The pressing need for uniform data reporting and accounting procedures has been noted by officials at many levels of government. In order to serve more than one agency, a transportation provider must frequently comply with distinct accounting and record-keeping procedures for each agency. In addition, billing structures and methods of billing for transportation vary from program to program and agency to agency. These variations may lead to confusion on the part of clients, providers, and agency administrators (5).

Several demonstration programs are currently under way to address these billing and accounting issues (1,5). The presentation of the seven charging procedures described in this paper should aid in the design of model administrative structures that, under the mandate of the demonstration programs "...should be flexible enough to allow transportation providers to report information in formats familiar to the transportation industry, and yet consistent with the mandated regulatory requirements of human service programs" (5).

ACKNOWLEDGMENT

The work reported in this paper was sponsored by the Office of University Research, U.S. Department of Transportation. The assistance and guidance of project monitors Raymond Benacquista and Douglas McKelvey of FHWA are gratefully acknowledged. We wish to extend special thanks to Paul McOwen of Mount Grace Regional Transportation Corporation, Loretta Sharpe of Regional Transportation Program, Inc., and Nanci Duetzman of the Eastern Task Force on Aging. The opinions and conclusions expressed or implied in this paper are ours.

REFERENCES

1. Improving Transportation in Rural America. White House Rural Development Initiatives, June 1979.
2. Hindrances to Coordinating Transportation of People Participating in Federally Funded Grant Programs. General Accounting Office, Washington, DC, Vol. I, Oct. 17, 1977.
3. S. Rosenbloom, A. Pio, and H. Dittmar. A Planning Manual for Social Service Agency Transportation Providers. UMTA, Nov. 1979.
4. J. Collura and R.P. Warren. Regional Paratransit Services: An Evaluation. Transportation Engineering Journal, Proc., ASCE, Vol. 105, No. TE6, Nov. 1979, pp. 683-697.
5. Transportation Services: An Examination of the Regulatory Problems in Medicaid and Social Service Programs. Office of Human Development Services, U.S. Department of Health, Education, and Welfare, Jan. 1980.

Mobility Training for the Retarded: An Issue of Public Transit Accessibility

JANE KAMMERER STARKS

The ability of the retarded to travel independently by public transit, particularly buses, has been demonstrated to have two positive results: (a) Institutions that provide services or custodial care for the retarded can reduce or eliminate the expense of providing special transit services for their clients, and (b) retarded individuals who can travel independently are thereby able to work in the community and become self-supporting, which furthers the national goal of deinstitutionalization. Travel training significantly improves the accessibility of public transit to the retarded. Travel training for the retarded is examined within the context of federal mandates for program and vehicle accessibility with respect to public bus transit. Local transit authorities have not recognized their responsibility to provide travel training in order to remove the barriers to accessibility experienced by the retarded because the retarded have not been recognized at the federal level as a distinct transportation-handicapped group.

The American Association on Mental Deficiency defines retardation as the expression of "significantly subaverage general intellectual functioning existing concurrently with deficits in adaptive behavior and manifested during the developmental period" (1). Retardation is etiologically diverse: More than 200 causes have been identified, although 75 percent of all cases cannot be explained. Retardation can be engendered in the individual by trauma, infectious disease, exposure to toxins, poor maternal and infantile nutrition, chromosomal abnormalities, hereditary and spontaneous metabolic disorders, and emotional deprivation (2). Genetic, metabolic, and environmental factors may function singly or in combination to induce retardation during the gestation, infancy, or early-childhood phases of life.

Persons afflicted with retardation comprise approximately 6 million individuals, or 3 percent of the total population of the United States. Yet, despite their handicap, 5.4 million, or approximately 89 percent, of all the retarded should successfully respond to mobility training (3, p. 14). But current federal policy overlooks the transportation needs of the educable mentally retarded in this country, who constitute a large portion of the travel handicapped.

This paper examines means of addressing the needs of these citizens. First, the paper identifies the cognitive travel barriers experienced by the retarded and explains how mobility training can be a solution to overcoming them. The paper then identifies the system barriers of bus transit modes and explains how appropriate solutions can be fashioned. Finally, the paper discusses the institutional barriers that have prevented federal recognition of the retarded as a transportation-handicapped group.

