

---

CUTR Research Reports

CUTR Publications

---

7-1-1993

## **Fare Cross-Elasticity and Allocation - Technical Memorandum Number 1: Existing Fare Policies/Pass Usage Characteristics**

CUTR

Follow this and additional works at: [https://scholarcommons.usf.edu/cutr\\_reports](https://scholarcommons.usf.edu/cutr_reports)

---

### **Scholar Commons Citation**

CUTR, "Fare Cross-Elasticity and Allocation - Technical Memorandum Number 1: Existing Fare Policies/Pass Usage Characteristics" (1993). *CUTR Research Reports*. 370.

[https://scholarcommons.usf.edu/cutr\\_reports/370](https://scholarcommons.usf.edu/cutr_reports/370)

This Technical Report is brought to you for free and open access by the CUTR Publications at Scholar Commons. It has been accepted for inclusion in CUTR Research Reports by an authorized administrator of Scholar Commons. For more information, please contact [scholarcommons@usf.edu](mailto:scholarcommons@usf.edu).

**METRO-DADE TRANSIT AGENCY  
Fare Cross-Elasticity and Allocation**

**FINAL  
Technical Memorandum Number 1  
Existing Fare Policies/Pass Usage Characteristics**

**Prepared for**

**Metro-Dade Transit Agency**

**Prepared by**

**Center for Urban Transportation Research  
College of Engineering  
University of South Florida  
Tampa, Florida**



**JULY 1993**

**TECHNICAL MEMORANDUM NUMBER 1**  
**Fare Cross-Elasticity and Allocation**  
**(Existing Fare Policies/Pass Usage Characteristics)**

This memorandum summarizes the existing MDTA fare policies and current pass usage characteristics, and offers a comparison to other similar systems. This memorandum is in accordance with Work Order Number 7, Tasks 1, 2 and 3 of the interlocal agreement between the University of South Florida and Metropolitan Dade County. The purpose of this Work Order is to obtain information on the usage patterns and the behavior/motivations of MDTA patrons purchasing the monthly Metropass. This information will then be used to develop cash and pass cross-elasticities and to revise methodologies to be applied when forecasting the impact of fare structure changes on method of fare payment. This information will also be used to revise allocation of pass revenues to bus and rail.

**CURRENT MDTA FARE POLICY**

MDTA currently provides five modes of transit service. Local Metrobus service has a \$1.25 full cash fare discounted to \$0.60 for the elderly, disabled, and students. Express Metrobus service has a \$1.50 full cash fare discounted to \$0.75 for the elderly, disabled and students. The Metrorail fares are identical to local Metrobus. The Metromover has a \$0.25 full cash fare discounted to \$0.10 for elderly, disabled, and students. The final mode of transit service delivered is the Special Transportation Service (STS). This is a door-to-door service provided for the physically disabled. The cost for this service is \$1.50 (0-10 miles), \$2.50 (11-20 miles), \$3.50 (21-30 miles) and \$4.50 (over 30 miles). The fare for STS service is scheduled to change in October 1993 to a flat fare of \$2.00 for trips within Dade County.

**Discounted Cash Fares**

To ride the Metrobus at a discounted fare, students in grades 7-12 must obtain a student permit through the Dade County School system. Students in grades 1-6 do not need a permit to ride Metrobus at the reduced fare. To ride the Metrorail or Metromover at a reduced fare, all students (grades 1-12) must purchase a reduced fare rail permit (school ID required) for \$0.50 available at the transit information center at the Government Center Station. Preschoolers less than 42 inches tall can ride the Metrobus, Metrorail, and Metromover free at all times when accompanied by an adult.

Senior citizens and disabled riders can obtain a free reduced fare bus permit (proof of age/disability required) at the Government Center Station. This permit enables the patron to pay the discounted fare on Metrobus. A Medicaid card is also valid as identification for reduced fares on Metrobus. To ride at the discounted rate on the Metrorail and Metromover, seniors and disabled patrons must purchase a reduced fare rail permit for \$0.50 at the Government Center Station.

## **Transfers**

Table 1 provides the current transfer rates between Metrobus, Metrorail, and Metromover. No transfers are available for the STS, as it is operated independently as a door-to-door service. Transfers from bus to bus are valid for two hours after the time they are punched, and are limited to use at locations where routes meet or cross each other or where bus routes link with the Metrorail system. Patrons cannot transfer to the same route in either an ongoing or backriding direction, though transfers can be made at transfer points to a new route going in the same direction as the one the patron transferred from. An a.m. rail transfer (bus to rail) is valid until 12:00 noon, while a p.m. rail transfer is valid from Noon until 12:00 midnight. Rail to bus transfers must be purchased at the station where you board the train. Bus operators will not accept transfers from stations where the passenger exited the train. Transfers are good for only one trip, although a transfer can be purchased on a transfer. Rail to mover transfers occur at the Government Center station via a direct connection within the fare control area.

