

The Runaround: User-Side Subsidies for Fixed-Route Transit in Danville, Illinois

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A two-year Urban Mass Transportation Administration Service and Methods Demonstration (SMD) project in Danville, Illinois, tested the first application of the concept of the user-side subsidy to fixed-route transit for the general population. The Transportation Systems Center was responsible for evaluating the demonstration and contracted with Crain and Associates for this purpose. Service was provided by private contractors, who were selected on a competitive basis every four months. Payment to providers, which was based on the number of prepurchased tickets used by passengers to pay for rides and then turned over to the city, was intended to create an incentive for designing and providing good, efficient service tailored to the existing demand. The system, called the Runaround, proved workable but administratively expensive. Only two providers participated, which indicated a lack of effective competition, although on most routes good service appears to have been supplied at a reasonable cost. The major provider adopted a very conservative negotiating position; the result was that payment was effectively on a fixed-price rather than per-passenger basis. Although unproductive service was dropped under the user-side subsidy arrangement, a full test of the concept's effectiveness has yet to be considered.

In August 1977, the city of Danville in Illinois was awarded a two-year grant, under an amendment to a Service and Methods Demonstration (SMD) grant from the Urban Mass Transportation Administration, to test a user-side subsidy scheme for supporting fixed-route transit to be provided by private transportation companies.

The distinguishing feature of a user-side subsidy is that providers of a service receive the subsidy only in amounts proportional to the number of people who use the service. In its purest form, potential patrons, or users, would receive the subsidy to be spent on transportation of any type, as is the case with food stamps or rent supplements. The mechanisms usually employed are (a) tickets sold at a reduced price and then redeemed by the provider for the subsidy after they are used and (b) vouchers signed by patrons and redeemed by the provider. Simple passenger or revenue counts can also be used as a basis for subsidy payments, but this type of statistic may be subject to fraud.

User-side subsidies are attracting national interest as an alternative to more-traditional forms of transit subsidy (provider-side subsidies) in which an operator receives a systemwide subsidy to provide a certain level of transit service. The most-common application to date has been in the provision of discounted taxi rides for the elderly and the handicapped. However, user-side subsidies can also be used to support more-conventional transit for the general population, as is the case in Danville. Under a user-side subsidy scheme, the revenues earned by the transit operator are not predetermined; rather, they depend on his or her ability to serve the needs of individual passengers, who, in effect, hold the power of the subsidy. There are, at least in theory, several strong advantages to a user-side subsidy arrangement:

1. By assuming that there is some form of marketlike competition or threat of competition, providers have an incentive to offer service that is as efficient as possible and tailored to the travel demands of the user population in order to maximize their profits.

2. Localities are afforded a degree of flexibility not offered by most traditional funding arrangements. For example, the need for commitment

to a particular vehicle or service type can be minimized. In addition, selective application of the subsidy by type of person (e.g., elderly, handicapped, low-income, and so forth), by mode, by type of trip, or by time of day or day of week is possible. Most applications to date have been for taxi service for the elderly and the handicapped (that the user-side mechanism appears acceptable as a means to subsidize taxi service is another of its attractive features).

Danville, which covers 13 miles², is a city of 43 000 located in east central Illinois, about 4 miles from the Indiana border. In 1970, voters in Danville rejected a 3-cent sales tax to subsidize a bus service that had become unprofitable for the private operator the year before. From then until late 1977, Danville was virtually without regular fixed-route public transportation.

This demonstration was phase 2 of a project; in phase 1, also a two-year demonstration, the user-side subsidy concept was applied to taxi services for the elderly and the handicapped in Danville (1). Phase 2 of the Danville demonstration, the focus of this paper, was designed to be the first application of a user-side subsidy to fixed-route transit for the general population (2). Federal funds allocated to phase 2 totaled approximately \$982 787; the city of Danville contributed in-kind services. The transit system, named the Runaround, began operations in November 1977.

PROJECT DESIGN

The original design of phase 2 of the project incorporated the following features. Transportation providers were selected on the basis of a competitive bidding process, repeated every four months. This short contract period was chosen, despite obvious disadvantages, to protect the city from the consequences of unrealistically low ridership predictions and to protect the providers from the consequences of unrealistically high ridership predictions. In addition, the short contract period allowed several opportunities for change over the course of the two-year demonstration.

The city established certain minimum standards (for example, air-conditioned vehicles); however, within those standards, bidders were free to propose any level or type of service they desired. In principle, multiple providers could have contracts that simultaneously operated different routes or the same routes at different times. It is important to note, however, that all transportation providers were responsible for furnishing, garaging, and maintaining the vehicles for operation of the service, as well as for hiring and training drivers.