Congress has sought to rectify the inequalities experienced by the transportation handicapped in the provision of transportation services and facilities by enacting several major statutes. The legislation produced by Congress that has resulted in the most controversy is Section 504 of the Rehabilitation Act of 1973. The Section 504 regulations are designed

to implement vehicle and program accessibility for the transportation handicapped.

The extremely high costs, incurred and projected, of compliance with Section 504 have inspired a congressional reappraisal of accessibility requirements. Currently, Congress is investigating altering the status of U.S. Department of Transportation (DOT) and U.S. Department of Health and Human Services (HHS)--formerly Health, Education, and Welfare--legislation. There is interest in transportation solutions to the needs of the handicapped that emphasize gains in mobility (i.e., improved efficiency in terms of expenditures) rather than accessibility. Recognition is growing, among the handicapped as well as legislators, that Section 504 legislation may have been hastily formulated without the benefit of adequate information about the actual travel behavior of the handicapped (4). An influential member of the activist handicapped movement attests the following: "There are...compelling physical reasons why subway and bus accessibility is an impractical concept. More importantly, in terms of equity it is an unjust concept" (5).

More sophisticated knowledge concerning the scope and varying degrees of severity of mental, as well as physical, handicaps is necessary to better inform federal and state policy. It is timely, therefore, to introduce into the current reevaluation a subject that has been consistently overlooked at the federal policy level: the transportation needs and abilities of the retarded. Independent travel for the retarded is a conjunct of both DOT accessibility requirements and the collateral goal of national deinstitutionalization of the retarded.

This paper focuses on the abilities and needs of the educable retarded because they constitute 89 percent of the total population of retarded individuals and because the retarded form the largest component of the developmentally disabled. The focus is on bus travel because it is the form of public transportation that the retarded are most likely to use in an independent fashion.

The acquisition of independent travel ability by the retarded is intrinsic to the national goal promulgated by President Nixon on November 16, 1971: "to enable one-third of the more than 200 000 retarded persons in public institutions to return to useful lives in the community."

VALUE OF TRAVEL TRAINING

A public awareness has emerged within the past decade that many individuals are institutionalized because the educational and social service resources that would assist their participation in normal community life have not been made available. Indeed, few of the retarded truly need or benefit from residential care (6). The American Association on Mental Deficiency estimates that 75 percent, or 150 000, of the institutionalized retarded are capable of independent or semi-independent work and living in the community.

The goals of deinstitutionalization are (a) to prevent the unnecessary admission of the retarded into residential-care facilities and (b) to return residents to the community accompanied by the minimum feasible amount of supervision and programming. The philosophy of deinstitutionalization "pertains to the right of an individual to receive treatment and programming in the least restrictive environment" (6, p. 126).

In 1972, the President's Committee on Retardation (3) conducted a study of the transportation needs of the retarded. They established that the ability to travel independently in the community is an essential corollary to deinstitutionalization.

Institutional and special-education professionals commonly classify the mentally retarded on the basis of both tested intelligence and social competence (6). The levels of classification include mild, moderate, severe, and profound retardation.

Mildly retarded individuals who score in the 50-70 point range of IQ tests are considered to be educable and capable of independence. They comprise 89 percent, or 5.4 million, of the national population of retarded individuals. They are good candidates for travel training.

Moderately retarded individuals fall into the 35-50 point range of IQ scores and are generally self-caring. They do require some degree of supervision in their work and living arrangements throughout their lives. However, they too are candidates for travel training.

Severely retarded individuals, those who score between 20 and 30 points in IQ tests, require residential care. Although not completely dependent, they are not candidates for travel training. The profoundly retarded score 20 points or less on IQ tests and are considered to be uniformly ineligible for travel training (3).

Although transportation is not suitable for the 3 percent of the retarded who are classified as severely or profoundly retarded, the applicability of mobility training is far more extensive than is known or practiced; the President's Committee on Retardation suggests that potentially 98.5 percent of the retarded (including both mildly and moderately retarded) would benefit from training in the use of both dependent and independent travel modes (3). Moderately retarded individuals with IQs greater than 35 respond successfully to travel training. If travel training were undertaken only for the 75 percent of the institutionalized retarded who are capable of benefiting from it, 150 000 individuals could be returned to community living.

