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Comparison of User-Side Subsidy and Dial-A-Ride Services Operated in Los Angeles

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This study is a comparative analysis of the dial-a-ride and user-side subsidy community transit service operations provided in Los Angeles. The study concentrates on two project areas, Venice and West Central, in which dial-a-ride services operated in 1980 were replaced with user-side subsidy operations in 1981. The dial-a-ride service, as operated in Los Angeles, requires a contractor to provide a specific number of vehicle hours of service per month; the contractor is compensated on that basis. The user pays a fixed fare regardless of the length of trip. The trip must be arranged at least 24 hr in advance and is provided between the hours of 9:00 a.m. and 5:00 p.m. on weekdays. The user-side subsidy program requires the user to purchase coupons that are good for 24-hr service from any participating taxicab company of the user's choosing. The broker subcontracts with the taxicab operators to reimburse them for the coupons they receive. The user is allowed to use up to \$5.00 in coupons for each one-way trip and must pay in cash any amount over the coupon limit. Three measures of comparison were used in the analysis: patronage, cost to the user, and cost per passenger. Under equal funding levels, more trips were provided by the user-side subsidy program. The user-side subsidy patronage exceeded the dial-a-ride patronage by 75 percent in Venice and 40 percent in West Central. Dial-a-ride fares were fixed at \$0.15/trip in 1980, but a new state law adopted for 1981 financing would have required the city to raise the dial-a-ride fares to an average of \$1.40/trip. The user-side subsidy service costs the user an average of \$0.92/trip. Over two quarters of operation, the user-side subsidy patronage grew considerably, reducing the cost to an average of \$5.63/passenger, approximately 60 percent of the dial-a-ride cost per passenger. The comparisons made in this study indicate that user-side subsidy service is superior to dial-a-ride service for Los Angeles.

The purpose of this paper is to provide a comparative analysis of the dial-a-ride and user-side subsidy methods of providing community transit service in Los Angeles. Both types of service have been and are being operated for elderly and handicapped residents of the city. The operating procedures used may be peculiar to Los Angeles; therefore, the paper contains a brief history and description of the services. Comparisons are made between the dial-a-ride services operated in 1980 and the user-side subsidy services operated in 1981 in the West Central Los Angeles and Venice community transit service areas.

Los Angeles has been operating community transit services since 1973 with the implementation of dial-a-ride projects in two service areas under the federally sponsored Model Cities Program. The city implemented four additional dial-a-ride projects in 1975.

The California State Legislature established a new funding source for community transit service in 1976. The Transportation Development Act (TDA) was amended by Article 4.5 to allow the county transportation planning agency to reserve up to 5 percent of the county's TDA funds for community transit services. Funding for the program came from state sales tax revenue.

The first user-side subsidy service began operating in the Harbor service area in August 1978. A second user-side subsidy demonstration project was initiated in the Echo Park-Silverlake service area

under Article 4.5 financing. The early success of this program led to the decision to convert some of the existing dial-a-ride services to user-side subsidy programs.

In fiscal year (FY) 1980-1981, dial-a-ride services were replaced with transportation coupon (user-side subsidy) programs in the West Central Los Angeles and Venice community transit service areas.

DIAL-A-RIDE

As Viewed by the Consumer

Dial-a-ride is a curb-to-curb service that requires route diversion and group loading. The user pays a fixed fare (\$0.15/trip during 1980), regardless of the length of trip. The trip must be arranged at least 24 hr in advance and is provided between 9:00 a.m. and 5:00 p.m. on weekdays. The user must understand that the service is not exclusive and that travel times may be long due to route diversions. Trip destinations are limited to 1.5 miles outside of the service area boundary.

Contractor Relations

Dial-a-ride-service is an operator-side subsidy, demand-responsive service that uses either profit or nonprofit companies as providers. The contractor is required to provide a specific number of vehicle hours of service by using vehicles dedicated to dial-a-ride service. The contractor is paid monthly, based on the number of vehicle hours operated. The contracts for West Central and Venice were with Golden State Transit Corporation doing business as Yellow Cab Company. The vehicle-hour rate was \$13.58 for West Central and \$10.28 for Venice.

