Mobility and Transportation for the Aged: A Phenomenological View

Bernice Gray,* Duke University, Durham, North Carolina
Kenneth Brewer and William Woodman, Engineering Research Institute and Sciences and Humanities Research Institute, Iowa State University, Ames

Traditional approaches to the mobility and transportation of the aged have been specific to the disciplinary background of the investigator or planner. The result has been a segmented and limited understanding of the complexity of that situation. This paper discusses traditional approaches to investigating and planning for the mobility and transportation of the aged, establishes the need for a new approach by pointing out the limitations of previous approaches, provides an alternative approach from which to do additional research and from which to formulate more suitable policies, illustrates this alternative approach, and shows the applicability of this alternative approach to the study of the mobility needs of the aged. The sociological perspective, phenomenology, can provide the underlying and unifying logic for the general effort to understand and to plan for the mobility and transportation situation of the aged.

In the last decade, an overriding question in the gerontological literature, and to a significant degree in the rural transportation literature, has been how mobility and transportation fit into the life of an older individual. Researchers in various disciplines, such as the physiological and biological sciences, psychology, economics, and transportation engineering, have investigated only certain aspects of this situation. Researchers from each discipline have been concerned with a fairly narrow aspect of that situation, and, therefore, have also made certain assumptions about the subject matter. These assumptions frequently have not been made explicit, and in some cases different investigators have made different and incompatible assumptions. Furthermore, the investigation of a topic such as the mobility and transportation of the aged is laden with the possibility of bias or ideological orientation. The result has been several discrete bodies of literature, each reflecting a different perspective. Thus, the literature concerned with the mobility and transportation of the aged offers only a segmented and limited understanding of the complexity of that situation.

Despite the interest by researchers and policy planners in mobility and transportation for older individuals, relatively little attention has been paid to the larger intellectual problems involved in providing an underlying logic for the relevance of the approaches taken or in fitting together the several discrete bodies of literature to form an overall understanding of that situation. We suggest that the sociological perspective, phenomenology, can provide that underlying and unifying logic for the general effort to understand and to plan for the mobility and transportation of the aged.

TRADITIONAL APPROACHES

While mobility and transportation of the aged received little attention from researchers prior to 1970, these subjects have been studied by researchers from various disciplines within the last 6 years (1). Most of the studies have attempted to describe, not explain, one or more of the aspects of that situation. Only a small number of approaches to the study of the mobility and transportation of the aged have gained widespread acceptance among researchers from various disciplines. These approaches are implicit in the aspects of the situations that are studied. These aspects are structural, processual, situational, social psychological, and behavioral.

Structural aspects refer to the empirical world as defined and studied by researchers who are concerned with describing those factors that exist outside of the social sphere. In general, these factors were taken as given and have not been specified by researchers. One such given is that mobility is achieved via transportation, which is a commodity that must be purchased (2).

Processual aspects refer to those forces outside the control of the individual or the household that are changing in some way. Several of these forces have been described by researchers. One force is the increase in the number of licensed drivers over the age of 60 (2, 3), a second is the increase in the portion of the aged living in nonmetropolitan areas or in towns where public transportation does not exist (2, 4, 5), and a third force is the continued predominance of the automobile rather than public transportation as the primary means of transportation for the aged (6).

Situational factors, such as the physiological condition of the individual, his or her place of residence, the income of the individual or household, and automobile ownership, further delimit the empirical work as it applies to the individual.

Physicians and researchers in the physiological and biological sciences have investigated the various factors accompanying aging that have implications for mobility. The difficulties frequently occurring with aging include the loss of peripheral vision, a decline in night vision, nearsightedness, the inability to hear well or discriminate tones, an increased threshold, a recruitment of sounds, the reduction in reaction time, a decrease in speed of motor tasks, and the regular use of drugs (3, 4, 7).

Researchers from economics and transportation engineering have investigated both the economic and transportation situation of the aged. They have found that one-quarter of the aged live on incomes below poverty level, which may make them too poor to own and maintain an automobile or may make public transportation too expensive to use (2, 3, 5). Because consumers who are older individuals spend most of their money on food, housing, and medical care, little is left for transportation (2, 3, 8). These situational aspects exert an influence on the behavior of older individuals insofar as they seek to become aware of their options for mobility and transportation.