MDTA currently has transfer agreements with Tri-Rail and neighboring Broward County Transit (BCT). Based on a May 1989 Memorandum of Understanding, Tri-Rail patrons transfer free to both Metrorail and Metrobus local routes. MDTA is reimbursed only for those persons transferring when using a one-way Tri-Rail ticket. These tickets are turned over by the patron to MDTA who is then reimbursed by Tri-Rail. Tri-Rail pass holders are able to ride free on any component of the MDTA transit system except express, shuttle, or park/ride service. Full fare passengers transferring from BCT bus service to a MDTA Metrobus pay a fare upgrade of \$0.40 for local bus service and \$0.65 for express bus service. The BCT transfers are accepted only at specified inter-county transfer points.

**Table 1**  
**MDTA Transfers**

<b>Transfer From</b>	<b>Full Fare</b>	<b>Discount</b>
Local Bus to Local Bus	\$0.25	\$0.10
Local Bus to Metrorail or Mover	\$0.25	\$0.10
Local Bus to Express Bus	\$0.25*	\$0.10**
Express Bus to Local Bus	\$0.25	\$0.10
Express Bus to Express Bus	\$0.25	\$0.10
Express Bus to Metrorail or Mover	\$0.25	\$0.10
Metrorail to Metromover	Free	Free
Metrorail to Local Bus	\$0.25	\$0.10
Metrorail to Express Bus	\$0.25*	\$0.10**
Metromover to Metrorail	\$1.00	\$0.50
Brickell Shuttle to Local Bus, Express Bus, or Metrorail	No transfer issued	No transfer issued
Broward County to Local Bus	\$0.40	\$0.20
Broward County to Express Bus	\$0.65	\$0.35

\* Plus \$0.25 upgrade to Express Bus service

\*\* Plus \$0.15 upgrade to Express Bus service

## **Time of Day**

Like most transit systems in the U.S., the MDTA does not currently have a peak period surcharge for any of their modes of transit service. MDTA fares remain the same regardless of time of day or day of week.

## **Passes**

The cost of a MDTA monthly Metropass is \$60.00. A discount pass for the elderly, disabled, and students is available for \$30.00. The Metropass allows unlimited rides for one month on the Metrobus, Metrorail, and Metromover. The pass is also valid on express bus service at no additional cost. MDTA sells Metropasses at a group discount rate of \$54.00 for between 5 and 99 passes, and \$52.00 for 100 or more passes. Passes can be directly purchased at the Government Center Station or at all MDTA sales outlets. Group passes are sold through the mail, with orders received by the 10th of the preceding month.

College students may purchase a monthly Metropass for \$45.00 at participating colleges and universities. Students must be registered full time at the time of sale and must be registered at the institution where the pass is purchased.

## **Parking**

Most Metrorail stations have parking facilities available for rail riders. The daily parking rate is \$1.00. Metropass holders can purchase a \$2.00 parking permit with their pass that allows unlimited use of the rail parking facilities for that month.

## **Tokens**

MDTA sells tokens at 10 for \$10.00. These tokens can be used as full fare on both Metrobus (local) or Metrorail. To use tokens on express service patrons must also pay a \$0.25 upgrade. Tokens are available at all rail stations as well as at all MDTA pass sales outlets.

## **Free Fares**

Currently, only MDTA employees, retired MDTA employees (having had 30 years or longer of service) and their spouses, and various uniformed officers (police, correction officers, court bailiffs, and firemen) with proper identification can ride for free on Metrobus. No such policy currently exists for Metrorail or Metromover.

## **Other Service**

MDTA also offers a Brickell shuttle service for a full cash fare of \$0.25, and a discounted fare of \$0.10. Park-n-Ride service for special events (football, tennis, etc.) are also offered. Fares for special events differ by each event and its location.

Table 2 summarizes the distribution of boardings by fare payment method and by mode from October 1990 to May 1993. As can be seen from the table, token use on both the bus and rail has increased since its inception in December 1990. Token use on the Metrorail has more than tripled during this period. No significant seasonal or overall trends have been noticed on pass usage.

## **CURRENT MDTA PASS USE**

The following observations are made of current MDTA Metropass usage based on information supplied by MDTA in the May 1993 Summary of Monthly Pass Sales By Pass Type-Outlet, and information derived from the Ridership Report, and Ridership Technical Report. Table 3 summarizes the pass sales by pass type for May 1993.