Before each contract period, prospective providers submitted proposals, which included fares, a per-ticket reimbursement rate, and a complete service plan (or several alternative plans) that showed routes, schedules, hours of operation, and fares. The city was not required to choose the lowest bidder or to implement the exact service plan contained in any of the proposals. Since Danville

had been without regular transit service for seven years, estimates of initial ridership levels were very uncertain. Therefore, to minimize risk and avoid discouraging potential bidders, providers were guaranteed a minimum payment based on vehicle mileage for the first two four-month contract periods; providers would receive the mileage payment if initial ridership estimates were not realized. Thereafter, the user-side subsidy would take effect: Providers would be reimbursed on a per-passenger basis, regardless of vehicle mileage.

Prepaid tickets constituted the primary method of fare payment as well as the determinant of the amount of subsidy. The city was responsible for selling the tickets to the public at the announced fare. On a weekly basis, the provider would redeem the used tickets for an agreed-on per-ticket price. Elderly and handicapped riders as well as students under 18 years of age could purchase special tickets at a 50 percent discount; the providers received full reimbursement for such tickets. Cash fare payments were allowed; however, the city paid no subsidy on such fares. Thus, providers were encouraged to set the cash fare at a level substantially higher than the cost of tickets in order to encourage use of tickets and to compensate for the absence of subsidy on cash fares. In the original request for proposal (RFP) issued by the city, prior to the first contract period, bidders had a fair amount of leeway in designing the fare structure: For example, zone fares, peak and off-peak fares, and transfer charges were permissible under the terms of the RFP.

The city of Danville was responsible for marketing the Runaround system in order to give the system a uniform image even in the event of multiple or changing providers. Also, in order to control the subsidy mechanism, the city had to assume responsibility for marketing the tickets, which were sold by 32 local businesses on a voluntary basis and by the project office at City Hall. Other marketing responsibilities delegated to the city included designing, printing, and distributing tickets, maps, and schedules; painting of (and possible removal of paint from) transit vehicles; designing and placing route markers, bus-stop signs, benches, or shelters; and conducting advertising and promotional activities to publicize the Runaround system. It was hoped that the user-side subsidy arrangement would create an incentive for the private operators to conduct their promotional activities (with review and approval by the city). However, the costs of provider-initiated marketing efforts were not to be considered in the negotiations of the mileage or per-ticket payments received by the providers.

This paper examines the implementation of these five features of the experimental design over the course of the five four-month contract periods during which the demonstration was conducted.

COMPETITIVE BIDDING PROCESS

Prior to each contract period, the city placed notices and advertisements that announced the RFP in national transportation journals and in newspapers in Chicago, Indianapolis, and Danville. Bidders were given one month to respond. With each bid package sent to prospective bidders, the city enclosed a copy of the Transit Development Plan (TDP). (Thus, while bidders were technically free to design any type of service, it was perhaps predictable that bidders would draw heavily on the TDP.) After the provider or providers had been selected, contract negotiations between the city and the provider (or providers) were conducted. The time that remained between the signing of the

contracts and the start of the new service averaged about a month and was sometimes shorter.

At the outset of the demonstration, before the first contract period, 10 firms requested RFPs; however, only 2 submitted bids. One of them, St. Louis-based American Transit Corporation (ATC), was well known to the city of Danville and its residents: The bus service that operated in Danville until 1970 was operated by the Bee Line Transit Company, a division of ATC. Bee Line continued to operate Danville's school bus service until the summer of 1979 by using a large fleet of buses based at Bee Line's extensive maintenance facility in Danville. The other bidder was unfamiliar to the city and owned no facilities near Danville.

Although the unit and total costs proposed by ATC were considerably higher than those contained in the other firm's bid, the latter took exception to many details of the RFP--specifically, the concept of multiple providers, the use of prepaid tickets, and the city's role in marketing the tickets and publicizing the transit system. The bid was therefore determined to be unresponsive to the RFP; a single contract was awarded to ATC, which offered the advantages of an established reputation and a large existing facility in Danville.

Prior to the second contract period, the city again attempted to induce prospective operators to bid on the Runaround service; however, only the same two firms submitted bids. The possibility of having the other firm provide small-bus service on lightly patronized routes was closely examined. However, after an investigation into this firm's past performance, the contract was again awarded to ATC. The other firm submitted no further bids.

