	$11.81	$12.12	$.73	$12.86	$12.55
Total*	2406	4296	-	$52075	$50749	$3157	-	-	-	-	-

* does not include April

Table A-2 (Cont.)

CENTS (cont.)

Month	Total cost	Revenue	Net cost	Miles	Net cost per mi.	Total Hours	Net cost per hr.	Pax per hr.
Nov. 1979	$10384	$62	$10322	3818	$2.70	310	$33.30	1.13
Dec.	$10459	$157	$10303	4820	$2.14	806	$12.78	0.70
Jan. 1980	$11263	$244	$11019	7070	$1.56	806	$13.67	1.04
Feb.	$10493	$382	$10111	8320	$1.22	911	$11.10	1.37
March	$12540	$354	$12186	8714	$1.40	842	$14.47	1.53
April	N/A	323	N/A	9038	N/A	840	N/A	N/A
Avg.*	$11028	$240	$10788	6548	$1.65	735	$14.67	1.17
Total*	$55139	$1198	$53941	32742	-	3675	-	-

* does not include April

Table A-3

CENTS/HSCTS Share of MMTC Costs*

TOTAL RENT for 1276 University Ave. St. Paul, Mn.	$18,750.00 per year
2,700 Net Usable Sq. Ft.	@ $6.94 Sq. Ft.
CENTS & HSCTS Occupy 360 Square Feet	
Net Cost @ $6.94 Sq. Ft.	$249.84 per month
Phone expense for MMTC ($1,244.75 per month)	
Suburban (8% of cost)	99.58 per month
Order Taker and Order Filler Expense Estimate for CENTS & HSCTS @ 62 hours per month	887.00 per month
	$1,236.42 per month
Miscellaneous Expenses	125.00 per month
Estimate of MMTC Cost to be allocated to CENTS & HSCTS ($.558 per ride based on 2,441 rides)	$1,361.41 per month

* table provided by MMTC staff