Using May 1993 as an example month:

- Percentage passenger boardings by Metropass on Metrobus, rail, and mover were 21%, 29%, and 29%, respectively.
- 83% of Corporate Metropass sales include a rail parking permit, therefore it can be assumed that at least 83% of Corporate pass buyers ride Metrorail.
- 14% of outlet pass sales include a rail parking permit



**Table 2**  
**METRO - DADE**  
**CASH, PASS AND TOKEN BOARDINGS BY MODE**

	METROBUS			METRO RAIL			METRO MOVER		
	CASH	PASS	TOKEN	CASH	PASS	TOKEN	CASH	PASS	TOKEN
OCT 90	80%	20%		67%	33%		74%	26%	
NOV 90	80%	20%		68%	32%		74%	26%	
DEC 90	76%	22%	2%	66%	30%	4%	79%	21%	
JAN 91	77%	21%	2%	63%	32%	5%	76%	24%	
FEB 91	76%	22%	2%	62%	32%	6%	75%	25%	
MAR 91	76%	22%	2%	62%	32%	6%	75%	25%	
APR 91	76%	21%	3%	62%	32%	6%	76%	24%	
MAY 91	76%	21%	3%	61%	32%	7%	75%	25%	
JUN 91	76%	21%	3%	63%	31%	6%	76%	24%	
JLY 91	77%	20%	3%	63%	30%	7%	78%	22%	
AUG 91	79%	19%	2%	64%	29%	7%	78%	22%	
SEP 91	77%	20%	3%	61%	32%	7%	72%	28%	
OCT 91	76%	21%	3%	60%	33%	7%	75%	25%	
NOV 91	76%	21%	3%	62%	31%	7%	77%	23%	
DEC 91	78%	19%	3%	64%	29%	7%	80%	20%	
JAN 92	77%	20%	3%	62%	30%	8%	77%	23%	
FEB 92	76%	20%	4%	61%	31%	8%	78%	22%	
MAR 92	76%	20%	4%	58%	31%	11%	76%	24%	
APR 92	75%	21%	4%	57%	31%	12%	72%	28%	
MAY 92	75%	21%	4%	56%	31%	13%	72%	28%	
JUN 92	75%	20%	5%	56%	30%	14%	70%	30%	
JLY 92	77%	19%	4%	56%	30%	14%	75%	25%	
AUG 92	73%	23%	4%	57%	29%	14%	79%	21%	
SEPT 92	73%	23%	4%	57%	29%	14%	79%	21%	
OCT 92	73%	23%	4%	58%	28%	14%	73%	27%	
NOV 92	74%	22%	4%	58%	28%	14%	66%	34%	
DEC 92	76%	20%	4%	60%	27%	13%	76%	24%	
JAN 93	76%	20%	4%	58%	29%	13%	72%	28%	
FEB 93	75%	20%	5%	57%	29%	14%	71%	29%	
MAR 93	74%	21%	5%	55%	30%	15%	67%	33%	
APR 93	74%	21%	5%	55%	30%	15%	69%	31%	
MAY 93	74%	21%	5%	56%	29%	15%	71%	29%	



Table 3

**MDTA TOTAL PASS SALES  
By Pass Type  
(May, 1993)**

<u>PASS TYPE</u>	<u># SOLD</u>	<u>% of total</u>	<u>COST/PASS</u>	<u>\$</u>	<u>% of total</u>
Regular Pass	3,151	17.13%	\$60.00	\$189,060	25.30%
Discount Pass	10,507	57.11%	\$30.00	\$315,210	42.19%
Corporate Group (5-99)	1,260	6.85%	\$54.00	\$68,040	9.11%
Corporate Group (100+)	1,735	9.43%	\$52.00	\$90,220	12.07%
Colleges/Universities	872	4.74%	\$45.00	\$39,240	5.25%
County/Transit Employees	873	4.75%	\$52.00	\$45,396	6.08%
<b>TOTAL</b>	<b>18,398</b>			<b>\$747,166</b>	
Average Cost/Pass			<b>\$40.61</b>		

- 82% of outlet sales are discounted passes.
- In total, 57% of passes sold are \$30 discount passes
- The average purchase price of a pass was \$40.61
- Based on the 21, 29, 29 percentage pass boardings by mode stated above, and the 18,398 passes sold, on average 81 trips per pass were taken on the three modes. The average rider using Metropass would have made 59 bus, 19 rail, and 3 mover trips in the month of May 1993 (See Table 4).

Table 4  
May 1993  
Metropass Ridership

MODE	MAY 1993 RIDERSHIP	% PASS USE	# of PASS BOARDINGS	AVG TRIPS PER PASS (/17,142)
BUS	5,145,843	21.0%	1,080,627	59
RAIL	1,197,925	29.0%	347,398	19
MOVER	176,367	29.0%	51,146	3
TOTAL	6,520,135	22.7%	1,479,171	81

In general, other items of importance include:

- County personnel can pay for the monthly pass through payroll deduction and receive the pass in the mail.
- Purchase of corporate passes at work sites is inconvenient, with orders needing to be placed a month in advance.