The contractor is required to have two-way radio communication between the dispatcher and the vehicles, and the dispatcher is required to load, route, and unload the vehicle to obtain the maximum efficiency. (In practice, this was rarely accomplished.)

Accessible Vehicle Service

The dial-a-ride contract requires the contractor to provide at least one lift-equipped vehicle for each service area for people in wheelchairs who cannot transfer to a standard passenger vehicle. These vehicles are dedicated to dial-a-ride service and are operated in the same manner as the other dial-a-ride vehicles.

For the West Central contract, which included four small service areas, four lift-equipped vehicles were provided. In the Venice service area, one lift-equipped vehicle was provided. There were not many backup vehicles, so at times the lift-equipped vehicle service was limited.

USER-SIDE SUBSIDY SERVICE

As Viewed by the Consumer

The user-side subsidy or transportation coupon program requires users to purchase coupons before they can obtain transportation service. Transportation coupons are sold in books with a predetermined dollar value for 20 percent of that value. The bearer uses the coupons to purchase taxicab service from any of the companies listed on the coupon book. The amount of coupons that can be used on any one trip is limited. The user may take longer trips, but any amount over the dollar limit must be paid by the user of the coupon book. Because of a high demand for this type of service, the number of coupon books a person can buy is limited to one or two books per month, which is equivalent to approximately 5 to 7 trips/month.

Both the West Central and Venice programs sold coupon books with a \$10 value for \$2. The amount of coupons that could be used on any one-way trip was limited to \$5.

Contractor Relations

The user-side subsidy programs developed by the city involve two distinct functions. There is a broker function and a service-provider function. The broker is the primary administrator of the program and performs three distinct functions: (a) arranges for the printing of coupon books, (b) develops a marketing plan for the distribution of coupon books and promotion of the program, and (c) reimburses the taxicab companies for the coupons they collect for service rendered. All funds for the program are disbursed by the city through the broker or prime contractor. The contract specifies the administrative personnel, equipment and supplies, and funds available for coupon reimbursement. The broker is also responsible for subcontracting with the taxicab operators for the provision of taxicab service. The subcontract also specifies the procedures for reimbursement.

Occasionally the broker and the taxicab service provider are one and the same entity, in which case there is no need for a subcontract arrangement. When such is the case, users do not have the opportunity to choose the taxicab company they prefer. However, the broker then has more control over the quality of service provided.

The West Central program is the prototype of the first example given, and the Venice program is an example of a taxicab company contracting to perform both the broker and service-provider functions.

Accessible Vehicle Service

Accessible vehicle service for people in wheelchairs who cannot transfer to taxicabs is provided in a different manner in the two user-side subsidy programs.

In the Venice program, the contractor is required to provide a lift-equipped van dedicated to a dial-a-ride type of service. The lift-equipped vehicle is prescheduled, which requires the users to arrange appointments 24 hr in advance. Special coupons are printed for this service, and users pay the fare in coupons equivalent to the taxicab rate established

for the company. The same dollar limit per trip is applied to this service as for the taxicab coupon service.

In West Central, a completely different design for providing accessible vehicle service is used. The broker subcontracts with companies that operate nonambulatory medical vehicle transportation. Such companies are established to cater to the needs of outpatients on Medical.

Originally, the West Central broker selected a single company through a competitive bid process to provide dedicated vehicles for accessible service as in Venice. However, the cost of having vehicles on call was too expensive (more than \$30/trip). Therefore, the subcontract was renegotiated so as to be similar to taxicab coupon service.

Currently, the broker subcontracts with any interested company established as a nonambulatory vehicle operator. Special voucher coupon books are sold for \$20. The books contain 10 vouchers, each of which is valid for one 5-mile trip. Each trip costs the city \$17.50, which is the 1980 Medical-approved transportation rate. If users wish to travel beyond the 5-mile limit, they must pay the city-established nonambulatory service rate of \$0.85/mile. If and when Medical or nonambulatory vehicle rates are increased, the companies that participate in the program will have the opportunity to negotiate amendments to their subcontracts.

Both of these options have the restriction that the trips must have either the origin or destination located within the service area in order to prevent the vehicles from traveling long distances, which would result in too many deadhead miles.

