

TRAVEL PATTERNS AND THEIR DETERMINANTS

AMONG THE ELDERLY

by

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INTRODUCTION

This report describes the design, procedures and findings of a research project conducted by the Vera Institute of Justice. The research concerned the travel patterns of elderly and handicapped residents in New York City, the effect of selected variables on those patterns and the effect of travel on their morale and on their use of health care resources. The respondents were studied during the Spring and Summer of 1978.

This research began as an effort to evaluate the Easyride transportation service, a demonstration project on the Lower East Side of New York. Easyride aimed to demonstrate the practicability of a comprehensive paratransit service for frail, elderly and handicapped persons who either cannot use, or experience great difficulty in using public transportation. It also sought to increase the mobility and morale of the elderly and handicapped and to assure them access to needed health care services. Easyride made available, for any handicapped or elderly resident of the target area, door-through-door transportation in wheel-chair-accessible vans to any destination for any purpose.* To evaluate the effects of the service, several different samples of elderly persons residing in the target area were selected for study. Additional samples of elderly people from other sections of the City and a small sample of visually handicapped people residing in various neighborhoods around the city were selected for comparison.

The evaluative purposes of the research, which had been grounded in a before-after comparison, were never realized because

* The single person trip to boroughs outside Manhattan was not provided because of the great cost and scheduling problems that would be involved.

financial support for the second wave of interviewing was not forthcoming. Therefore, our data do not allow us to search for -- and measure -- change in travel patterns over time or in relation to the operation of the Easyride service. Nevertheless, a substantial amount of data were collected that provides useful information on the travel behavior of the research subjects and on some of the factors that affect that behavior. This report describes the designs used for the collection and analysis of those data and presents the major findings.

It is important to note that none of the samples constitutes a representative sample of all elderly and/or all handicapped. Nor can the samples taken together, be considered representative of all members of these groups in the New York City population. That said, and it being acknowledged that findings from the data presented here cannot be generalized with confidence even to a city-wide level, the data can be mined for insights into the travel, health and social support needs of the several categories of poor and elderly people which the samples do not represent. When similar observations are found in each of the samples studied, as is the case with several of the findings presented here, it is reasonable to conclude that those findings apply beyond the limits of this particular piece of research.

A. The Easyride Transportation Service

Throughout much of the 1960's and the early 1970's, the Vera Institute conducted research and developed action projects designed to help people caught up in the criminal justice system make non-criminal adjustments to life in the community. Special

emphasis was given to programs designed to improve the work experience and employability of ex-offenders in the hopes that greater satisfaction and stability in this area of life might somehow lessen the person's criminal involvements. It was with these goals in mind that Vera began the Wildcat Services Corporation, which developed and applied the principles of "supported work" to structure an employment setting; the goal of that demonstration was to move "unemployable" ex-drug addicts and ex-offenders from welfare dependency, through a transitional period of structured employment, into stable participation in the labor force.* In addition to providing participants with work orientation, experience and job training, Wildcat sought to locate or create jobs for its graduates in the unsubsidized labor market. Because many participants expressed preference for and seemed to adjust well to social service jobs, they were considered especially desirable as placements for Wildcat graduates. These were among Vera's concerns when, in 1975, it also became interested in the services needs of the elderly and the handicapped.

At that time expressions of concern for the elderly in New York were increasing both in frequency and volume. Vera became particularly interested in the transportation needs of the elderly and the disabled. It was apparent that these citizens

* See Lucy N. Friedman, *The Wildcat Experiment: An Early Test of Supported Work in Drug Abuse Rehabilitation*, Washington, D.C.; National Institute of Drug Abuse, 1978.

often had needs for transportation which, because of their physical limitations, they could not meet by the conventional public transportation system. These transportation difficulties, in turn, were thought to impede the people's ability to use needed health care services and to carry out other important activities of daily living. In this juxtaposition of the needs of the elderly and handicapped for a responsive transportation service and the needs of ex-offenders for stable employment in useful service roles, Vera saw the opportunity to create ways of filling and financing service delivery gaps with a potentially capable work force.

A preliminary exploration by Vera staff revealed that, in fact, the need for door-to-door transportation was substantial and that, though a great deal of money was spent on specialized transportation, the system for delivering this service was fragmented, its coverage uneven, and its cost high. It appeared that an independent organization could coordinate the service needs, arrange the financing, and develop an operations system that would meet the diverse needs of elderly and handicapped people.*

Vera sought, therefore, to develop a project which would meet some of the unmet needs of the elderly and handicapped and provide an opportunity to test the employability of rehabilitated ex-addicts and ex-offenders in demanding human service jobs.

* From its inception, Easyride stressed the importance of handicap as a criterion for user eligibility. However, in the early days of the program, it was not a formal eligibility criterion. Instead, elderly people who were capable of using the public transportation system were discouraged from using Easyride. However, in 1980 the focus on the handicapped was made more formal by limiting registration to those required to use a wheelchair or some mobility aide such as, a walker, a cane or a crutch.

A planner was assigned to identify a community that would be likely to make effective use of such a transportation system, and to plan for its operation and financing. Ultimately, the Lower East Side of Manhattan was chosen as the target area for the following reasons:

- the community organizations had joined forces to deal with the issue of transportation, recognizing that the lack of transportation barred access to services and contributed to social isolation;
- the Lower East Side had an ethnically mixed population, a fact which would permit assessment of how a demonstration service affected different racial and cultural groups;
- the income of people on the Lower East Side was predominantly low, with very few exceeding the lowest levels of the "middle income" range. Thus, the use of taxis was expected to be low. In addition, other forms of accessible transportation (e.g., private ambulances and autos) were economically out of reach for many in this population;
- the elderly made up about 16% of the population on the Lower East Side. If the generally recognized estimates that 5% of the non-elderly population are handicapped applied, the potential market for such a service in this community would be sizable.

In April 1975, the Vera Institute and the Association of Lower East Side Settlements (ALESS) agreed to work together to establish a door-to-door transportation service in the Lower East Side. The next year was devoted to developing applications for funds to obtain suitable vehicles* and to meet operating costs,** designing the operating system, arranging for insurance, locating garage and office space, obtaining necessary regulatory approvals, and selecting, hiring and training personnel.

* Vehicles were ultimately obtained through the Urban Mass Transportation Administration's sec. 16 (b) (2) program which provides 80% federal funding and requires a 20% local match.

** Grants were obtained from U.S. Administration on Aging and the Urban Mass Transportation Administration. In addition, Medicare funds were made available in accordance with an agreement described below.

In June, 1976, with some of the financing in place and a grant for 10 vehicles awarded (but before the vehicles were delivered), Easyride began a pilot operation with three leased vehicles. The fleet of 10 arrived six months later--in January, 1977.

The drivers and office staff were specially trained to understand the problems which elderly and handicapped persons face; to handle safely people who use wheelchairs, crutches, canes, and walkers; to administer basic first aid; to drive defensively; to handle record keeping and to follow operational procedures correctly; and to be alert to possible criminal activity on the street. Vehicles were specially designed with high headroom, low steps, grab rails, seat belts, air conditioning and other passenger comfort and accessibility features. Vehicles were maintained by a staff of mechanics working on a part-time basis under contract with Easyride; this arrangement minimized vehicle out of service time. Records were kept through a management information system which included extensive data on trips and on registrants. This system also provided the basis for third-party and direct billing.* Trip data and data describing the purpose and eligibility of passenger for a particular reimbursement source form the basis for billing.

The primary source of third-party payments was Medicare.** These payments at the average per-trip cost of the service, reimbursed Easyride for health and nutrition trips taken by

* Individuals who take Easyride to work are billed on a monthly basis; the third-party payors are discussed in the text.

** Medicare reimbursement ended on December 31, 1980.

Medicare beneficiaries.* This reimbursement was made possible by a June, 1977 waiver of Medicare regulations by the Secretary of Health, Education and Welfare; the waiver was granted pursuant to Sec. 222 of the 1972 amendments to the Social Security Act, for the purpose of testing the Easyride model. (Without such a waiver of regulations, the Medicare program would not cover the costs of health-related transportation except by ambulance.)

Under a contract with Project Outward Bound -- a general social service agency serving the handicapped -- Easyride received a small sum for cultural, recreational and employment trips taken by registrants. In 1979 contracts for per-trip reimbursement were negotiated with two of the area's major hospitals to serve Medicaid clients, and with New York State's Office of Vocational Rehabilitation. In addition, agreements were struck between Easyride and the local senior centers who use Easyride for group recreational trips.**

This network of third-party payors was an important part of the Easyride experiment. Paratransit service is usually rather costly on a per-trip basis (though not approaching the expense of ambulance service), but it is not often supported from more than one source. That is, paratransit may be financed by transportation authorities, or by Medicaid, or by vocational rehabilitation agencies, or by a community-based agency. Under these circumstances, the service is usually limited to trips that support the mandate of the financing agency; this, in turn,

* Medicare status of an Easyride registrant was first verified by the Health Care Financing Administration in Baltimore.

** Easyride provided free service on special occasions for community projects (e.g., shuttles to a hospital for glaucoma testing, shuttles to community fairs).

tends to limit the number of trips taken and/or the number of riders using the service; and this, of course, results in inefficient use of vehicles and high per-trip costs. One of the innovative notions behind the Easyride model was to encourage travel by the transportation-handicapped by trips at a low cost, to any destination for any purpose; it was believed that the more efficient use of vehicles would reduce the costs of any one trip, the spectrum of agencies having responsibilities for the elderly and handicapped would find the service an attractive buy for their clients. Thus, the model afforded a test of a full-service attack on the immobility of this part of the population, to be financed by the widest possible array of agencies.

After May, 1978, anyone on the Lower East Side who was 65 or older^{*}, or who was over 18 years old and eligible for Medicare and handicapped with respect to transportation, became eligible to register with Easyride by phone.^{**} Registered passengers were asked to call in at least 48 hours in advance to reserve a ride; same day trip reservations were taken whenever possible. Trip times were negotiated with passengers to maximize vehicle utilization. Passengers who were known to have difficulty remembering appointment times were called the day before their scheduled trips and reminded of their pick-up times. Passengers were encouraged to meet the driver at the door in order to save time and discourage over-dependence on the personalized aspects of Easyride's service; however, for any passenger who required

* Prior to that date, people 60 and over were eligible.

** In 1980 the age restriction was dropped entirely and replaced by the previously mentioned handicap requirement for eligibility.

assistance from his/her apartment, the driver would go up and escort the passenger to the bus. Many wheelchair-bound passengers required this service -- a factor which increased the time (and cost) of the average trip.

A major tenet of the Easyride demonstration program was that the registrants be enabled to use it for all the purposes so as to parallel the public transit system as closely as possible. But for some trip types, special arrangements were made to ease scheduling and to contain costs. For example, a shuttle system was established to pick up and deliver Easyride passengers to the major hospital out-patient clinics in the area. The shuttle made two stops at each of four health-care institutions each afternoon. Another example evolved when service to patients of private doctors located uptown became difficult because the pick-up times for return to the Lower East Side could not be known beforehand. Easyride contacted the uptown doctors who were serving Easyride passengers most often and secured their cooperation in scheduling appointments for these patients so that all registrants needing to visit these doctors could be efficiently accommodated by trips on two afternoons each week. But within the constraints of an efficiently-managed, locally-based paratransit system, the frail elderly and the handicapped of New York's Lower East Side were encouraged by this demonstration project to travel as often as they desired to whatever destinations they liked, for whatever reasons moved them.

B. The Original Evaluation Design

In its simplest terms the Easyride program was built on the assumptions that the elderly and handicapped on the Lower East Side had many unmet transportation needs and that a service which responded to those needs might produce a number of effects on the users' health care practices, health status, morale and social contacts. These assumptions are reflected in many of the following general questions which Vera staff entertained regarding the program.

If Easyride provided transportation for some of these people, would it help relieve their isolation? Would they re-connect with friends and family, or would they at least more often be in situations where they could establish contact with others. Could they better satisfy some of their more dire needs -- getting to stores where they could shop, to nutrition programs, to health care facilities? Would they feel better, more optimistic, more in control of their own destiny? Would they be less deterred from going out by their fear of mugging, because of the door-to-door features of this service? Would all of this improve their health? Their mental health? Would an increased independence have further consequences, especially for the maintenance of that independence, so that the probability of institutionalization would be reduced?

The evaluation of Easyride was originally designed to test the impact of transportation on health care status and to provide data for consideration of the advisability of including transportation as a covered service under the Medicare program. Funds for the evaluation, granted by the Public Health Service through

the Center for Health Services Research, became available on July 1, 1977; a project director was hired the 1st of September, 1977.

The original focus of the evaluation was on a before and after design, with comparison groups. In the spring of 1977, a pilot study was conducted with a convenience sample of 188 people identified by senior centers on the Lower East Side. The interviews were valuable for pre-testing some measurements and for generating hypotheses about program impact. They also suggested that, in selecting samples for the actual study, it was not important that all respondents be interviewed before they took a ride with Easyride, because any effects the program might have were expected to appear only after a considerable period of time.

During the fall and winter of 1977-78, case histories of some Easyride users and some non-users were gathered, to provide insights into the differences Easyride might make in the lives and mobility of particular individuals and to raise questions about the generality of such differences; the initial interview was substantially redesigned as a result. Samples of the elderly on the Lower East Side were then selected, as were comparison samples from other sections of the City. In the spring and summer of 1978 the pilot sample was reinterviewed* and the study samples were interviewed for the first time. It was intended, of course, that they would be interviewed again later in the research in order to measure change in the study's dependent

* It was expected that the re-interview data from the pilot sample would help sharpen hypotheses and provide a test of different techniques for the later analysis of changes in the study sample.

variables.

The specific characteristics of the samples and the methods by which they were chosen are described in Chapter I of this report. It is sufficient for our present purpose to indicate that a fairly large sample was chosen from residents of Lower East Side public housing that was specifically designed for senior citizens. Then, similar samples were selected from senior citizen public housing projects outside the Lower East Side. In addition, a sample of visually disabled people residing on the Lower East Side and a comparable sample from other sections of the City, a sample of elderly people on the Lower East Side receiving homecare services from the ALESS organization were picked for study. Finally, a sample of Lower East Side residents who had registered with Easyride was selected.

Using these samples, the research was designed to evaluate the impact of the Easyride program on the travel patterns of the elderly and handicapped on the Lower East Side, their patterns of social interaction, their sense of well-being and independence, their self-assessed state of health and their utilization of health care resources. Of course, the working hypotheses saw the program increasing travel and social interaction and thereby enhancing the sense of well-being and independence. These improved social psychological states would be expected to lead, in turn, to a more positive self assessment of personal health. In this regard, the program was expected to increase the accessibility of local health care services which, in turn, would make it more feasible for elderly citizens to remain in the community, rather than experience short and long term institutionalization for health problems. These measures of change were to be calculated from

comparing data from the first wave of interviews with data from a second wave that was to follow after an interval of approximately 18 months.

Finally, additional data were to be collected on the manner in which Easyride affected the operations of various service agencies, especially those servicing the elderly and handicapped, on the Lower East Side. It was expected that the availability of door-to-door transportation on demand might expand the use of these services and increase the certainty and punctuality with which appointments were kept by Easyride users.

C. Abandonment of the Evaluative Purposes

In the original grant application, it was estimated that the entire research effort could be completed within two years -- i.e., from July 1, 1977 to June 30, 1979. However, this plan was grounded in a sampling plan that proved unworkable and had to be completely redesigned at the beginning of the research project. Substantial amounts of time and effort were expended on locating and selecting new samples on the Lower East Side and comparison samples from other sections of the City. In addition, the original questionnaire had to be revised and pre-tested, and it was not until the spring and summer of 1978 that the respondents were interviewed for the first time. If the respondents were to be reinterviewed even twelve months after the first interviews, the second wave of data collection would not have been completed until the summer of 1979. Finally,

it was felt that any impact on the program would be more evident if more time passed between the first and second wave of interviews.

These considerations were discussed with staff at the funding agency. It was agreed that a request to extend the grant on accruals through August would be approved and that an application for new funding starting on September 1, 1979 would be submitted. It was also agreed that the second wave of interviewing would be put off until the new funding period.

An application for new funding was developed during the fall of 1978 and submitted in January, 1979. The application sought funding to conduct the second wave of interviews and to analyze program impacts as originally intended. In addition, the application proposed to undertake a new but related research effort that could have utility in evaluating any form of health care program.

The application suggested that the health care needs of the elderly could be conceptualized as ranging from a state of complete independence, in which the individual is able to take care of himself without any help, to a state of complete dependence, in which the individual must be in a long-term care facility. Long-term institutionalization is used, both appropriately and inappropriately, to cope with the dependency of the elderly and the disabled; however, it involves high costs -- financial, social, and psychological. Transportation, at least the demand-responsive, multi-purpose kind that Easyride

provided, might allow people to lead more independent lives, outside institutions, with provision, as needed, of less costly services such as home care, home help, day hospitals, and visiting nurse services. The long-term consequences of providing accessible transportation -- or any other service having similar aims -- could then be estimated through the effects observable at intermediate stages of health care utilization; if the long-term effects are not observable in a given time span, documentation of intermediate effects could be used to estimate future impact. This approach to learning about the relationship between institutionalization and transportation involved measurement of the possible effects of transportation at various stages of a person's "care pathway", each stage of which is characterized by a "level of support" given by helping services, at home or in health-care or domiciliary facilities.

The application proposed to select a sub-sample consisting of 400 project respondents (200 Easyride users and 200 non-users) for the "care pathway" research. Each member of the sub-sample was to be interviewed every three months for thirty months and asked about the type of health care and support services which he or she received during the preceding quarter. Distinct states along the "care pathway" would be defined in terms of the level of health care and other support received by elderly and handicapped persons. The data collected from respondents would be used to trace transitions from one state to another and estimate the probabilities of movements from one to another. The effects of Easyride could then be measured in terms of the program's

impact on these transition probabilities. Thus, the research could be used to develop a more sensitive and relevant means for measuring the impact of health care and other services.

The research proposed -- however useful it might prove if it worked -- was novel, expensive, and risky. In recognition of the possibility that the funding agency might be reluctant to make such a commitment of resources and time, Vera indicated that it could, for a much reduced level of support, simply conduct the "second wave" of interviews and analyze that data against the original impact hypotheses. As it happened, the refunding proposal was not accepted, and no distinction was made between the "care pathways" proposal and the more limited option. As a result, the second wave of interviews with the study samples could not be conducted, and it became impossible to measure change over time in the Lower East Side and comparison samples. Thus, the evaluation objectives of the research had to be abandoned.

D. Content and Utility of the Present Report

While the data collected during the aborted research effort cannot be used to evaluate the Easyride program, they do provide some interesting insights into the travel needs and travel patterns of the elderly and handicapped in New York. The data base can be used to describe the travel behavior of respondents in several different ways. In addition, considerable data were gathered regarding the nature and extent of disability in the study samples, the prevalence of various health conditions, the respondents' assessments of their own state of health, and

various measures of social relationships enjoyed by participants.

These data are used here, first to describe the travel patterns and needs of the elderly and handicapped and secondly to study the effects of disability, health status and social support on travel behavior. (These latter analyses suggest the extent to which diverse classes of independent variables affect the travel behavior of sample members.) Taken together, these elements of the research provide some useful insights into the ways of life of poor, elderly residents of New York City.

Finally, the research reports on the state of morale and patterns of health care utilization among respondents. Several indicators are used for each of these variables. Although these variables could be reviewed as independent variables in relation to travel, the analyses and discussion presented here suggests that they are more usefully conceived as consequences of travel among the elderly.

The next section of this report describes and discusses the samples used in the study. There are five major samples: (1) residents of public housing for the elderly on the Lower East Side; (2) residents of public housing for the elderly in the Bronx and in the Chelsea section of Manhattan; (3) people who receive homecare services from the Association of Lower East Side Settlements; (4) a small sample of Lower East Side residents and a corresponding sample of non-Lower East Side residents selected from the rolls of a service agency for the visually handicapped; and (5) a moderate size sample of people who had registered with the Easyride transportation service.

The public housing samples are the largest, numbering 332 on the Lower East Side and 193 in the Bronx and Chelsea. Taken together, the samples of public housing residents included 525 members. In some instances, especially where regression techniques are used to estimate the relative strength of travel determinants, the public housing samples are combined to yield one rather large sample of fairly poor, elderly residents of the City. However, there are some important differences and similarities among the five samples, and these are useful in analyzing differences in travel patterns and in the relationships between travel and selected independent variables.