Throughout the remainder of the demonstration, which consisted of three more contract periods, ATC had virtually no competition, although Red Top Cab, a local company, did provide service on routes that ATC could not serve at a reasonable price after the user-side subsidy arrangement came into force in the third contract period. Considerable effort was spent encouraging Red Top to bid. Although 25 firms were sent copies of the RFP to provide service for the third contract period under the user-side subsidy arrangement, only ATC and Red Top Cab submitted bids. Red Top Cab had 18 licensed vehicles in early 1978. During phase 1 of the Danville demonstration, Red Top Cab had provided the majority of subsidized taxi trips to elderly and handicapped persons registered with the project. Thus, the cab company was well known to the federal monitors as well as to the city and community of Danville. Contracts for the third period were awarded to both ATC and Red Top; the latter was to operate a 21-passenger minibus along two routes that could not be profitably served by ATC's large 45-passenger buses, as well as a demand-responsive, fixed-route taxi service along two other low-volume routes. This arrangement remained essentially unchanged throughout the two final contract periods: ATC and Red Top Cab were the sole bidders; both were awarded contracts. Clearly, then, the competitive environment envisioned in the experimental design of the project never materialized.

At the end of the demonstration, a mail-back survey of nonbidding firms was conducted. The majority of the 15 firms that responded indicated that the four-month contract period constituted the primary obstacle to bidding. In addition, several respondents wrote in comments about ATC; one wrote, "Incumbent or local operator has an unrealistic advantage due to short [lead] time and size of system; the cost to an outside firm to set up and

operate the system under the program is too high. It is an ideal arrangement for keeping outsiders out."

SERVICE DESIGN

The route structure proposed in ATC's initial bid (submitted prior to the first contract period) conformed closely to the TDP developed for Danville by De Leuw Cather and Company in 1976 and also to the routes served by Bee Line Transit (operated by ATC) prior to 1970. ATC proposed a flat \$0.40 ticket fare and a \$1.00 cash fare; transfers were to be free. In response to this fare structure, the city decided to sell tickets in books of 5 and 20 full-fare tickets and 10 half-fare tickets. ATC's initial bid also proposed three alternative levels of transit service; the city chose to implement the highest of the three service levels. Thus, in December 1977, having had no public transit service at all for seven years, the Danville community suddenly had service 12 h/day, 6 days/week, that consisted of 11 routes, 5 of which operated on 30-min headways. The rest operated on 60-min headways. These routes were served by seven regular 45-passenger buses and two spares; each bus served at least two routes. In hindsight, this level of service proved to be unnecessarily and unmanageably high. The need for rerouting, unforeseen delays in obtaining two-way radios, and other reliability problems all contributed to uneven service quality in the initial months of service.

A number of schedule and level-of-service changes were instituted during the second contract period. The schedules were altered to permit "pulsing" of the buses at the central downtown transfer zone, and weekday service headways were decreased to 30 min on all but two routes, which thus raised the weekly vehicle mileage from 6923 to 8090. Note that the user-side subsidy arrangement had not yet been implemented; the mileage guarantee was still in effect. The decision to increase service was made by the city, not by ATC, in response to disappointingly low ridership. City officials felt strongly that only by increasing system coverage could the Runaround receive a fair test.

As stated earlier, the remaining three contract periods incorporated two major changes to existing arrangements: The guaranteed per-mile reimbursement was dropped, and service on four low-demand routes was contracted to Red Top Cab due to the prohibitively high per-passenger cost of having ATC continue to serve those routes. A plan was devised by which a van or minibus would serve two of the unproductive routes and taxis would serve the other two. Red Top Cab purchased a 21-passenger minibus, which operated for the duration of the project.

In summary, the implementation of the user-side subsidy appears to have had two beneficial impacts on the design of the Runaround: It created an incentive for ATC to eliminate unproductive service and, by focusing attention on the per-passenger cost of serving various routes, it provided the city with justification for service cutbacks. Without this justification, the city might have been more susceptible to fair-share arguments against service cutbacks. The decision to serve the unproductive routes with minibuses and taxi service was not a product of free-market forces at work, however. Rather, the multiple-provider arrangement was devised by the federal monitors and the city; intense negotiations with all parties were required to design an arrangement that was workable and satisfactory to both ATC and Red Top.

SUBSIDY MECHANISM AND PROJECT RIDERSHIP

As discussed earlier, providers were guaranteed a minimum payment based on vehicle mileage for the first two contract periods. Thus, ATC received a per-mile reimbursement of \$1.35 for the first contract period; this figure was renegotiated and lowered to \$1.26 for the second contract period to compensate for the addition of 1167 vehicle miles of service. In addition, ATC was reimbursed for start-up activities: These included training and relocating transit employees, repainting ATC's vehicles, and installing two-way radios in the vehicles.