Social psychological aspects refer to the perceived world of the individual as studied by social scientists. The limited research on social psychological aspects has generally been based on the assumption that transportation availability is crucial for the social and social psychological functioning of the aged (9, 10). This is exemplified in the relative absence of research that assesses the relation between transportation availability and the well-being of the aged. The studies conducted by Carp (11) and Cutler (12, 13, 14) are notable exceptions.

A second assumption common in research on social psychological aspects is that the aged continue to have needs and desires to be mobile and thus seek at least the potential to maintain the life space of middle age. Most studies have thus far extrapolated transportation needs from expressed transportation problems. Of those studies that have dealt specifically with needs, definitions of and criteria for needs were found inadequate (15). Carp (1) stated that the only way to evaluate the behavioral equivalent of expressed needs and to test the possibility of additional latent needs is to improve transportation in relevant ways and then observe the effects on mobility rates and on the quality of life of older individuals. An implicit assumption is that transportation availability is the crucial variable in activity and no other factors intervene.

Behavioral aspects refer to the actual travel of the individual as studied by economists, transportation engineers, and social scientists. Most research on actual travel has dealt with travel by automobile (6, 16). Many studies have been concerned with problems created by the driver over the age of 60, but few have been concerned with the transportation habits of the aged. Only isolated research has used transportation as an independent or intervening variable.

Most of the studies concerned with actual travel have been conducted in urban areas rather than rural areas. Notable exceptions are the works of Hauser (17) and Burkhardt (15). Furthermore, comparative analyses between rural and urban areas are also few in number. Most of the studies of actual travel have been limited to a particular community or perhaps to only two or three communities and have involved poor response rates and small sample sizes.

Relatively little attention has been given to determining the underlying logic for investigating these aspects or a logic for how these diverse approaches fit together. The present understanding of the mobility and transportation situation of the aged is based on several discrete bodies of literature, each of which has its own approach to investigating that situation.

Traditional approaches to planning for mobility and transportation of the aged have been few in number. To date, the programming-planning-budgeting systems have usually been based on an approach that suggests that transportation assistance programs be extended soon after the mobility or transportation problem is recognized. Even though the initial investment may be heavy, this approach suggests immediate action because there will be less manpower used, less money spent, and fewer resources consumed over the long run (18). This was essentially the philosophy of section 147, on public transportation, of the Federal-Aid Highway Act of 1973 (Public Law 98-87). No funds could be spent in this demonstration program to upgrade, study, analyze, better manage, or otherwise plan an existing system. Funded systems had to be new entities or significant rolling stock and service expansions of existing systems. In short, all that was presumed to be needed to make the rural transportation disadvantaged mobile was to run buses up and down the roads. This approach is generally adopted because it relies on measuring progress in terms of output indicators and because governmental agencies have been reluctant to fund a program that cannot reflect concrete advances or changes or that is preventive in nature.

Transportation planners have defined the basic need of older individuals to achieve mobility via affordable and adequate transportation (5). In doing this planners have made the assumption that programs directed at relieving pressures associated with poverty level incomes and decreasing capabilities to own and maintain an automobile are central to eliminating the mobility and transportation problems of the aged. This assumption is obvious in the efforts made in the last 15 years to improve the mobility and transportation situation of the aged. The greatest effort has been to allow older individuals to ride various transportation modes for reduced fares (19, 20, 21). Thus far little has been done for handicapped older individuals (22), and mobility programs in rural areas are still fragmented and fraught with special interest funding conflicts (23, 24, 25).

Efforts at fulfilling the basic need of older individuals (mobility via affordable and adequate transportation) have been a series of disconnected responses to pressure points (17). There is no formal national transportation policy for the aged in the United States. This is not to say the federal legislation has not been passed to provide a basis for programs or that federal action in recent years has not helped the aged meet their needs (2, 26).

Taber (27) suggested it is easy to understand why the nation has been so laggardly in arriving at policy formalization:

1. The question remains whether the aged should be provided with special programs, since they as a group reflect the economic, physical, ethnic, and psychological sectors of the larger society (28, 29);
2. It is difficult to be politically expedient and at the same time make certain choices and preferences regarding an age group that our society places little value in; and
3. It is difficult to formulate a transportation policy from a limited data base.

Taber (27) stated that, as a result of such factors, the transportation policy for older individuals is a de facto policy of disengagement.

As the number of older individuals in the United States increases, an understanding of their mobility and transportation situation appears to be a pressing need of transportation policy planners. It is especially so, since we are increasingly pressured for large programs to facilitate in some ill-defined manner the increased participation of the disadvantaged in our society.