Despite its lack of program evaluative information, the report presents data and analyses that should be useful to those who are concerned with the transportation needs of the elderly. The report describes their transportation practices in terms of the frequency, destinations, and distances of trips taken within specific time periods. In addition, a considerable amount of information is provided with respect to the mode of transportation used and the difficulties experienced by elderly people in attempting to use various modes. Data are also presented which describes the travel patterns which respondents claim they would like to have, if the available modes of travel would permit. The regression analyses show the relative importance of selected

determinants of travel and identify a limited number of variables that appear to be fairly good predictors of travel patterns in the study samples.

All of this information should be useful to transportation planners who are attempting to develop efficient and responsive modes of public transportation for the elderly and handicapped.

Health services planners might also find value in the data reported here. The elderly consume a significant proportion of health services, at a substantial cost to the public. This report describes a variety of health conditions from which the elderly respondents suffer, and the extent to which those conditions limit travel. Moreover, the nature and extent of the health care services used by the sample members are described, and the analyses suggest the extent to which travel constraints may affect the patterns of health service utilization.

Finally, gerontologists searching for information on the problems, coping mechanisms and social interaction patterns of the elderly may find this a useful document. While no attempt is made to use the data to give a systematic description of the lives of the elderly poor, the analysis of social contact patterns, morale, disability and the relation of all these variables to travel provide some insights into that way of life. The extent and purposes of the respondents' contacts with family members, friends and associates within the same building complexes and friends and associates outside those immediate confines are

described and analyzed. They show the kinds of assistance which respondents seek from these various classes of persons, and suggest the extent to which their social lives carry them beyond their immediate neighborhoods.

E. Format of the Report

The remainder of this report consists of six chapters, and appendices. Chapter I identifies and describes each of the samples used in the study and explains the rationale for establishing it and the methods used to select sample members. In addition, the samples are described and contrasted with respect to their demographic characteristics and, for the public housing samples, selected physical characteristics of the housing complexes. This provides the reader with a summary of all the major dimensions of the samples, and make it easier to follow sample comparisons that are drawn in the subsequent substantive chapters.

In Chapter II, each of the major variables is introduced, discussed theoretically and defined operationally. Some of the variables are measured by more than one indicator and, in some cases, indicators are combined to form indexes. The rationale behind each of the indicators is explained, as are the procedures used to measure them. In addition to the dependent variable travel, three major classes of independent variables -- disability, health status and social support -- are described. Finally,

two variables treated as functions of travel -- morale and health care utilization -- are defined and explained.

Chapter III is the first of the substantive chapters. It presents descriptive data on each of the travel indicators and contrasts its distributions within the various samples. In addition, the chapter explores the relationships among the indicators and identifies those indicators which will be most useful measures of the dependent variable in the chapters that follow.

Chapter IV presents data describing the association between travel and several sets of the independent variables described in Chapter II. In addition, this chapter describes the extent and manner of association between travel and selected demographic characteristics of the population. The data presented in this chapter are analyzed, for the most part, using cross-tabulations. This type of analysis permits us to explore the manner of association between variables, thereby providing some insight into the processes that lie behind the correlations. In this sense, the chapter prepares the ground for the regression analyses that follow.

Chapter V presents the analyses and rationale for limiting the number of indicators used to represent the classes of independent variables. The more limited set of variables are subjected to regression analyses using two different measures of the travel variable. In this way, the contributions of selected determinants of travel is estimated, and those variables which are the most effective predictors of travel are identified.

Chapters VI & VII, the last of the substantive chapters, present and analyze data in relation to a limited number of hypotheses which view respondent morale and patterns of health care utilization as products of the respondent's travel practices.

Chapter VIII presents, in summary form, conclusions derived from the preceding substantive chapters and suggests ways in which some of these findings might relate to policy and program issues in the areas of transportation and health care for the elderly and handicapped.

CHAPTER I
THE STUDY SAMPLES

The original research design for evaluating the Easyride program envisioned the selection of a rather large sample (600) of elderly or handicapped residents of the Lower East Side and a similar size comparison sample of elderly people from outside that area. Unfortunately, given the budget limitations of the grant, it was impossible to find a way of selecting a representative sample of people living on the Lower East Side who were either elderly or handicapped. The sample that had been selected for the pilot study consisted of 188 elderly people on the Lower East Side who had been identified by local social services agencies as likely users of the Easyride Transportation service. Given the nature of the selection process, there was no way of reproducing such a sample for comparison purposes. Hence, another sampling technique had to be devised.

Two strategies were used to obtain samples. One was to aim for a sample of the general population of the elderly, but with a sufficient relaxation of the representativeness demand to make it possible to find other samples outside the Lower East Side that would be similar in many important ways to the samples on the Lower East Side. The other was to find smaller groups of people with specific disabilities which might impair

their ability to travel. It was hypothesized that Easyride might lessen the impact of the disability on the person's travel practices.

The first strategy resulted in samples picked from the residents of public housing specifically for the elderly which could be found both on the Lower East Side and outside of it. On the Lower East Side, such residents were very likely to know of Easyride's existence, since the service picked up and delivered passengers at the buildings every day. Therefore, they were seen as fairly likely to use the service. In addition, the age and socioeconomic requirements for residence in public housing for the elderly provided some basis for comparability between the buildings on the Lower East Side and those in other sections of the City. Two comparison samples were chosen from similar housing projects in the Bronx and Chelsea.

The second sampling strategy required a search for special groups of elderly or disabled people who could be sampled effectively but with a relatively minor investment of resources. Several social service agencies and hospitals were considered but not used because the organizational mechanisms that were needed for establishing contact with sufficient numbers of clients could not be set in motion fast enough. Ultimately, two agencies were chosen to meet this need. The New York Association for the Blind (the Lighthouse) made it possible to select a small sample of their clients from the Lower East Side and a reasonably comparable sample of clients from other sections of the City. In

addition, the Association of Lower East Side Settlements (ALESS) agreed to permit the selection of a sample of their clients receiving homecare services. Although the group did not have a comparison group outside the Lower East Side, it was expected that some comparisons could be made with respondents in the Public Housing samples who receive homecare.

Finally, to assure the inclusion of people who had at least expressed interest in the Easyride service, a sample consisting of those who registered with Easyride for the first time during the months of May and June, 1978 was selected.

The table below gives the target sizes and the interview completion numbers and percentages for each of the samples used in the study.

TABLE I-1

INTERVIEWS COMPLETED & COMPLETION RATES FOR EACH SAMPLE

	Target Sample	# of Interviews Completed	% Com- pleted
Public Housing for Elderly: TOTAL	718	525	73%
Lower East Side	466	332	71%
Bronx and Chelsea	252	193	77%
Homecare	85	60	71%
Visually Impaired	(*)	66	---
Easyride Recent Registrants:	99	61	62%

* Since the records were often outdated, or otherwise unusable, it was not possible to fix an exact target size.

A. Methods of Sample Selection

Before describing the demographic characteristics of the various samples, a brief description of how each sample was selected is in order.

1. Public Housing for the Elderly.

While elderly people live in all public housing projects on the Lower East Side, only three buildings are exclusively devoted to housing the elderly and the handicapped. The residents of these buildings constituted the population from which Lower East Side samples were selected. The buildings in Chelsea and the Bronx are generally similar to those on the Lower East Side in terms of gross socio-economic measures. In order to be accepted as a resident in one of the buildings, people had to: be over 62 years old or, if younger, be seriously disabled; live in New York City; have income and assets under \$13,900; and reside in substandard housing.

All three of the neighborhoods involved had been designated as federal poverty areas with large proportions of their populations receiving welfare. In the Bronx River area, 52% of the residents received Supplementary Security Income (SSI) compared to 44% in the Lower East Side and 22% in the Chelsea area. Both the Lower East Side and Bronx River are predominantly residential areas while the Chelsea is both commercial and residential in character.

It appeared desirable to have at least one relatively large sample that, while not representative of the total population of older people, would be representative of some segment of the older population that was likely to be poor, disabled, in need of assistance (e.g., with transportation), and accepting of such assistance if it were offered. The choice of six buildings of the Public Housing Authority which were reserved for the elderly or handicapped served this purpose well.

In each building, systematic samples with random starts were selected from the floor plans. Thus, samples of apartments were obtained by picking every other apartment on each floor, and by alternating starting points on each floor. Where apartments were set aside for the handicapped, these were made into a separate stratum, then sampled in a similar way. Where it was desirable to increase the sample of apartments because some of those originally sampled were empty or contained people unable to be interviewed for reasons of health or difficulties with communication, additional systematic samples were picked from the apartments not previously included. Most of the apartments contained one tenant; where two persons lived in an apartment, a systematic rotation scheme was used to select the male or older member, the female or younger member, both, or neither.

2. The Homecare Sample

The "homecare" respondents are the clients of an agency (ALESS) which provides homemaker services and which, by letter, recruited as many clients as were willing to participate in this study. Most of these respondents were not completely home-bound, though a number of them had not been out for a long time except to visit the doctor. One thing that distinguished them was that they were not eligible for Medicaid at the time of their first contact with the agency, though they all were on Medicare. While there is no control sample of homecare recipients, comparisons can be made between this group, matched sub-groups from the public housing samples, and the samples of visually impaired people.

3. The Visually Impaired

The visually impaired sample is made up mostly of people drawn from the files of the Lighthouse and of a small number of people from the active files of the Jewish Guild for the Blind. This sample was picked according to age groups and zip code zones so as to provide pairs matched on age, sex and degree of visual impairment or blindness. One member of each matched pair lived on the Lower East Side and the other within a set of zip code areas in Manhattan, which had a degree of socioeconomic similarity with the zip code areas on

the Lower East Side. Letters were sent out by the Lighthouse (the Jewish Guild for the Blind recruited members in person) inviting those selected by this method to participate in the study. All who agreed were included. While most of the clients who were asked to participate were 65 years old or older, a small number of younger people were included also.

4. Easyride Registrants

The target sample here was the population of people who registered with Easyride in the two months of May and June, 1978. The relatively high non-response rate may be due, in part, to the fact that new registrants had already been asked for a great deal of information when they filled out the registration form. Thus, they may have thought that the research interviews were merely repetitious of the forms they had completed. These registrants may also have been more difficult to find since they were neither housebound, nor all residents of public housing.

B. The Demographic Characteristics of the Samples

We turn now to a description of the major demographic characteristics of the samples. In a later chapter we shall examine the relationship between these characteristics and various patterns of travel. For the present, however, we are interested in identifying the similarities and differences among the samples.

1. Age. - Table I-2 shows that the respondents in each of the samples were indeed elderly. Over 50% of the public housing, Easyride registrants, and homecare samples were 75 years old or over. Only the visually impaired were notably younger with 29% of the sample under 60. Nevertheless, the visually impaired respondents were generally advanced in years themselves with 68% being 65 or older.

TABLE I-2

	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
Less than 60	8%	7%	5%	29%
60-64	8	10	10	3
65-74	34	31	28	38
75+	51	52	57	30
	(525)	(61)	(60)	(66)

2. Sex. - As the Table I-3 indicates, the samples are essentially similar with respect to the sex distribution. In each case there are at least twice as many women as men. This is not unexpected in samples of elderly people, since women have a longer average life span than men.

TABLE I-3

SEX DISTRIBUTION OF THE SAMPLES

<u>Sex</u>	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
Male	29%	33%	27%	33%
Female	71	67	73	67
	(525)	(61)	(60)	(66)

3. Ethnicity - Ethnicity is associated with cultural differences that may affect patterns of visiting, shopping and health care utilization and thereby influence travel and transportation habits. However, in selecting the samples for the intended evaluation study, no effort was made to control for ethnicity, because age, income, disability and social isolation were assumed to be more crucial determinants of travel. Thus, it is not surprising that there are differences in the ethnic composition of the samples.

In examining the table below, it is useful to note that in 1970 the ethnic composition of New York City was described as 49% white, 37% black, and 13% Hispanic. By contrast, the Lower East Side, from which the majority of the public housing sample and all of the Easyride registrant sample were selected, had a 1970 ethnic distribution of 48% white (including a substantial population of elderly Jews), 24% non-white (black, Chinese) and 13% Hispanic (Schwartz, 13).

TABLE I-4

ETHNIC DISTRIBUTION OF THE SAMPLES

<u>Ethnicity</u>	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
Black	17%	3%	12%	11%
Hispanic	24	18	12	2
Jewish	19	53	21	37
Other White	38	21	55	50
Oriental	1	3	--	--
Other	1	2	--	--
	(525)	(53)	(60)	(66)

4. Marital Status - The public housing, Easyride registrants and homecare samples were essentially similar with respect to marital status. Approximately 15% of each sample had never married, while roughly a third of each sample were married at the time of the survey. Half of the public housing and Easyride registrant samples were widowed compared to slightly less than 40% of the homecare sample.

Once again, the visually impaired stand out as different. Slightly less than one-quarter of those respondents had never married, and slightly more than one quarter were widowed. The percentage of divorced or separated in the visually impaired sample was two to three times greater than in any other sample.

TABLE I-5

PERCENTAGE DISTRIBUTION OF MARITAL STATUS AMONG THE SAMPLES

<u>Marital Status</u>	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
Never married	13%	13%	15%	24%
Married	27	30	38	27
Widowed	50	50	37	27
Divorced	5	5	8	15
Separated	6	2	2	6
	(525)	(61)	(60)	(66)

5. Household Composition

The respondents in all samples were asked questions about whether they lived alone or with another person. Three quarters of the people in the Public Housing Sample lived alone, while this was true of approximately half of those in the other samples. In the public housing and homecare samples, most of those who did not live alone, lived with their spouse. In the Easyride registrants sample, and the visually impaired sample, however, more than half of those who did not live alone lived in an arrangement with someone other than a spouse. These other people appear to be healthy and capable themselves and may be of assistance to the more disabled members of these two samples.

TABLE I-6

PERCENTAGE DISTRIBUTION OF HOUSEHOLD COMPOSITION AMONG THE SAMPLES

<u>Household Composition</u>	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
Alone	73%	41%	56%	49%
Spouses	24	28	37	20
Other Arrangements	2	31	7	31
	(525)	(61)	(60)	(66)

6. Work Status

In all of the samples except for the visually impaired, 80 to 90% of the people were retired and approximately 10% never worked. The visually impaired included 10% who were working full or part-time, 2% who were unemployed, 3% who were students and a relatively large 10% who, while retired, were working part-time or as volunteers.

TABLE I-7

PERCENTAGE DISTRIBUTION OF WORK STATUS AMONG THE SAMPLES

<u>Working Status</u>	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
Working Part/full	2%	--	--	10
Retired Vol/Part	3	3%	--	10
Retired	79	87	89%	64
Never worked	16	8	11	11
Students	--	2	--	3
Unemployed	--	--	--	2

7. Economic Status

The respondents' economic status was measured indirectly. One indicator used for the purpose was the kind of health and hospitalization insurance which they had. The vast majority of the sample members were eligible for Medicare by virtue of their age and/or, in some cases, disability. Thus, Medicare is not an indicator of income. To qualify for Medicaid, however, the respondent must satisfy financial means criteria. Thus, Medicaid eligibility is a gross indicator of financial need, while the possession of "other," that is, private forms of insurance, is taken as a gross indicator of more financial comfort. The distribution of these types of insurance within the samples is shown in the table below.

TABLE I-8

SOURCES OF HEALTH INSURANCE*

	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
Medicare	85%	84%	96%	75%
Medicaid	43	34	9	25
Other, total	12	27	27	46
None	5	2	--	3
	(525)	(61)	(60)	(66)

* Percents add to more than 100, since many have Medicare plus other insurance.

Clearly, many respondents report more than one source of health-care support. While some respondents were probably confused as to whether they received Medicare or Medicaid, the figures presented in the table seem consistent with other considerations. For example, in every sample, the total number reporting that they received Medicare exceeded (at least by one percentage point) the number claiming to be 65 years old or older. In as much as disability is another criterion for eligibility, this is as it should be. The fact that 96% of the homecare sample claim to be on Medicare and only 9% on Medicaid is consistent with the data presented in Table I-9, below, and reflects the eligibility criteria of the ALESS program. Again, the fact that the visually impaired have a large fraction with "other types of insurance" accords with the impression that this sample is considerably better off economically than others.

Another indicator of poverty is the receipt of Supplementary Security Income (SSI). Table I-9 shows the percentage of people in each of the samples who receive Social Security and those who receive SSI.

TABLE I-9
PERCENTAGE OF INCOME SOURCES IN EACH SAMPLE

<u>Income Source</u>	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
SS	87%	81%	82%	79%
SSI	43	28	8	22

The table indicates that a considerable number of the respondents in at least three of the samples were in serious financial need. Specifically, between 22 and 43% of those in the visually impaired, Easyride registrants and public housing samples received SSI. By contrast, only 8% of the homecare sample received SSI. This is consistent with the fact that eligibility for receiving homecare services from ALESS precludes the receipt of SSI, except for the period between SSI approval and the commencement of services from other sources.

C. Selected Characteristics of Projects Included in the Public Housing Sample

As previously indicated, the public housing sample was drawn from six different buildings that provide housing specifically for the elderly and handicapped. The material presented earlier in this chapter describes some of the demographic characteristics of the sample as a whole and compares it with the other study samples. For the most part, in the chapters that follow, the public housing residents will be treated as one sample. However, occasionally we will note an interesting difference between two or more public housing projects with respect to particular travel patterns. We believe that some of these difference might be, in part, a reflection of different patterns of land use within and around the projects and/or small demographic differences that distinguish the residents of one project from another. We have not tried

to collect systematic and detailed data describing the physical characteristics of the projects and their environs, nor do we use projects of residence as a specific variable in our analyses. Instead, we present here a general description of the physical environment and a mention of the few demographic variables on which projects differ one from the other. This information should at least orient the reader to the physical context in which our public housing research subjects traveled about.

1. The Lower East Side Houses

a. LaGuardia Houses Addition

LaGuardia Houses Addition is located in the southwest section of the Lower East Side within a large public project and houses 170 elderly and handicapped people. The building was constructed in 1965 and, though beginning to age, is kept in good condition. Each of the fifteen floors above the ground floor has ten apartments serviced by two elevators. LaGuardia has its own small senior center, which can be entered from both inside and outside of the building and serves elderly people who live in the building and in the neighborhood. A social worker at the center estimates that about half of the 60 to 70 people who generally attend the lunch program come from the building itself. The center has a lunchroom, kitchen, t.v./recreation room, an arts and crafts room, and a housing authority office. It is staffed by a social worker, a cook, and three part-time group workers. Activities, which include regular group trips, are frequent and varied. Also available

to LaGuardia residents are the social and recreational services of the Educational Alliance which is located three blocks away.

The grounds around LaGuardia are landscaped. At the front entrance is a small semi-private area where people congregate. There is also a back entrance providing access into the building. Many LaGuardia residents sit on benches placed along a sidewalk which separates the north side of the building from a large cement playground. Many non-elderly people usually congregate in this area and in other areas surrounding LaGuardia. Next to the LaGuardia Addition is a small parking lot which makes door-to-door transportation easily accessible to residents of this building.

Most LaGuardia residents travel to the north and northeast of their building to do their grocery shopping. To the south, new buildings were constructed at the time of the research. To the west are projects, businesses, rundown factories, and then Chinatown itself. To the east are still more projects. A public bus stop is two blocks away and a subway station is three. The out-patient clinic of Gouverneur Hospital is three blocks away.

b. Meltzer Tower

Meltzer Tower is a large nineteen story building with 231 units. It houses over 300 people of diverse ethnic origins. On each floor, a resident has been named as a volunteer floor captain who provides information, attends monthly meetings, and reports to the building's social worker. In addition to

a meeting room, Meltzer has an arts and crafts room with sewing machines, easily accessible restrooms and water fountains on the ground floor, a bulletin board in the lobby, and a social service office which is staffed by a full-time social worker and a senior resident advisor. On the average, this office initiates two or three activities a week. The building also has a frequently used small park with places to sit in the sun or in the shade. Unlike other buildings in this sample, Meltzer is not located within a housing project.

