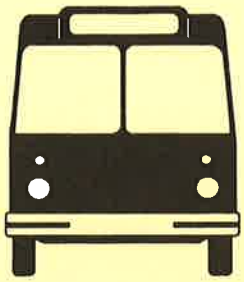
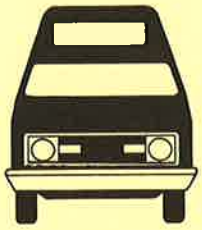


Small City Transit

ANN ARBOR, MICHIGAN:

Pilot Dial-A-Ride Project in a Sector of the City



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U. S. DEPARTMENT OF TRANSPORTATION
Urban Mass Transportation Administration
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Preface

This document was prepared by the Transportation Systems Center (TSC) as part of the information dissemination function of the Office of Service and Methods Demonstrations, Urban Mass Transportation Administration. This case study is one of thirteen studies of public transit systems in small communities and is intended to serve as an information resource for other communities in the process of planning or considering public transportation.

The information presented in this document is based on a visit to the site, interviews and phone conversations with the principals involved, and operating records obtained during 1975. The authors gratefully acknowledge the cooperation of local officials and transit operators at all of the sites selected for study, and of the TSC staff in compiling the information gained from these studies and assisting in its interpretation.

ANN ARBOR, MICHIGAN: Pilot Dial-A-Ride Project
In A Sector Of The City

Ann Arbor is an unusual city in many ways, and its transit service is one of its more interesting features. Ann Arbor is in the process of implementing a coordinated dial-a-ride/fixed route service, called Teltran, throughout the entire city. Over 40 percent of the operating cost of this system is being paid for by means of a dedicated property tax approved by the voters of Ann Arbor. Teltran is the outgrowth of a locally funded pilot project conducted in a portion of the City in order to assess the public's response to dial-a-ride. This report deals mainly with the events leading up to the implementation of the Teltran service, namely the pilot project and the passage of the dedicated property tax.

Background

Ann, Arbor, with a population of 100,000, centers around the University of Michigan, which has an enrollment of about 33,000. Ann Arbor is fortunate in having a strong tax base, made possible by vigorous prior use of its power to annex surrounding land as it developed. The median family income is $12,800. The median number of years of education of men over twenty-five years old is 17, of women 14. Attention to civic and social issues has traditionally been high, and the issue of transit has been no exception. There has been much discussion and interaction between the Ann Arbor Transportation Authority's board and staff members, interested citizens, members of the University's planning departments, personnel from private consulting and research firms, and the now-defunct Transportation Research and Planning Office of the Ford Motor Company, partly because membership in these groups overlap.

In recent years Ann Arbor has been a center of the ecology movement, and strong political support for transit has developed. This stems less from concern over pollution and energy conservation than from a feeling that the City will be more livable if automobile growth is replaced with transit growth.

The Ann Arbor Transportation Authority was created in July, 1968, when the last of a succession of private transit operators discontinued service because of continuing deficits. Interim service was maintained on a contract basis with another private carrier. However, because of the

inability of the contractor to remain within contract costs, the City took over operations completely in the spring of 1969. At the time the dial-a-ride pilot project began in 1971, the Authority was operating fixed-route system with a fleet of 18 buses when the dial-a-ride pilot project commenced. Radial routes covered most of the City. All lines met at a central downtown transfer point once every half hour. Service was offered Monday through Friday with half-hour headways during high demand periods and one hour headways on certain routes during midday. The adult fare was 35¢, and senior citizens and children rode for 20¢. Transfers were free.

The long-range goal of the Ann Arbor Transportation Authority (AATA) is to reduce the car ownership rate to one per household. Since there are now seven cars for every four households, this requires a very basic change in transportation modes within the city. As the population and population density increases, the Authority and its supporters wish to minimize the amount of land given over to streets and parking lots, while still providing for ample transportation capacity. They hope to reduce the private as well as public costs of transportation by offering service levels which can allow Ann Arbor citizens to travel conveniently within the City, thereby reducing the need for families to own more than one car. At present, Ann Arborites spend 15% of their gross incomes on automobiles.

There is one high demand corridor in Ann Arbor, the route between the two campuses of the University, but it is already well-served by the University's free-fare bus system. This fixed route service carries 11,000 passengers per day in the winter at a cost to the University of less than 15¢ per ride. The task facing AATA is to accomodate the more dispersed tripmaking patterns within the remainder of the city. After some investigation the AATA planners concluded that door-to-door service would be necessary to satisfy their desired goals.

Pilot Service

From September, 1971, to September, 1972, AATA conducted a pilot project in order to field test a dial-a-ride (DAR) public transit service. Transit system characteristics and operating data are summarized at the end of this report. Both the public response and the operating feasibility of the project were to be measured so as to determine if such a door-to-door service could help the AATA fulfill its goals. Service was initially offered Monday

through Thursday and Saturday from 6:30 a.m. until 6:00 p.m., and 6:30 a.m. to 9:00 p.m. on Friday. However, Friday evening service was discontinued after five months of operation because of the poor ridership response.