The benefits of increased travel ability by the retarded would be fourfold:

1. Increased mobility would reduce institutional and social service costs by permitting a decrease in the expenditure required to provide alternative transportation for those individuals untrained in the use of fixed-route transit but who would respond to such training.
2. Increased independent travel by the retarded would allow more productive employment of retarded individuals in the community than is possible in cost-intensive sheltered workshops.
3. Independent travel ability would enable the retarded individual to make use of the recreational and educational resources available in the greater community.
4. A less tangible but equally important benefit is the significant increase in the retarded individual's self-esteem that results from sharing with normal citizens the ability to travel freely throughout the community.

The solution strongly recommended by the President's Committee--travel training--is endorsed by professionals who provide residential services for the retarded. These professionals give travel training equal priority with finding work and housing for the retarded. Unfortunately, most institutions cannot spare the personnel necessary to undertake a travel-training program for their residents.

TRAVEL BARRIERS FOR MENTALLY RETARDED

Before this paper examines how travel training can be provided, an understanding of retardation and the

travel barriers experienced by the retarded is needed. A study by the Urban Mass Transportation Administration (UMTA) noted that "the combined effect of various travel barriers is to keep people from using public transit when they might desire to do so if they could" (7, p. 15). This concept of "travel barrier" will be used throughout the rest of this paper.

The retarded individual is confronted by a unique configuration of travel barriers in his or her attempts to independently use mass transit. To ensure clarity, these travel barriers will be differentiated and defined as cognitive, system (bus-related mode), and institutional barriers. Because the three barriers fall into a natural progression from the particular to the general, cognitive barriers are dealt with first and institutional barriers are considered last. Pertinent solutions are included in the discussion of each barrier.

Cognitive Barriers to Independent Travel

Cognitive travel barriers experienced by the retarded arise from the intellectual limitations on travel ability imposed by mental deficiency. Examples are numerous.

Poor retention reduces the individual's ability to memorize routes, make transfers, and recognize disembarkment points. Poor visual acuity creates difficulties in distinguishing bus numbers, route names, and color codes. Conceptual problems involve the abstract notions of time and distance and create difficulties in comprehending fixed routes, schedules, fares, and transfers. Inadequate verbal skills, including poor speech ability and a lack of transit-related vocabulary, reduce the retarded individual's ability to request information or assistance.

Social incompetence results in the inability of the retarded to comport themselves in public because of a lack of knowledge about what constitutes appropriate behavior. In addition, being under a time pressure to make decisions can cause a retarded individual to disintegrate in a social situation, such as that occasioned by riding public buses. Diminished self-esteem, based on the retarded individual's unwillingness to expose his or her handicap in public, can cause a lack of the assertiveness necessary to seek assistance when required.

Spatial difficulties include a lack of geographic awareness. Geographers Davies and Carley (8) undertook a study of retarded residents of a state institution. They reported that these residents' incomplete awareness of the immediate environs of the institution and other urban areas served by transit effectively reduced their capacity to travel independently by any mode--bus, walking, or taxi. They concluded that increased familiarity with the urban landscape was an essential prerequisite to effective travel training.

Although equipment modifications to overcome some of the travel barriers experienced by the retarded are available, the President's Committee on Mental Retardation (3) recommends training passengers rather than modifying transit equipment. They point out that the modification of hardware would benefit only the small percentage of clients who are physically as well as mentally handicapped.

Travel-Training Programs as Response to Cognitive Barriers

Laus, the author of a unique text that deals specifically with mobility training for the educable retarded, stresses that the "message...is that when many of these cognitively impaired persons are provided with an appropriate training program, they are able to learn independent travel; many have already learned independent travel skills, and now we ought to expect many more to travel independently" (9, p. xi).