South of Meltzer is Houston Street, a very wide and heavily travelled street which is often seen as a barrier to Meltzer's elderly residents who wish to cross to purchase their necessities in a bargain shopping area. Also located two blocks south of Meltzer is a social center which offers a lunch program. Some residents use this social center while others use centers 10 - 15 blocks away. Meltzer residents appear hesitant to travel east or west because they are afraid of crime in these areas. They do not hesitate to travel north up First Avenue which is thought to be comparatively safe and on which are supermarkets and many small stores. Bus stops and a subway entrance are less than a block away. However, residents express reluctance to use the subway because younger people congregate around its entrance and its many stairs make access difficult.

c. Baruch House Addition

Baruch is an attractive, newish building 23 stories tall with ten apartments on each floor, housing 254 residents. A driveway leads to within 15 feet of the front door. Unlike the buildings previously described, Baruch's entrance is manned by a security guard who asks guests to sign in. Offices on the first and second floors are used by a social worker, a housing assistant, and visiting social workers who assist tenants. Also on the first floor are two common rooms used by residents to watch television, to hold meetings, and to gather informally.

Perhaps because Baruch is located in the far eastern part of the Lower East Side and is surrounded by housing projects and tenements, residents seem to confine their travels to the immediate area. In front of the building are some frequently used benches where residents congregate. Across the street are a few stores, a supermarket, a drugstore, and a pizza parlor. Baruch residents can walk one block west to one lunch program offered by a social center or two blocks west to another social center which also has an extensive activity program. Residents can also choose to walk south to both Delancey and Grand Streets where more extensive shopping is available. However, distances in this direction seem to be too far for elderly people who complain, as well, about the younger people who congregate both on these streets and on the cross-streets. A bus stop is located one block from Baruch. This line goes north and then crosstown on 14th Street. To travel further uptown, one must travel for 20 minutes on this bus and then transfer to another bus.

2. Chelsea Houses Addition

Located in the Lower West Side of Manhattan, the Chelsea Houses Addition is a fourteen story building constructed in 1968. It has 96 units housing approximately 107 tenants. This building has no area inside or out where people can congregate. The entrance is locked, but unguarded. The building has a tenants' patrol, however, and apparently has few problems with crime. A small hallway on the first floor leads directly to the elevators. Each floor above the first has six apartments in a semi-circular fashion around the elevator bank. Hallways are narrow and not particularly well-lit. Observers did not see any signs posted announcing organized activities in the building.

A few people sit on benches which line an access road running in front of the building. Also in front of the building is a large ball playing area which is separated from the road by a tall wire fence. To the east of the entrance is a small playground and an elementary school which has a cement courtyard where children and teenagers congregate. One block east of Chelsea is 9th Avenue. A public bus runs on this avenue and goes south to 14th Street and Greenwich Village. There is also a social center on 9th Avenue, but it is located 9 blocks from the house and seems rarely used by residents. A small public park, with benches and trees is another facility which seems rarely used by residents of the Chelsea Houses. The land to the North on 9th Avenue is essentially given to commercial

use while that to the south mixes both residential and commercial use. Two blocks east of Chelsea is a large middle-income housing complex and two blocks further east is the Eighth Avenue subway and a bus which runs north. Tenants have little reason to walk west on the access road because warehouses and Hudson River wharves, which are closed off to pedestrians are located there. However, this access road goes to the public bus which runs north up Tenth Avenue. Four blocks from Chelsea are two supermarkets, a bakery, and a variety of small stores. A hospital is located about a mile from the building.

3. The Bronx Houses Addition

The two buildings which make up the Bronx River Houses Addition are two blocks from each other and are situated on the periphery of a large housing project. The smaller of the two is located on East 174th Street and contains 75 units in its six floors. The larger building on Manor Drive has 150 units on its 13 floors. Both buildings have common rooms used by their residents for meetings, for playing bingo, and for other kinds of socializing. Outside both are places to sit and a parking lot.

A senior center, located inside the Bronx River Houses Neighborhood Center, maintains an active and varied program including a breakfast/lunch program, arts and crafts and other kinds of classes, a telephone reassurance program, and weekly group trips. About 75% of the approximately 150 elderly people who daily attend this center live in the two buildings of the Addition. Within three blocks is a supermarket and an

area in which vendors sell their produce. An outpatient clinic, operated by Bronx Lebanon Hospital, is within the Bronx River Houses complex and is located less than two blocks from each of the buildings of the Addition. In addition, some medical and dental offices are located nearby.

Most of the residents who walk in this neighborhood go to a commercial area 5 blocks away. Although the neighborhood they walk through is not severely deteriorated, the elderly people interviewed were concerned about crime. Many residents also travel on a public bus, which stops in front of each building, to go to a nearby department store or to an accessible subway stop. The nearest subway stop, located five blocks away, is inaccessible to most elderly because of the three flights of stairs they must climb to reach the elevated platform. Some residents use the subway to travel to Manhattan while, for shorter trips, they summon a taxi by telephone. Most residents of these two buildings came from points of the city geographically distant from Bronx River. Thus, their friends and relatives are most likely to live outside the neighborhood. In this respect, these buildings differ from the other buildings in this study, most of whose residents live in buildings located in neighborhoods where they had lived previously.

The major physical characteristics of the houses from which our Public Housing sample was drawn are summarized in Chart I-1 on the following page.

CHART I-1

General Physical Characteristics of the
Public Houses and Their Environs

	<u>LaGuardia</u>	<u>Baruch</u>	<u>Meltzer</u>	<u>Chelsea</u>	<u>Bronx Manor Avenue</u>	<u>Bronx 174 St.</u>
Size:						
# Floors	15	23	19	14	13	6
# Units	150	220	231	96	150	75
Building Social Worker?	Yes	Yes	Yes	No	No	No
# Common Rooms	2	2	2	None	None	None
Place to Congre- gate Outside?	Yes	Yes	Yes	No	Yes	Yes
# of Open Routes to Travel*	2	1	2	2	2	2
Distance in blocks** to:						
Shopping	2	1	6	4	3	3
Social Center	Within Building	2***	2***	9	1	1
Hospital/Clinic	3	20	17	20	1	1
Bus	2	1	1	1	0	0
Subway	3	9	1	4	5	5

* Open routes are those without barriers to travel such as rivers and construction sites, as well as industrially isolated and other areas where people fear for their safety. A route was classified as open based on the agreement of two research observers.

** About 20 blocks = 1 mile.

*** Meltzer and Baruch have numerous activities organized within the building; Meltzer more than Baruch.

4. Some Demographic Differences Between The Buildings Within Public Housing Facilities.

Although the public housing for the aged attracts fairly homogeneous populations of elderly people due to the strict prerequisites for entry, there are some differences between the populations in the different buildings. While the whole sample is relatively old with over half of the people 75 years of age or older, the Baruch House differs from the others in this respect with only 27% of its residents having reached 75 years of age. The Baruch houses also had the largest percentage of male residents, the largest percentage of people currently married (41%) and the smallest percentage whose marriages ended in death, separation or divorce (47%). By comparison, 71% of the LaGuardia houses were no longer married for one of these three reasons.

There are also marked differences in the ethnic and racial composition of the buildings. Approximately half of Baruch's tenants, (48%) are Hispanic, while 69% of LaGuardia's tenants are "white" (excluding the Hispanics). Almost two thirds of these people identify themselves as Jewish, while in Meltzer, 80% of the residents are white -- but of these only 17% say that they are Jewish. In the Chelsea Addition, Blacks, Hispanics, and whites, none of whom are Jewish, occur in the ratio of 1:2:3. Both of the buildings in the Bronx have populations which are 40% Black, 40% white, and 20% Hispanic.

While regulations limit public housing for the aged to those who do not have assets in excess of \$13,900, there appear to be some income differences among the buildings. For example,

in three of the buildings between 53% and 59% of the residents received Supplemental Security Income (Baruch, LaGuardia and Bronx Manor), the percentage of SSI recipients in the other three buildings (Meltzer, Chelsea and Bronx 174th Street) was much lower, ranging from 27% to 34%. In addition, while in five of the houses, the percentage of residents receiving Medicaid ranged from approximately 35% to 60%, the Chelsea house differed sharply with only 1.7% of its residents in this category. While the Chelsea residents do seem to be somewhat better off, this figure is strangely low, since approximately 21% of the residents receive SSI and in New York State all of these people would automatically qualify for Medicaid.

CHAPTER II

The Dependent Variable: Travel Behavior of the Elderly and the Handicapped

A) Introduction

The dependent variable with which this research is concerned is the travel behavior of relatively poor, elderly and handicapped people in New York City. Governmental reports, technical studies of transportation and the expressed opinions of experts on the aged and the handicapped indicate that transportation is a crucial problem. It has been suggested that appropriate, accessible transportation for the elderly and the disabled is needed to increase their independence, reduce their isolation and improve the quality of their lives. The first year report of the Project to Monitor Title XX Senior Services in New York State discusses transportation as one of the services for which elderly people express the most need (State Communities Aid Association, 1976). In the Technical Report of the National Survey of Transportation Handicapped People (UMTA: 1978, p. 35) it is estimated that there are 7,440,000 transportation handicapped people in the urban population 5 years of age and older; almost half of them, 3,478,000 are 65 years old or older. This survey also affirms that elderly and handicapped people want to travel and, more importantly, that they do travel, even though they have great difficulty using public transportation. The mechanical characteristics of public vehicles and the physical

demands of boarding and leaving them are but a part of the problem. The UMTA report suggests that the combination of age and related physical disabilities makes it particularly difficult for the elderly to make effective use of public transportation facilities.

This limited mobility of the elderly and handicapped is the result of many different kinds of obstacles. Besides physical or mental disability and health problems, there are economic barriers and problems posed by mechanical aspects of the environment and transportation. (Brail, Hughes, Arthur 1976) Many elderly people never obtained driver's licenses when they were younger; and even if they had, it would not help them now since they cannot afford a car, and are prone to such physical disabilities as blindness, loss of peripheral vision, and other forms of visual impairment, hearing loss, poor coordination and slowed reactions, restricted, slower and often painful movement, and the need to use medication. All these disabilities make it difficult not only to drive an automobile, but to travel independently at all. Many have specific locomotion problems which affect their ability to use public transportation. Many cannot even walk far enough to get themselves to a bus stop or to a subway station.

When they do attempt to use public transportation, elderly people often find such physical barriers as high steps which they must climb to get into vehicles, staircases in subway stations, fast moving escalators, longer walking distances than they can manage, and waiting places which have no seating.

Many have difficulty standing in moving vehicles, getting into and out of seats, reaching for handholds, and understanding announcements or reading directional signs. In addition, it may be very difficult for these people to navigate through crowds.

Some of the operational inadequacies of public transportation systems such as, infrequent service, rapid acceleration of vehicles, schedule irregularities, inadequate presentation of information, inconvenient routes, and difficult transfers may be annoying inconveniences for younger users, but are often insurmountable barriers for the elderly and handicapped. Other conditions, such as overcrowding and lack of seating, make the use of public transportation particularly difficult for the subjects of this research.

Despite these many barriers which make transportation difficult, if not impossible for them, most elderly and handicapped people want to travel. Studies reporting on the travel habits of the elderly describe the destinations of their travels, the number of trips they take, the means of transportation they use, and the assistance they need. One report enumerates the destinations to which elderly and handicapped people most frequently travel--to their doctors or clinics, to do their shopping, to senior centers and lunch programs, to their family and friends, to places of recreation, and to churches and synagogues (UMTA, 1978). This report also states that elderly people who experience problems with transportation travel primarily for shopping and personal business, for leisure and recreation, and for medical reasons (UMTA, p.82).

In another study, managers of housing for old people rated the importance of those facilities, or destinations, where older people want to go, and gave, for each of these facilities, a "farthest allowable" and a "preferred distance" from the homes of their elderly users (Niebanck and Pope, 1965). Data from this study (Table II-1) indicate that the two most important destinations cited by the managers as most important were the grocery store and the bus stop. In discussing the bus stop, managers emphasize the need for accessible transportation.

TABLE II-1: Facilities Rated Important by Housing Managers in Selection of Urban Housing-Project Sites for Older People.

<u>Facility</u>	<u>Rank of Importance</u> ¹	<u>Critical Distance</u> ²	<u>Recommended Distance</u> ³
Grocery store	1 (57)	2-3 blocks	1 block
Bus stop	2 (53)	1-2 blocks	adjacent to site
House of worship	3 (46)	$\frac{1}{4}$ - $\frac{1}{2}$ mile	$\frac{1}{2}$ mile
Drugstore	4 (37)	3 blocks	1 block
Clinic or hospital	5 (31)	$\frac{1}{4}$ - $\frac{1}{2}$ mile	1 mile
Bank	6 (25)	$\frac{1}{4}$ mile	$\frac{1}{4}$ mile
Social center	7 (14)	Indeterminate	on site if feasible
Library	8 (9)	1 mile	$\frac{1}{2}$ mile
News-cigar store	9 (9)	$\frac{1}{4}$ mile	$\frac{1}{4}$ mile
Restaurant	10 (9)	$\frac{1}{4}$ - $\frac{1}{2}$ mile	no consensus
Movie house	11 (2)	1 mile	1 mile
Bar	12 (1)	Indeterminate	no importance

1. Based on the number of times mentioned as "important" in the location of a housing development for the elderly. Frequency of mention is shown in parenthesis.

2. Based on the distance of the housing from a given facility in cases where dissatisfaction had been expressed by the residents.

3. Based on the apparent consensus of the managers for a recommended distance to each facility.

Several studies have found that older people classified as "transportation handicapped" take a considerably lower average number of trips in one month (20.4) than do younger "transportation handicapped" people (36.6) (UMTA, 1978).

A number of studies have found that elderly people as a group, whether handicapped or not, and the transportation handicapped of all ages, travel substantially less than the general population. (Crain, 1976; Abt. Associates, 1969; UMTA, 1978).

The UMTA report introduces travel data beyond trip frequency. For example, it indicates that shopping and leisure activities make up the greatest part of all the trips made by elderly, transportation handicapped people (p. 89). The study also presents national data on the means of transportation used by transportation handicapped people. The car appears to be the primary mode of transportation (p. 95); however, the taxi is of great importance among transportation handicapped people with visual impairment, 22% of whom rely on the taxi for their transportation, compared to 13% of transportation handicapped in general (p. 96). As might be expected, the national sample does not rely heavily on mass transit. This is not true of the New York City residents reported on in this study. In New York, the private car is not crucial and dependence on mass transit is considerable. The UMTA report also notes that if transportation handicapped people have access to a car, they are much more likely to be passengers than drivers. (p. 107) In fact, 39% of transportation handicapped people require assistance when travelling and 42% of

the elderly require assistance and generally need this assistance throughout the trip.

Other studies underscore the importance of the availability of accessible transportation. In "Community Care for the Elderly: An Alternative to Institutionalization", William G. Bell claims that insufficient medical care is due more to the inability to get to medical resources than to the lack of medical resources. Bell also estimates that 15% to 30% of the aged recently admitted to nursing homes could have avoided or postponed admission if community care was available and adequate (Bell, 1975). Jane Barney in "The Perogative of Choice in Long Term Care" reports on her study of the Well-Being Clinic of Detroit (Barney, 1973) and maintains that transportation is an important facilitating service. Eva Kahana (Kahana and Coe, 1975) indirectly suggests that transportation may help to compensate for the lack of a strong social support system when she states that the lack of transportation has often been cited as the lack of the one service often responsible, for the under-utilization of all others. David Hatlack, in "The Case for Geriatric Day Hospitals" (Hatlack, 1975), maintains that day hospitals, which already operate in Great Britain and to a lesser extent in the United States, allow for the earlier and more successful discharge of inpatients and the maintenance of the frail and the elderly in their communities. He emphasizes the importance of transportation as contributing the facilitating service which would make a day care program possible, as it would a community based continuing

care program (Robertson, et al, 1977). Cutler suggests that transportation not only enables elderly people to utilize the health care facilities they need, it also contributes to many aspects of the quality of life:

Whether old age is a period of retirement leisure, fruitful in personal fulfillment and social contribution, or a sterile stretch of "free time" depends, in large part, upon the individual's access to services and goods he needs, and to activities and people he enjoys. In other words, the quality of later life depends upon the quality of housing and environment, made dynamic by transportation. (Cutler, 1975).

Cutler also suggests that satisfaction with life as a whole will decline among persons without adequate transportation because they will be kept from social interaction.

B. The Indicators of Travel Behavior

It was, then, against this background of a good deal of information on the difficulties elderly and handicapped people experience in getting to the places they wish to go and the solutions proposed to these problems, that the Easyride transportation service was begun. The literature summarily reviewed above was helpful both in suggesting the independent variables that might be usefully studied in relation to travel and in helping us to construct operational definitions for all of our study variables. In fact, the travel behavior of our research subjects was measured through the use of many different indicators. These indicators are described below and are used separately and in combination to describe travel throughout the subsequent chapters

of this report.

All of the data were collected through interviews with sample members. The main interview schedule is contained in Appendix A to this report. Page 7 of the interview schedule presents a matrix in which the vast bulk of our travel data were recorded. The matrix called for information on the destination to which respondents travelled and, for each destination, the frequency with which the respondent travelled to it, conditions which affect the respondents' travel to that destination, the mode of travel typically used and the estimated distance of that destination from the respondents' home. The interviewer also asked the respondent whether he/she would go to that destination more often if better transportation were available.

Virtually all of the travel measures used in this study are based on data taken from this matrix. The descriptions most often used include the following:

- the total number of trips made in a given year.
- the frequency of trips made to the grocery store (clearly, a crucial travel destination of our respondents).
- the frequency of trips made to a social center.
- the frequency of trips made to medical destinations.
- the number of different destinations visited in specific time periods.
- the mode of travel used.
- the extent to which travel is done on foot.

- the greatest distance travelled to destinations visited at least once a month.
- the estimated distance to the most frequent destinations.
- the farthest distance travelled on foot at least once a month.

Data describing the travel patterns of our samples according to each of these measures are presented in Chapter III. In subsequent chapters exploring the relationship between selected independent variables and travel, some, but not all, of these travel indicators are used. In some cases, the indicators are combined to form a particular index of travel (e.g., the most difficult mode used). The rationale behind the index and the mechanics of its computation are explained wherever it is first introduced.

C. Travel Patterns Among The Study Samples

1) Total Annual Trips

The measure for the total number of annual trips taken by respondents represents the sum of their estimated number of trips to the 16 different destinations listed in the matrix on p. 7 of the Interview Schedule (Appendix A). We accept the estimated total number of trips as fairly accurate on the assumption that overestimates and underestimates of trips to different destinations cancel each other out.

To compare the amount of travel reported in the different samples, we established quartiles of the distribution of annual trips in the public housing sample and then compared the percentage distributions of each of the other samples across the categories

whose boundaries are defined by the quartile. Thus, 25% of the public housing sample took an estimated 99 or fewer trips in a year. The second 25% took between 100 and 206 trips annually; the third quartile between 207 and 321 trips; and the most travelled 25% of the public housing took between 322 and 906 trips. Table II-2 presents the distributions of the other samples.

This table and most of those that follow in this chapter present descriptive statistics for a special sub-sample of the public housing sample--members of that sample who had used Easyride at least once at the time of data collection. Despite the fact that the research is no longer evaluative in character, this subsample may be of interest as a group of elderly and handicapped people who have made use of a door-to-door transportation service.

TABLE II-2

Distribution of Annual Trip Statistics
Among the Study Samples: Quartiles
Established on the Public Housing Samples

<u>Annual Trips</u>	<u>Public Housing Sample</u>	<u>Public Housing Subsample of Easyride Users</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
1-99	25%	32%	33%	40%	21%
100-206	25	19	29	27	21
207-321	25	19	25	15	21
322-906	25	30	13	18	36
	(525)	(85)	(61)	(60)	(66)

Using the public housing sample as a standard for comparison, the visually impaired were clearly the most widely travelled sample of respondents in our study--only 42% fell into the two lower quartiles, while 36% were in the highest quartile. The other extreme is represented by the homecare sample in which 67% of the respondents were classified in the lowest quartile and 18% travelled frequently enough to be categorized in the highest quartile.

While the subsample of Easyride users does not differ sharply from the public housing sample, the sample of Easyride registrants, most of who did not live in the housing projects for the elderly, more closely resembled the homecare sample in their relatively limited travel. Specifically 62% of the registrants fell into the lowest quartiles of annual trips, while only 13% took enough trips annually to be classified in the highest quartile.

2) Frequency of Trips to the Grocery Store

The most frequent destination for sample members venturing out of the house was the grocery store. Later sections of this report will indicate that the frequency of grocery shopping is a rather good indicator of the extent of travel in general and that the frequency of grocery shopping is greatly affected by various factors that constrict travel. Thus, it is an indicator that figures prominently in subsequent analyses of travel patterns.

