

# Mobility Training Program: Methods and Costs of Teaching Mentally Retarded Persons to Ride Public Mass Transit in Sacramento

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## ABSTRACT

An examination is presented of the Mobility Training Program that was implemented in Sacramento, California, in response to an increasingly common phenomenon: the influx of mentally retarded clients of social service agencies to special efforts paratransit systems. In this instance, mobility training was initiated through the cooperative efforts of local special efforts providers, the regional transit agency, and various social services and was designed to divert mentally retarded users of paratransit to the fixed-route bus system. As is typical of most training programs, a high rate of success was attained. Ninety-five of the ninety-seven clients accepted for training achieved independent travel ability. Eighty-five clients have continued to use the fixed-route system. Although the procedures followed in training clients remain constant, per capita training costs vary widely among different training programs. Therefore, the costs of mobility training in Sacramento are examined closely to determine how different strategies and policies affect both the cost and the cost-effectiveness of mobility training. The administrative location of training in the metropolitan planning organization increased the overhead cost. However, labor policies permitting the use of paraprofessional trainers on a part-time basis, plus instruction practices that emphasized training at frequent intervals and exclusively during bus travel, greatly minimized the direct costs of training. Therefore, the cost of training in Sacramento was less than costs reported for some other programs. In addition, mobility training plus subsequent travel is far more cost-effective than other special transit supply options in the Sacramento regional transit service area.

During 1982 the Mobility Training Program (MTP) in Sacramento trained ninety-five adults, of whom all but five were mentally retarded, to travel independently on the fixed-route bus system. The MTP was initiated through the cooperative planning of special efforts transit providers and local social service agencies, and financed by state funds dedicated to special transportation needs. The purpose of training retarded persons was to reduce the demand of these citizens for peak-period subscription-type travel on local special efforts and human services specialized transit modes.

The circumstances that prompted recourse to mobility training in Sacramento are not unique. A rel-

atively recent influx of mentally retarded patrons onto various special efforts paratransit systems has severely tested the ability of some of these systems to preserve previous levels of demand-responsive services. Although social and human service agencies have been the usual providers of mobility training, the recognition that mobility training permits the substitution of much less expensive mass transit modes for costly paratransit services has induced local special efforts systems and community organizations to inaugurate training programs in Detroit and Oakland, as well as Sacramento, that have been funded or in other ways supported by regional or state transportation agencies.

This paper, therefore, is addressed to three different audiences who might wish to undertake or to support mobility training for transit-disabled persons in their communities:

- Social service agencies whose transportation expenditures have preempted the provision of primary services to their clients;
- Paratransit systems that are operating at capacity and therefore wish to divert patronage to fixed-route modes in order to serve the unmet transportation needs of persons for whom mobility training is not appropriate; and
- Fixed-route transit systems, whether or not subject to federal or state accessibility directives, who seek to address the mobility needs of transit-handicapped persons in a manner that can increase route productivity without the need for costly operational or equipment modifications.

First, what mobility training is, why it is needed, and for whom it is appropriate are outlined. Then the implementation of the MTP and the training procedures that were used are described. Third, the cost components of mobility training at the MTP, including costs that are attributable to the strategies used to implement training, as well as costs that are related to client characteristics are discussed. Fourth, the cost-effectiveness of the MTP is examined in relation to the costs of alternative transit supply options. The last part of the discussion is devoted to policies and perceptions that limit the service-effectiveness of mobility training.

Because of the scarcity of published information about mobility training, especially information presented from a transportation planning perspective, data from other training programs have been included to more fully illustrate some of the issues examined in this paper.

## CATALYSTS FOR MOBILITY TRAINING: NEED AND ABILITY

Mobility training is a generic, nonmodal specialized transportation service that provides personal instruction in travel skills to enable people to use

conventional fixed-route transit in an independent fashion. Mobility training programs for the retarded have been adapted from earlier training programs created for the blind and have retained a basic emphasis on pedestrian skills and route recognition (1). Persons who are mentally retarded, who can also be described as developmentally disabled, reveal significantly subaverage intellectual ability and deficits in adaptive behavior that are manifested during the developmental years (2). Therefore, mobility training for mentally retarded persons emphasizes instructional techniques that overcome the cognitive barriers--poor visual acuity, deficient verbal skills, retention difficulties--that can prohibit their use of mass transit. A more complete discussion of the various travel barriers that confront the mentally retarded is available in an earlier paper (3).