Travel-training programs for the retarded are generally adopted from earlier programs designed to provide mobility instruction for the blind. Laus (9) describes several programs that have reported success in training the retarded: the Tobias program, Cortazzo and Sansone, Kubat, and Laus. These programs share a curriculum that includes developing skills in fact identification, pedestrian techniques, handling money, and becoming familiar with the travel route.

Davies and Carley (8) stress training in the collateral areas of community orientation and pedestrian mobility as well as intracity transportation use. They also recommend on-site training as much as possible in order to develop experience with real situations, frequency of trips to reinforce previous lessons, a one-to-one ratio between instructor and pupil, and the granting of complimentary bus passes to instructors and their pupils.

Candidates for mobility training can be selected from among the educable retarded. Within this population, there are many individuals who have dual or multiple handicaps--e.g., brain injury, deafness, emotional disturbance, and speech impediments--that further complicate training endeavors. Interestingly, intelligence as it is represented by IQ scores is not a relevant criterion in selecting individuals who will respond successfully to travel training.

Laus (9) describes four requisites of candidacy:

1. The candidate should possess social competence. This means not only the ability to behave properly in public but also the ability to deal with unanticipated contingencies such as delays in departures and arrivals, detours, disorientation, unsolicited contacts with other passengers, and changing features in the landscape.
2. The candidate should demonstrate the capacity to learn basic routines, recognize the landmarks that signify disembarkment, and be able to tell time and exercise punctuality.
3. The candidate must be able to distinguish one particular bus from among many, whether by number, name, or color.
4. The last characteristic required of a candidate is imperative--the ability to behave assertively. The candidate must be emotionally able to seek assistance from the driver or from other passengers when necessary and to make decisions and then be able to act on them.

The selection of qualified candidates is critical to the overall success reported by travel-training programs. However, as the following example illustrates, cognitive limitations will always complicate in unforeseen ways the travel difficulties experienced by the retarded.

The Center for the Retarded in Houston, Texas, provides a mobility-training program specifically designed for those of their clients who use the public bus system to commute to their jobs in the community. One staff person is assigned exclusively to this program. The training procedure includes taking photographs of route landmarks to enable the client to recognize points of disembarkment and practice in riding the bus accompanied by the instructor. Finally, the client travels on the bus unaccompanied and the instructor follows by car to ensure that he or she has mastered the procedure.

In one instance, a client was so successful in

the training program that the last step--following the bus by car--was omitted. One of the landmarks (a billboard) that the client had been using to keep himself oriented to the route was changed on the day he took his first solo trip. He became disoriented and panicked, left the bus without taking along his identification or medication to control seizures, and was found by the police many hours later huddled in a ditch. Such failures, however, have been rare.

System Barriers

System barriers relate to the operations and equipment of a particular transit mode--in this instance, public buses. They include inadequate facilities, poorly designed information delivery systems that do not take into account the comprehension difficulties of the retarded (e.g., automated flashing bus signs in the case of Houston Metro), and a lack of driver training. Solutions could include having the driver call out the name of every stop, training drivers to recognize the retarded and to respond to their needs, and providing the retarded with travel passes.

The President's Committee on Mental Retardation does suggest ideas for equipment additions that would simplify the delivery of information and thereby improve accessibility for all passengers, not only the retarded. They specifically recommend the installation of public "bus phones" at major stops, which would provide bus service information and would be staffed by an operator trained to deal with the retarded. They also recommend the placement of symbolic city maps with color-coded routes at major stops. Buses would be designated by color, name, and number. The location of the viewer, as well as major landmarks, would be indicated. The benefits would not be limited to the retarded; such modifications would assist all passengers (3). However, as noted by the President's Committee, mobility training is the paramount need and should be given priority over the correction of bus-system deficiencies.

Institutional Barriers

The reason why cognitive and system barriers have both gone unchallenged is the existence of the third, more overwhelming class of barriers--institutional barriers. Institutional barriers that obstruct the independent use of transit by the retarded are derived from societal attitudes, or "agreements", that either ignore or misconstrue the travel needs and abilities of the retarded. These attitudes have been translated into policies that have an impact on the provision of services for the retarded. An example of one such barrier is the low expectations held by parents and educators concerning the ability of the retarded to respond to travel training (9, p. 52): "Most parents as well as professionals assumed that independent travel was beyond the realm of the mentally retarded person's capability. The success of past programs had not reached the attention of others." I also suspect that parents become concerned because they (correctly) perceive independent travel ability as a way for the retarded child to move freely about in society, beyond the protection offered by the custodial environment.