TABLE II-3: Frequency of Trips to Grocery Store

<u>Frequency of Grocery Trips*</u>	<u>Public Housing Sample</u>	<u>Public Housing Subsample of Easyride Users</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
Less than once per year	26%	49%	43%	52%	29%
Several times per year	3	4	3	3	1
1 to 4 times per month	18	14	18	10	20
More than once per week	52	33	36	35	50
	(525)	(85)	(61)	(60)	(66)

In both the public housing and visually impaired samples, half of the respondents go to the grocery store at least once per week, while a little more than a quarter of these respondents indicate that they rarely or never take such trips. The other three samples differ notably from these two and more closely resemble one another. While between 43% and 52% of these samples almost never go to the grocery store (less than once per year), about one-third go on at least a weekly basis. Again, the home-care sample seems to be the least mobile.

3) Frequency of Trips to the Social Center

In general, trips to the social center were less frequent than we expected in an elderly population. From 50% to 80% of the respondents in the various samples described such trips as rare, at best. Yet with the exception of the visually impaired,

* The categories are made up from the original codes as follows: Less than once per year = Rarely or Never; several times per year = once per month; several times per year (occasionally), or once a year; 1 to 4 times per month = several times per month, and once per week.

it appears that those who do go to social centers, do so rather frequently. For example, while only 40% of the public housing sample and 32% of the homecare sample said they went to social centers at least several times per year, 25% and 27% of the two samples respectively, indicated that they made such visits once per week, or more. Indeed, except for those in the visually impaired samples, of those who go to the social center at least several times a year, at least 60% of each sample go more than once a week. This reflects the fact that most of those who go to the centers go for their meals.

TABLE II-4: Frequency of Trips to a Social Center

<u>Social Center Trips</u>	<u>Public Housing Sample</u>	<u>Public Housing Subsample of Easyride Users</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
Less than once per year.	60%	50%	72%	68%	82%
Several times per year	7	5	5	--	4
1 to 4 times per month	8	9	5	5	10
More than once per week	25	35	18	27	3
	(525)	(85)	(61)	(60)	(66)

The visually impaired are distinctive in the extent to which they refrain from visiting social centers.

4) Trips to Medical Destinations

Visits to doctors, clinics, health centers and other medical destinations were frequent, except in the sample of visually impaired respondents. Almost 60% of the latter indicated that

they made such visits rarely or never. Except for the visually impaired, between 50% and 70% of the other sample members go to medical destinations at least once a month, and between 12% and 17% go once a week, or more. The Easyride registrants and the homecare respondents appear to need more medical attention than the other samples.

TABLE II-5: Frequency of Trips to Medical Destinations

<u>Trips to Doctor or Clinic</u>	<u>Public Housing Sample</u>	<u>Public Housing Subsample of Easyride Users</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
Rarely, never	39%	28%	18%	20%	57%
More than once a month	49	59	69	63	31
More than once a week	12	13	13	17	13
	(525)	(85)	(61)	(60)	(66)

5) The Number of Different Destinations Visited at Least Once a Month

This measure was considered an indicator of variation in the respondents' travel patterns. The 16 destinations listed in the matrix (p. 7 of Appendix A) were collapsed into categories describing the number of different destinations to which respondents travel with some frequency.

As can be seen from the figures in Table II-6, there is not a great deal of variation in destinations. Only 7% to 17% of the various samples identified 6 or more distinct destinations.

TABLE II-6: Number of Destinations Respondents Go To Once a Month or More

<u># Places</u>	<u>Public Housing Sample</u>	<u>Public Housing Subsample of Easyride Users</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
0-1	22%	27%	21%	27%	9%
2-3	36	34	51	45	41
4-5	29	24	21	18	33
5+	13	15	7	10	17
	(525)	(85)	(61)	(60)	(66)

On the other hand, between 50% and 72% of the samples indicated that they visited less than 4 different destinations once a month, or more. By this measure, the visually impaired are clearly the most mobile while the homecare and Easyride registrants enjoy the least variety in their travel patterns.

6) Mode of Travel Used by Respondents

The respondents were asked to describe the means of transportation used in travelling to the various destinations. For analyzing mode use, we sought to create categories that would describe somewhat regular patterns rather than the full range of travel methods ever used by each respondent. For that reason we classified respondents by the travel mode used for destinations that they visited at least once a month. We also sought to establish mode use categories that were ordered in terms of the amount of physical ability and agility required for regular use of that mode. We assumed, in this regard, that travel outside

the home on foot did not require very much agility. Thus, the category "NONE" (see Table II-7) of the travel mode variable includes two kinds of respondents: (1) those who do not mention any destinations where they go at least once a month, regardless of the kind of vehicle they use when they do travel; and (2) those who go to at least one destination once a month or more, but make all such trips on foot. Although some members of this group may possess agility, in the aggregate the very restricted travel patterns of the group are seen as an indicator of their limited travel ability.

The category "door-to-door" transportation includes such vehicles as private cars, taxies, ambulettes, and Easyride vehicles, which pick up passengers at their homes and drop them at their destinations. The use of these vehicles requires only limited agility on the part of the traveller and, in some cases, such as Easyride, the mode may actually move the passenger from the interior of the home to the interior of the destination (i.e., "door-through-door"). Use of a public bus requires a fair degree of physical agility, while use of the subway requires even more. Indeed, there was hardly a respondent who reported using the subway, who did not also use the bus.

TABLE II-7: Mode of Travel

<u>Mode of Travel</u>	<u>Public Housing Sample</u>	<u>Public Housing Subsample of Easyride Users</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
None	12%	15%	13%	7%	3%
Door-to-door	16	24	25	28	18
Bus	42	46	34	45	36
Bus & subway	30	15	28	20	42
	(525)	(85)	(61)	(60)	(66)

Once again, the visually impaired are the most mobile of our study samples (i.e., 42% use bus and subway regularly; another 36% use the bus). On the other hand, only 61% and 62% of the Easyride subsample and the Easyride registrants, respectively, make regular use of these fairly demanding modes of transportation. Perhaps the most important statistic shown here is that about one-quarter of the Easyride subsample of the public housing respondents, the Easyride registrants and the homecare respondents rely on door-to-door forms of transportation.

7) The Amount of Travelling Done on Foot

Table II-8 describes the proportion of all trips that were made on foot in each of the study samples.

TABLE II-8: Proportion of All Trips Made on Foot

<u>Percent Trips On Foot</u>	<u>Public Housing Sample</u>	<u>Public Housing Subsample of Easyride Users</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
0-20%	25%	27%	21%	25%	20%
21-71%	25	18	44	47	52
72-92%	24	26	24	15	21
93-100	26	29	10	13	8
	(525) ^d	(85)	(61)	(60)	(66)

To facilitate comparison among the samples we divided the distribution in the public housing sample into quartiles and then described each sample in terms of its distribution across the

categories defined by those quartiles. They range of the second quartile is quite large covering from 21% to 71% of all trips. Within this range there are, by definition, 25% of the respondents of the public housing sample, but it contains almost half of the Easyride registrant, homecare and visually impaired respondents (i.e., 44%, 47% and 52% of the samples, respectively). These latter three samples depends, therefore, more on vehicular transportation than the public housing samples; clearly, a smaller fraction of their members make most of their trips on foot. In the case of the Easyride registrants and homecare samples, this difference reflects their lesser mobility and greater dependence on door-to-door transport. In the case of the visually impaired, however, the difference reflects their greater mobility and greater facility in using public transportation.

8) Distance From Home to the Farthest Destinations

One way of measuring distance travelled is to look at the distance of the destination farthest from the respondent's home to which he travels at least once a month. What immediately strikes the eye in Table II-9 is that the Easyride users subsample of the public housing sample never ventures out of the borough of Manhattan. Indeed, two-thirds of the members of this sample report that they never go regularly to a destination that is more than three blocks away from home. By this measure, the travels of this subsample are far more limited than those of any other sample. In fact, the other samples seem rather similar in

TABLE II-9: Greatest Distance of a Destination Travelled to at least Once a Month

<u>Distance Travelled</u>	<u>Public Housing Sample</u>	<u>Public Housing Subsample of Easyride Users</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
Stay at homes	7%	26%	7%	5%	8%
Under 3 blocks	13	40	5	10	2
3-6 blocks	15	24	23	10	8
7-20 blocks	26	11	23	12	14
20+ in Boro	24	--	30	42	49
Out of Boro/ Metro Area	15	--	13	22	21
	(525)	(85)	(61)	(60)	(66)

terms of the distance to their farthest destination, except for the visually impaired, 70% of whom indicate that the farthest destination visited regularly is 20 or more blocks from their homes.

9) Farthest Destination Regularly Visited on Foot

Distance travelled was also measured in terms of the farthest place to which people go on foot at least once a month. Table II-10 shows the distribution of this measure across the study samples. The modal category in all of the samples, except for the visually impaired, is 3-6 blocks. For the exception, the modal category is 1-2 blocks. Very few people in any of the samples walk more than 6 blocks to a place they visit with some regularity.

TABLE II-10: Farthest Distance Travelled on Foot Once a Month or More

<u>Farthest Distance On Foot</u>	<u>Public Housing Sample</u>	<u>Public Housing Subsample of Easyride Users</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
Under 1 block	24%	29%	9%	15%	6%
1-2 blocks	21	25	39	33	42
3-6 blocks	46	32	43	45	35
7-20 blocks	9	14	6	5	11
20+ blocks	--	--	--	--	4
Out Boro	--	--	3	3	2
	(403)*	(63)	(46)	(40)	(54)

* Percents are based on the total number of those respondents who (1) went by foot once a month or more to some destination, and (2) gave the distance for such a destination.

It can be seen from the data presented so far that the elderly and handicapped respondents included in this study did not travel a great deal or for great distances. Over half of those in each sample, except the visually impaired, ventured out of their homes fewer than 206 times per year -- far less than once a day. The grocery store was the most frequent destination. Among the visually impaired and the public housing residents, about half visited the grocery store once a week, while another quarter described such trips as rare, at best. In our other samples, however, only about one-third made such

trips on a weekly basis, while almost half said they made such trips rarely.

Social centers were not a very popular destination for our respondents, but those who did visit them, tended to go once a week or more. Medical destinations, such as doctors, clinics, etc., were very popular with 50% to 70% of the respondents going one to three times per month and another 12% to 17% going once a week or more.

The number of different destinations to which our respondents travelled at least once per month was quite limited; at least half of the respondents of each of the samples visited less than 4 destinations with that frequency.

While 60% to 75% of the sample members did use the public bus or bus and subways for trips made at least once a month, roughly 20% to 25% relied on door-to-door transportation for such trips, while another 5% to 15% either did not go to any place that often, or walked when they did so. Thus, there was a substantial proportion of the respondents who did not, or could not, rely on public transportation for trips that they made with some frequency.

CHAPTER III

The Independent Variables: Health, Disability and Social Support

The study was designed to explore the relationship between the travel patterns and selected demographic characteristics of respondents. In addition, the relation of two other classes of variables to travel were of special interest. Health and disabilities of the sample members may be expected to have an effect on their travel behavior, as can the extent and nature of social support that old people enjoy. This chapter presents the reasons for considering each variable, the means used to measure it, and the statistical distribution of the various indicators across the study samples.

A). Health and Disability

As previously indicated, some researchers contend that it is not age, per se, which limits travel among the elderly, but the greater prevalence of ill health and disabling conditions among this population. To examine that issue we collected several different kinds of data to describe the health and disabilities of our sample members. Each measure of health and disability is described here and its distribution in each of the samples is presented in tabular form. These general descriptive data will provide the reader with a context in which to consider the analyses presented in subsequent chapters regarding the relationship between these variables and the travel patterns of our respondents.

1) Self-Assessment of Health

One of the most useful measures of health status is a person's own subjective assessment. Thus, all respondents were asked to rate the condition of their health (see p. 4 in Appendix A). The distribution of answers to this question are presented in Table III-1.

TABLE III-1

	<u>Self-Assessment of Health</u>			
<u>Self-assessed Health</u>	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
Poor	29%	48%	43%	9%
Fair	45	33	40	29
Good	23	20	17	46
Excellent	3	--		17
	(525)	(61)	(60)	(66)

The table indicates that the vast majority of respondents suffered from ill health--from 74% to 83% in each of three samples described their health as poor or fair. Only the visually impaired sample had a majority (63%) who described their health as "good" or "excellent."

2) Troublesome and Travel-Restricting Health Conditions

The respondents were also presented with a list of 12 troublesome health conditions (see p. 14 in Appendix A) and asked to identify those which were a problem for them, and those that sometimes kept them from travelling to a place they wanted to go.

The conditions they were asked to consider were as follows:

- Trouble breathing, shortness of breath.
- Tiring easily or feeling that you have no energy.
- Pain.
- Notable discomfort on very cold or very hot days.
- Memory problems.
- Fainting spells, dizziness.
- Aches, swelling, sick feeling.
- Weakness, lack of strength.
- Nervousness, tension, depression.
- Weak bladder.
- Problems seeing.
- Problems hearing.

It is notable that 50% of the public housing sample, 56% of the Easyride registrants and 68% of the homecare samples reported that pain sometimes keeps them from going where they want to go. Feeling a lack of energy, aches, swelling, or sick, fainting, and a lack of strength were mentioned by 40% of the respondents in these samples. Respondents in the Easyride registrant and homecare samples generally mentioned more of these troublesome conditions than those in the other samples. Table III-2 presents the proportions of each sample who experience specific numbers of troublesome conditions, while Table III-3 describes the extent of travel restricting conditions in the various samples.

TABLE III-2: Distribution of Troublesome Health Conditions

<u># of Health Conditions</u>	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
None	10%	2%	--	1%
1-2	20%	10%	13%	29%
3-4	19%	15%	10%	32%
5-6	22%	28%	22%	30%
7-12	28%	45%	55%	9%

TABLE III-3: Distribution of Travel-Restricting Health Conditions

<u># of Health Conditions Restricting Travel</u>				
None	23%	13%	10%	38%
1-2	24	20	15	33
3-5	28	36	27	21
6+	26	31	48	7

By this measure of health, the visually impaired were again healthier than the respondents in the other samples. Generally poor health is the rule in the other samples with from 50% (public housing) to 77% (homecare) of the respondents indicating the presence of 5 or more of the 12 troubling conditions. Moreover, the respondents in these samples see their travel as limited by their health. Those who defined at least three of these conditions as sufficiently troublesome to occasionally prevent them from going where they wanted to go accounted for 54% of the

public housing sample, 67% of the Easyride registrants and 75% of the homecare sample, but only 28% of the visually impaired.

3) Vision Problems

As indicated earlier, the visually impaired sample was included in this study specifically because it was thought that this handicap created specific obstacles to travel. However, specific attention was given also to the occurrence of vision problems among the other samples and the extent to which those problems interfere with the respondents' desires to go out. Table III-4 shows the results of that inquiry.

TABLE III-4: Vision Problems and Whether They Interfere With Going Out

<u>Problems Seeing And Can Respondents Go Out</u>	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>
Problem, Interferes	13%	22%	29%
Problem, Interferes Sometimes	8%	17%	2%
Problem Doesn't Interfere	14%	3%	15%
Not a Problem	64%	57%	54%
	(525)	(61)	(60)

The Easyride registrant and homecare samples were the most troubled by vision difficulties with 39% of the Easyride registrants and 31% of the homecare clients indicating that these difficulties do interfere with their going out.

While the respondents in the visually impaired sample were not asked whether they had problems seeing and whether a seeing problem prevented them from going out, they were asked questions designed to tap the degree to which their handicap was disabling for them. Specifically they were asked "Can you tell light from dark?", "Do you have enough vision to help you get around?", "Can you read print of any size?", and "Do you usually ask for help in crossing streets and with directions?"

Table III-5 shows that among these "legally blind" people about half require help when crossing the street and about 40% usually seek assistance with directions.

TABLE III-5: Nature of Vision Difficulties Among The Visually Impaired Sample (N=66)

	<u>Percent</u>
<u>Able to:</u> Tell Light from Dark	78
See to Get Around	71
Read Print	55
<u>Usually asks for help:</u> Crossing Streets	47
With Directions	
Most of the Time	22
Usually	37
Never	41

4) Disabilities With Respect to Mobility
and Personal Care

For the purpose of this study, disability was defined as a limitation in the performance of specific everyday activities. To measure such limitations, a matrix was created (see p.3 of the Interview Schedule in Appendix A) which enabled the interviewer to characterize the respondents' difficulties in performing the following twelve functions:

- 1) preparing meals.
- 2) grocery and other shopping.
- 3) housework.
- 4) going out of doors.
- 5) walking up and down stairs.
- 6) getting about the house.
- 7) washing and bathing.
- 8) dressing and putting on shoes.
- 9) cutting toenails.
- 10) getting out of bed.
- 11) using the telephone.
- 12) getting to the doctor or clinic.

The respondents' ability to perform each task was checked in one of three categories "without difficulty"; "with some difficulty but without assistance"; "only with assistance from another person." The latter two categories were seen as indicating the presence of at least some disability.

Three of these items--getting about the house, walking up and down stairs, and going out of doors--were grouped together to form an index of the respondents' mobility impairment. In its crudest form, this index attributes a score to the respondent which reflects the number of items (0 to 3) on which he/she experiences some disability. Table III-6 describes the distribution of this crude index of mobility disabilities in each sample.

TABLE III-6: Mobility Disabilities

<u>Disability Score</u>	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
0	59%	44%	37%	72%
1	21	24	32	15
2	12	14	24	9
3	7	19	7	3

In terms of this index, the visually impaired are clearly the least disabled. The Easyride registrants and the homecare respondents appear to be the most disabled in that 30% of each sample indicate some disability with respect to at least two of the items comprising the index.

Three additional items from the matrix--washing and bathing, dressing and putting on shoes, and cutting toenails--were grouped together to form an index of the respondents' personal care disability. This crude index also attributes a score to each respon-

dent which reflects the number of items (0 to 3) on which he or she experiences some disability. Table III-7 describes the distribution of this crude index of personal care disabilities in each sample.

TABLE III-7: Personal Care Disabilities

<u>Disability Score</u>	<u>Public Housing Sample</u>	<u>Easyride Registrant Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
0	76%	53%	62%	45%
1	13	16	25	48
2	3	7	7	2
3	8	25	7	5
	(525)	(61)	(60)	(66)

Again the visually impaired sample is the least disabled with only 7% experiencing some disability on two or more items, while the Easyride registrants are the most disabled (32% indicate disability on two or three items).

The use of these items to form these indices was actually developed through the work of Townsend (1963), Shanas (1968) and Louis Wilker (1975). In fact, Wilker used precisely the same six items to create an index of mobility and an index of personal care disability. Fortunately, both indices have been developed to be much more sensitive and sophisticated measures than the crude simple indices described above.

Thanks to the structure of their internal relationships, the items of each of the three-item indices form a cumulative scale

(often called a Guttman scale). The items may be ranked according to the difficulty of the task; from getting about the house to climbing the stairs in the index of mobility impairment, and from washing and bathing to cutting toenails in the index of personal care disability. Clearly, if someone finds a relatively "easy" task more difficult than someone else, he would be considered more disabled. If, as is the case in these scales, the items can be ranked according to difficulty, then only the least disabled can perform all the tasks without difficulty. A simple index of disability would be no more than the number of tasks one cannot do. However, in a cumulative scale, where the tasks can be ordered by difficulty, the number of tasks one can perform implies what specific tasks one can perform. If one can do N tasks, then one must be able to do the N easiest tasks.

These patterns were identified by Wilker and can be reproduced in all our samples. However, the scale does not distinguish very well among different degrees of disability at the lower end of the disability continuum.

5) A Trichotomous Scale of Mobility Impairment

In order to make finer distinctions, more detailed response patterns were studied which consist of three different responses for each item: performing the task without difficulty, with some difficulty, or needing assistance--instead of distinguishing only those who cannot perform a task without assistance.

Cumulative scales based on such trichotomies are hard to find in the large literature on scaling. Nonetheless, in the case of the three mobility items, a cumulative trichotomous scale of ten patterns out of the twenty-seven logically possible patterns crystallized clearly when applied to our data and, again, there were some differences between different samples.