As noted elsewhere, it is unclear to what extent mentally retarded individuals are represented in the data enumerating the national population of travel-handicapped persons (4-6). Nonetheless, mentally retarded persons should figure prominently in the national count of the nominally transit disabled. This is due to the fact that 3 percent of all U.S. citizens, nearly 7 million persons, will be identified as mentally retarded at some point during their lives (7).

#### Demand for Paratransit Services

In the 1970s mentally retarded persons became the focus of federal and state expenditures that resulted from various legislative mandates [e.g., Intermediate Care Facilities for the Mentally Retarded, 1972; Rehabilitation Act, 1973; Supplemental Security Income, 1974; Education for All Handicapped Children Act, 1975 (8)]. Consequently, social service administrators have observed that transportation has emerged as a critical factor in enabling mentally retarded clients to take advantage of the community-based educational, rehabilitative, and vocational programs made newly available to them (9-14).

Encouraged by low-fare or no-fare policies, social service agencies have become increasingly, and in some instances overwhelmingly, dependent on the most costly mode of travel for their mentally retarded clients: door-to-door demand-responsive services provided by special efforts systems. For example, more than one-third of the special efforts systems' ridership of the Southeast Michigan Transportation Authority (Detroit), Houston, and Fort Worth, and more than half of the ridership of Getabout, in southern California, is comprised of mentally retarded users (5,6).

Estimates of national or local costs of transportation services for the transit-handicapped are highly problematic. It has been noted that, in general, expenditures for transportation services by social and human service programs have been extremely difficult to differentiate from other program costs (5). However, cost data obtained from a recent study by the Department of Developmental Services (DDS), which represents approximately 56,000 mentally retarded persons in California, does suggest the magnitude of transportation spending for these citizens. For example, continuing a recently established trend of sharply escalating costs, the DDS spent a minimum of \$20 million in fiscal year 1982 for purchased transportation, predominantly door-to-door specialized services, for more than 12,000 mentally retarded clients (13). These clients represent less than 2 percent of the 604,931 state residents identified as transit handicapped by the

1980 Census of Population and Housing. Yet, expenditures by a state agency, which represents a single category of special needs recipients, exceeded the total (\$19 million) state funds allocated by the California Transit Development Act to address the transportation needs of all transit-handicapped Californians.

The DDS has uncovered instances where transportation costs for some individuals are inordinately high. In the most extreme case paratransit service for one client cost \$112 per day, approximately \$28,000 per year. Furthermore, the payment of premium fares has not guaranteed the provision of superior levels of service: round-trip fares of \$66, \$72, and \$84 have been charged for clients who must spend 3 to 4 hr daily in transit.

Currently the DDS has issued policy recommendations favoring mobility training, when feasible, over the purchase of specialized transportation services (13). It seems probable that, if and when more agencies explicitly examine the costs of transporting their clients, mobility training will be more widely instituted as an alternative transportation measure.

#### Latent Independent Travel Ability of Mentally Retarded Persons

In 1972 the President's Committee on Mental Retardation asserted that at least 89 percent of all mentally retarded persons can be successfully mobility trained (14). The high rates of achievement attained by all programs described in the literature attest to this claim: 99 percent of 140 clients trained at the Center in Mental Retardation in Los Angeles (6), 98 percent of the 97 clients from the MTP, 80 percent of the clients from the Ray Graham Center in Chicago (15), and more than 72 percent of the 68 clients trained by the Wayne County Association for the Retarded in Detroit (16) were successfully taught independent travel skills during each program's first year of operation. Between 1972 and 1982, 85 percent of the children trained by the New York City Board of Education acquired proficiency in independent travel (17).

However, no criterion is available that can be used alone to preselect successful candidates for mobility training or even to restrict eligibility for special transportation services; intelligence quotients certainly are not useful. Psychometric measures have been emphatically rejected as invalid for predicting the probability of whether a higher-functioning individual can be successfully trained (1,16,18). Only 3 percent of all mentally retarded persons can be uniformly regarded as intrinsically incapable of training because they are profoundly retarded; that is, their IQs range from 0 to 20 points (14). However, even here it is the exception that tests the rule: The Wayne County Association for the Retarded successfully trained a severely retarded person with an IQ of 20 to travel a route in the city of Detroit that required him to transfer between buses (16).