Only a small number of aspects of that situation have been studied. Thus far an understanding of social psychological and social aspects has been neglected because of concentrated efforts to describe the physiological and economic situation of older individuals as they relate to mobility and transportation. The necessity of investigating all aspects (and ultimately which aspects are more crucial to the decision making of older individuals) has emerged because the approach of transportation planning has heretofore been based on the premise that an understanding of select aspects of the mobility and transportation situation of the aged is sufficient for defining demands or needs and for predicting future travel requirements. Such a premise requires the tenuous assumption that these selected aspects establish the parameters of the mobility and transportation situation of older individuals. The use of a phenomenological approach requires no such assumption.

NEW APPROACH

The roots of modern phenomenology reside in the works of Edmund Husserl and Alfred Schutz (30). Together, their viewpoint would present an image of the mobility and transportation situation of the aged that differs

enormously from that of most researchers interested in this area. Specifically, this viewpoint suggests that those things taken to be given by a researcher may not be accepted as given (or as real) by older individuals. Further, this approach suggests that no instinctual or biological device tells older individuals what is real.

The phenomenological approach posits the view that older individuals develop their perceptions of their mobility and transportation situation through a process labeled intersubjectivity, wherein a form of give-and-take occurs among the aged. The result is a consensual agreement as to what is real. Older individuals depend on one another for verification of what they perceive is real. Their decisions about travel are socially negotiated decisions. Thus, what is real in the mobility and transportation situation of the aged is what they decide is real. There are several significant implications of this approach for the mobility and transportation situation of the aged.

First, the assumptions planners make regarding the certainty of the empirical world must be examined very carefully. Some aspects of the empirical world tend to be obvious to the policy planner but inobvious to the aged. For example, a health planner observes that the rural aged do not visit physicians as many times per year as the urban aged and concludes that some social service is needed to provide the same level of health care consumption to both groups. A transportation system is then devised, which provides rural area bus service focusing on medical care. The use of health facilities by the rural aged rises but still lags far behind the urban rate. Is the transportation system a failure? From the point of view of the planner, it may be an economic failure, but from the viewpoint of the rural aged, it may be a functional success.

Second, there is little reason to expect that pointing out facts to the aged will cause the aged to accept the reality of an externally derived picture of the empirical world, which the policy planner has provided for them. They may still intersubjectively generate an understanding of the world that makes some elements of that world more real than others. For instance, transportation economists and planners have presumed that the aged lack the economic means to utilize public transportation. Therefore, federal regulations require public transportation systems to offer a reduced fare to the aged in order to be eligible for federal funds. However, the aged have suggested an integral part of their transportation problems is social psychological in nature (1).

Figure 1 presents a simple model derived from the general area of phenomenology, which attempts to depict the processes or stages that occur as meaning is attached to segments of the ontological world. In beginning with the empirical or ontological world, it should be stressed that a basic tenet of the phenomenological approach is that no individual or group is capable of knowing the world in its totality. This implies that, in a very fundamental sense, no one deals with the real world but rather with the world as it is perceived. This helps to explain many categories of social phenomena that appear to be examples of older individuals' oblivion to reality. For instance, despite physical limitations, some older individuals see themselves as still physically capable of driving. Therefore, they continue to drive when in fact their vision, hearing, and reaction time make them a hazard on the road. Thus, the world some older individuals perceive may not be the same one the driver-licensing examiners perceive. In point of fact, they are responding to their own interpretation of reality.

Persons attach meaning to the empirical world through the process of subjectification, which is above all a social act wherein meanings having widely variable degrees of certainty are attached to cultural objects. In order to act, however, some of these meanings (attached through subjectification) must be regarded as more useful (or accurate or realistic) and at the point at which one meaning is selected to be the basis for acting, objectification has occurred. As expected, the objectified meaning frequently proves to be unworkable or undesirable, at which time a new subjectification (resubjectification) must occur. If, on the other hand, the objectified meaning proves to be acceptable, occasionally the process of reification occurs. When this happens, the act of new meaning-association becomes no longer socially negotiable.

Although some writers and researchers have indicated their awareness of these phenomenological realities, little has been done either to delineate and study the various aspects of those realities or to incorporate the more important aspects of those realities into transportation planning for older individuals.