ANALYSIS OF DIAL-A-RIDE VERSUS USER-SIDE SUBSIDY SERVICE

The services analyzed and compared in this report pertain to the Venice, Mar Vista, West Los Angeles, and West Central Los Angeles community transit service areas. Comparisons are made between the dial-a-ride services operated during the third and fourth quarters of FY 1979-1980 and the user-side subsidy services operated during the third and fourth quarters of FY 1980-1981. The first and second quarters of FY 1980-1981 were conversion periods for the replacement of the dial-a-ride service with user-side subsidy service. A summary of the fourth-quarter operational data for the two services is given in Table 1.

Patronage

The monthly ridership figures for the Venice and West Central services for all of 1980 and 6 months of 1981 are shown in Figure 1, and a summary of the patronage data for the third and fourth quarters for each type of service is given in the table below (note that dial-a-ride service is for FY 1979-1980 and user-side service is for FY 1980-1981):

Service Area	Patronage	
	Third Quarter	Fourth Quarter
Venice		
Dial-a-ride	2,873	2,489
User-side subsidy	2,018	4,346
West Central		
Dial-a-ride	9,271	9,614
User-side subsidy	3,457	13,242

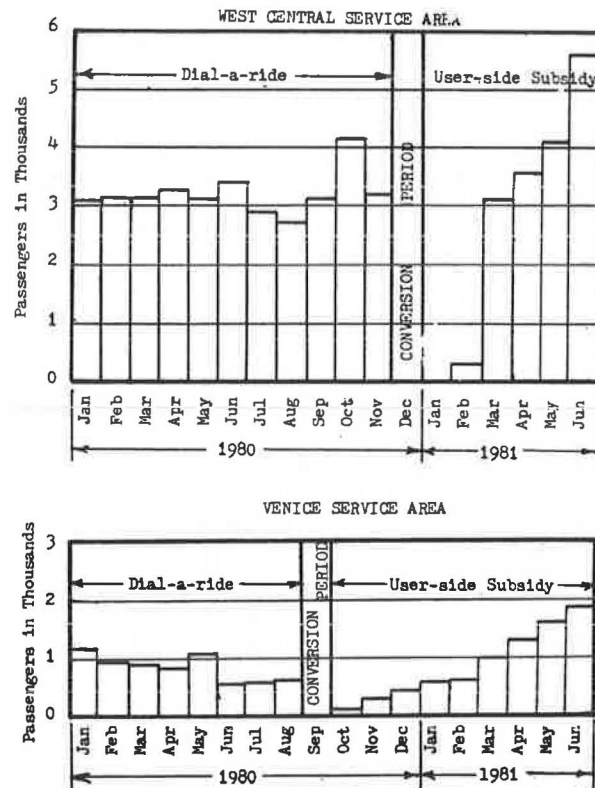
(Note: The dial-a-ride service was a well-established service, whereas the user-side subsidy system was in an initial growth period.)

Table 1. Operational data: dial-a-ride versus user-side subsidy.

Item	Venice Area		West Central Area	
	User-Side Subsidy ^a	Dial-a-Ride ^b	User-Side Subsidy ^a	Dial-a-Ride ^b
Trips per quarter	4,336	2,489	13,242	9,614
Vehicle hours per quarter	2,677	2,049	8,403	5,438
Miles per quarter	14,657	25,863	38,964	67,501
Cost per quarter (\$)	26,644	24,960	67,942	73,841
Cost per vehicle hour (\$)	9.95	12.45	8.09	13.58
Cost per mile (\$)	1.82	1.02	1.74	1.09
Cost per passenger (\$)	6.13	10.03	5.13	7.68
Passengers per hour	1.62	1.23	1.58	1.77
Farebox revenue (\$)	4,006	374	16,700	1,543
Farebox recovery ratio (%)	15.04	1.6	24.58	2.1

^a Fourth quarter, 1981.^b Fourth quarter, 1980.

Figure 1. Patronage comparison: dial-a-ride versus user-side subsidy.



The figures in the table above show that, for the third quarter of FY 1980-1981, the user-side subsidy patronage was below the dial-a-ride service a year earlier. However, after the start-up period, the fourth quarter patronage for the user-side subsidy program was 75 percent greater in Venice and 40 percent greater in West Central than the comparable dial-a-ride service.