Similarly, just as it has been impossible to predict what personal or intellectual characteristics permit the retarded person to successfully adjust to living and working in the community (7), it has been difficult to determine the prerequisite attributes of the successful mobility training candidate. For example, the DDS attempted unsuccessfully to statistically differentiate 216 successful candidates from both the MTP and the East Bay training programs from a sample population of 2,505 mentally retarded counterparts who had not undergone training (13).

The DDS did, however, subjectively isolate 20 attributes of 216 mobility-trained persons. These attributes are believed to correlate with successful mobility training (10). The mentally retarded mobility-trained person

1. Is not profoundly retarded,
2. Is not severely impaired by cerebral palsy,
3. Is not severely impaired by epilepsy,
4. Does not have combined severe loss of hearing and vision,
5. Is ambulatory or moves independently in a wheelchair,
6. Is toilet trained,
7. Has control of bladder during the day,
8. Has control of bowels during the day,
9. Has not caused serious physical injury within the past year,
10. Does not have a major problem with self-injurious behavior,
11. Does not cause serious property damage,
12. Does not have a major problem with running away,
13. Does not inappropriately undress self in public place,
14. Is not overly resistive,
15. Is able to associate time and events,
16. Is able to keep attention focused on a single activity,
17. Is able to follow safety rules,
18. Remembers instructions,
19. Has either verbal or nonverbal expressive language, and
20. Has either verbal or nonverbal receptive language.

These attributes are believed to correlate with successful mobility training. Although intuitively reasonable, this list is not a valid preselection tool; virtually the entire non-mentally retarded mass transit ridership could safely be presumed to meet the criteria. Furthermore, the high rates of success reported by training programs suggest that such selection tools are superfluous, if only because it is probable that only those candidates who are regarded as likely to succeed are referred for training. In addition to innate ability, the variables that currently determine selection for training are the individual's proximity to transit, the approval of parents or guardian, and the individual's need for transportation to a particular destination.

#### MOBILITY TRAINING PROGRAM

##### Background

Sacramento County is a low-density, largely suburbanized region with a population estimated in 1980 to be approximately 783,381 (19). The city of Sacramento, the urban center, has 275,741 residents. The population density of the city, 2,981 persons per square mile, is six times greater than that of surrounding communities. The average density of the countywide area is 709 persons per square mile.

Two aided transit systems operate under the aegis of the Sacramento Rapid Transit District. Both systems, Regional Transit (RT), the fixed-route bus system, and Paratransit, Inc. (PI), the special efforts system, are the major suppliers of specialized paratransit services. A total of 1,310 one-way trips per weekday are provided by RT and PI. Approximately 85 percent, or 1,113 trips, are taken by mentally retarded clients of social service agencies.

Regional Transit, which serves the county of Sacramento, supplies 70,000 trips daily on a fleet of

240 buses (23 of which are lift-equipped). From its fleet RT also operates the RT Special, a specialized fixed-route service used exclusively by mentally retarded patrons who are sponsored by the Sacramento Association of Retarded Citizens. The RT Special serves 350 people on eight routes during off-peak hours and provides approximately 716 one-way trips per weekday to congregation sites.

Paratransit, Inc., supplies advance-notice, demand-responsive, and subscription doorstep services to the frail elderly and physically disabled, in addition to the mentally retarded, within Sacramento city limits. Twenty of PI's 28 vehicles are lift-equipped. In fiscal year 1981 PI provided an average of 594 trips per weekday and 54 trips per weekend day.

The circumstances that prompted the implementation of mobility training in Sacramento confirm the more general observation that claims for service by special users, which are addressed through community-based planning and financed through dedicated funds, constitute a significant impetus for the adoption of paratransit innovations (20). Regional Transit, PI, and various social service agencies formed a coalition to institute mobility training as a means of reallocating existing systemwide demand for paratransit service by diverting mentally retarded users to RT's conventional bus service. In Sacramento, limited paratransit capacity adversely affected providers and consumers of special transportation services. Both the RT Special and PI had waiting lists for their subscription services. Moreover, PI's overall capacity had become increasingly devoted to subscription travel, to the detriment of elderly or physically handicapped patrons with more occasional needs for travel. Before the MTP was begun, PI was unable to fulfill 35 percent of trip requests for demand-responsive services (21).