Many-to-few trips were given the highest priority. Within a defined service area (a residential area in the southwest section of Ann Arbor), passengers were picked up at any requested point, e.g., their home, and transported along with other passengers to a small number of destinations outside the service area. These destinations included specific points along a loop in the downtown area, a junior high school, two hospitals, a university, and during the off-peak only (9:00 a.m. to 3:00 p.m. weekdays, all day Saturday), two shopping centers. Many-to-many trips between points entirely within the service area were also offered, but on a low-priority basis. The low priority, in effect, meant that many-to-many trips were often not available during the peak periods.

The original service area was expanded twice during the project year because the usage rate per household turned out to be lower than expected. The final area comprised about 2.4 square miles and included a population of about 16,000 (16% of the City's population). The area was also served by one of the Authority's scheduled bus routes, which operated at half-hour headways, except between 10:15 a.m. and 2:15 p.m., when the headways were one hour. The service continued unchanged throughout the project except that midday service was suspended during the last three months of the pilot project. Average income and automobile ownership were higher in the service area than in the rest of the City. Forty-one percent of the households owned two or more cars, 52% one car, and 7% none.

It was a small scale project: only three vans were used and one dispatcher handled all the dispatching functions for the dial-a-ride project. This dispatcher also answered various information calls. The operation of the service was such that inbound riders would telephone the dispatcher to request doorstep pick-up, while outbound riders would telephone to request pickup at any of the permitted "destinations". In addition, outbound riders would be allowed to board a DAR vehicle at the downtown stops without first phoning in. In this case, the DAR driver would then radio the pickup point and drop off address to the dispatcher.

Fares were set at 60¢, or $10.00 for a monthly pass, permitting members of the same family an unlimited number of rides. Free transfers to all AATA line buses were available to all cash fare customers. Similarly, transfers from line buses could be made on payment of an additional 25¢ to equal the dial-a-ride fare. Transfers of this nature occurred at the main line-bus transfer point, located along the downtown loop. Wait times averaged 11 minutes from the time of request to pick-up time, and ride times averaged 13 minutes. By comparison, similar rides on the local taxi service were estimated to involve a 5-10 minute average wait and a 10-minute ride. Total operating costs came to $89,000. Capital costs were $10,800, planning and publicity costs $24,000. Revenues from fares came to $24,900. The City, the State of Michigan, and the Ford Motor Company provided funds or services to cover the remainder of the costs.

The City's immediate goal, which was to demonstrate the feasibility of DAR in Ann Arbor, was accomplished. Costs were within planned limits. Manual dispatching was shown to be more than adequate for a project of this size. Indeed, cost per ride could be lowered by increasing the number of vehicles assigned to one dispatcher. The cost per ride averaged $1.74 but fell to $1.35 during the winter months of the project when ridership was higher. The operating cost per vehicle was $10.50. Productivities of 6.3 passengers per vehicle hour were lower than productivities on the established Canadian systems, but similar to those experienced in other new, U.S. systems.

The AATA developed criteria to be used in evaluating ridership levels before operations began. The project was to be considered unsuccessful if the average weekday ridership was below 200 per day, moderately successful at 200 to 300 per day, and successful at 300 to 400 per day. By this standard, the project was moderately successful. Ridership reached 200 per day by the close of the project and stayed well over that level during the winter months of 1972. Total ridership was 51,370.

There is evidence that the DAR project successfully appealed to a group not reached by the regular, line bus service: Car ownership was much higher for dial-a-ride users than for line bus users. Ridership on the bus route passing through the service area did not decrease after the introduction of DAR; total transit ridership originating in the area doubled. Only 10% of the DAR users indicated that they would have taken the bus if no DAR had been available. Nineteen percent said that they would have driven a car, 31% that they would have been driven, 13% that they would have

taken a cab, and 19% that they would have walked, while 5% would not have made the trip, and 3% gave other responses.

The pilot project results confirmed the AATA's initial hope that the public would find dial-a-ride more attractive than conventional service and would therefore encourage public transit usage over the automobile. The cost results indicated that a new source of funding would be required if Dial-A-Ride service were made available to Ann Arbor's citizens on a city-wide basis. To obtain these funds, AATA decided to ask for community support in the form of a property tax. The property tax issue was put to a vote in April, 1973, and it passed with 61% of the vote.

While the student vote undoubtedly contributed to the size of the margin, the vote should not be characterized as one in which students voted in a property tax to be paid by others. Citizen groups were organized to push for the proposal, and no group was created to work against it. The Downtown merchant groups supported the project, as did the Ann Arbor News.

The Beginning of Teltran

Passage of the tax issue gave the AATA a dedicated property tax of 2-1/2 mills, effectively increasing property taxes by 17%. The yield of $1,500,000 per year was to be used to offer a coordinated dial-a-ride/fixed route service called Teltran to the entire city. The mixed-mode service was adopted as a compromise between the convenience of dial-a-ride and the greater efficiency of fixed route service. Service would be many-to-many within each of about ten zones in the City. Residents of zones touching the downtown area would be able to make trips into the downtown on the DAR vehicles, but people from outlying zones would transfer to express buses. All transfers would require waits of no more than a few minutes, and all such waits would be in the DAR vehicle or in shelters.