## **COMPARISONS WITH OTHER SYSTEMS**

Table 5 presents base and monthly pass fare information for MDTA and similar transit agencies. As can be seen from this table, MDTA is one of few agencies not offering a discount on its base monthly pass for both bus and rail modes. The breakeven number of trips for both bus and rail is 48, higher than most other agencies. It must be noted however, that for Metrorail users \$1.00 a day in parking costs can be saved by buying a \$2.00 monthly parking pass along with the purchase of a Metropass.

Many MDTA patrons must transfer when travelling by bus or rail. With a transfer the average fare per trip would be \$0.75. This would create a breakeven point for number of trips at 80 unlinked trips, but only 40 linked trips. For rail patrons who use the paid parking facilities the breakeven point of a monthly Metropass and monthly parking permit combined (\$62.00) would be 35 trips based on an average fare of \$1.75 (\$1.25 fare + \$0.50 average per trip for parking).

Other systems were contacted regarding their methods of allocating farebox revenue by mode and of forecasting ridership by fare payment method. All transit agencies contacted currently use existing ridership information to allocate fares by mode. None of the systems surveyed used any formal method to predict ridership by fare payment method.

CUTR recently completed a survey of the 20 largest transit systems for information related to both the Fare Elasticity and the Fare Policy tasks with MDTA. This information is included in the Fare Policy Work Order Technical Memorandum.

### **MDTA NEEDS FOR PASS USE INFORMATION**

First, with regard to allocation, MDTA indicates that there is currently no good information on the reasons why people buy passes, the breakeven point for different users, where and how the passes are used, and whether usage is most sensitive to price, convenience, or other variables. Farebox and turnstile data currently provide MDTA with the number of boardings by pass for each mode. No information is available on the pass holder or on linked trips. Technical Memorandum Number 2 will present the method for surveying current pass and cash users by mode.

The second issue is forecasting pass usage. Current MDTA forecasting models assume a constant relationship between the price of the monthly pass and the base cash fare. MDTA

Table 5  
Monthly Pass Fare Comparison

SYSTEM	MONTHLY PASS							
	ADULT BASE FARE (1)		MONTHLY PASS DISCOUNT (2)		MOTOR BUS		RAIL (3)	
	MOTOR BUS	RAIL (3)	MOTOR BUS	RAIL (3)	COST	BREAKEVEN # OF TRIPS	COST	BREAKEVEN # OF TRIPS
ATLANTA	\$1.25	\$1.25	22%	22%	\$43	34	\$43	34
BALTIMORE	\$1.25 (Z)	\$1.25 (Z)	24%	24%	\$42	34	\$42	34
BOSTON	\$0.60 (Z)	\$0.85 (Z)	24%	28%	\$20	33	\$27	32
CHICAGO	\$1.50	\$1.50	-18%	-18%	\$78	52	\$78	52
CLEVELAND	\$1.25 (Z)	\$1.50 (Z)	18%	18%	\$45	36	\$54	36
DALLAS	\$0.75		30%		\$23	31		
LOS ANGELES	\$1.10	\$1.10	13%	13%	\$42	38	\$42	38
<b>MIAMI</b>	<b>\$1.25</b>	<b>\$1.25</b>	<b>-9%</b>	<b>-9%</b>	<b>\$60</b>	<b>48</b>	<b>\$60</b>	<b>48</b>
NEW JERSEY	\$1.00 (Z)	\$1.00 (Z)	7%	7%	\$41	41	\$41	41
NEW YORK	\$1.25	\$1.25	NA	NA	NA	NA	NA	NA
PHILADELPHIA	\$1.50	\$1.50	12%	12%	\$58	39	\$58	39
PITTSBURGH	\$1.25 (Z)	\$1.25 (Z)	27%	27%	\$40	32	\$40	32
PORTLAND	\$0.95 (Z)	\$0.95 (Z)	26%	26%	\$31	33	\$31	33
SAN ANTONIO	\$0.40 (Z)		9%		\$16	40		
SAN FRANCISCO	\$1.00	\$1.00	27%	27%	\$32	32	\$32	32
SAN JOSE	\$1.00	\$1.00	32%	32%	\$30	30	\$30	30
WASHINGTON D.C.	\$1.00 (Z)	\$1.00 (Z)	NA	NA	NA	NA	NA	NA

(1) March 1, 1993

(2) March 1, 1993 - COMPARISON TO 44 BASE FARE TRIPS/MONTH

(3) "RAIL" DOES NOT INCLUDE COMMUTER RAIL.

(Z) ADDITIONAL DISTANCE OR ZONE CHARGE

would like to integrate cash and pass prices directly into the models and thus be able to forecast the ridership impacts for separate changes in cash and pass prices. The survey results from this and other studies will be used to estimate cross-elasticities by fare payment method and the likely results of cash/pass price differentials.