Regional Transit formally submitted the proposed training program to the California Department of Transportation. The Secretary's Discretionary Fund for Public Transportation Needs, created by Senate Bill 620, supplied the grant monies. Regional Transit subcontracted the grant to the Sacramento Area Council of Governments (SACOG), the metropolitan planning organization, who implemented the MTP during a 1-year demonstration period.

The SACOG organized the Mobility Training Advisory Committee (MTAC) to assist the development of the MTP and to oversee the conduct of training. The following agencies participated: RT, PI, Alta California Regional Center, the California Department of Rehabilitation, the Community Services Planning Council, the Easter Seal Society, Goodwill Industries, the Developmental Disabilities Council, Resources for Independent Living, the Sacramento Association for the Retarded, Training Toward Self-Reliance, and United Cerebral Palsy. The committee met monthly and proved to be a fruitful source of client referrals. Training began in January and concluded in September 1982. The MTP is currently administered by PI on a fee-for-service basis.

##### Instruction

A uniform training curriculum is dictated by the cognitive attributes of mentally retarded persons and by the need to ensure client safety. Therefore, virtually all reported training programs, including the MTP, rigorously adhere to training procedures that include the following elements: instruction in pedestrian and pre-mobility skills and emergency procedures, one-to-one instruction on the fixed-route mode until the client achieves mastery of the route, and covert observation of the client from a separate

vehicle when the client first travels alone (1,3,11, 15-18,22,23).

During the first year 97 clients were accepted for training. Thirty-three percent of these clients were diverted from the RT Special; 15 percent were diverted from PI's subscription service. Over half, 52 percent, of the clients had relied on served trips from family members before training.

To be accepted for training the client had to meet several eligibility criteria. She or he had to be ambulatory (assisted by walking aids if necessary), sighted, able to sit and stand unassisted, able to communicate name, address, and telephone number (or display printed information), able to communicate needs if verbal, and able to display acceptable social comportment.

Before instruction began, the trainer examined the route to be taught locating bus stops and identifying, and perhaps photographing, landmarks that indicated destinations or transfer points. The trainer also prepared documents for the client, including emergency identification and route cards in addition to bus passes.

The client's premobility skills were evaluated by the trainer in the client's home. This assessment accomplished two purposes. The first objective was the diagnosis of the client's idiosyncratic strengths and deficits in travel and pedestrian skills so that an appropriate training regimen could be devised. The second, more subtle, purpose of the home-based interview was the introduction of the trainer to the client in familiar, reassuring surroundings. This allowed the trainer to identify, and perhaps alleviate, any fears for the safety of the client disclosed by the family or care provider.

Training was conducted on the route at the times needed for travel so that disruptions in the client's attendance at workshops or programs were avoided. Contact between the instructor and the client was frequent, usually twice daily, so that newly learned skills could be quickly reinforced. More details concerning training will be presented later. However, a comprehensive explanation of the training process used at the MTP, as well as descriptions of the specific disabilities attendant to mental retardation, is available in the MTP Mobility Training Handbook (23).

**COSTS OF THE MTP**

The uniform character, noted earlier, of training procedures employed by various training programs contrasts sharply with the diversity and flexibility displayed by these same programs in how mobility training has been implemented. Training, to date, has been administered in diverse institutional settings, under various funding arrangements, on different scales of magnitude, and used different labor policies. The variability evinced in the ways mobility training has been undertaken is accompanied by variation in training costs among programs. Costs range from \$288 per person, reported for the Center in Mental Retardation in Los Angeles (6), to nearly \$1,800 per person, reported by the Wayne County Association for the Retarded in Detroit (16).

Some portion of the disparity between per capita costs of training is probably attributable to differences in clients' abilities or in the learning difficulties presented by particular transit systems. However, some of the disparities in cost may reflect inefficiencies in the conduct of training. In this section what the MTP cost and why are examined carefully to identify policies and strategies that will minimize the cost of training so that more individuals can be trained per dollar amount of investment.