For both initial contract periods, the contracts negotiated with ATC specified that ATC would receive either the per-mile reimbursement or \$1.20/ticket collected, whichever amount proved higher. For the latter, in which the user-side subsidy payment was to exceed the mileage payment, ridership on the Runaround would have had to exceed 1327/day during the first contract period and 1415/day during the second contract period. In fact, ridership did not reach either level at any time during the demonstration. Figure 1 shows average daily project ridership by month and the levels at which the user-side subsidy would equal the mileage guarantee payment.

By the eighth month of the project, it had become clear that initial forecasts of rapid ridership increases had been unrealistic. Thus, in negotiating the per-passenger (or user-side subsidy) payment to be instituted at the start of the third contract period, ATC took a very conservative stance, but, since the city received no other bids to provide service on most routes, ATC was in a very favorable bargaining position. The resulting contract with ATC specified a subsidy of \$2.00/ticket collected; Red Top received \$1.50/ticket. To compensate for the high per-ticket payment, the contracts also specified a maximum payment to each contractor; trips provided beyond the specified limit were not reimbursed. The per-ticket or user-side subsidy payment received by each operator was designed to cover the cost of providing service and to furnish a reasonable profit to each operator; thus, the contract maximum was designed to allow for the possibility that the providers' profits would be far higher than anticipated. In theory, the maximum payment should be very high and thus almost impossible to attain at projected ridership levels and a projected operator profit margin of, for example, 10-15 percent. Thus, on the one hand, the high maximum should serve as an incentive for the operator to increase ridership by furnishing efficient high-quality service, and, on the other hand, it is designed to function as a safety mechanism in that it limits the city's liability in case of unusual ridership growth. It also offers potential advantages to the city in conducting contract negotiations with transit providers: If an operator furnishes a conservative ridership estimate and thus negotiates a high per-ticket payment, the city can lower the maximum payment, which thus reduces potential profits to the operator. The reverse may also hold: The city may offer to increase the maximum in order to negotiate a lower per-ticket payment. Finally, most public bodies (which include the federal government) cannot legally enter into open-ended contracts; the maximum payment was therefore an administrative necessity.

The per-ticket payment and maximum payment received by ATC were renegotiated prior to the fourth and fifth contract periods; the city's financial arrangement with Red Top did not change

Figure 1. Average daily ridership.