Such a scale differs in crucial ways from the usual mathematical structures we think of as scales (the nominal order, interval, ration scales). A cumulative scale of trichotomies consists of a number of overlapping subscales, each of which exhibits the cumulative properties of order within and between scale patterns. Each subscale is, in effect, a different path of ordered movement from the pattern of least disability to that of most disability. Each pattern describes the degree of difficulty experienced in performing the three ordered tasks. In Table III-8, no difficulty in performance is indicated by the symbol (-); some difficulty, by (0); and only with assistance by (+). Thus, the pattern (---) indicates that all three tasks can be performed without any difficulty and represents the least disability or least amount of mobility impairment. The other end of the scale is represented by the symbol (+++), indicating that assistance is needed for all three of the tasks. This is the pattern of greatest mobility impairment. Table III-8 displays the five cumulative subscales and all of the patterns that are possible within them.

TABLE III-8

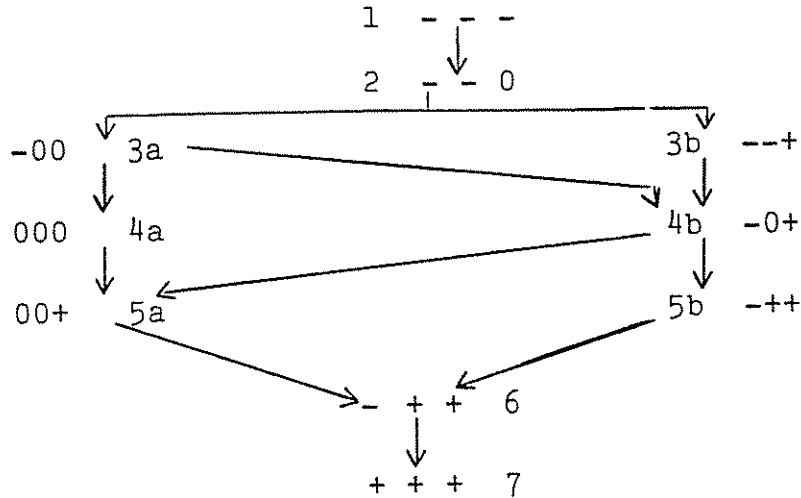
Cumulative Subscales of the Partially
Ordered Scale of Trichotomies

Least Impairment	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>V</u>
	---	---	---	---	---
	--0	--0	--0	--0	--0
	-00	-00	--+	-00	--+
	000	-0+	-0+	-0+	-0+
	00+	00+	00+	-++	-++
	0++	0++	0++	0++	0++
Most Impairment	+++	+++	+++	+++	+++

Since we have three performance items and three possible responses to each item (-, 0, +), we have 27 possible patterns (3x3x3) representing different combinations of responses. However, our scale is to reflect cumulative impairment within each pattern and cumulative impairment between patterns. Therefore, the scale consists of only 10 patterns, since the other 17 cannot meet the tests of cumulative order. For example, the pattern (-00) indicating no difficulty with the easiest task, but some difficulty with the two more difficult tasks belongs in the scale because it reflects proper cumulative order. However, the pattern (-0-) indicating no difficulty with the easiest task, some with the next and no difficulty with the most demanding of the tasks fails to meet the demands of cumulative order and cannot be included in the scale.

The 10 patterns that make up our partially ordered scale of mobility impairment are displayed in Table III-9.

TABLE III-9: Partially Ordered Scale of Mobility Impairment



The arrows show the path of movement from least impairment to most impairment, or disability. For example, pattern #2 symbolizes more disability than #1, but less than #3a. The latter, in turn, reflects less impairment than patterns 4a and 4b.

The system described in the table is referred to as partially ordered because the order between the "incomparable" patterns on the (a) and (b) sides of the table is undefined. We do not know how to distinguish a pattern of no difficulty on one item with some difficulty on the next two items (-00, #3a) from a pattern of no difficulty on two items with extreme difficulty on the third (--+, #3b). We can handle this dilemma by defining as

equal two patterns which bear the same order relationship to all other patterns. Thus, both patterns 3a and 3b reflect more disability than patterns 2 & 1 and less disability than patterns 4a, 4b, etc. By treating the (a) and (b) patterns as equivalents we have constructed a linearly ordered scale of mobility impairment which contains seven points.

Table III-10 shows how each of the study samples, and a subsample of Easyride users from the public housing sample, is distributed across the seven points of our mobility impairment scale. We note first the very large number of cases falling into the scale patterns. Only in the visually impaired sample do as many as 15% of the cases fall outside the scale. There are particular reasons for that deviation which will be discussed presently. Despite it, the scale describes mobility impairment quite well.

The homecare sample seems to be the most disabled, since far fewer of its members (less than 25%) fall into the least impaired categories (1-3) than of any other sample. The Easyride registrants also have a relatively small fraction (36%) in these categories; besides 18% of this sample, more than any other, manifest the greatest degree of mobility impairment (+++).

The visually impaired sample, on the other hand, shows the smallest percentage of high impairment (categories 4-7), although the public housing sample has the largest percentage of people who register no impaired mobility at all on this scale.

Out of 66 respondents in the visually impaired sample, 10 fall into response patterns which do not fit the seven point

TABLE III-10: Distribution of the Scale of Mobility Impairment Among the Study Samples

Mobility - Disability

Scale of Trichotomies. Percent Distributions

Patterns	Public Housing Sample	Easyride Registrants Sample	Homecare Sample	Visually Impaired Sample	Public Housing Subsample of Easyride Users
Least Impaired					
1 (---)	37.9	3.3	1.7	16.7	18.8
2 (--0)	10.1	14.8	8.3	22.7	8.2
3a (-00) } 3b (---+) }	10.9	18.0	13.3	19.7	18.8
4a (000) } 4b (-0+) }	12.4	11.5	28.3	12.1	15.3
5a (00+) } 5b (-++) }	10.7	13.1	16.7	4.5	10.6
6 (0++)	7.6	9.8	23.3	4.5	11.8
7 (+++)	7.0	18.0	6.7	3.0	10.6
all others	3.4	11.5	1.7	15.2	5.9
Most Impaired					
(N)	(525)	(61)	(60)	(66)	(85)

scale. All of these respondents fall into response patterns in which "going outdoors" is more of a problem than climbing stairs (and more of a problem than getting about one's house). In other words, for the visually impaired there is some special difficulty with going outdoors, and it tends to be more troublesome than the other tasks. A closer examination of the cases manifesting this non-scale pattern indicates that a disproportionate number are under 65 years of age. Thus, for these visually impaired respondents, going outdoors is more difficult than getting around the house, or climbing stairs. This order of item difficulties is more pronounced among the younger members of the sample, who tend to experience less physical discomfort generally, than among the older ones.

In the chapters that follow, the seven point scale of mobility impairment and the simple scale of personal care disability will be used as principal measures of disability.

B) Social Support

How much and what kind of social support people receive is likely to affect their ability to deal with the world, to cope with interpersonal relations, and to face the material and social environment which transportation may enlarge and make accessible.

Much has been written that supports the contention that as individuals get older, the social ties they built up through the years begin to weaken. Hess (1971) points out that as people, especially those with low incomes, get old, their participation in

clubs and organizations lessens, and their informal relationships diminish as neighborhoods change, and their families separate when children marry and pursue jobs and their other relatives and friends move away or die. She concludes that "old people progressively lose their group support as networks of relatives, friends and neighbors wither away through time", and wonders "What possible substitutes exist for these deteriorating social ties?" The substitute which Hess posits is that elderly people form new friendships with younger people living nearby. However, she recognizes that "there is an effective social barrier between older and younger people that proximity does not destroy". She found that in a large apartment building with old and young residents, very few friendships in the building were between the old and the young.

Marjorie Cantor (1973) notes that New York City as a whole has proportionately more older people living alone than the United States (30% in New York, 22% nationally). According to Harris (1978), only a small percentage of elderly people live with relatives other than a spouse. In fact, in 1976 multigenerational families represented only 4% of all families in the United States (the number of three or four generation families decreased by 10% during the 1960's). The New York City Office for the Aging reports on a study in which they found only 8% of their respondents living in another person's household, usually that of an offspring's (Cantor, 1973:14). Riley, Riley and Johnson (1969) found that

the loss of a spouse is one of the factors that leads old people to diminish social contacts and to withdraw from many social relations. While such withdrawal may easily be associated with the depression that commonly follows a loss, it may also reflect a backing away by people and organizations in the survivor's neighborhood.

On the other hand, Cantor's study of the inner city in New York presents findings which contradict the notion that elderly people have been abandoned and feel isolated. She found that most elderly people's children have not abandoned them but, on the contrary, "familial bonds are strong and there is evidence of mutual affection and assistance between generations." Kahana and Felton () find that old people see their children and friends as sources of information and advice to whom they turn when the need arises. They also find that elderly people who choose to be near family or friends do so because they prefer to live with people sympathetic to them. Lowenthal and Haven (1968) say that the availability of a confidant who is not necessarily, or even ordinarily, the spouse is especially important for older people.

Many of these studies suggest that neither the living arrangements of elderly people--which tend to separate them from the young--nor the tendency of old widowed parents to live alone imply that there is generational separation and emotional detachment. On the contrary, Maddox claims that a decade of research has

documented that "parents with living children demonstrably have contact with these children, and substantial transfer of goods and services between generations has been documented" (Maddox, 1975). In fact, G.L. Groman (1978) states that "the inner-city elderly enjoy an ongoing and satisfactory relationship with their children and are able to offer aid (such as baby-sitting) at the same time as they receive it." However, Maddox cautions the reader that this closeness is not universal and that it does not mean that older persons never feel isolated or lonely or that generations within families do not deny responsibility for one another. In fact, there is no clear picture of inter-generational relationships, neither of the interaction between old parents and their children nor of its consequences.

Besides contacts with their children, contacts with friends may be of great importance to old people. Hess (1971) reports that friendships tend to be maintained well into later life; however, this claim applies primarily to people in higher socioeconomic positions. Length of residence, which is often a function of age, is also directly associated with the likelihood of being in contact with neighbors and evolving close relationships with some of them. Hess found that among people 65 and over, nearly half say that most of their friends live nearby.

Festinger, Schachter and Back (1950) found that the effects of physical or functional distance upon friendships were striking: The closer one's neighbor, the more likely it is that he will become

a friend. They also found that the more advantageously located an apartment is in terms of the traffic flow within the complex, the more likely its occupants are to have extensive networks of friends. It is reasonable to think that elderly people who say it is hard to visit friends who live at a physical or functional distance which is difficult for them to bridge will decrease the frequency of their visits.*

Yet another aspect of elderly people's social lives is the social contacts they make with other people at such public places as parks, senior centers, and doctor's offices at public clinics. Barbara Myerhoff's (1979) study of a community of elderly urban Jews stresses the importance of parks and benches as places where old people can socialize with friends. She found that old people develop a highly stylized "bench behavior" and that benches are segregated by sex and by conversation topic.

"The men's benches are devoted to abstract, ideological concerns--philosophical debates, politics, religion, and economics. The women's benches are given more to talk about immediate, personal matters--children, food, health, neighbors, love affairs, scandals, and "managing". Men and women talk about Israel and its welfare, about being a Jew, and about Center politics. On the benches, reputations are made and broken, controversies explored, leaders selected, factions formed and dissolved. Here is the outdoor dimension of Center life; like a village plaza, it is a focus of protracted, intense sociability."

These considerations suggest that the extent and character of a person's social relations will affect his sense of self, the way

* It is perhaps not by chance that the building in our Public Housing Study that had the highest level of internal interaction is Chelsea, where the small number of apartments per floor implies a greater probability of mutual visibility and contact between the residents on any one floor.

in which he sees his environment and his efforts to deal with that environment, including his travel behavior. A reasonably well developed set of relationships might provide more reasons for venturing out of the house and more physical and moral supports in doing so. To examine questions of this nature, we used several means of measuring the respondents' social relations and the supports which he or she derives from them. In the pages that follow, those different measurements are described as are their distributions in the different samples.

a) Living Arrangements and Marital Status

It may be assumed that a person's closest ties are with those with whom he or she lives. The respondents in our samples were asked whether they lived alone, or with others (see p. 18 of the Interview Schedule in Appendix A). The response distributions to that question are shown in Table III-11.

TABLE III-11: Household Composition

<u>Household Composition</u>	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
Alone	73%	41%	56%	49%
With Spouse	24	28	37	20
Other Arrangement	3	32	7	28
With others, all with impaired vision	--	--	--	3
(N)	(525)	(61)	(60)	(66)

A very substantial majority (73%) of the public housing sample live alone, while roughly half of the respondents in the other samples live that way. The Easyride registrants and the visually impaired differ from the other samples most notably in that almost a third of them live with some person or persons other than their spouses. Most of the people who live with someone else said that the people they live with could go outdoors without the help of another person, were able to use public transportation without the help of another person, and were healthy enough so that they did not in any way limit where respondents could go and the kinds of things they do. Thus, living with **someone** else is likely to have positive implications for a person's travel behavior.

Living arrangements, especially among the elderly, often reflect marital status. Table III-12 presents the distributions of marital status in the different samples.

TABLE III-12: Marital Status

<u>Marital Status</u>	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
Never Married	13%	13%	15%	24%
Married	27	30	38	27
Widowed	50	50	37	27
Divorced	5	5	8	15
Separated	6	2	2	16
	(525)	(61)	(60)	(66)

The proportions shown as married in this table are only slightly greater than the proportions shown to be living with their spouses in the preceding table. The public housing, Easyride registrant and homecare samples resemble each other rather closely, (e.g., the percent currently widowed or married ranges from 75% in the homecare sample to 80% in the Easyride registrant sample), except that a smaller proportion of the homecare sample are widowed and a larger proportion are still married. On the other hand, the visually impaired are decidedly different in their distribution of marital status: more of them were never married; more of them have been divorced; and fewer of them are widowed.

2) Contact With Children

The respondents were asked a series of questions about their children and the nature and extent of contact they have with them. Living children are a likely source of social support. We sought to find out the extent to which our respondents relied on their children for that support. Tables III-13 through III-15 present data describing for each sample, the number of living children, the proximity of the nearest child and the frequency of contact with children.

TABLE III-13: Number of Living Children

<u># Living Children</u>	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
0	33%	33%	48%	59%
1	23	23	19	17
2-3	33	30	24	18
4-5	6	11	8	5
6-8	5	3	2	2
	(525)	(61)	(60)	(66)

TABLE III-14: Location of Nearest Child for Respondents Who Have Children

<u>Where Nearest Child Lives</u>	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
Same Address	1%	5%	--	7%
Can walk to see	12	5	19	11
In city	25	10	13	26
In metropolitan area	21	24	25	19
Out of metropolitan area	34	39	44	26
No Answer	7	17	--	11
	(350)	(41)	(32)	(27)

These tables indicate that a rather large portion of the respondents in each sample do not have any children--a third among the public housing residents and Easyride registrants; about half of the homecare sample and almost three-fifths of the visually impaired. Among those with children, few have offspring who live within walking distance. Between 44% and 63% of the sample members had a child who lived within the metropolitan, if not the City of New York, while between 26% and 44% of the sample members had children who lived outside the metropolitan area.

TABLE III-15: Contacts With Children Among Respondents With Living Children

<u># Times Per Month</u>	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
0	1%	0%	0%	0%
1-6	18	30	16	30
7-15	29	25	31	22
16-29	18	5	16	7
30+	35	40	37	41
	(350)	(41)	(31)	(27)

Table III-15 describes the number of times people are in contact with their children either face to face or by means of the phone. Perhaps the most notable fact shown in this table is that between

35% and 41% of the respondents in all samples have daily contact with one or more of their children and virtually all of the respondents have such contact at least once per month. Thus, it does not appear that any appreciable number of those included in our study samples have fallen out of touch with their offspring.

3) Frequency of Visits With Family and Friends

Table III-16 describes the frequency with which the respondents actually visit with family members, including children.

TABLE III-16: General Frequency of Visiting Family

<u>Visit Family:</u>	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
Once a week or more often	13%	12%	--	13%
Once a month*	15	15	10	14
Once a year*	16	13	13	26
Rarely, never	56	60	77	48
	(499)	(60)	(60)	(66)

* "Once a month" signifies once a month or more but less often than once a week.

"Once a year" signifies once a year or more but less often than once a month.

Comparing this table with the preceeding, we can see that actual person-to-person visits with family members are considerably less frequent than contacts, including phone conversations. In fact, roughly one-half to three-quarters of the people in our samples indicate that they visit with family members rarely or never. The most disadvantaged in this regard is the homecare sample, followed by the Easyride registrants. This may reflect the greater physical immobility of the people in these samples.

While visiting family members does not appear to be very frequent, visiting with friends who live outside the respondent's building is even less frequent. These data reflect responses to questions concerning the destinations of respondents' travel (see p. 7 in Appendix A). Table III-17 indicated that between 59% and 85% of the respondents in each sample said they make such visits either rarely or never. Once again the Easyride registrants and the homecare respondents are the least mobile and the visually impaired visit with friends most often.

TABLE III-17: Frequency of Visits to Friends Outside Respondents' Building

<u>Visit Friends:</u>	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
Once a week or more often	15%	8%	7%	19%
Once a month*	14	3	8	18
Once a year*	8	3	--	5
Rarely, never	63	84	85	59
	(480)	(58)	(58)	(56)

* See footnote on p. III-26.

The respondents were also asked about the frequency with which they are visited by friends. Table III-18 shows the results of responses to that question.

TABLE III-18: General Frequency of Visits from Friends

<u>Visited by Friends:</u>	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
Once a week or more often	38%	30%	35%	36%
Once a month*	10	23	--	7
Once a year*	3	7	7	11
Rarely, never	48	41	58	46
	(480)	(61)	(58)	(66)

It is evident that the respondents in all of the samples receive visits from friends much more frequently than they make visits (e.g., 30% or more in each sample are visited at least once per week). Nevertheless, a large proportion of them (over 40% in each sample) indicate that they receive such visits rarely or never. Again, the homecare respondents are the most disadvantaged in this regard.

4) Additional Measures of Social Contact

Two variables were constructed to provide a more general view of respondents' social contacts: The first measures the number of "primary" social contacts, defined as the number of visits per year to relatives, friends, and the frequency of friends visiting respondents.

The second measures the amount of yearly "secondary" contacts, taking into account of the number of yearly visits to work, church, clubs, social centers, recreation, and school (see p. 7 in Appendix A). The distributions of these variables in the different samples is shown in Tables III-19 and III-20.

TABLE III-19: Amount of Primary Social Contact:
Number of Visits per Year

<u>Number of Visits Per Year:</u>	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
0	26%	26%	35%	15%
1-29	14	9	12	25
30+	60	65	53	60
(N)	(525)	(61)	(60)	(66)

TABLE III-20: Amount of Secondary Social Contact

<u>Number of Contacts Per Year</u>	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
0	30%	31%	33%	17%
1-29	13	12	19	10
30+	57	57	48	73
(N)	(525)	(61)	(60)	(66)

Between one-quarter and one-third of the people in three of our samples report having no primary contacts in a year. This seems a rather large number of people devoid of support from family or friends. Those in the visually impaired sample seem to enjoy the largest number of such contacts. They also experience far more contact with associations and organizations than do the members of the other samples, approximately one-third of whom claim to have no such contacts in the course of a year. There are no notable differences between the public housing, Easyride registrants and homecare samples with respect to either form of contact.

Senior centers, churches and synagogues are forms of secondary associations in which we were particularly interested because of their tendency to offer support services tailored to the needs of the elderly. These contacts were measured in terms of the frequency with which respondents went to these places. Tables III-21 and III-22 show the results of these inquiries.

Respondents in the visually impaired sample go least often to senior centers (81% go rarely or never), while the Easyride registrants are a close second. About 30% of both the homecare and the public housing samples go to a senior center at least once a week,

TABLE III-21: Frequency of Trips to Senior Centers and Lunch Programs

	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
Once a week or more often	29%	18%	30%	16%
Occasionally*	13	8	3	4
Rarely, never	57	73	67	81
	(484)	(59)	(60)	(63)

TABLE III-22: Frequency of Visists to Church or Synogogue

	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
Once a week or more often	24%	25%	18%	22%
Occasionally	30	20	29	25
Rarely, never	45	54	52	52
	(510)	(59)	(60)	(66)

* "Occasionally" signifies once a year or more often but less than once a week.

whereas less than 20% of the Easyride registrants and visually impaired sample visit that often. These figures probably reflect the fact that proximity to a senior center influences attendance, and respondents from samples other than the public housing sample may not live close to such centers. We recall, however, that all of the public housing buildings for the elderly, with the exception of Chelsea, either contain or are near a senior center. The greater frequency of such trips among the homecare sample may reflect the fact that the sample was drawn from an agency which runs such a center and provides such services to respondents.