**Training Cost Components**

The ratio of the total number of persons successfully trained, 95, to the full cost of training, \$65,700, yields a per capita cost of training of \$692 for the MTP. Table 1 shows both the reconstructed full costs and the expenses of the MTP. All training was performed during travel, and there were no vehicle or equipment purchases. Therefore, direct and indirect services were the only cost components.

It was observed that some social service agencies may underestimate the need for, and therefore the costs of, overhead for mobility training. The majority of both costs and manhours expended for training at the MTP was devoted to the performance of many important indirect services: accounting, monitoring, program start-up, hiring and orientation of trainers, marketing, preparation of the training manual, data collection, route selection, client assessments, and obtaining bus passes.

**TABLE 1 Training Cost Components of the Mobility Training Program**

	Direct Costs (\$)	Indirect Costs (\$)	Total Costs (\$)
Salaries	18,500.00	25,250.25	43,750.25
Benefits			
Office rent			
Utilities			
Communications			
Supplies			
Books			
Data processing <sup>a</sup>	0.00	14,199.75	14,199.75
Memberships <sup>a</sup>			
Legal Services <sup>a</sup>			
Consultants <sup>a</sup>			
Mileage	3,957.00	0.00	3,957.00
Printing	793.00	0.00	793.00
Total grant expenses	23,250.00	39,450.00	62,700.00 <sup>b</sup>
RTD-donated bus passes	3,000.00		
Full costs	26,250.00	39,450.00	62,700.00

<sup>a</sup> Indirect expenses of SACoG that were not incurred by the MTP.  
<sup>b</sup> Standard accounting procedures (direct labor costs constitute the basis against which indirect costs are charged) were used by the Sacramento Area Council of Governments to derive the expenses of the MTP (23).

Table 2 shows how financial costs were allocated among direct and indirect services. Indirect services cost \$39,450, an amount representing 63 percent of total financial costs. Although trainers performed several indirect services (client assessments, route selection, data collection), their salaries were treated entirely as a direct cost. Spending for training clients, the only direct service, was altogether \$23,250, approximately 37 percent of the total financial cost. This dominant relationship of indirect to direct costs manifested by the MTP would probably hold true for any training endeavor, regardless of total program expenditure.

**Impact of Institutional Setting on Training Costs**

The MPT exemplifies the general observation that the provision of paratransit services by large organizations, which possess a complicated management infrastructure, imposes a burden of overhead costs for administration; such costs will preempt funds that could better be used for service delivery (20).

The administration of the MTP by SACoG increased total costs in two ways. First, the MTP was located in a large, diverse agency that practiced standard accounting procedures whereby direct labor costs constitute the basis against which indirect costs

TABLE 2 Labor and Cost Inputs Allocated by Staff Level

Staff Level	No. of Persons	Manhours			Expenditures		
		Avg Hours per Person	Total Hours	Percentage of Program Total	Avg Hourly Expense per Person (\$)	Total Expense (\$)	Percentage of Program Total
Indirect							
SACoG	7	74	519	8	43.95	22,810.61	36
Project coordinator	<u>1</u>	1,884	<u>1,884</u>	<u>28</u>	8.83	<u>16,639.39</u>	<u>27</u>
Subtotal	8	300	2,403	36	16.42	39,450.00	63
Direct							
Trainers	<u>6</u>	714	<u>4,287</u>	<u>64</u>	5.42	<u>23,250.00</u>	<u>37</u>
Overall	14	477.9	6,690	100	9.37	62,700.00	100

are charged. The salaries and expenses of the trainers were assessed for some of SACoG's overhead expenses that did not correspond to actual training costs. Therefore, overhead expenses not incurred by the MTP, such as data processing, memberships, legal services, and outside consultants, were cross-subsidized by the MTP grant funds.

More critical, overhead costs were increased by the participation of senior staff members of SACoG in the MPT. As shown in Table 2, seven full-time administrative SACoG staff members, most of whom were highly compensated in terms of salaries and benefits, devoted, on a part-time basis, a total of 519 manhours that were billed to the MTP. Although these individuals contributed 8 percent of the total of 6,690 manhours expended on the MPT, the average hourly cost of their services, \$43.95, totaled \$22,810.61, which represented 36 percent of the total grant monies of \$62,500. The project coordinator, who was hired for the exclusive purpose of supervising the MTP, was the only SACoG staff member involved full time in the training project. However, she contributed over 78 percent of the manhours required for administration at an average hourly cost of \$8.83, less than 43 percent of the total overhead cost of \$39,450.