Example

This example of the application of the phenomenological approach involves the transition of an older couple who have been living on a farm but are forced to move and their accompanying decision-making process as it relates to their mobility and transportation situation. A rural example was chosen because of the disproportionate number of rural individuals who are older (2) and because relatively little research has been done on the rural aged. A phenomenological approach to this situation is diagrammed in Figure 2.

This approach takes the empirical world as a given. It is the empirical world as defined by the policy planner or the transportation economist. It consists of rules, regulations, and laws, as well as structural constraints outside the social sphere. It is the basic input into the mobility and transportation situation of the older couple. For example, the empirical world of the older couple consists, in part, of such invariant constraints as the income options available (savings, social security payments, and investments), employment opportunities, the time available to pursue tasks at the activity pace of an older person, and distance spatially separating activity locations (distance from farmstead to doctor office, grocery store, or church).

This approach also suggests that no individual or group is capable of knowing the empirical world in its totality. Therefore, no one deals with the empirical world but rather with the world as it is filtered through meanings attached to some objects or classes of objects. Meanings can be socially derived or assigned by the individual. In the process of subjectifying their personal situation, the older rural couple considers such things as definitional factors, processual-resource factors, social structural constraints, ideological congruence, and knowledge levels.

Processual-resource factors are factors that filter the empirical world into the world perceived as related to the older rural couple. In their transition the older couple has to deal with a range of potential options that expand or contract, due to changing forces outside of their control. They have to take into account such forces as the adequacy of public transportation in surrounding towns, the expense and shortage of energy, and the rate of inflation in eroding savings, investments, or social security payments.

Social structural constraints are also considered by the older couple. Constraints such as physical limitations, financial difficulties, retirement, or the death

Figure 1. Phenomenological model of the construction of social reality.

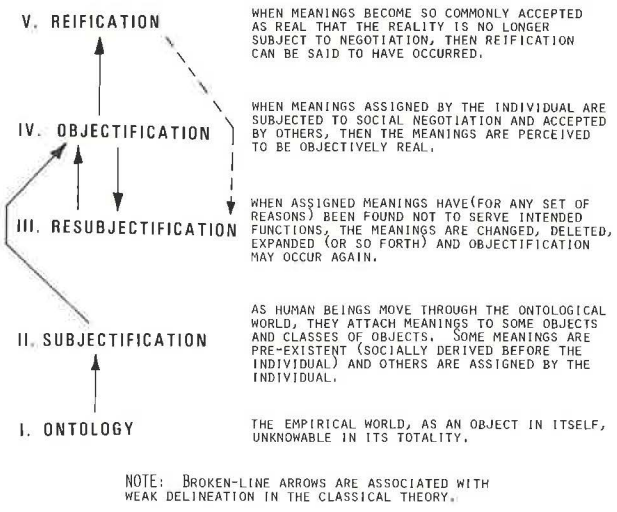
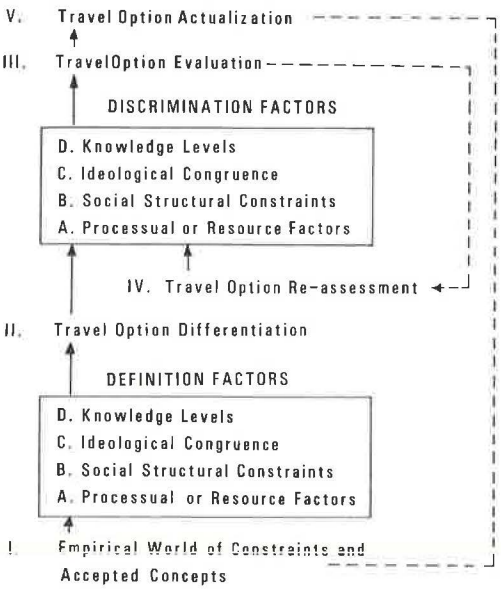


Figure 2. Phenomonological approach to mobility and transportation situation of the aged.



of a spouse exert additional controls on the behavior of the couple insofar as they seek to become aware of their options regarding their decision to move to a place that provides them with adequate transportation facilities and meets their mobility needs.

The other definitional factors that the older couple take into consideration are ideological congruence and knowledge levels. One example of ideological congruence is that the older couple feels their mobility and transportation should be assured through public programs but at the same time realize that mobility and transportation-related programs in rural areas emphasize individualized solutions. Still, they seek a place of residence that will provide them with some type of public or private transportation.