There appear to be no notable differences among the samples with respect to the frequency of visits to religious facilities. About 20% to 25% of the respondents make such visits once a week or more, while about one-half describe such trips as rare at best.

5) Perceived Availability of Help

We believed that the respondents' perceptions about the availability of help, if needed, could influence both their travel behavior and their feelings of isolation. Information on these perceptions was sought through three questions in the interview (see p. in Appendix A). The distribution of responses is shown in the three tables that follow.

TABLE III-23: Can Rely on Family Members or Friends in Case of Emergency

<u>Can Rely</u>	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
No	17%	15%	28%	7%
Unlikely	19	8	17	12
Probably Yes	22	26	23	20
Yes	43	51	32	61
	(525)	(61)	(60)	(66)

TABLE III-24: Can Rely on Family Members or Friends for Long Term Help?

<u>Can Rely</u>	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
No	25%	26%	65%	12%
Unlikely	23	13	18	20
Money sent or other	22	25	12	15
Probably Yes	30	36	5	53
	(417)	(61)	(60)	(65)

TABLE III-25: Can Give Help to Family or Friends in Emergency

<u>Will be helpful</u>	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
Unlikely	45%	33%	46%	29%
Somewhat likely	22	31	25	9
Very likely	34	36	29	62
	(515)	(61)	(59)	(66)

About one-third of the homecare sample were confident that family or friends would help out in an emergency; almost twice as large a fraction of the visually impaired manifested this confidence; the public housing and Easyride samples were in between. This confidence dropped in all samples when the question involved long-term help. However, about one-quarter of the Easyride registrants and over 35% of the public housing sample thought that even emergency aid was unlikely at best. These figures rose to almost 40% and almost 50% in the two samples, respectively when the concern was with long-term help.

As with many other measures of social support, the homecare sample seems most insecure. Forty-five percent thought that even emergency assistance was unlikely at best and 83% felt that way about their receiving long-term help from family or friends. At the other end of the scale, the visually impaired were relatively confident that both emergency and long-term help would be forthcoming, if needed. Yet even in this group, one out of five (19%) thought that they could not count on help in an emergency, and one-third (32%) thought that long-term help was unlikely.

The visually impaired differ from the other samples also in terms of their belief that they could give help to family members or friends who need it. Almost two-thirds thought such behavior likely compared to approximately one-third in the other samples. Again, the homecare sample seems the most disabled and needy. Almost one-half thought it unlikely that they would be able to give such aid while about one-third thought it very likely that they could do so.

6) Feelings of Confidence and Trust in Others

As a final indicator of the quality of respondents' social relationships, we asked several questions regarding their perceptions of others as trustworthy and friendly (see p. in Appendix A). We believed that these perceptions could facilitate or impede social interactions and indirectly affect travel behavior. Table III-26 shows the distribution of responses to these questions.

In general, the samples seem to split rather evenly between positive and negative responses to these items. The clear exception is the item on the perceived friendliness of others. A definite majority see others as generally friendly.

The homecare sample members, who appear to be the most isolated on other measures, also appear to have the most jaundiced view of others, and the visually impaired, who seem to enjoy a good deal more social support than the other samples, tend to see others in the most positive light.

TABLE III-26

% Giving "Positive", "Neutral" and "Negative"
Responses to Questions About Others

	<u>Public Housing Sample</u>	<u>Easyride Registrants Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>
a) <u>People Can Be Trusted</u>				
Negative	40%	43%	58%	33%
Undecided, neutral	11	13	5	8
Positive	49	44	37	60
b) <u>Most People Care About Themselves</u>				
Negative	47%	43%	70%	54%
Undecided, neutral	11	13	--	9
Positive	43	45	30	38
c) <u>Most People Can be Counted On</u>				
Negative	38%	48%	63%	35%
Undecided, neutral	12	10	2	9
Positive	50	42	35	56
d) <u>Most People Are Friendly</u>				
Negative	23%	23%	45%	15%
Undecided, neutral	8	12	--	13
Positive	69	65	55	72
	(525)	(61)	(60)	(66)

CHAPTER IV

The Relationship between Travel Behavior
and Selected Independent Variables

This chapter considers in summary fashion the relationships that obtained between our independent variables and the travel behavior of the sample members. Selected demographic characteristics and measures of health, disability and social support are considered. Numerous cross-tabulations were run involving demographic traits and different travel indicators. A textural summary of the major findings derived from those analyses is presented here. In addition, tables and text are presented regarding the relationships between disability and travel and social support and travel.

In the next chapter we present the results of regression analyses which permit the simultaneous assessment of various characteristics of the respondents on two principal indicators of travel behavior, the number of annual trips taken and the number of trips taken to the grocery store. But first, it is important that we get a more direct substantive perspective on the various ways in which the classes of independent variables affect the travel behavior of the elderly and the handicapped. The cross tabulations and correlations presented here enable us to do so.

As indicated in the preceding chapters, there are a number of similarities and differences among the samples used in the study. Almost all of the respondents are elderly and most are of limited

means economically. However, the Easyride registrants seem to be both poorer and more disabled than several of the other samples. The homecare sample, although better off economically than others appears to be more disabled than the public housing sample and generally less mobile than any of the other samples. The visually impaired, on the other hand are more mobile, less disabled, and generally healthier than any of the others.

The data analysis strategy used in this study derives, in part, from recognizing the differences among our samples. The public housing sample is, by far, the largest in this study. It is the closest thing we have to a representative sample of the elderly poor in New York.* In fact, they may be better off than others in the City who, although they are also poor, live in badly deteriorated buildings with no particular amenities for the elderly. Nevertheless, because it is our largest and most general sample, the public housing sample is used here as the principal source of our analyses. The cross-tabulations and correlations reported on are for the public housing sample. They function as the standard against which judgments are made regarding the other samples. When one of the other samples (the homecare, Easyride registrants and the visually impaired) manifests an interesting variation or a relationship first observed in the public housing sample, it is reported and discussed.

* Nevertheless, we remind the reader that it is not actually representative of the elderly poor in New York. See the discussion of the samples in Chapter I.

A. Demographic Characteristics

a) Age - Since our respondents are all elderly, the question here is whether or not age makes a difference in the travelling behavior of those over 60 years of age. The answer is yes at the extreme end of the age continuum. In fact, people over 75 years of age consistently make fewer trips annually. This finding is true in all four samples.

Similarly, the number of destinations people over 75 go to once a month or more is consistently lower than for younger people. However, in the visually impaired sample, people between 75 and 80 are especially diverse in their travels. Only those over 80 show the typical decline in the number of destinations they frequent.

How people travel is clearly affected by age. In the public housing sample, people under 65 use the bus and the subway more than do people over 65. Among those over 75, the number who use door-to-door transportation exclusively is larger than it is in the younger age group. This relationship between age and the means of travel is similar in the visually impaired sample and in the sample of Easyride registrants. (Again for the visually impaired, 80 years seems to be a more relevant cutting point.) On the other hand, no such relationship is discernible in the homecare sample. As previously indicated, this sample appears both more disabled and more travel restricted than the others. It is possible, therefore, that the relatively high level of disability obliterates the effects of age.

People over seventy-five do less grocery shopping than do the younger people in these samples. However, in the Easyride registrant sample, people under 60 are all in the lowest category of grocery shopping. This variation again reflects the effects of disability on the relationship between age and travel. The only people under 60 who were permitted to register with Easyride were those suffering from a physical disability that prevents them from using available transportation. Thus, the expected relationship between age and travel is not in evidence among the Easyride registrants because physical disabilities among the younger members of the sample restrict their travel more than might otherwise be expected.

People over 80 years of age make more trips to the doctor than do younger people. However, there is a good deal of irregularity in the relationship, and for the homecare sample, so such relationship is discernible. For Easyride registrants, there is quite a strong relationship between going frequently to the doctor and being over 75, while in the public housing sample people between 75 and 80 have unusually low frequencies in their medical visits. There appear to be two opposite tendencies influencing trips to the doctor. On the one hand, greater sickness should produce more visits to the doctor. However, as people get older and are more likely to be sick or to be physically disabled, they cannot travel as easily and therefore, are less able to get to the doctor.

People over 80 do go less to social centers than do younger people. This is consistently so in all samples except for the homecare sample, where there is no difference. Undoubtedly, there are some among the older people who never frequented a social, while others did in the past but now find the trip too difficult to make with any regularity. In these latter cases, increasing disability limits travel. In any event, special efforts by social agencies to facilitate visits by older seniors, including arranging for easy to use transportation, might be a much appreciated service.

While our study samples are clearly truncated with respect to age, the limiting effect of age on the travel behavior of the older respondents (those over 75) seems fairly clear. However, the fact that the homecare and Easyride registrant samples evidence the most restricted travel patterns, regardless of age, suggests that disability is a more powerful constraint on travel than is age, per se.

(b) Sex - This variable does not correlate very often or very strongly in our samples with the various indicators of travel. Indeed, in the public housing sample, travel does not seem to be related at all to the travellers' sex. The only indicator of the amount of travelling which shows even a small difference between the sexes is frequency of travel to a social center. Women go a little more often than men do. Similarly, in the visually impaired and the Easyride registrant samples, there is no consistent difference between men and women in regard to any

measures of the amount of travel. On the other hand, in the homecare sample, men make more trips per year than do women, they go to more destinations once a month, and they go to a social center more often, while women go more often to the doctor. Thus, in this sample it appears that men are less transportation handicapped than women.

Interestingly, there is a consistent difference between the sexes when we look at means of transportation. Men use the bus and the subway more than women do. That they use the subway more is true in all four samples, and that they use the bus more is true in all the samples except the visually impaired sample. In this sample, women use the bus relatively more than men do. Finally, in all the samples women use door-to-door transportation more than men do and use vehicles of all kinds less frequently than men. Since bus and subway are the most difficult means of travel in our travel mode index, this fact may suggest that the men in our samples are somewhat less disabled than are the women. Alternatively, making use of public transportation may be more culturally discouraged for elderly women.

(c) Household Composition - On the whole, people who live alone seem to go out more often than do those who live with someone else. However, for people in the visually impaired and the Easyride registrants samples this is not so.

In the public housing sample, people who live alone go to relatively many different destinations, six or more a month;

however, among the visually impaired and the Easyride registrants, those who live alone go to few destinations. In the homecare sample, there is no relationship between household composition and the number of places where people go.

(d) Ethnicity - At the beginning of this study, it was assumed that ethnicity would not be a significant determinant of the travel of elderly people, especially as compared to the physical and economic condition of the respondents. Thus, ethnic differences among the buildings included in the public housing sample and between the various samples were not considered problematic for comparing, for example, the travel patterns of Lower East Side residents with those of people living elsewhere. Since the research is no longer evaluative in character, these inter-building comparisons are no longer crucial to our purpose. Nevertheless, we can still look at the relationship between ethnicity and travel by studying the public housing sample as a whole.

It should be remembered that a large number of elderly public housing residents on the Lower East Side are Jewish people who emigrated to the United States in their youth. In recognition of their substantial numbers, we focused on them as a particular sub-group of the sample.

Black and Hispanic residents generally report a larger number of annual trips than Jewish and other White residents. Given our original assumption that ethnicity was not a significant determinant of travel, we sought to determine whether these ethnic differences

in travel could be accounted for either by factors which, like age or disability, have nothing intrinsically to do with ethnicity, or by factors such as the location buildings and the transportation obstacles posed by the building and the neighborhood in which the respondents live.

A simple way to begin testing whether an apparent correlation is due to some other variable is to ask whether that correlation can still be found when one "controls" for the other variable. For example, we found that sixty percent of the black and Hispanic respondents in the public housing sample have an annual trip score of 207 or higher (the "high" category) while only forty percent of the Jewish and other White respondents score that high. It may well be that this difference is not due to differences between ethnic groups, but to the fact that blacks and Hispanics live in greater proportion in those buildings which offer the fewest obstacles to travel. However, if these reasons explain the large apparent difference between the two groups, we would expect the difference to be reduced in each of the buildings taken separately; indeed, reduced to zero if the building and neighborhood accounted for the entirety of the difference. Table IV-1 shows that while in five of the six buildings, the difference is considerably smaller than in the total sample, blacks and Hispanics still seem to travel more than Jews and other whites, even when building of residence is taken into consideration.

TABLE IV-1

Percent of Public Housing Residents
in the High Travel Category
(207 trips or more per yr.)
by Building of Residence and Ethnicity

<u>Building</u>	<u>Black and Hispanic</u>	<u>Jewish and other White</u>	<u>Difference</u>
Baruch	56%	53%	+ 3
LaGuardia	50	45	+ 5
Meltzer	73	40	+32
Chelsea	55	42	+13
Manor Avenue	50	39	+11
174th St.	62	50	+12
Total Sample	60	40	+20

In all buildings the black and Hispanic respondents have a greater percentage (however small the difference may be) making a "high" number of annual trips. In all buildings, Meltzer, these differences are smaller than the twenty percentage point difference between ethnic categories in the total sample. Indeed, only the difference in Meltzer and the total sample difference is statistically significant at the .05 level. (Note also that under the null hypothesis that these differences are all essentially zero, pitched against the one-sided hypothesis that they are larger, a sign test would reject the null hypothesis at the $(1/2)^6 = 1/64 = .016$ level of significance.)

There is a correlation, therefore, between ethnicity and travel, but its strength is reduced by building of residence. Our analysis sought to determine whether other factors would reduce the association still further. With increasing age, there is a decrease in travel. This is true within both ethnic categories, but within every age group there is a small difference indicating that blacks and Hispanics travel more. No difference is larger than eleven percentage points, so that again it is true that the overall difference is reduced. But it is also true that the effect of ethnicity is not eliminated by controlling for age.

We know also that with increasing disability--measured by the mobility impairment scale (see Chap. III)--travel is reduced. When we "control" for disability, we find that very few of the more disabled respondents regardless of ethnicity, fall into the "high" category of annual trips. However, though there is then a good deal of irregularity in the relationship with ethnicity, there is still a preponderance of disability groups within which the black and Hispanic respondents seem to do more travelling.

In short, among our public housing respondents, ethnicity does exert some effect on travel, even after other presumably important variables are taken into consideration. The differences between blacks and Hispanics, on the one hand, and Jews and other whites, on the other, with the former travelling more than the latter, are not very large, but they are persistent.

(e) Income - As indicated in Chapter I, we have two gross indicators of economic status. In general, our respondents tend to be poor. However, the receipt of Medicaid and the receipt of Supplemental Social Security Income (SSI) indicate a relatively greater level of economic need. Our analysis uses these indicators to explore the effect of economic hardship on the travel patterns of our respondents. Given the crudeness of our indicators and the correlation between them, as well as the relative economic homogeneity of our sample, we could not expect to distinguish subtleties in this relationship. Despite all of these limitations, there is a gross relationship between economic hardship and travel behavior.

In the case of the public housing sample, we find that recipients of both Medicaid and SSI tend to make a smaller number of trips annually than do those who do not receive these benefits. The number of destinations to which they travel does not seem to be affected. However, those who receive both Medicaid and SSI go to the doctor more frequently. They also use door-to-door transportation more than do those who do not receive Medicaid or SSI, and they go grocery shopping less often.

It is possible, of course, that some of this relationship is explained by a greater prevalence of sickness and disability among the poorest members of our study samples. The more disabled tend to travel less, use door-to-door transportation more often, and to use a larger proportion of their trips for medical destinations.

B. The Effects of Disability on Travel

The analyses presented below provide some specifications to a general relationship between disability and travel which indicates that the greater the disability a person suffers, the less often he is likely to travel, the shorter the distances involved when he does travel, and the less likely he is to use physically demanding modes of travel.

The two principal measures of disability used in these analyses are the Trichotomous Scale of Mobility Impairment and the dichotomous scale of personal care disability described in Chapter III. Table IV-2 shows the correlations between these two indicators of disability and several distinct indicators of travel behavior.

TABLE IV-2: Correlations of Travel Variables
With Two Indicators of Disability:
Public Housing Sample, N=525

<u>Travel Variables</u>	<u>Scale of Mobility Impairment</u>	<u>Scale of Personal Care Disability</u>
Frequency of Grocery Shopping	-.65	-.53
Mode Use Index	-.49	-.40
Annual Trips	-.45	-.28
Farthest Distance on Foot (Among once a month destinations)	-.41	-.37
Number of Destinations	-.36	-.27
Farthest Distance	-.19	-.23
Frequency to Social Center	-.13	-.11

All of the correlations are negative, meaning that the greater the disability, the lower the particular travel indicator. The variables in this table are written in the order of the size of their correlations with the mobility impairment indicator. The correlations with the personal care indicator are in the same order with one exception; i.e., the third and fourth variables, annual trips and distance on foot, are reversed. Both scales correlate most highly with the frequency of grocery shopping. As expected, the correlations between travel and the mobility scale are larger than those with personal care, but the latter is itself an indicator of reduced travel.

The causal sequence between these variables--that is, between disability and travel--seems, on common sense grounds, to go from disability to travel. But some travel variables may be thought of as being casually prior to others. This permits one to consider the relationship between two or more travel indicators. Since grocery shopping is such a strong correlate of disability, one might consider these two indicators as predictors of some other aspects of travel behavior, for example, of the use of public transportation. Indeed, a discriminant function analysis showed that these variables are the two best predictors of the use of public transportation.

More specifically, when a large number of variables--nine background variables, ten disability, health, and health care variables, two social support variables, and eight travel

variables--were combined into a linear function which would best* predict use (or non-use) of bus or subway, the two "predictor" variables making by far the greatest contribution, (that is, having by far the greatest standardized discrimination function coefficients) were found to be the scale of mobility impairment and the frequency of grocery shopping.

The test of a discriminant analysis is how well the discriminant function(s) classify respondents correctly, for example, what fraction of public transportation users (i.e., bus and subway users) will be classified by the discriminant function as public transportation users? Table IV-3 indicates that the function obtained in this analysis does a good job. A convenient over-all measure of the usefulness of the discriminant function applied to this table is as follows: the percentage correctly classified is the sum of the number of public transportation users classified as such, and the number of public transportation non-users classified as such, as a fraction of the total sample $(333 + 107)/525 = 83.8\%$. However, the table also indicates that the non-users of public transportation are less accurately classified than are the users.

A similar analysis attempted to discriminate not only between use and non-use of public transportation, but between the four

* Technically, the method employed gives an "optimal" rather than "the best" solution, a distinction that need not concern us because the function obtained discriminates extremely well between public transportation users and non-users.

TABLE IV-3

Accuracy of Classification by
Discriminant Function for Distinguishing
Between Public Transportation Users and Non-Users:
Public Housing Sample, N = 525

	<u>Classified by Discriminant Function</u> <u>As Public Transportation...</u>		
	<u>User</u>	<u>Non-User</u>	<u>Total</u>
Public Transportation Users	333 88.1%	45 11.9%	378 100%
Public Transportation Non-Users	40 27.2%	107 72.8%	147 100%

"Mode Use" categories--(1) no use of any vehicular transportation once a month or more to any destination, (2) use only of door-to-door transportation once a month or more to any destination, (3) use of the public bus, and (4) use of both bus and subway. This analysis discriminated equally well between public transportation users (categories 3 & 4) and non-users (83.0 percent correct classification), but predicted the bus and subway users (category 4) most accurately (91.9 percent) as public transportation users. The other three categories were predicted correctly in approximately 80 percent of the cases.

While slightly different methods of analysis were used to obtain these discriminant functions,* it is encouraging to note

* For the two-group analysis, a step-wise procedure was used (Called MINRESID in the SPSS manual). For the four-group analysis the classical analytic method was used which enters all independent (or predictor) variables at the same time.

that the same two variables were found to be the best predictors in both analyses. Accordingly, we proceed with some confidence in the idea that mobility impairment and the frequency of grocery shopping will be important variables in further analyses.

Before ending this discussion of the discriminant analysis, we should mention some other potentially interesting observations that may be made by this particular manipulation of the data. In the more complex analysis, the first discriminant function distinguishes primarily between public transportation users and non-users. But the procedure results in additional discriminant functions. The second one seems to distinguish most clearly those who use only door-to-door transportation from those who use no vehicular transportation at all. The two variables that are overwhelmingly the best predictors of these travel modes are: 1) the farthest distance one goes once a month or more; i.e., the greater the distance, the more likely one is to use door-to-door transportation; and 2) the fraction of all one's trips that one makes on foot; i.e., the larger that fraction is the less likely one is to use door-to-door transportation.