Finally, the assertion that the appropriate framework for paratransit implementation seems to be the community, the workplace, and the social service center (20) is applicable to the MTP in its current location. Using the same instructional techniques and the same labor practices, but now located at PI, mobility training currently costs approximately \$500 per person (recovered through a fee for service), nearly 28 percent less than the per capita cost of \$692 for training administered through SACoG.

#### Deployment of Direct Labor and Minimization of Costs

Despite the costs imposed because of institutional location, substantial cost savings were achieved in the hiring and deployment of direct labor because of low wages, variable hours, and training practices. Six part-time paraprofessionals performed all of the training as well as several administrative duties. Trainers were paid salaries and expenses but no benefits. Direct labor costs, \$5.42 per hour, were consequently low. Trainers contributed 63 percent of the total manhours for the MTP, but incurred only 37 percent of the total financial cost (Table 2).

If a professional training staff had been deployed at the MTP, total program costs would probably have been doubled without a commensurate increase in the number of clients trained. As more clients are mobility trained, the issues of risk or liability associated with the use of paraprofessional trainers may become increasingly important. It is important to note, however, that special edu-

cation professionals have endorsed the use of non-professional trainers as a way to substantially reduce training costs (11). Of course, the supervision of training by qualified persons is imperative.

The critical minimization of costs, however, was accomplished by the deployment of instructors on a part-time, variable basis. Training capacity, or manhours, corresponded directly to the availability of clients for training. Therefore, the direct costs of training varied according to daily, weekly, or even seasonal fluctuations in client intake (fewer referrals are received during holiday seasons; inclement weather disrupts training; no-shows occur because of illness).

#### Training Practices, Client Characteristics, and Costs

Although comparable data are not available from other programs, the MTP minimized instruction time because of the following practices: All training was conducted on the bus and at frequent intervals. Training required an average of 25 hr per client. An average of 12 one-way trips (at an average trip length of 5 miles) was taken by the client during training. Training was usually completed within a week to 10 days.

It has been asserted that group instruction at one site reduces the overall costs of training (22). However, unless the subjects of training are children in a classroom, or more severely handicapped adults who need extra instruction in pre-mobility skills, group training is believed to be redundant. Skills must be retaught when bus travel begins. Moreover, group instruction may encourage a commitment to more expensive strategies, such as hiring full-time professionals or purchasing equipment, as well as require a facility, which might offset the economies of scale attained by an enlarged instructor-to-pupil ratio.

Despite the likelihood of ultimate success, client characteristics, such as the severity of retardation or the presence of other handicaps, can and do influence the amount of effort required to train different clients. This may cause per capita costs of instruction to vary greatly within one program. For example, the cost of training paid by the Lanterman Regional Center in Los Angeles ranged from a minimum of \$140 to \$3,888 spent to train one person who was both blind and mentally retarded. Her training required over four times the mean cost of \$891 spent in training 24 other retarded clients in the program. Similarly, the MPT expended 120 hr to train one individual who was retarded and deaf.

It is noteworthy that multiply handicapped retarded persons can be mobility trained. And, even though the cost of training is substantially increased, it may be more cost-effective to train

these individuals than to continue supplying them with specialized transportation.

#### EVALUATING THE EFFECTIVENESS OF MOBILITY TRAINING

The ability of the individual to learn independent travel skills and his or her propensity to use fixed-route transit after the completion of training together represent the sum and substance of any mobility training endeavor. Accordingly, it is appropriate to address questions that social service agencies or special effort providers might have concerning the wisdom and financial risk of investing in mobility training for mentally retarded persons: What risks do clients incur during training and subsequent travel? How long are travel skills retained? What additional costs are required for further training, if it is necessary?

#### Risks and Benefits of Independent Travel

To date, one client of the MTP has been injured as a consequence of using public transit. After the completion of training and 8 months of continuous travel she was struck down and her leg broken when she ran in front of a car when hurrying to catch her bus. This accident is the only known incident of travel-related physical injuries sustained by a mentally retarded person who has been travel trained. Mobility training programs have excellent safety records to date, and no actuarial data are available that would suggest that mentally retarded public mass transit patrons are subject to greater risks than are users of normal intelligence.