Cost to User

A comparison of the cost to the user of the two types of service is given in the table below (note that dial-a-ride service is for FY 1979 and user-side service is for FY 1980):

Service Area	Cost per Trip for User (\$)	
	Six-Month Average	Required to Comply with State Law
Venice		
Dial-a-ride	0.15	1.65
User-side subsidy	0.98	0.98
West Central		
Dial-a-ride	0.15	1.13
User-side subsidy	0.86	0.86

The dial-a-ride service, as operated in 1980, was considerably less expensive to the user than the user-side subsidy service, but compliance with state law would have required an increase in dial-a-ride fare beyond the cost for user-side subsidy service, as discussed below.

Dial-A-Ride

The fare for dial-a-ride service was \$0.15/trip, which allowed the patron to travel anywhere within the service area and to major destinations within 1.5 miles outside of the service area boundary.

State law currently requires that transportation programs that use state funds must recover 10 percent of the total cost of operation from farebox revenue; this is termed the farebox recovery ratio (FRR). For this reason, dial-a-ride rates in Los Angeles have been increased to \$0.65/trip for any service that is financed with state funds, such as TDA Article 4.5.

The FRR was approximately 2 percent for both service areas under the old \$0.15 dial-a-ride fare. The FRR would have been between 7 and 8 percent if the new \$0.65 fare was used, based on cost and patronage data for dial-a-ride operations. Because the cost of dial-a-ride service in recent bids has increased approximately 50 percent from the previous service, it appears likely that the dial-a-ride fare would have to be approximately \$1.40/trip or added matching funds would be required to comply with the state law.

User-Side Subsidy

The cost per trip to the user of the transportation coupon service varies, depending on the length of the trip. Initially, the user pays \$2 for \$10 worth of coupons; however, only \$5 worth of coupons can be used on any one-way trip. The operational data for the Venice and West Central transportation coupon services indicate that the average trip length is 3.3 miles, which would cost approximately \$4.50 at the established taxicab rate. Therefore, coupons could be used to pay the entire fare, and the cost of the trip to the user would be \$0.90. A trip that costs more than the \$5 limit would cost the user the initial \$1 cost for the coupon plus the additional fare shown on the taxi meter in excess of \$5.

The FRR attained by the Venice and West Central transportation coupon programs during the comparison period was 16.3 and 27.8 percent. The FRR is high because these programs were in a growth period, and revenue obtained from coupon sales in the first months of the contract will balance against the reimbursement costs near the end of the contract. There is also a built-in safety margin to prevent the necessity of the city being required to make up any shortfall in the FRR from the city's general fund.

Total Cost of Service

The total cost of either service is based on the funds available. Nearly equal amounts of money were available for each type of service in the two service areas. However, because the user-side subsidy services were in a growth period, less funds were expended over the 6-month period. In West Central, \$145,600 was expended on the dial-a-ride service and \$100,000 on the user-side subsidy service. For the Venice service area, \$48,100 was expended on dial-a-ride and \$42,800 on user-side subsidy. Unlike dial-a-ride with dedicated vehicles, funds are expended on user-side subsidy only when the service is actually used; there are no payments for deadhead hours or miles of service. A better method of comparison is to use a common unit of measure, such as cost per passenger.

A comparison of the cost per passenger of the two services is given in the table below (note that dial-a-ride service is for FY 1979 and user-side service is for FY 1980):

Service Area	Cost per Passenger (\$)	
	Third Quarter	Fourth Quarter
Venice		
Dial-a-ride	8.47	10.03
User-side subsidy	8.03	6.13
West Central		
Dial-a-ride	7.75	7.69
User-side subsidy	9.28	5.13

Third-quarter comparisons show that the average cost to the city for user-side subsidy service was \$8.66 as compared to the average dial-a-ride cost of \$8.11. The higher cost for user-side subsidy service was the result of start-up costs and low patronage. By the fourth quarter, the user-side subsidy patronage had grown considerably, resulting in an average cost of \$5.63/passenger--approximately 60 percent of the average dial-a-ride cost.

There are some complexities about the two types of service that relate to the cost per passenger and its usefulness in comparing the services. Dial-a-ride service, as contracted by Los Angeles, is provided at a fixed cost per vehicle hour. Fluctuations in the number of passengers do not affect the total cost of the service but do directly affect the cost per passenger.