Knowledge levels also help to define the situation of the older couple. For example, the couple has first-hand or primary knowledge of their physical and financial limitations for mobility and transportation. They also consider the secondary knowledge of a friend who found it difficult to take advantage of reduced fare programs associated with public transportation. Finally, they take into account their indirect or tertiary knowledge of the limited amount of special transportation in rural areas to meet the needs of the aged.

All of the above factors help to define and delineate the particular situation of this older rural couple. These factors are then used as a backdrop from which to differentiate their travel options. For instance, some of the alternatives available to the couple include (a) a rural nonfarm residence (including villages) where transportation would be limited to private automobile; (b) a residence in a small town where some type of transportation other than private automobile would be available (such as a part-time taxi or a senior citizens' volunteer group); (c) a residence in a semi-urban or urban center where available transportation options would include both public and private modes (such as taxi, small urban bus system, and public intercity bus connections to other areas of the country); (d) a retirement community where transportation is oriented to the special needs of the aged (such as wheelchair lifts in buses and individual assistance in boarding and alighting); (e) an extended family residence where transportation is provided by a relative; and (f) an intensive-care facility where transportation of any kind is relatively nonexistent.

The various factors associated with each of these travel options are considered in the couple's evaluation of the options. Processual-resource factors associated with the feasibility of these various alternatives include money, physical mobility, privacy, social interaction, religious activity, and other things. In this case, the couple decide that private automobile is the most desirable mode of transportation but also realize they might not be able to drive indefinitely because of physical disabilities. Because of such constraints, they place more value on a place of residence near a relative or friend who would take them where they desire to go in a private automobile and place less value on a place of residence near public transportation. The benefit of a move to a place nearby relatives or friends is the desired mode of transportation. The cost associated with this alternative is the loss of freedom to travel when and where they desire at all times.

When the older couple approach both relatives and friends regarding their move and their desire for personal transportation from them, they subject their meanings associated with their travel options to social negotiation. Because both the relatives and friends are reluctant to completely accept their values associated with private transportation, the meanings are not perceived to be objectively real. Therefore, the older couple has to reassess their travel options or resubjectify their meanings. Objectification finally occurs when they decide on a place of residence that has relatives nearby as well as a public transportation system that has a reduced-fare program associated with it. In this case, such value is ultimately assigned to this option that no further set of options is ever considered. Thus, travel option actualization or reification occurs.

This approach to delineating the factors that impact on a behavioral process can be summarized as a dynamic feedback decision-making process that provides the underlying and unifying logic for previous research. A phenomenological approach permits the identification of variables that directly affect the ultimate decision (form direct trade-offs with mutually exclusive alternatives and consequences of selecting an alternative), the identification of variables that indirectly affect the ultimate decision (intervene on the value systems in establishing weighted preference or priority among

alternatives), and the identification of the dimensions that create the dynamic nature of the process (in the context of this paper: the process of aging, changes in purchasing power of the dollar, dispersal of extended family members, and other characteristics of the ontological environment). It is the ever-changing ontological world and the rate at which individuals' perception of it changes, as well as the direction of change in perception (dissonant or consonant), that requires this dynamic analysis framework, rather than basing an analysis on data with a fixed time reference to capture the essence of the behavioral process.

Applicability to Analysis

This logic pattern constructed through phenomenology will permit the development of a sequence of mobility options with transportation alternatives that can be incorporated into an interactive computer simulation. If the simulation were constructed around a microprocessor and used display devices such as cathode ray tubes (TV monitors), persons not yet defined as aged in either structural factors or situational factors could play the game of growing old. Individuals could react to computer-adjusted allocations of mobility by imposing changes in the real world as constraints. The sensitivity to incremental changes in these constraints would provide statistical estimators of the process of making a transition from young, middle-aged, or mature to elderly (or aged) mobility status. Until we begin to deal with this process our planning research will remain essentially a static analysis of a dynamic phenomenon. We are currently conducting limited investigations into the technological requirements of such an interactive simulation.

CONCLUSION

The very generality of this approach is one of its major advantages, because the abstract theoretical model (see Figure 1) allows for the selection of appropriate measures designed to meet the purposes of any particular research project or policy problem. It also accounts for the various factors pertinent to the decision making regarding mobility and transportation. Finally, it provides an underlying logic for the integration of research previously conducted and policies previously formulated.