Another example of an institutional barrier arises from the definitions of retardation. The American Association on Mental Deficiency adjusted the numerical parameters (IQ) of mild retardation downward from 80 to 69 points when the purpose was to elevate a portion of the retarded into the "normal" range in order to erase the stigma of retardation. However, the result has been that those individuals whose IQ falls into the 69-80 point range have lost their eligibility to be provided with services from any school or program that is a recipient of state or federal funds. This restriction affects precisely that portion of the retarded population who are most likely to benefit from travel training, the educable mentally retarded.

Reduced expectations about the abilities of the retarded are demonstrated by federal officials as well as by parents and educators. Thus, mobility training has never been investigated or promoted as a significant alternative to the provision of special transportation services for the retarded. The lack of mobility training becomes a self-perpetuating barrier because these widely accepted but misinformed attitudes about the abilities of the retarded preclude the widespread adoption of travel-training programs.

RESPONSIBILITY FOR TRAVEL TRAINING

Who, then, is charged with the responsibility of providing system accessibility for the retarded? Quite simply, any transit authority that is a recipient of federal transportation funds and is therefore subject to DOT and HHS accessibility directives.

Section 16a of the Urban Mass Transportation Act of 1964 (as amended) mandates as national policy that "special efforts shall be made in the planning and design of mass transportation facilities and services so that the availability to elderly and handicapped persons of mass transportation which they can effectively utilize, will be assured". The eligibility of the retarded for these "special efforts" is established by Section 16d2, which states that "for the purposes of this act the term 'handicapped person' means any individual who, by reason of illness, injury, age, congenital malfunction, or other permanent or temporary incapacity or disability, is unable without special facilities or special planning or design to utilize mass transportation facilities as effectively as persons who are not so affected." Although the retarded are not mentioned per se, Section 7 of Section 504 of the Rehabilitation Act of 1973 states that "the term 'handicapped individual' means any individual who (A) has a physical or mental disability which for such individual constitutes or results in a substantial handicap to employment...." Section 504 also specifies as a qualifying disability "mental impairments which substantially limit one or more such person's major life activities."

The responsibility of transit authorities for providing an accessible system of services, i.e., travel training for the retarded, is established by Section 504 (as amended), which states that "No otherwise qualified handicapped individual...shall, solely by reason of his handicap,...be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance...." Furthermore, explanatory material that supplements the Section 504 regulations stipulates that all recipients of federal funds must provide a transition plan to provide interim accessible transportation until all systems are accessible and "the planning process must involve public participation, including that of elderly and handicapped persons." In fact, my experience has been that the retarded have not contributed to the planning process nor have the professionals responsible for their care been consulted on their behalf. Travel training as a solution to the travel needs of the educable retarded has not been adopted with any degree of significance because of this lack of the explication

of the particular needs of the retarded at the federal policymaking level.

WHY PROGRAM ACCESSIBILITY FOR THE RETARDED HAS NOT BEEN ACKNOWLEDGED

The educable retarded, although strongly deserving of recognition, have not been analyzed as a distinct transportation-handicapped group by policymakers in DOT. A study commissioned by the state of New Jersey (10, p. 51) noted that, for transportation planning purposes, the retarded need to be considered separately from the other transportation handicapped and that "identifying the level of disability is crucial to determining the usefulness of transportation systems to the developmentally disabled and handicapped." However, as has been noted by Davies and Carley (8), reference to the retarded as a special dysfunction group has in the past been uniformly omitted from literature dealing with the transportation handicapped. This situation has persisted: Reports recently issued from DOT and the Congressional Budget Office, with one exception, are devoid of reference to the retarded.