User-side subsidy service has a fixed administrative cost but a variable service cost associated with it. The cost per passenger for a user-side subsidy program does not drop as directly as the dial-a-ride program, because as the number of passengers increases the cost for coupon reimbursement also increases. However, at current costs, there are sufficient funds in the program to provide services to approximately 6,100 riders/month in West Central and 2,730 riders/month in Venice. This patronage is approximately twice the level of service provided by the previous dial-a-ride operations in those areas.

Service Aspects

Length of Trip

Dial-a-ride passengers are allowed to travel anywhere within, and up to 1.5 miles outside of, the service area boundaries. Little data are available on the average trip length of community transit service. An origin and destination study conducted by the Los Angeles Department of Transportation of the Venice dial-a-ride service determined an average

trip length of 2 miles for that service area. Dial-a-ride service offers greater travel distances at a lower cost to the passenger (even at the increased dial-a-ride rates); however, there are boundary limitations. The miles per passenger data in Table 1 include deadhead mileage on dial-a-ride vehicles and therefore do not provide an accurate measure of actual trip length.

User-side subsidy service allows the rider to use coupons for up to a \$5 fare, which is approximately 3.6 miles; however, there was no limit on the destination except that the passenger must pay cash for the fare in excess of \$5. The user-side subsidy service allows the riders to travel greater distances at their option. The Department's records of the user-side subsidy services indicate an average trip length of 3.3 miles.

Response Time and Travel Time

Dial-a-ride service is a shared-ride type of system with a limited number of vehicles. It requires the vehicles to follow a circuitous route to load and discharge passengers. Therefore, passengers must be willing to accept a longer travel time than would be necessary for a vehicle going directly from point of origin to point of destination. The circuitous routing oftentimes results in delays in response time.

User-side subsidy service makes use of the existing taxicab fleet authorized to operate in the service area. In most areas of the city, several franchised companies and the two independent associations are available for telephone orders. In the West Central and Venice communities, five taxicab firms are authorized to serve passengers. Standard taxicab service usually provides a response time of 15 min, and service is direct from origin to destination, therefore requiring less travel time per rider.

Patron Satisfaction

Dial-A-Ride

A city monitoring report dated September 23, 1980, indicated that there was a considerable degree of dissatisfaction with the dial-a-ride service in the West Central service area. Some of the problems were related to operational efficiency and the ability of the system to meet demand, whereas others related to program design.

The most common complaint received from dial-a-ride users was failure to be picked up, either at the scheduled time or at all. Other problems included complaints that the telephone was busy or not answered and that orders were denied because the system was booked to capacity. The reason given by Yellow Cab Company was that service capacity was not adequate to meet the demand. From experience gained from the subsequent user-side subsidy service, it was apparent that the dial-a-ride service was underfinanced. The demand for good, efficient service was great in the West Central service area.

Other complaints were related to system design. Users complained often of not being able to travel to destinations outside the service area. Funding limitations prevented the expansion of the service area to alleviate this problem. Another problem was the difficulty users had arranging for the return trip from medical appointments. It was difficult to determine the correct pickup time in advance.

Regardless of the complaints, when the dial-a-ride service was replaced by the user-side subsidy program, the Department received many calls indicating how important the dial-a-ride service was to

many people and that it should not be stopped. Once the user-side subsidy service was implemented, however, the Department received few calls requesting reinstatement of the dial-a-ride service.

User-Side Subsidy

The Department received considerable favorable response about the user-side subsidy program. The major complaints were related to the inability of the program to cope with the large demands of the elderly and the handicapped community. Other complaints were related to the nature of the service provided by the taxicab companies.

Beginning with the first month of implementation of the user-side subsidy program in the West Central area, it became apparent that the community transit service for this area was underfinanced. An elaborate system of sites and subsites had been developed for the distribution of coupons. This system was dropped when the demand for coupons resulted in a complete sellout in the first week of the coupons allocated for the first month. This condition improved to the point that in the sixth month the coupons lasted until the third week of the month. The purchases of each patron had to be limited to one or two books per month.