We also do not want to leave the reader in doubt about the remarkable character of our discriminant functions: It is very rare that one finds variables that will predict with 80 percent accuracy some phenomenon of interest, except where the predictor variables are tautologically equivalent to the dependent variable.

This is clearly not the case with respect to disability as a predictor, and it is perfectly true that the frequency of grocery shopping is a predictor that describes travel behavior, this particular destination is not at all likely to involve public transportation. Hence, it is by no means a tautological equivalent of the dependent variable.

In making comparisons of the correlation between disability and travel we first wanted to establish the relationships which appear in the public housing sample, and later ask whether the data in the other samples depict similar relationships. In Table IV-4 we present the correlations between four travel variables and six disability indicators. The travel variables are the number of annual trips, the frequency of grocery shopping trips, the number of destinations where the respondent goes at least once a month, and the four-point mode-use index described earlier. The six disability variables are, besides the mobility impairment scale and the scale of personal care disability, self-rated health, the number of "health conditions" respondents mentioned as troubling them, the number of these "health conditions" that interfere with travel, and a Frailty index based on three self-reported items--weakness or lack of strength, tiring easily or having no energy, and having no pep.

With the exception of only a few of the coefficients in Table IV-4 which are effectively zero, all correlations indicate that the more disabled travel less. In the public housing sample

TABLE IV-4: Disability and Travel
Correlations in Various Subsamples*

Legend: Each Cell of the Table contains four correlation coefficients, arranged in the pattern A B C D where each letter refers to a particular sample:

A--The Public Housing Sample; B--The Homecare Sample; C--The Visually Impaired Sample; D--The Easyride Registrants Sample. In this table all positive coefficients imply that greater disability is related to less travel or less demanding mode.

Disability and Health Variables:	Travel Variables							
	Number of Annual Trips		Frequency of Grocery Shopping		Number of Destinations		Mode Use	
Scale of Mobility Impairment	.45	.28	.55	.28	.29	.23	.42	.37
	.14	.18	.11	.13	.06	.18	.19	-.07
Scale of Personal Care Disability	.35	.26	.48	.20	.24	.08	.39	.46
	.14	.46	.16	.52	.19	.38	.55	.42
Self-Reported Health	.24	.06	.31	.09	.17	.00	.24	.18
	.10	.32	.08	.13	.15	.14	.18	.19
Number of Health Conditions	.20	.23	.30	.13	.11	.15	.18	.08
	.12	.13	.06	.03	.23	.01	.37	.02
Number of Conditions that Interfere with Travel	.23	.18	.28	.12	.15	.07	.22	-.01
	-.02	.28	.11	.04	.17	.07	.32	.24
Frailty Index	.23	.25	.29	.15	.20	.15	.18	.02
	.18	.15	.10	.03	.20	.00	.26	.10

*Significance Levels: For each of the samples, the following are the values of sample correlation coefficients which justify the rejection of the hypothesis that the coefficient is zero in the population at the 5 percent level. Our expectations were that greater disability results in less travel, so that all coefficients, except those with health, should be negative, and one-sided tests are appropriate. We also provide the upper 2½ percent points for two-sided tests at the 5 percent level. (Note: Signs have been changed so that correlations supportive of the hypotheses are positive.)

	Sample	Upper 5% Point	Upper 2½% Point	N
A	Public Housing Sample	.070	.086	525
B	Housebound Sample	.212	.253	60
C	Visually Impaired	.202	.241	66
D	Easyride Registrants	.211	.251	61

there is no correlation that falls below the point of statistical significance. However, this, in a way, is a weak criterion--we are interested that these correlations should be large, not merely larger than zero. Grocery shopping shows the strongest correlations with every one of the disability variables. Annual trips and mode use come next, while correlations between the number of destinations and travel are relatively weaker. Conversely, the disability scales consistently show the strongest correlations with the different transportation variables.

The correlations between various measures of disability and grocery shopping are consistently around .30 or better for the public housing sample, while the correlation of the transportation variables with the other four disability variables hover around the .20 mark for that sample. The important point here is that all of these correlations support the hypothesized relationship between disability and travel and consistently show the frequency of grocery shopping to be particularly sensitive to the effect of disability. The size of the correlations is less important, especially in the other samples. Given those sample sizes, even a one-sided test of the hypothesis that a correlation coefficient is greater than zero requires a sample correlation of .2 or larger.

In the homecare sample, most of the correlations between the two disability scales and the travel variables are significantly

greater than zero. But most of the other correlations for this sample are not significant different from zero. The correlations with mode use are of the same order of magnitude as they are in the public housing sample. The other correlations are somewhat smaller than those in the public housing sample, and, for all practical purposes, the correlation between the number of destinations and the personal care disability scale vanishes. We mentioned earlier a possible reason why correlations in the homecare sample might be smaller than they are in the public housing sample. It may be that, by the way we picked this sample, we reduced the variance of disability within it. Indeed, when we consider standard deviations of the disability scales that seem to be the case. In fact, we find that the scale of mobility impairment has a standard deviation of 1.47 in the homecare sample, while it is 2.03 in the public housing sample.* On the other hand, the personal care scale has almost identical standard deviations in the two samples, .88 and .89.

The homecare sample has two correlations, (the number of annual trips, with the number of health conditions and with the

* We expected the homecare to have the smallest variance in the disability measure for mobility, and expected the visually impaired to be somewhere in between the homecare and the general population, here represented by the public housing sample. Moreover, knowing something about the Easyride Registrants, especially the many difficulties in their lives, including a much higher level of personal care disability than the other samples, we expected the variance of the mobility scale to be smaller for them than for the public housing sample. All of these expectations are borne out by the data. The standard deviation of the scale of mobility impairment for the visually impaired is 1.61, and for the Easyride registrants, 1.91.

frailty index) which reach significance, other than those obtaining between the disability scales and travel indicators. These two variables also correlate significantly in the visually impaired sample with the number of destinations. Otherwise, most of the significant correlations for the visually impaired involve the mode use variable. Finally, in the Easyride registrants sample we find strong correlations with the scale of personal care disability, and the only significant correlation of self-reported health with annual trips which occurs besides that in public housing sample.

One looks to this matrix of correlations to determine whether or not they tend to offer support for relationships observed in the public housing sample. In fact, sixteen of the twenty-four cells of table IV-4, significant correlation in the public housing sample is confirmed to some degree by a significant correlation in one of the other samples. Curiously, grocery shopping despite its strong correlations in the public housing sample in the other samples shows significant correlations only with the disability scales.

It is also notable that mode use shows significant correlations with all the disability variables in at least one sample. In fact, among the visually impaired only mode use is significantly affected by disability, however measured. This suggests that constrictions on travel experienced by these people can be largely compensated for by finding alternative

modes to public transportation.

The fact that the disability scales (mobility and personal care) are generally more highly correlated with the travel variables than are the other disability indicators may reflect the difference in impact between disability and ill health. It suggests that travel is related to a person's ability to function in activities of daily life--mobility and personal care being two important aspects of this functioning. General health on the other hand, is not itself an aspect of functional capacity, though, of course, it may have indirect effects, that is, poor health may interfere with functioning.

C. The Impact of Social Support on Travel

We have hypothesized that maintaining one's social life depends in part on one's ability to travel, and conversely, that one's tendency to travel depends to some degree on one's social support. In this chapter, we consider the effects of social relationships on travel behavior under two headings:

- (a) Social isolation and social contact.
- (b) Other forms of social involvement: help getting, political involvement and trust.

(a) Social isolation and social contact

As indicated earlier, those who live alone tend to travel somewhat more than do those who live with others. It may be that those who live with others have less of a need to travel.

Consistent with this finding is the relationship of marital status to travel--those people who are married or who have never married travel a little less than do those who were married but are now widowed or divorced. This could suggest that those whose situation has remained constant (those who were never married, and those who are still married) have established a modus vivendi at a somewhat lower level of contact and activity outside the home, while those who have experienced a loss of contact and support at home (those who have been widowed or divorced) need to get, or give, more social contact than they find in their own homes.

When we consider the greater age of the widowed, it is even more surprising that they travel more than married people do. In the public housing sample, the widowed report more annual trips than the married, a greater number of destinations to which they go once a month or more, and a higher frequency of trips to a social center. Trips to the Grocery do not distinguish the married from the widowed, but the widowed do have a greater tendency to use door-to-door transportation. These relationships are precisely replicated in the sample of Easyride registrants. In the homecare sample, the differences are small, though widowed people still make more annual trips than do married people. However, in this sample, trips to the social center are made more frequently by the married than by the widowed. In the visually impaired

sample which, as we have seen, differs consistently from the other samples, married people travel more in all respects than do the widowed. Despite this difference it seems safe to generalize that poor, elderly, widowed people travel more than do poor, elderly, married people.

Widowed respondents seem to have more contact with their children than do those who are still married. In addition, being widowed, is associated with a greater frequency of trips to social centers. In spite of common assumptions that older people withdraw when they are widowed, it appears that compensatory mechanisms also operate, and that some of these seem to be facilitated by travel.

The facilitating role of travel is suggested in the comments of some of the respondents. While the widowed travel more than the married, they also have a greater tendency to say that they would travel more often, if better transportation were available (Table IV-5). Of course, there may be many types of deprivation which our elderly respondents would attempt to alleviate through travel if effective means of transportation were readily available. However, loss of a spouse may be a particularly significant one in this regard.

TABLE IV-5

Percent Who Would Visit Three or More Destinations More Often If Better Transportation Were Available, by Marital Status; Public Housing Sample

	Never Married	Married	Widowed	Divorced	Separated
	24.6%	22.0%	30.2%	38.5%	22.3%
N	(65)	(141)	(258)	(26)	(31)

Table IV-6 suggests that the willingness to travel more frequently given more adequate transportation is dampened somewhat by increasing age and the disabilities attendant to it. However, even among those 75 years of age and over, 23% indicate that they would visit more destinations if facilitating transportation were available.

TABLE IV-6

Percent Who Would Visit Three or More Destinations More Often If Better Transportation Were Available, By Age: Public Housing Sample

	Under 65	65 - 74	75 and Above
	34.5%	26.4%	23.0%
N	(113)	(231)	(143)

The resolve of the respondents to visit travel more often given better transportation is influenced further by the distance to the destinations involved. Table IV-7 indicates that, in general, the farther the family member or friend, the more likely is the respondent to claim that he would increase his visits, if better transportation were available.

TABLE IV-7

Percent Who Say They Would Visit a Family Member or Friend More Often, If Better Transportation Were Available, by Distance to the Persons Home -- Public Housing Sample - Those Who Mention These Destinations

<u>Would go More To Visit</u>		<u>Distance of Destination (Family or Friends, Resp.)</u>						<u>TOTAL</u>
		<u>Under 3 Blocks</u>	<u>3-6 Blocks</u>	<u>7-20 Blocks</u>	<u>20+ Blocks in Boro.</u>	<u>Out of Boro.</u>	<u>Out of City</u>	
Family	%	19	43	33	56	53	31	45
	(N)	(16)	(14)	(39)	(41)	(30)	(13)	(196)
Friend	%	13	23	33	55	61	-	35
	(N)	(53)	(26)	(36)	(44)	(23)	(-)	(182)

It is also worth noting that the number of visited friends who live within six blocks of the respondent is considerably larger than the number of visited family members who reside that close to the respondent. Perhaps, friendship is, in part, a consequence of propinquity. However, within this limited distance a higher proportion of respondents say they would visit family members, rather than friends, more often if better transportation were available. It may be that friends within the neighborhood account for more of the respondents social contacts, but travel difficulties attendant to visiting family members who reside close to the respondent are a substantial deprivation.

We considered the possibility that lower levels of contact with friends would produce heightened desires to increase travel, given the availability of adequate transportation. We asked people how often they visit friends in the building where they live, and how often they are visited in their apartment. Contrary to our expectations, neither of these variables showed any noticeable correlation with the number of destinations to which respondents would go more often, if better transportation were available.

We also considered the possibility that increased visits to friends might compensate for decreased contact with family. We found, on the contrary, that visiting friends was strongly correlated with visiting family. Visiting friends in one's own building had a similar but weaker correlation and being visited by others has a near zero correlation with visiting one's family.

The frequency of trips to visit relatives may be considered an indicator of social contact, as well as a particular reason for travelling. In our public housing sample, a very large number of respondents claimed that they "rarely or never" visited relatives. Therefore, for purposes of analysis, we included with these people those who claimed to make such visits less than once a year, and simply distinguished them from those who claimed to make such visits at least once per year.

It is notable that 56% of the public housing sample reported "never" visiting a relative. This percentage increases a little with increasing age: Of respondents under 75 less than 50%,

of those over 75 more than 60% report never visiting their relatives. Seventy percent of the never married, 60% of the married, 53% of the widowed and divorced and 43% of the separated report "never" visiting relatives. And finally, while 70% of those who do not have children "never" visited relatives, the same claim was made by 50% of those who do have children.

Our data do not support the speculation that visiting friends compensate for a lack of contact with relatives. Rather the data shows that those who visit relatives visit friends much more than those who do not visit relatives. Of those who visit relatives, 54% visit friends both within and beyond their apartment building. Of those who do not visit relatives, 35% visit friends in their own building but only 22% visit friends who live outside the building.

TABLE IV-8

Visiting Relatives and Visiting Friends
Public Housing Sample: Percents Who Visit Friends

	Among Those Who	
	Never Visit Relatives	Sometimes Visit Relatives
Visit Friends Within Own Apt. Bldg.	35%	54%
Visit Friends Beyond Own Apt. Bldg.	22%	54%
(N)	(274)	(204)

We may look another way at the relationship between visiting friends and visiting family; i.e., to see whether visiting friends affects visiting relatives. In Table IV-9 we see that people who visit friends whether outside or inside their own building are much more likely also to visit relatives than are those who do not visit friends. Among the latter, however, those who do not visit friends beyond their own building, but do make such visits within the building are much more likely to visit relatives than are those who do not visit friends at all.

TABLE IV-9

Percent Who Ever Visit Relatives By
Pattern of Friend Visiting: Public Housing Sample

Visit Friends

<u>Beyond Own Building</u>	<u>Within Own Building</u>	<u>Percent Ever Visit Relatives</u>	<u>(N)</u>
Yes	Yes	63%	112
Yes	No	67	58
No	Yes	42	93
No	No	23	215

We considered the possibility that a lack of visits made to friends might be compensated for by a larger number of visits from friends. Table IV-10 shows that this is not true either. Clearly, those who do the most visiting are visited the most, and those who do the least visiting are visited the least.

TABLE IV-10

Percent Ever Visited By Friends By
Pattern Of Visiting Friends and Relatives

<u>Friends Beyond own Bldg.</u>	<u>Relatives</u>	<u>Percent Visited By Friends</u>	<u>(N)</u>
Yes	Yes	63%	(110)
Yes	No	75	(60)
No	Yes	37	(94)
No	No	39	(214)

We know from the preceeding section of this chapter that those who are more disabled and, therefore, more in need of help, are less likely to visit others. Thus, the lack of visiting is not entirely a matter of choice. This is suggested further by the relatively high percentages of people who say they would visit more frequently, if better transportation were available.

(b) Other Forms of Social Involvement

Our respondents were asked about the likelihood of them getting either emergency or long-term help, should they need it and the likelihood of them being willing and able to give such help to someone else, if necessary. The belief that help will be forthcoming is related to the presence of children. Among those who have children, the nearer the nearest child lives, the greater the belief that help will be available in

both emergency and long-term situations. The more frequently respondents see their children the more they believe this to be the case.

It would appear that the greater faith an old person has that help is available, if necessary, the more he or she would be willing to travel. At least, there is a small correlation between this measure of confidence in support and number of annual trips respondents made. Of course, the link between these two phenomena may be explained in the opposite direction; i.e., those who go out more have reason to be more optimistic, perhaps because of their greater contact with others or their greater sense of competence. This interpretation may be suggested further by the fact that the number of annual trips is more strongly correlated with the claim that one would be helpful to friends or relatives needing help than it is with the belief that one would receive help, if one needed it oneself.

A question that in itself combines travel and help-getting problems asked respondents to tell whether or not they often stay at home because they don't want to impose on anyone to take them out. Not surprisingly, this sense of imposing is strongly related to a relatively small annual number of trips. However the fear of imposing on others does not have a uniform effect at all levels of travel. It is in the lowest quartile of annual trips that the tendency to stay at home for fear of imposing on others is most pronounced.

Lack of mobility seems to be associated with a sense that help is not easily at hand and with the belief that asking for help is an imposition on others. While the direction of causality here is not clear, it is safe to conclude that, if people feel that help is hard to come by, they are more confined and travel less. If people travel less, they are likely to feel less able to get help when they need it. Increasing their mobility, by whatever means, is likely to have an effect on this vicious circle.

One facet of social involvement which may require a certain amount of travel, but which, nonetheless may be seen as an act which reveals a tie to the community or society is the tendency to vote in elections. Respondents were asked whether they voted in the 1977 and the 1978 elections. Not surprisingly, the relationships between these two variables and the travel variables are very similar.

Those who vote make more trips, go more often to social centers and grocery shopping, go to more destinations, go farther from home, make somewhat more of their trips on foot, and tend to go longer distances on foot. They are also more likely to visit friends in their own apartment building, but are somewhat less likely to be visited by others than are those who do not vote.

This hardly indicates that voting or not voting affects travel. Rather, it seems likely that those who make more trips, go more often to social center, etc., have a greater tendency to

vote. Suffice it to say that the kind of social integration or activity that is represented by the travel variables increases the likelihood of voting, just as those who vote are more likely to engage in these various activities. If voting is a sign of social involvement, being able to travel and travelling, on the part of elderly people, contributes to that social involvement.

Other dimensions of the relationship between social support and travel, especially regarding the ways in which this relationship may mediate the impact of disability on travel behavior, will be discussed in the next chapter.

CHAPTER V

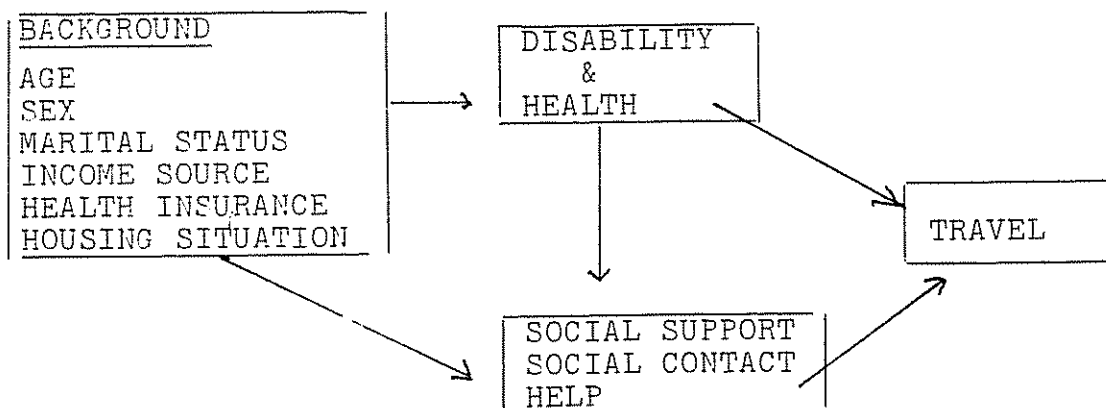
The Determinants of Travel: A Regression Analysis

A. Introduction

Having looked at the relationship between demographic characteristics, other independent variables and travel, we are now in a position to consider the extent to which these variables help explain the travel behavior of our sample members. In doing so, we first consider the model of causal sequence from which our analysis of travel determinants proceeds. We have focussed on the difficulties which older people have and that may constrain their travel behavior. We have ascribed these difficulties to age, poverty, social isolation, physical disability, and the lack of appropriate transportation. These classes of difficulties and the causal sequence of relationships among them are graphically depicted below.

FIGURE V-1

The Causal Sequence of Selected Determinants of Travel by the Elderly



This figure indicates that we regard travel as the outcome of elderly peoples' general background, their disability and health, and their available social support. Moreover, background is seen as causally prior to both disability and social support, while disability is conceived of as causally prior to social support. This means that the importance of social support variables must be understood in the context of both disability and background, while the effects of disability or travel must be seen within the context of specific background variables.