The test of ridership response to Teltran is just beginning. Fares were reduced to 25¢ on both DAR and fixed routes immediately after the election, in part to give the voters an immediately visible benefit from the new tax, but the major expansions of the service did not begin until 1975. The system is scheduled to be in full operation in early 1976. In the intervening time, the AATA has applied for and received an UMTA grant for 80% of the capital set-up costs, and a Michigan grant for most of the remaining 20%.

If usage per household is at the level experienced in the pilot project, Ann Arbor may have a service which does not achieve the original ridership goals set for it. However, several factors may work to make the usage rate higher. Ridership will have years, rather than months, in which to react; many more destinations will be available; and the system is known to be permanent. The dedicated property tax ensures that transit cannot be sharply cut back whenever the City Council or its appointees on the AATA board suffer a change of heart.

Recent changes in the present services offered include a free-fare shuttle connecting two shopping areas and the campus, subscription service using the DAR vans, bus priority at signal lights. A one-year experiment offering many-to-many DAR service to the handicapped and elderly in an area of roughly 500 square miles which includes nearly every population center in the county is also being tried. Their efforts have met with positive ridership response so far; total transit ridership increased from 35,000/month in 1970 to 115,000 in 1974.

Conclusions

Local support for transit in Ann Arbor developed gradually as basic attitudes towards transit were changed. This change was in part brought about by years of effort by local citizens' groups who had advocated less roads and more transit. Attitudes towards the AATA and DAR were formed by the planning debate surrounding the DAR project, by the project itself, and by the public planning (with both formal and informal citizen and City Council input) for the Teltran proposal.

From the point of view of planners in other cities, the pilot project demonstrated that Dial-a-Ride can attract riders in an affluent area where car ownership is high, and it can attract enough to bring average costs below taxi fares, which were $2.05 for similar length trips. This result cannot be attributed solely, or even largely, to the presence of students in Ann Arbor, since relatively few students live in the project service area, and only 13% of the riders were between the ages of 18 and 24. However, the factors which may have been partly responsible for the degree of public acceptance achieved by the system may not be present in other cities.

SUMMARY OF ANN ARBOR TRANSIT SYSTEM CHARACTERISTICS

DEMOGRAPHICS

Population in service area: 16,000 approx.
Population density: 7,250 person/square mile, approx.
Median income: $12,800
Automobile ownership:

Cars/household	% of Households
2 or more	41%
One	52%
None	7%

Percent transit dependent: n/a
Average distance to service: n/a

COVERAGE AND SERVICE

Service area: 2.4 square miles (a residential section) plus certain downtown destinations
Time of service: 6:30 a.m. - 6:00 p.m., Mon - Sat
Average wait time: 10.8 min. from call to pick-up (excludes zero wait times most of which are for subscription service or standing orders or downtown hail-stops)
(8.5 including zero times)
Number, types and average capacity of vehicles: 3 vans, 10 seats
Number of vehicles in service: 3

COST AND PRODUCTIVITY

Average operating costs per month: $7,420
Vehicle miles per day (300 days): 340
Vehicle hours per day (300 days): 28
Operating cost per vehicle hour: $10.50
Operating cost per vehicle mile: n/a
Operating cost per passenger trip: $1.74
Passengers per vehicle hour: 6.3
Passengers per vehicle mile: n/a
Driver wage rate per hour including fringe:
Sept., 1971 to July, 1972 $5.20
July, 1972 to Sept., 1972 $5.50

REVENUE AND SUBSIDY

Fares: 60¢/ride
$5.00/ten tickets
$10.00/month for a pass, unlimited rides by all members of family, available at this price from Sept., 1971 to Dec., 1971. Price revised to $15.00 in Jan., 1972 and held steady until end of project (Sept., 1972)
$10.00/month off-peak pass, available March, 1972 to Sept., 1972. Good from 9:00 a.m. - 3:00 p.m. Mon-Fri and all day Saturday, 25¢ surcharge required with the pass at other times.

Revenue per passenger: $0.47
Subsidy per passenger: $1.27 operating only
Operating ratio (Op. cost/revenue): 3.7
Lease or buy vehicles: Lease
Funding:

	Capital	Planning/Evaluation
Federal	-	-
State	-	-
Local	-	-
Total	$10,800	$24,000

RIDERSHIP

Average passengers per weekday: 182
Ridership growth rate: Multiplied by 3 in one year and still increasing.
Ridership composition:

January 1972 -	39%	Under 18
	13%	18 - 24
	21%	25 - 34
	7%	35 - 44
	12%	45 - 54
	7%	55 - 64
	1%	65 or over
June 1972 -	28%	Under 18
	20%	18 - 24
	14%	24 - 34
	7%	35 - 44
	12%	45 - 54
	8%	55 - 64
	11%	65 or over*

*Two senior citizens' residences were added to the service area in May.

Trip Purpose - January:

Work	34%
School (includes University)	23%
Shopping	22%
Personal business	11%
Social	8%
Other	2%