ACKNOWLEDGMENT

We wish to acknowledge the support of the Engineering Research Institute, the Sciences and Humanities Research Institute, and the departments of Civil Engineering and Sociology at Iowa State University in the development of this paper.

REFERENCES

1. F. M. Carp. The Mobility of Retired People. In Transportation and Aging: Selected Issues (E. J. Cantilli and J. L. Shmelzer, eds.), U.S. Government Printing Office, 1970, pp. 23-41.
2. I. Kaye. Transportation Problems of the Older American. In The Neglected Older American (John G. Cull and Richard E. Hardy, eds.), Charles C. Thomas, Springfield, IL, 1973, pp. 86-106.
3. L. S. Libow. Older People's Medical and Physiological Characteristics. In Transportation and Aging: Selected Issues (E. J. Cantilli and J. L. Shmelzer, eds.), U.S. Government Printing Office, 1970, pp. 14-18.
4. H. B. Brotman. The Elderly as a Significant Population Group. In Transportation and Aging: Selected Issues (E. J. Cantilli and J. L. Shmelzer, eds.), U.S. Government Printing Office, 1970.
5. A. N. Schwartz and I. N. Mensh. Professional Obligations and Approaches to the Aged. Charles C. Thomas, Springfield, IL, 1974.
6. W. H. Bottiny. Trends in Automobile Ownership and Indicators of Situation. HRB, Highway Research Record 106, 1966, pp. 1-21.
7. R. A. McFarland, G. S. Tune, and A. T. Welford. On the Driving of Automobiles by Older People. Journal of Gerontology, Vol. 19, 1964.
8. Three Budgets for a Retired Couple. Office of Information, U.S. Department of Labor, Rept. USDL-10-746, 1969.
9. L. E. Gelwicks. The Older Person's Relation With the Environment: The Influence of Transportation. In Transportation and Aging: Selected Issues (E. J. Cantilli and J. L. Shmezer, eds.). U.S. Government Printing Office, 1970, pp. 19-22.
10. H. A. Williams. Transportation and the Elderly. In Transportation and Aging: Selected Issues (E. J. Cantilli and J. L. Shemlzer, eds.). U.S. Government Printing Office, 1970, pp. 181-186.
11. F. M. Carp. On Becoming an Exdriver: Prospect and Retrospect. Gerontologist, Vol. 11, 1971, pp. 100-103.
12. S. J. Cutler. The Availability of Personal Transportation, Residential Location, and Life Satisfaction Among the Aged. Journal of Gerontology, Vol. 27, 1972, pp. 383-389.
13. S. J. Cutler. The Effects of Transportation and Distance on Voluntary Association Participation Among the Aged. Aging and Human Development, Vol. 5, 1974, pp. 81-93.
14. S. J. Cutler. Transportation and Changes in Life Satisfaction. Gerontologist, Vol. 15, 1975, pp. 155-159.
15. J. E. Burkhardt. Need as a Criterion for Transportation Planning. HRB, Highway Research Record 435, 1973, pp. 32-41.
16. F. M. Carp. Automobile and Public Transportation for Retired People. HRB, Highway Research Record 348, 1971, pp. 182-191.
17. E. Hauser. Use of Existing Facilities for Transporting Disadvantaged Residents of Rural Areas. Federal Highway Administration, Rept. DOT-FH-11-8261, Vol. 2, 1974.
18. E. S. Cohen. Toward a Social Policy on Aging. Gerontologist, Vol. 10, No. 4, Pt. 2, 1970, pp. 13-22.
19. Chicago YMCA Senior Transport Serves 1606, Aids 48 Agencies. Aging, No. 186, 1970, pp. 7-8.
20. Thirty-four Cities From Coast to Coast Now Have Low Senior Fares: Savings Average 10-15 Cents. Aging, No. 186, 1970, p. 9.
21. "Senior Shuttle" Gives Free Transportation to Hingham, Mass., Elderly. Aging, No. 211, 1972, p. 15.
22. Three More Cities Reduced Bus Fares for Elderly Persons. Aging, Nos. 233-234, 1974, p. 21.
23. Transplan 1976. Planning and Research Division, Iowa Department of Transportation, Ames, March 1976, pp. 140-152.
24. You Can Get There From Here. Public Transit Division, Iowa Department of Transportation, Ames, Aug. 1976.
25. Transplan 1977. Planning and Research Division,