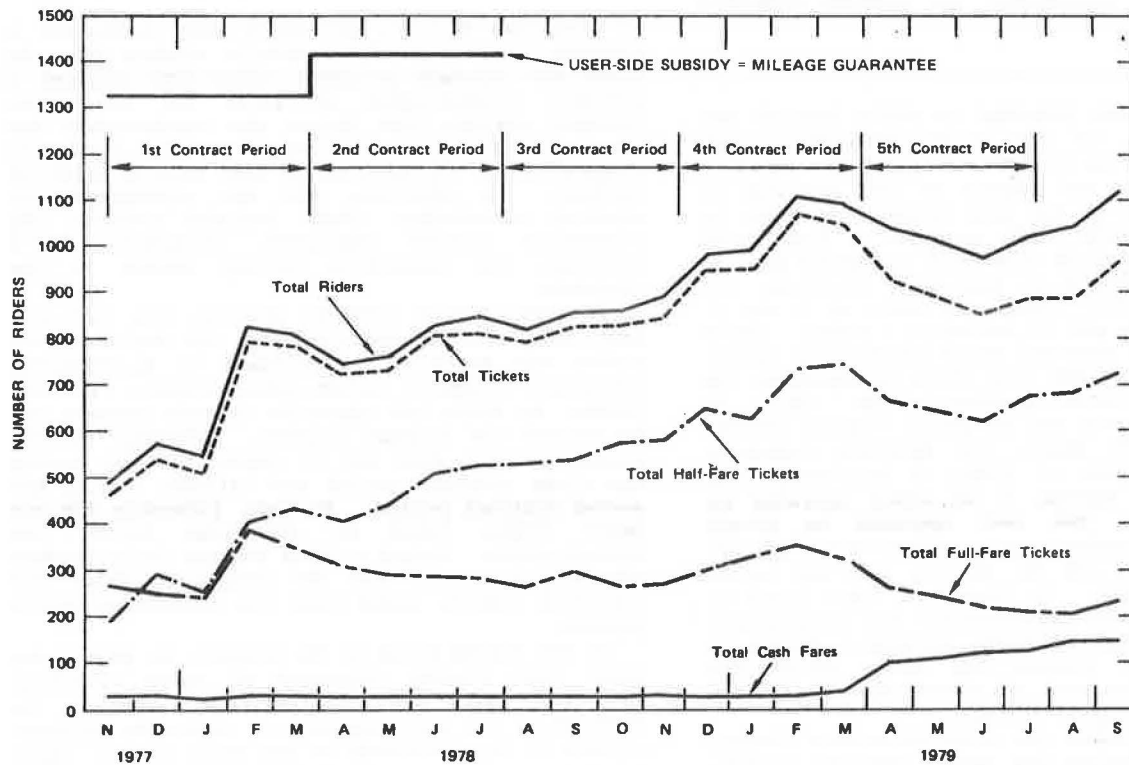


Table 1. Subsidy arrangements.

Contract Period	Contractor	Subsidy	Maximum Payment (\$)
1	ATC	\$1.35/mile ^a	175 000
2	ATC	\$1.26/mile ^a	172 000
3	ATC	\$2.00/ticket	130 000
4	Red Top	\$1.50/ticket	25 000
	ATC	\$1.85/ticket	138 000
5	Red Top	\$1.50/ticket	25 500
	ATC	\$1.65/ticket	142 000
	Red Top	\$1.15/cash fare ^b	25 500
Post-demonstration	ATC	\$1.50/ticket	486 000
	Red Top	\$1.00/cash fare ^b	
		\$1.65/ticket	14 000
		\$1.15/cash fare ^b	

^aOr \$1.20/ticket collected, whichever amount proved higher. During both contract periods, ATC received the mileage payments.

^bProviders retained the \$0.50 cash fare; thus, the total payment (fare plus subsidy) was the same as that for tickets.

for the duration of the project. Table 1 lists the subsidy arrangements negotiated with ATC and Red Top for each contract period. In general, ATC negotiated high per-ticket payments for the three contract periods during which the user-side subsidy arrangement was in effect. Correspondingly, the city set the maximum payments at levels that were in fact attainable. Figure 2 shows ATC ridership by month and the ridership levels that corresponded to the maximum payments for the last three contract periods. Note that for the last three contract periods, ATC's ridership was more than that needed to reach the contract maximum. Thus, due to the difficulty of accurately predicting ridership levels of the new transit system, the user-side subsidy

mechanism of reimbursement in practice had little relevance to ATC, which received (in effect) a fixed amount of money to furnish service during each contract period. The other provider, Red Top, never reached the contract maximum and thus operated under the user-side subsidy arrangement for three contract periods. However, due to many factors, the service furnished by Red Top was of inferior quality to that of ATC, and ridership on the routes served by Red Top remained low throughout the demonstration.

As noted earlier, the user-side subsidy arrangement did cause unproductive service to be dropped before the third contract period. Indeed, the flexibility to change levels of service and providers is considered to be a major advantage of the user-side subsidy concept. In the Danville case, however, an additional, unresolved issue is whether major changes in service levels, routes, schedules, and providers depressed ridership levels.

PROJECT COSTS

The costs of operating and administering the Runaround system, exclusive of federal evaluation survey and data collection costs, totaled approximately \$550 000 for one year under the user-side subsidy arrangement. Table 2 shows the breakdown by the total cost, cost per revenue mile, and cost per revenue passenger.

The most striking feature of Danville's cost breakdown concerns the figures for administrative expenses. In particular, salaries and wages appear to be very high. ATC was able to negotiate very favorable contracts with the transit drivers during both years of the demonstration; thus, the wages received by ATC drivers are low compared with those of other transit systems. Therefore, the figure for salaries and wages shown reflects high administrative costs rather than high operating

Figure 2. Average daily subsidized trips provided by ATC (contract periods 3, 4, and 5).