The inherent risk does exist that mentally retarded persons who use public transportation modes to pursue normal activities in the community will be more vulnerable to accidents than if they remained in protective care and were transported on closed systems. Nonetheless, the risks are compensated by the benefits to the client of increased mobility that may open new employment and recreational opportunities, as well as the substantial gains in social competence, initiative, and self-confidence noted in the clients of the MTP.

#### Retention of Travel Skills

The travel behavior of clients trained at the MTP suggests that the risk that a retarded person will simply forget critical travel skills is low. A survey of clients conducted 3 months after the demonstration period ended in September 1982 showed that 85 of the 95 clients who completed training continued to use RT buses on a regular basis. In a very few instances trainers spent additional time with clients after independent travel had begun. However, this was done to allay the fears of parents, not because the clients actually needed to be retaught route skills. A client who withdrew from travel for a while might need some retraining. But it has been noted elsewhere that clients who did not travel after the successful completion of training retained their travel skills for at least a year (22).

However, 25 graduates of the MTP did have to be trained on new routes because RT rerouted its buses. For these 25 persons, all of whom were retarded, additional training required only 20 percent of the initial training time of 25 hr. Instead, these individuals needed an average of 5 hr of instruction that required two one-way trips (usually in a single day). This suggests that most of the initial train-

ing involves the learning of generic travel skills that the individual can later transfer to learning new routes. Through the addition of more routes to an individual's repertoire, his or her mobility can be significantly enhanced with a small incremental increase in overall cost.

#### Cost-Effectiveness of the MTP

Both the percentage of clients who are successfully trained and the percentage of clients who continue to use transit after training is completed constitute fundamental measures of mobility training performance. Both measures embody, to some extent, the relative cost-effectiveness of different training programs. The second measure, the posttraining use of transit, will be used here to compare the cost-effectiveness of mobility training and subsequent travel with alternative transit supply options that are available in the Sacramento public transit service area.

An incremental cost per trip has been calculated for mobility training so that the costs of other transit systems can be compared. It is assumed that the 85 clients who were using RT 3 months after the end of the demonstration period will continue to do so on a daily basis. Therefore, the trip rate for travel during training and for subsequent independent travel is postulated to be 504 one-way trips per year. Finally, the per capita cost to train of \$738 (the quotient of the full costs of training, \$65,700, divided by the 85 actual users) is amortized over the annual trip volume of 504 one-way trips yielding an incremental cost of training per trip of \$1.41.

Table 3 shows the full costs, the user costs, and the net transit subsidies of other transit options in relation to mobility training. Comparing the ratio of the combined full costs of both training at the MTP and travel on RT with the full costs of other transportation services reveals the opportunity costs to taxpayers of providing individuals with paratransit who instead could or should be mobility trained. For example, the opportunity cost ratio of the full cost of training and travel to the full cost of PI service is 2.75. This means that, for the cost of supplying one person with travel on PI, at least two persons could be diverted to RT. If all 85 clients continue to travel after the first year, the full cost becomes travel on RT, and the opportunity costs relative to specialized services increase correspondingly. The opportunity cost ratios of the full cost of services on the RT Special and on PI to the full cost of conventional bus service would then become 1.42 and 5.98, respectively.

The cost-effectiveness of mobility training is more striking when evaluated from the perspective of the regional transit agency, the Sacramento Rapid Transit district. Regional Transit donates the travel of both trainers and clients during training and sells handicapped users passes to clients who continue to travel. The net transit subsidy for the first year of training and travel on RT is \$0.92 per one-way trip, an incremental increase of only \$0.05 over the average subsidy of \$0.87 per trip for handicapped users (who do not require wheelchair lifts). Furthermore, the net transit subsidy to divert mentally retarded users is only 15 percent of the subsidy of \$6.47 per trip for PI. This implies that the opportunity costs of not training are significant for the Sacramento regional transit system: the foregone productivity of one passenger on PI is seven passengers who could be trained to use RT.