Iowa Department of Transportation, Ames, May 1977, pp. 39-50.
26. Sign Working Paper on Transportation. Aging, Administration on Aging; U.S. Department of Transportation, No. 238, 1974, p. 16.
27. M. Taber. Social Policy and Social Provision for the Elderly in the 1970s. Gerontologist, Vol. 11, 1971, pp. 51-54.
28. W. L. Garrison. Limitations and Constraints of Existing Transportation Systems as Applied to the Elderly. In Transportation and Aging: Selected Issues (E. J. Cantilli and J. L. Shmelzer, eds.), U.S. Government Printing Office, 1970, pp. 100-106.
29. R. P. Roess. Existing Technology in Mass Transportation. In Transportation and Aging: Selected Issues (E. J. Cantilli and J. L. Shmelzer, eds.), U.S. Government Printing Office, 1970, pp. 93-99.
30. A. Schutz. The Phenomenology of the Social World (G. Walsh and F. Lehhert, tr.). Northwestern Univ. Press, Chicago, 1967.

This work was done while Ms. Gray was a research assistant in the Sociology Department at Iowa State University.

Efficiency of Transit Subsidies to the Elderly

Jack Reilly, Capital District Transportation Authority, Albany, New York

This paper proposes a method of evaluation to measure the user benefits of transit subsidies to the elderly. Included are methods to evaluate transit fare reductions, human service agency transportation systems, and user-side subsidies. For each program the ratio of user benefits to subsidy costs is estimated at a variety of price elasticities and discount rates. Some external benefits may accrue to nonusers of subsidized transportation; measurement of direct user benefits is only one part of an evaluation plan for such programs. The paper concludes that evaluations of transit subsidy programs for the elderly have not focused on measurement of user benefits and suggests the data requirement for such evaluations.

The increased amount of attention being paid to the transportation needs of the elderly has resulted in a number of federal, state, and local transportation subsidies to this segment of our population. Although these subsidies are certainly proper from an income distribution perspective since there is a disproportionate incidence of poverty in the elderly population, little analysis has been performed in measuring the efficiency of these programs.

In general, direct cash transfers or income supplements are more efficient means of income transfer than a system of subsidies and rebates for specific goods. However, where a significant amount of external benefits is caused by consumption of specific goods, subsidies may be superior to direct cash grants. For example, low-cost or free medical assistance to low-income individuals has been justified by policymakers who state that, if consumption decisions were left to the free choice of individuals, the use of medical services from a societal perspective would be less than optimal. Public policy has looked favorably on these subsidy programs possibly due to donor preference. Public expenditures on Medicaid and food stamps, the two largest consumer subsidy programs, are considerable and these subsidies typically represent a significant portion of the purchasing power of low-income persons.

While the external benefit argument for transit subsidies in general is quite compelling in light of uninternalized cost of automobile travel, particularly in cities during rush hours, arguments on behalf of such transit subsidies, particularly directed toward the elderly, have not been discussed in the literature on the subject.

Except in rare cases, for each $1.00 spent on a subsidy, the intended beneficiary actually benefits by some amount less than $1.00. That is, a person could be made equally well off with a $1.00 subsidy on a particular item as he or she would be with a direct cash grant less than $1.00. Although some might claim that each $1.00 spent on subsidy provides $1.00 in benefits, consider the extreme example of issuing free $20 gilded pens to low-income persons. Surely they would not benefit by the full $20 cost of the item. The welfare loss of such programs, measured as the difference between the cost of the subsidy and user benefits, is in addition to administrative and participation costs, which are frequently nontrivial.

This paper is intended to analyze the efficiency of various transit subsidies as income transfer devices for the elderly. As such, the welfare loss will be estimated for each program. No inference will be made concerning the external benefits of such programs. The reader can determine whether the benefits that accrue to nonparticipants exceed the calculated welfare loss. The implications of this research for transit subsidy policy are also discussed.

The types of programs to be analyzed include reduced-fare programs on urban transit systems, provision of demand-responsive transportation service by human service agencies, and user-side subsidies.

THEORY OF CONSUMER DEMAND

Program efficiency can be measured by analyzing the factors that influence consumer choices. The simple model shown in Figure 1 illustrates this. The model assumes that all income is spent either on transportation or nontransportation. In Figure 1, the vertical axis is the amount of income spent on nontransportation and the horizontal axis is the number of trips. The curves represent consumer indifference curves. On every point on each curve, the consumer is equally well off. Indifference curves farther away from the origin are