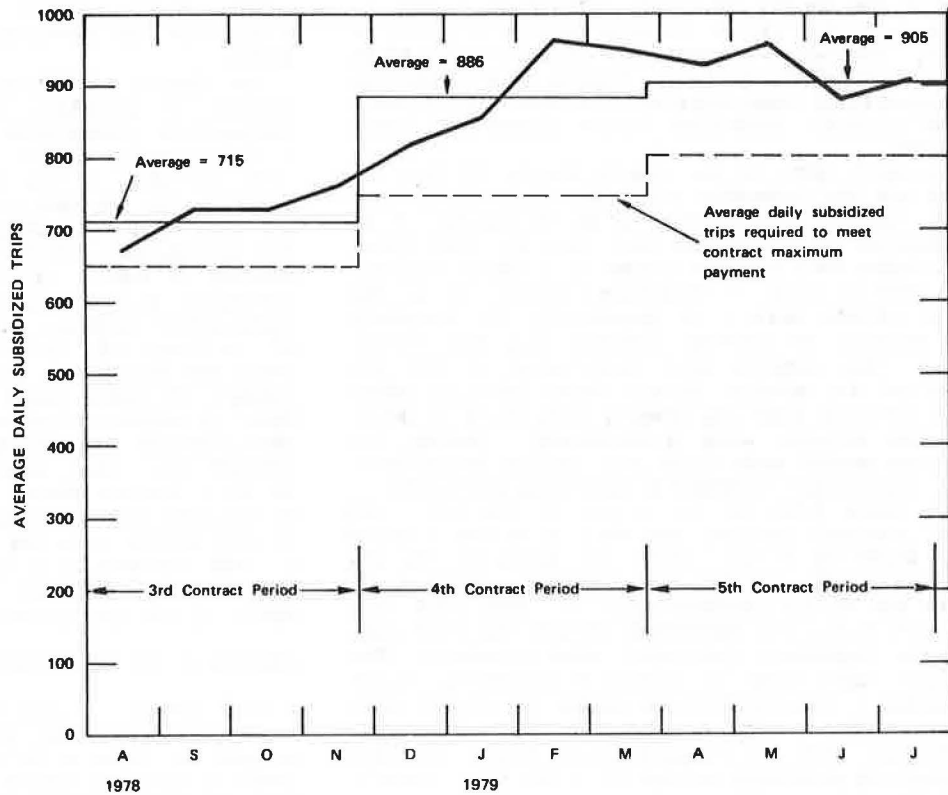


Table 2. Breakdown of Runaround costs for one year under user-side subsidy.

Category	Costs (\$)		
	Total	Per Revenue Mile	Per Revenue Passenger
Transit services			
Vehicles	68 700	0.21	0.23
Drivers' wages	111 457	0.34	0.38
Maintenance (wages and other)	57 573	0.18	0.20
Other (including fuel)	53 317	0.16	0.18
Administration			
Salaries and wages	95 141	0.29	0.32
Other (tickets, maps, office supplies, etc.)	19 622	0.06	0.07
Garage and office rent	18 410	0.06	0.06
Marketing	13 194	0.04	0.04
Insurance and bonding	23 060	0.07	0.08
ATC back-up service on Red Top routes 4 and 7	1 190	0.00	0.00
ATC profit ^a	37 659	0.11	0.13
Red Top costs and profit ^b	51 884	0.16	0.18
Subtotal	551 207	1.68	1.87
Less			
Cash fares	11 411	0.03	0.04
Ticket revenues	71 207	0.22	0.24
Total subsidy costs	468 589	1.43	1.59

^aBased on costs reported by ATC.

^bA full cost breakdown for Red Top Cab is not available.

contract period, in which the user-side subsidy was first implemented, their estimated profit margin was close to 13 percent; however, this dropped to 9.8 percent for the fourth period and to 7.7 percent for the fifth period.

When the revenue mileage and ridership for the third through fifth contract periods were compared, the project costs were as follows:

Cost Category	Contract Period		
	Third	Fourth	Fifth
Per revenue mile (\$)	1.61	1.70	1.71
Per revenue passenger (\$)	2.08	1.84	1.74

The high cost per revenue passenger is corroborated by the low productivity statistics for those periods:

Productivity Category	Contract Period		
	Third	Fourth	Fifth
Passengers per revenue mile	0.78	0.93	0.99
Passengers per revenue hour	11.46	14.44	14.53

Overall, project ridership was disappointingly low. Although the costs of ATC's operations appear to have been reasonable and the total project costs do not appear to have been extraordinarily high, the low ridership levels did call into question Danville's ability to support a fixed-route transit system.

PREPAID TICKETS

On the whole, the system of selling books of prepaid half-fare and full-fare tickets worked well. When the bus service began, 32 local businesses enthusiastically agreed to sell the ticket books on a volunteer basis, despite the staff time required to order consignments from the city, sell the tickets, and maintain records of all transactions. Full-fare tickets were sold in books of 5 for \$2.00

costs. The user-side subsidy arrangement does in fact require a large administrative effort to handle the ticket program, prepare RFPs, conduct contract negotiations, monitor the subsidy arrangement, and publicize changes in service features.