The Venice service area did not have the same experience. The program had to maintain a constant publicity program to encourage sales and use of the coupons, and there were practically no limits on the number of books a person could purchase.

Other complaints involved incidents of uncooperative taxicab drivers. Some drivers were unpleasant, refused to accept the coupons, overcharged, complained about lack of tips, or made the users feel like second-class citizens. This type of complaint is handled by the Department's Regulation and Enforcement Division. Investigations are conducted and disciplinary action taken as appropriate.

In spite of the coupon limitations, the Department received considerable positive response about the program. The coupons sold in the West Central service area carried an August 31, 1981, expiration date. As the date approached, many users called to support continuation of the program. Many people said they used the coupons regularly, while others said they only used them occasionally. The only complaint was that they could not get enough coupons, but coupon shortage was not a reason for changing or dropping the program.

Program Monitoring

There are several aspects of the community transit programs that must be monitored for compliance with the program designs, contracts, and grant funding requirements. Monitoring involves verifying eligibility of users, quality of service delivered, dispatching records and vehicle use coupons submitted for reimbursement, coupon sales, and promotion of service.

Eligibility of Users

The predominant source of funds (Article 4.5) for community transit limits the service to elderly and handicapped residents of the service area. The verification of user eligibility for dial-a-ride service should be the function of the order taker. However, the dial-a-ride program design in Los Angeles does not provide for screening for eligibility. Therefore, verification of the users' eligibility fell to the drivers of the vehicles. There

are no records to indicate whether anyone was turned down because of ineligibility. The only way to monitor the eligibility of users of this service was through spot-check observations.

Verification of eligibility for the user-side subsidy service is determined at the time the coupons are sold. Coupons are sold by various non-profit agencies that deal with elderly and handicapped persons. In effect, the process of selling coupons does provide screening for eligibility before the provision of service.

Dial-A-Ride

Dial-a-ride services are designed to provide a specific number of vehicle hours of service. The number of vehicles operating each day must be verified. This can be done by verifying the driver log sheets (waybills), field checks, and dispatching records.

Dial-a-ride service is much harder to monitor. Much field work is necessary to adequately verify eligibility, vehicle use, and vehicle hours of service provided, and also to investigate complaints.

User-Side Subsidy

Vehicle service is provided by existing taxicab and nonambulatory vehicle operating companies. Service is provided as requested, and the used coupons provide the means for verifying vehicle use. However, vehicles are not required to be dedicated or set aside specifically for this service. Payment is made only when service is actually provided and is based on the standard rate established for taxicab or nonambulatory vehicle service.

The Department has found that there are several checks built into the user-side subsidy program to prevent misuse and fraud. Lists of eligible users are maintained. Taxicab companies verify coupon use, as does the operating agency. Payments are made only when service has been used. The Regulation and Enforcement Division is used to investigate user complaints.

Under the user-side subsidy program, taxicab and lift-equipped van drivers are prohibited from questioning the eligibility of persons requesting service. However, they are requested to notify the administrator of the program of the Department of Transportation of any flagrant violations of eligibility; to date, none has been reported.

It is the opinion of the Department of Transportation that the transportation coupon program provides a greater degree of verification of eligibility than the dial-a-ride program.

CONCLUSIONS

The comparisons made in this paper would indicate that user-side subsidy service is far superior to dial-a-ride service. However, this is only true of the experience and service designs that have been used in Los Angeles. Both the dial-a-ride and user-side subsidy service designs have limitations.

The greatest shortcoming of the user-side subsidy approach is that it subsidizes exclusive taxicab-type service. Users are encouraged to ride together (group loading) in order to use their coupons more economically. However, no data have been collected to indicate that shared riding is occurring. On the other hand, dial-a-ride service is designed to achieve economies through prescheduling and group loading.

Dial-a-ride service in the Venice and West Central areas was operated by a taxicab company. The Department's experience indicates that taxicab com-

panies that use standard taxicab dispatching and scheduling techniques cannot achieve the type of efficiency that will result in a cost per passenger that is competitive with user-side subsidy programs.

Currently, even with limited funding, the user-side subsidy services operated in the Venice and

West Central service areas are providing more than 2.5 times the number of trips at nearly one-half the cost per passenger as the previous dial-a-ride services.

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