DOT conducted a national survey of the transportation handicapped that included travel behavior, transportation barriers, latent travel demand, and transportation solutions. The survey is purported to be comprehensive, "since it establishes a firm base of knowledge on the transportation handicapped on a national basis, which until now did not exist" (11, p. 1). Respondents to the survey included the transportation handicapped who were institutionalized as well as those who were home-based. However, in the appendix the authors note that, of the transportation handicapped who resided in institutions, the mentally retarded, without qualification, were specifically exempted from consideration or participation in the survey (11, p. A-1). This is the only specific reference to the retarded I have located in literature issued by DOT.

By allowing the exclusion of the retarded from participation in this survey, DOT has in effect implied that the retarded are, ipso facto, incapable of using public transit. This institutional "agreement" by which DOT excludes the educable retarded from being considered among the transportation handicapped constitutes a formidable institutional barrier. When the independent travel needs of the educable retarded are not affirmed at the national level, it is not surprising that local transit authorities, who are dependent on policy directives and accessibility data issued from Washington, have not addressed an unidentified need by providing system accessibility for the retarded through travel training.

CONCLUSIONS

The fact that travel training is not provided is tragic simply because it could so easily be implemented: A variety of travel-training programs are in existence, and volunteer organizations devoted to the retarded are able to supply teachers. Transit authorities that do not want to directly undertake travel training could hire on a contract basis people or organizations that are experienced in conducting travel training (e.g., the Center for the Retarded, Easter Seals, and the Cerebral Palsy Foundation).

Travel training, administered by transit authorities contracting with relevant community organizations, might thus be implemented on a scale that would result in a significant increase in the ability of the retarded to independently use public transit. All that is required is that transit authorities recognize that federal mandates require accessibility for the retarded and that the resources exist to provide it.

Travel-training programs have been quite successful, both in reducing costs and in achieving independent travel ability for their students (9). Travel training, not wheelchair lifts, represents the most effective way of implementing program accessibility for the retarded. Federal policymakers and transit authorities must accord the mentally retarded recognition as a unique transportation-handicapped group; they must recognize that the needs of the wheelchair handicapped and the retarded are not reconcilable in one set of solutions.

ACKNOWLEDGMENT

I wish to acknowledge the suggestions made by Sandra Rosenbloom of the University of Texas, which significantly improved the content and organization of this paper, and Alan Black of the University of Texas, who originally suggested submitting it for presentation. I am also grateful to Roland Delaney of the Austin Transit System; David Warren of Metrolift, Houston; Steve Walldner of the Center for the Retarded, Houston; Charles Cleland of the University of Texas; and Barbara Cohen of Citizen's Advocacy, Inc., of Austin, who all generously contributed their time and insights to this paper. Finally, I wish to acknowledge Carolyn Nall, whose friendship inspired the idea for this paper.

REFERENCES

1. H. Grossman, ed. Manual on Terminology and Classification in Mental Retardation. American Assn. on Mental Deficiency, Washington, DC, 1973.
2. B.C. Moore and S.M. Moore. Mental Retardation: Causes and Prevention. Bell and Howell Co., Chicago, 1977.
3. Transportation and the Mentally Retarded. President's Committee on Mental Retardation, Washington, DC, June 1972.
4. Urban Transportation for Handicapped Persons: Alternative Federal Approaches. Congressional Budget Office, Washington, DC, Nov. 1979.
5. H. Gallagher. Letter to the Editor. New York Times, May 20, 1980.
6. R.C. Scheerenberger. Deinstitutionalization and Institutional Reform. Charles C. Thomas Publishers, Springfield, IL, 1976.
7. The Handicapped and Elderly Market for Urban Mass Transit. UMTA, 1973.
8. S. Davies and J. Carley. The Transportation Problems of the Mentally Retarded. Council for Advanced Transportation Studies, Univ. of Texas at Austin, Res. Rept. 17, Dec. 1974.
9. M.D. Laus. Travel Instruction for the Handicapped. Charles C. Thomas Publishers, Springfield, IL, 1977.
10. R.K. Brail, J.W. Hughes, and C.A. Arthur. Transportation Services for the Disabled and Elderly. Center for Urban Policy Research, Rutgers Univ., New Brunswick, NJ, 1976.
11. Summary Report of the National Survey of Transportation for Handicapped People. UMTA, June 1978.