Although ATC adopted a very conservative posture in each round of contract negotiations, analysis of the estimated costs submitted by ATC with each proposal does not indicate that their overall profit margin was unreasonably high. For the third

and 20 for \$8.00; half-fare tickets were sold in books of 10 for \$2.00. Elderly persons 65 years or older, handicapped persons, and students aged 18 or less qualified for half-fare tickets on presentation of appropriate identification. In addition, parents could purchase half-fare ticket books for their children.

In April 1978, in response to complaints from the press and the community about the steep \$1.00 cash fare, the city introduced a \$0.50 coupon to be distributed to all riders that paid the cash fare. The coupon entitled the bearer to a \$0.50 discount on a book of half- or full-fare tickets. Thus, the sales outlets were also responsible for accepting the coupons as partial payment for the ticket books. The coupons were distributed on the ATC buses and the minibus through March 1979, at which time the cash fare was lowered from \$1.00 to \$0.50 and the coupons were discontinued. During the one-year period from April 1978 through March 1979, 3999 coupons were redeemed by Runaround passengers.

In March 1979, at the outset of the fifth and final contract period, the cash fare was lowered from \$1.00 to \$0.50. Under the terms of the new contracts, ATC and Red Top received subsidies of \$1.15 and \$1.00, respectively, for each cash fare received (i.e., the difference between the cash fare and the negotiated per-ticket reimbursement). The ensuing rapid rise in cash-fare ridership, which included a disproportionate number of new transit riders, offers some evidence in support of the hypothesis that the prepaid ticket system may have discouraged ridership during the first four contract periods.

Although the sales outlets performed the various functions associated with selling the tickets at no charge to the city, the ticket system proved quite time consuming (and thus costly) to administer. During the first year or so of operations, two project staff members spent at least eight person days per month on ticket-related activities, e.g., resupplying the outlets with tickets, taking inventory and counting cash at each location, and keeping detailed records of all transactions. Various procedural changes designed to reduce the burden on city staff were introduced midway through the demonstration; for example, outlets were asked to order larger ticket consignments less frequently and to pay by check rather than cash for tickets sold. However, the ticket system continued to absorb a relatively large amount of staff time--about five person days per month.

MARKETING

The city of Danville conducted a number of advertising campaigns and promotional activities designed to publicize the Runaround over the course of the demonstration. These included radio and newspaper advertisements, displays at various locations in Danville that showed the bus schedule and listed the ticket sales outlets, discount coupons in the newspaper good toward the purchase of ticket books, distribution of free Runaround tickets at special events, and free-ride days on which Danville residents could ride the bus all day at no charge. The payment received by ATC was based on an average of normal ridership levels; Red Top Cab's payment was based on actual ridership on the free-ride days. The first two free-ride days were held on two consecutive Saturdays just before the Christmas holidays in December 1978; ridership skyrocketed to four times the average Saturday ridership. The third free-ride day was held on a Monday in late May 1979; 2500 riders took advantage of the event. However, these days did not seem to

induce large numbers of first-time riders to substitute the Runaround for their transportation needs.

In theory, the user-side subsidy arrangement creates an incentive to the provider to finance independent promotional activities in order to attract new ridership and thus increase profits. Under the terms of the contracts between the city of Danville and the two transit operators, ATC and Red Top Cab, these providers received no reimbursement for promotional activities. Nevertheless, ATC did conduct a number of low-cost transit events to publicize the Runaround service; these included distributing balloons and candy on the anniversary of the Runaround, distributing prizes and flowers on board the buses on special days, and outfitting the drivers in Santa Claus costumes on the free-ride Saturday before Christmas. Thus, although ATC's net out-of-pocket expenditures on Runaround publicity totaled less than about \$1000, the company did devote a certain amount of staff time and resources to planning and coordinating promotional activities in conjunction with the city of Danville. Red Top Cab was included in a few such activities, but the cab company did not initiate or finance any publicity for the system.

LESSONS OF THE DEMONSTRATION

A full test of the user-side subsidy for fixed-route transit service has yet to be conducted. The lessons of phase 2 in Danville carry a number of implications with regard to the optimal location and set of circumstances in which to implement a user-side subsidy arrangement. Specifically, they are as follows.

1. The bidding environment should favor open entry of transportation providers. This implies the existence of no single, well-entrenched local operator who would impair the bidding process, as in Danville. The user-side subsidy scheme assumes some form of marketlike competition or threat of competition in order to create an incentive to the existing provider or providers to offer efficient service tailored to the travel demands of the user population.