TABLE 3 Comparative Costs of Sacramento Rapid Transit District Supply Options

Mode	System	Full Cost		Price to User		Net Transit Subsidy	
		Per One-Way Trip (\$)	Total per Passenger per Year (\$)	Per One-Way Trip (\$)	Total per Passenger per Year (\$)	Per One-Way Trip (\$)	Per Passenger per Year (\$)
Conventional Transit							
Fixed-route bus	Regional transit	1.25	630	0.35	192	0.87	438
Specialized Transit Services							
Mobility training plus fixed-route bus	MTP and Regional Transit	2.71 <sup>a</sup>	1,366	1.76 <sup>b</sup>	902	0.92	464
Specialized fixed-route subscription bus	Regional Transit Special	1.77	892	0.50	240	1.27	652
Demand-responsive & subscription paratransit	Paratransit, Inc.	7.47	3,765	1.00	504	6.47	3,260

<sup>a</sup> \$2.71 is the combined costs of \$1.25 per trip and the incremental cost (\$1.41) of mobility training. \$1.41 = \$738.00 (the full cost to train one person who continues to use transit)/504 one-way trips (the presumed base trip volume for one client during the year of training and travel).

<sup>b</sup> \$1.79 = \$1.41 (incremental cost) + \$0.35 (user charge). Note that other costs in the price column are actual revenues generated by user fees that are charged on a monthly basis (e.g., Regional Transit sells a handicapped user pass for \$16.00 monthly).

### Service-Effectiveness of Mobility Training

Despite the cost-effectiveness of training, the demand for training has been low. The Department of Developmental Services for the state of California reports that a total of 451 mentally retarded persons (including the clients of the MTP) have been trained out of a statewide caseload of 56,000 persons 16 years of age or older and living in the community (13).

Two factors reduce the demand for training. As data in Table 3 suggest, for social service agencies the relevant costs governing the decision of whether to mobility train clients may be the prices charged for alternative special transit services rather than the full costs of providing them. For example, social services in Sacramento must now pay for mobility training and for the user passes for RT; the cost for both exceeds the costs to the users of the other specialized transit services. Thus there may be little cost incentive to train clients if special efforts systems are effectively in competition with providers of mobility training.

More important, it has been noted that parents are likely to oppose the attempts of social service agencies and schools to teach their retarded offspring skills that prepare them for a normal life in the community (24). In keeping with this tendency, parents are especially prone to oppose mobility training; training programs often identify parental resistance as a major difficulty (15,16,18,23).

A significant amount of parental reluctance inevitably affects both the effectiveness of training and, indirectly, the costs by preventing qualified individuals from being trained, inducing an overly cautious approach to training that results in more hours of instruction than necessary to learn skills, and preventing successfully trained clients from continuing independent travel. At the MTP only one parent prevented her successfully trained daughter from subsequently traveling on RT. However, in Detroit 11 of the 48 clients who were successfully trained were not allowed by their parents to continue to travel on city buses despite the special care taken and the success achieved in ensuring the safe travel of the clients (16).

### CONCLUSION

The MTP has demonstrated that mobility training can be an inexpensive auxiliary transportation service that promotes the use of fixed-route transit by handicapped persons who would otherwise patronize special efforts systems. Although strictly compar-

able data are either cryptically presented or omitted from the training literature, it does appear that the MTP successfully trained retarded persons in less time and at lower cost than did other programs, due in part to the training regimen and the labor policies applied to instructors.

So that various training results can be compared and more efficient training practices developed, providers of mobility training should more rigorously collect and report training data. It would be useful if variables related to client traits, transit mode service characteristics, and teaching methods were correlated with the rate of success and the amount of time and money required for training. Furthermore, the travel behavior of mentally retarded persons should be evaluated both before and after training, as well as be compared with the travel behavior of retarded persons who remain patrons of special transportation services, to determine the impact independent travel ability may have on mobility, on the substitution of fixed-route modes for paratransit, on induced tripmaking, and on the ability of the person to secure competitive employment and better living arrangements in the community.

This information would be particularly enlightening for federal and state transportation policy makers who are currently investigating cost-effective responses to the needs of the transportation handicapped. Careful and comprehensive reporting of mobility training will ensure that it is included in the body of recognized transit supply options and that the tripmaking needs and patterns of mentally retarded persons are distinguished from those exhibited by other subgroups of the transportation handicapped.

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