2. New transit service should be introduced gradually. Not only did the initially high level of service implemented in Danville prove costly and unmanageable, but it also served to discourage small providers from bidding on the service, due to the high start-up and capital costs involved. In view of the scheduling and reliability problems experienced by any new service in its early stages, a better strategy might have been to start transit operations with only a few routes and to add service gradually as start-up problems were ironed out and ridership increased.

3. The contract period should exceed four months in order to attract prospective bidders. Long contract periods do entail the disadvantages of restricting entry of new providers and possibly locking the city, the provider, or both into an untenable financial position. One compromise arrangement, which took effect in Danville after the demonstration, is a one-year contract that permits either party to reopen the negotiations at specified intervals. (In the Danville case, this interval was three months.) Such a contract could also specify that new proposals could be entertained at any time, which allows a reasonable termination notice before another provider could take over operation of the service.

4. Prospective bidders may require some assistance from the city or other public body that

contracts for service. In particular, small paratransit operators generally lack the resources and experience necessary to prepare detailed proposals or negotiate service contracts. Therefore, a willingness on the part of the city to offer such assistance may be desirable in order to encourage operators to bid and thus increase the competition among bidders to provide the service.

5. Administrative costs of user-side subsidy arrangements are likely to be higher than average, due to the need to monitor the ticket system, conduct contract negotiations, and oversee reimbursement procedures.

6. The system for prepurchasing tickets is costly to administer and may discourage ridership; however, such a system may be a necessary safeguard against fraud.

7. The user-side subsidy arrangement does appear to create an incentive for providers to eliminate unproductive service, although the providers generally did not initiate any major service revisions during this project.

ACKNOWLEDGMENT

Ronald Kirby and Francine Tolson of the Urban Institute were responsible for many parts of the

demonstration concept and design and provided valuable comments on the evaluation. The Danville Planning Department staff--Michael Federman, Dan Bolton, Rose Hutchins, and Margaret Henderson--were responsible for providing most of the raw data and for keeping us informed on developments. The staffs of Bee Line Transit and Red Top Cab were always helpful in explaining their operations and providing data. Cindy Campbell was untiring in her role as project research assistant.

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Publication of this paper sponsored by Committee on Public Transportation Planning and Development.

Elasticity Measures of Behavioral Response to Off-Peak Free-Fare Transit

LAWRENCE B. DOXSEY

Changes in transit ridership behavior in response to the elimination of off-peak transit fares are examined. Empirically, the analysis is based on data collected for a one-year free-fare demonstration sponsored by the Urban Mass Transportation Administration in Trenton, New Jersey. Fare elasticity of demand is used as the measure of behavioral response. Important to the analysis is the clarification of distinctions among different measures of fare elasticity. In order to both illustrate the differences among types of elasticity and demonstrate the separate impact attributable to the choice of estimating technique, several techniques are applied and their results compared. It is concluded that the demand response to fare elimination is inelastic and that variations among individuals in the extent of response cannot be associated with differences in socioeconomic characteristics. Free fare is therefore judged not to be a direct means of fulfilling the transportation needs of socioeconomically defined population groups.

Between March 1, 1978, and February 28, 1979, the Office of Service and Methods Demonstration of the Urban Mass Transportation Administration (UMTA) and the New Jersey Department of Transportation sponsored the elimination of the existing 15-cent off-peak bus fare in Trenton, New Jersey, and surrounding Mercer County. The peak fare was unchanged until December 1978, when it was increased to 40 cents.

The major objective of this study was the examination of changes in transit use behavior by the Trenton area population in response to the elimination of bus fares during off-peak periods. Two major conclusions result. There was an inelastic response to the fare elimination, and little of the variation in responsiveness among individuals could be explained by socioeconomic differences. Furthermore, elasticity estimates are

shown to be sensitive to the particular elasticity definition chosen, the functional form of the demand curve, the initial conditions against which changes are measured, the estimation technique applied, and the data used.

The first part of this paper reviews the concept of demand elasticity as a measure of responsiveness to fare change. A discussion of alternative measures of elasticity is presented.

The second part of the paper presents the results of estimating elasticities from data collected in Trenton. Elasticity estimates are obtained by four different procedures.

ELASTICITY MEASURES

In many studies of fare-change response, there has been inadequate recognition that there are a number of related (though nonequivalent) measures of demand elasticity. Failure to distinguish among elasticity measures results in two kinds of error. First, inferences appropriate to one type of elasticity have been drawn from estimates of another type. Second, there is a tendency for elasticities of different types to be compared directly and for conclusions to be drawn from differences or similarities in their values.

Elementary Properties of Demand Curves

To clarify the differences among alternative elasticity measures, several underlying properties