Tabular analyses, such as those reported on in the last chapter, are useful in exploring the individual links in this model. However, in order to analyze the whole system of relationships between these variables, a method is needed which takes into account a large number of variables at the same time. Regression analysis is used here to relate these many variables and to show their combined effect on travel. The regression analysis is used first to determine the extent to which the travel variable (the dependent variable) is determined or statistically predictable by the combined effect of all three sets of independent variables (background, disability and social support). The analysis is then used to tell us how important a particular variable is in this scheme of things, or how much it contributes to the total outcome. We want to know for each variable whether it is worth keeping, or whether our explanatory model would be just as good if this variable were left out.

Regression analysis gives us this information by measuring the amount of variance in the dependent variable that is attributable to the entire set of independent variables. The contribution of a specific independent variable is then measured by the amount of explained variance that is left after the amount of variance explained by all the other independent variables is determined.

Regression analysis studies variance by analyzing correlations between variables. The multiple correlation coefficient, referred to as R, indicates the strength of the correlation between the dependent variable and the set of independent variables. For example, an R of .80 indicates an exceptionally strong correlation. The squared value of the multiple correlation (R^2), in turn, indicates the amount of variance in the dependent variable that is explained by, or attributable to, the effect of the independent variables. In the case of this example, an R of .80 indicates that 64% (R^2) of the variance is attributable to the independent variable in question. That is a very high percentage of variance explained by a set of independent variables.

B. The Universe of Variables

As a matter of analytical strategy all of the regressions were first run using the public housing sample. We later ran similar regressions on the other samples to see if the explanatory patterns discovered in the public housing sample were evident in the other samples as well.

As described in earlier chapters, we used many different indicators of travel behavior in this study. It hardly seemed necessary to run regression analyses on each of them. Indeed, a number of these indicators were causally prior to others. For example, how far a person usually goes on foot is a less ultimate dependent variable for us than is the number of trips a person makes in a year. In fact, this latter variable may very well depend on a person's ability to travel on foot.

Accordingly, we decided early on to focus on only 4 travel variables as ultimate dependent variables. They are: A) the frequency of going grocery shopping; (B) the frequency of going to a social center; (C) the number of different destinations to which one travels at least once a month; (D) the total annual number of trips. These variables were seen as the outcome variables of the causal process depicted in Figure V-1 and involving all the sets of independent variables listed in the boxes shown there. In addition, the remaining travel variables, which are treated as causally antecedent to the dependent variables, are also treated as independent variables. We shall refer to these throughout the remainder of this report as "ancillary" travel variables.

Figure V-2 lists all of the independent variables, by category, that were considered as we began to structure the regression analyses.

FIGURE V-2

The Universe of Independent Variables
Considered for the Regression Analyses

1. Ancillary Travel Variables:

The most difficult mode used once per month
The distance of the farthest destination where respondent
goes at least once a month.
Distance to the grocery store
Distance to the farthest destination where the
respondent usually goes on foot.
Fraction of all trips made by foot
Money spent on transportation in past week.

2. Social Relation and Support Variables:

Index of primary social contact
Index of scndary social contact
Number of tasks for which R. has paid help
Number of tasks for which R. has personal (unpaid) help
Frequency of visiting friends in building
Frequency of being visited by friends
Number of living children
Frequency of seeing children
Frequency of phoning with children
Total contact with children
Index of perception of available help
Trust index

3. Disability and Health Variables:

Mobility scale of trichotomies
Personal care scale of dichotomies
Use of locomotion aids
Has paid help for grocery shopping
Has paid help for housework
Number of chronic conditions
Number of conditions that interfere with travel
Self-rated health
Frailty index

4. Background Variables:

Ethnicity (Black, Hispanic, Jewish, other)
Marital Status (Married, Never Married, Widowed, Separated,
Divorced)
Age
Sex
Supplementary Security Income recipient
Medicaid client
Location (Building)

All of these variables were regressed on each of the four dependent variables. The results indicate that this large set of variables best accounts for the frequency with which people go to the grocery store (dep. var. A) - $R^2 = .61$. This means that 61% of the variance in the respondents' frequency of grocery shopping is explained by the complete set of variables included in our analysis. The model fits next best when the number of destinations to which respondents traveled once a month or more (dep. var. C) is the dependent variable. The square of the multiple correlation (R^2) in this case is .47. Similarly 42% of the variance of the total annual number of trips (dep. var. D) is accounted for. But this model of analysis does not contribute much to an explanation of the frequency of attendance at social centers or lunch programs (dep. var. B). The R^2 here is only .19. Thus, less than 20% of the variance in the frequency of travel to this particular destination is explained by these hypothesized determinants of travel.

C. Reducing the Number of Dependent Variables

In developing our strategy for conducting the regression analyses, we sought first to limit further the number of different measures we would use for the dependent variable. It was quickly decided to discontinue the use of trips to the social center as a dependent variable, in view of the fact that the entire set of independent variables explained less than

20% of its variance. Obviously, a better understanding of such trips as a dependent variable would require the exploration of different independent variables.

The number of different destinations to which one travels at least once a month was also dropped from further consideration as a dependent variable. In the first place, this variable was very highly correlated with another dependent variable -- the annual number of trips. In fact, the correlation coefficient between these variables was .78. Thus, it offered very little by way of a description of travel behavior that was not offered by the annual number of trips.

Moreover, the number of destinations was more strongly affected by the ancillary travel variables and less strongly by the other independent variables than was the annual number of trips. We thought it desirable, therefore, to use a dependent variable that offered greater opportunity to explore the effects of background, disability and social support.

Given these considerations, we were left with two dependent variables -- the annual number of trips and the frequency of trips to the grocery store. Regression analyses of each of these variables are reported on later in this chapter.

D. Reducing the Number of Independent Variables

There are a number of criteria by which a set of independent variables can be reduced, and a number of different ways in which this can be done. Clearly, variables which have no noticeable correlation with the dependent variables should be eliminated first. However, such variables occasionally are part of a constellation of independent variables which together have a significant effect on the dependent variable. Whether such a constellation is then best combined into a single index, or is best represented by one or more of its constituent items can be argued in the light of preliminary analyses. Other formal criteria for excluding items have to do with their specific contribution to the regression model. Does their inclusion matter; i.e., does it make any difference to the total multiple correlation, and are differences in the value of this variable reflected in differences in the dependent variable?

Stepwise procedures in regression analyses occasionally provide some insight into the contribution made by a set of variables, and clarify situations in which a variable which appears at one point to contribute substantially to the dependent variable, later appears to contribute little. For example, in one analysis of the effect of disability on the frequency of grocery shopping, forty-five percent of the variance of grocery shopping was accounted for by the disability variables. On the other hand, when social support variables were analyzed for their contribution to frequency of grocery shopping, they

were found to contribute 50% of the variance. When disability variables were subsequently entered into the equation, they added only two and a half percent to the explained variance. But this pattern has a substantive meaning that is of interest to us. The hypothesis that social support might mitigate the effects of disability seems to be supported. This does not mean that disability is irrelevant to travel but rather, that these data are consistent with a causal model in which disability has a bearing on social support, and social support on travel, and in which the principal effect of disability on travel is exerted through the social support pattern that derives from disability.

This example suggests that a small contribution to the R^2 is not in itself a clear criteria for eliminating a variable or set of variables.

Because of the large number of independent variables, much detailed analysis was required to pare down the number of variables to a manageable set which would still represent what the set as whole contributes to an explanation of the dependent variables. The remainder of this section presents some considerations in the light of which we reduced the number of variables in each of the major substantive sets of variables.

1. The Background Variables

Social background variables are almost invariably correlated with whatever dependent variables one is investigating. Yet the

importance of such correlations must be assessed in terms of their location in some reasonable causal scheme. Although this study is largely restricted to older people, we considered the possibility that age, within our samples, might be an important factor. At first sight age does assume some importance. However, when we studied the relationship of age to various travel variables, and looked at this relationship for people with different degrees of disability, it became clear that it is disability and not age that is the determining variable.* For example, the correlation between age and frequency of grocery shopping is $-.167$. When age is entered into a regression equation for frequency of grocery shopping after the scale for mobility impairment, the standardized (partial) regression coefficient, which represents the contribution of age to the dependent variable, when disability has been taken into account, is only $-.015$. Even though the initial correlation was not very large, what there was has been greatly reduced. Table V-1 gives a clearcut picture of the overwhelming effect of disability on grocery shopping and the relatively negligible effect of age. On these grounds, age was discarded as an independent variable for inclusion in the regression analyses.

* It will be recalled that in our discussion of sample selection we suggested that disability would outweigh ethnic difference. In fact, the idea that it is disability that makes old people different from others entered our thinking at many points in the design of the study.

TABLE V-1: % Going Grocery Shopping Less Than Once a Week
By Age & Disability: Public Housing Sample

Scale of Mobility * Impairment	Age			
	Under 65	65-74	75 +	
Low				
1) ---	8	8	6	7.6
2) --0	(85)	(120)	(47)	
Medium				
3) -00	34	38	33	35.4
4) 000	(47)	(76)	(55)	
5) 00+ -++				
High				
6) 0++	100	79	91	87.0
7) +++	(12)	(29)	(35)	

R² for age = .028; R² for age and disability = .419
* see Chapter III pp. 10-16 for an explanation of the
Scale of Mobility Impairment

Besides the correlations of age with travel, only seven correlations between background variables and travel exceeded .1 in absolute value. The largest of them was the correlation between receipt of Medicaid and frequency of grocery shopping. -.222. This correlation was hardly different from that between receiving Supplementary Security Income (SSI) and frequency of grocery shopping. Indeed, these two variables, Medicaid and SSI, correlate similarly with many other variables. Coded as a "dummy variable," 0 or 1, with 1 given to SSI recipients, SSI was included in the regression analysis as the only indicator of income level and Medicaid was dropped. This decision was made because of the similarity of the two variables and because the Medicaid variable includes elements of the respondent's health experience and his utilization of health care facilities -- variables in which we have an independent interest. Since utilization is treated as a consequence of travel later on, whatever aspects of utilization are contained in Medicaid membership would be a confounding factor. It should be remembered also that all the respondents in this sample had already met the income requirements necessary for entrance into public housing. Accordingly, a single, crude distinction in income level seemed all that was likely to make much substantive sense.

As to other background variables, it will be recalled that ethnicity was assumed to be less important than age, disability, poverty, and the physical obstacles of the environment. In fact, in searching through long series of correlations,

relationships between ethnicity and the dependent variables although partially explained by disability and age differences, were small, but persistent. Nevertheless, we did not include ethnicity in our final set of independent variables.

Marital status variables were remarkable for their lack of correlation with any other variables and was therefore dropped from further analysis. Of course, being widowed is correlated with age and sex, and having ever been married is related to all questions having to do with visiting children, a variable which will be discussed later.

Despite the fact that men do seem to use the subway more than women, and use buses slightly more, and door to door transportation somewhat less, age accounts in part for these relationships. Thus, sex was excluded from the regression studies, because its effect on other variables was neither very great nor systematic.

The last major independent variable which is part of the "background" set is location ; i.e., the particular building a person lives in and all that the building may imply about the physical and social environment. Although we have claimed that location has a considerable effect, we are excluding it from the regression analysis. We have made some comments about this variable earlier, and do not now suggest that it can be ignored. However, because we did not establish systematic procedures for measuring it and because of the technical

difficulties of including this variable in a regression equation (3 to 5 dummy variables would be required) we dropped it from further analysis. This decision was supported further by the fact that certain important characteristics of location are implied by some of the ancillary travel and social support variables, such as distance walked to the grocery store and frequency of visits within the building.

In sum, this paring down process has left us with one background variable -- the receipt of SSI payments -- for inclusion in our regression analyses.

2. Disability and Health Variables

Choosing which disability variables to include was relatively easy. The scale of mobility impairment and the scale of personal care disabilities were logical choices. Both showed many strong correlations with dependent and intervening variables, and they referred to two clearly different dimensions of disability.

Other variables related to disability are reflected in some of the differences between samples -- visual impairment in one case, needing household help in the other. In replicating regressions in those samples we may be able to see some of the special effects of these characteristics. But in numerous regressions in which we varied methods and included different variables, based on the public housing sample, neither these variables nor the various health indicators made any large or consistent contributions, once the two chosen disability

variables were included. Even the number of health conditions which interfere with travel did not make any large or consistent contributions once the mobility scale and the personal care disability scale were included.

This does not imply that health has no impact on travel. Obviously, when one is feeling poorly, one is disinclined to go out at all. However, most of our health measures were generally transient in nature, while the dependent variable measures tapped longer-term regularities in travel behavior. Thus, it is reasonable to conclude that the more transient aspects of health do not make a great deal of difference to these more persistent aspects of travel.

3. Social Support Variables

In the selection of variables which were to reflect the most potent effects of social contact on travel, it was first necessary to cope with certain logical problems. A number of variables which had very strong correlations with the dependent variables were, in some way, part of the dependent variables. For example, the number of times one goes to visit various people outside of one's building is, of course, included in the dependent variable of annual trips. Similarly, because of the way the questions were asked, the number of tasks for which a person has help can at most be the number of tasks which he has difficulties doing by himself. This variable is part of one of the disability indices. These variables were, therefore, dropped from further use in the regression.

Other variables, such as visits made within one's own building, and visits received in one's own apartment, do not enter into any of the travel variables. Moreover, these variables turned out to be particularly good candidates for inclusion in the regression analyses, good indicators of the social life in the buildings, and, to some degree, useful surrogates for variables descriptive of the building in which one lived. Although both variables were included in the regression analyses to represent social contact and support, it may be that one of them would have served just as well. They are highly correlated, and the number of visits received by the respondent rarely adds much to what we have learned from the number of visits he has made in his own building.

The end result of this paring away process was to leave us with seven independent variables for use in our regression analyses, when the annual number of trips was our dependent variable. They are as follows:

- (1) Mode of travel used within the past year^{*}
- (2) Distance of farthest destination to which the respondents go once a month or more often.

* More precisely, categories 3 and 4 of the Travel Mode variable depend on whether a bus or subway have been used in the past four months; category 2, implying the use of door to door transportation, depends on having used a taxi within the past four months, or a private car or ambulance more than six times during the past year, but not belonging to categories 3 or 4. Finally, if this variable is in category 1 -- none of the above took place -- that is, in the last four months, the respondent has either gone out only on foot, or not at all, or has used Easyride, a mode of transportation purposely left out of this index.

- (3) The scale of mobility impairment.
- (4) The scale of personal care disability.
- (5) Frequency of visits to a friend in one's own building.
- (6) Frequency of being visited in one's own apartment.
- (7) Receipt of Supplementary Security Income (SSI)

When grocery shopping is the dependent variable, the distance of farthest destination to which respondents go once a month or more (#2, above) is replaced by two other ancillary travel variables. They are:

- (2a) Distance to farthest place to which respondent goes once a month or more often on foot.
- (2b) Distance to the grocery.

E. Regression on the Annual Number of Trips

We are now in a position to ascertain the degree to which these independent variables determine the dependent travel variables. We begin with a somewhat detailed description of the relationships of the seven independent variables, the dependent variable, the annual number of trips.

In the equation below, Y stands for the dependent variable, the annual number of trips, and X_i for the independent variables, numbered as they are listed above. Multiplying each X_i with its regression coefficient, and summing, we obtain a regression equation. In terms of standardized variables, it is

$$Y = .11X_1 + .19X_2 - .34X_3 + .07X_4 + .32X_5 - .06X_6 - .03X_7 + e$$

where e is the residual deviation of individuals.

The degree to which this model fits the data of the public housing sample is measured by the square of the multiple correlation coefficient, $R^2 = .33$; that is, one third of the variance in the number of annual trips is accounted for by this linear combination of the seven independent variables. As previously indicated, the entire set of independent variables explained 42% of the variance in the number of trips per year. Thus, by paring down our set of independent variables, we lost only 9% of the explained variance.

From this equation, it is evident that X_3 , the scale of mobility impairment, and X_5 , the frequency of visits to friends in one's building, are important determinants of the number of annual trips, since their coefficients are numerically large when compared to the other variables. While the distance of the farthest destination, X_2 , has the next largest regression coefficient, it is travel mode, X_1 , that makes the largest contribution to the total R^{2*} . What this means, roughly is that if the variance of the annual number of trips is considered as the sum of the variances contributed by specified and unspecified sources, of the specified sources, travel mode contributes the most; or knowledge of the travel mode reduces the residual variance most. If $Y = a + bx$, the regression coefficient b indicates how steep the regression line is; that is, how much the local mean of Y changes with x ; the square of the (in

* The R^2 contributions of each of the seven variables are as follows:
 $X_1 = .13$; $X_2 = .03$; $X_3 = .07$; $X_4 = .00$; $X_5 = .09$; $X_6 = .01$; $X_7 = .0$

this case simple) correlation coefficient indicates how much the sample points are concentrated on the regression line. It is in this sense that the square of the multiple correlation coefficient indicates how well the particular independent variable determines the dependent variable.

The standardized equation is useful in that it can easily be compared to other such equations, and does not reflect the greatly different variances of the different independent variables. The unstandardized equation gives a more graphic picture. For example, instead of the number of annual trips having, as it does in the standardized version, a mean of 0 and a standard deviation of 1, the annual number of trips has, in fact, a mean of 232 and a standard deviation of 174 -- numbers that make somewhat more intuitive sense. The following is the unstandardized equation, and beneath it is written the numerical value of each term obtained by substituting its mean value.

$$Y = 142.9 + 21.1X_1 + 18.6X_2 + 29.0X_3 + 14.5X_4 (+19.9X_5 - 3.8X_6) - 9.8X_7 + e$$
$$235.6 = 142.9 + 38.6 + 71.2 + 57.6 + 6.1 + 44.4 - 9.5 - 4.1 + e^*$$

We note first that in the unstandardized equation there occurs a constant, 142.9, to which the different terms in the regression equation add or subtract their values to obtain the estimate of the dependent variable. Disability (X_3) as measured by the scale of mobility impairment, has numerically the largest

* The theoretical mean of e is always taken to be 0; the fact that in this case it is 3.6 reflects an accumulation of round off errors.

coefficient (-29.0) in the equation, but at its mean value it does not influence the annual number of trips (57.6) as much as does the farthest destination ($X_2 = 71.2$). We see that visiting friends (X_5) has a large effect (44.4) but being visited (X_6) a relatively negligible one (9.5). Finally, receiving supplementary security income (X_7) makes very little difference. We can be perfectly precise about this. Since this is a variable which has the value 1 for those who get SSI, and for those who do not, the unstandardized equation tells us that those who get SSI make, on the average, 10 (i.e. 9.8) fewer trips per year than others who are similar to them on all the other independent variables, but do not get SSI.

Earlier, we suggested that our dependent travel variables might better be considered the dominant element in a combination of travel variables, since our purpose here is to ask about determinants of travel which are themselves not descriptions of travel. The standardized equation can then be re-written as:

$$\begin{aligned} Z &= Y - .11 X_1 - .19X_2 \\ &= -.34X_3 + .07X_4 + .32X_5 - .06X_6 - .03X_7 + e \end{aligned}$$

Again, and perhaps even more plainly, we see that this composite travel variable, which reflects predominantly the number of annual trips, with the effect of travel mode and the farthest distance in a sense removed, is determined to a considerable degree by two variables, the frequency of visiting friends in the same apartment building (X_5), and disability (X_3).

As indicated in previous discussions, visiting friends in one's own building may be either another indicator of mobility, or a suggestion that closer relationships to people in the same building facilitates travel generally. It is at least as plausible that greater social contact produces greater social support which, in turn, stimulates older people to be more adventurous and allows them to exercise this greater interest in the outside world. The greater contacts inside the building may provide both assistance in going out and a receptive audience with whom to discuss one's outside adventures.

F. Applicability of Regression Findings Beyond the Public Housing Sample

If disability and active contact with others in one's own building are the dominant predictors of the annual number of trips in the public housing sample, there are two directions of generalization that must be considered. First, having found this in a sample, the question immediately arises whether it is likely to be true of a more general population -- for example, the population of people in public housing for the elderly in New York City. However, this generalization goes beyond our data. Statistical inference from sample to population permits us no more than to generalize to the population of people in the six buildings that were included in our study. No claim was made that these buildings were representative of public housing for the elderly.

Can we, then, on the basis of our data come to any conclusions about elderly people in general, or at least, elderly, relatively poor people in New York? We can attempt to do so by considering the data from our various other samples, in relation to the data of the public housing sample, and data from sub-samples of the public housing sample relative to the total sample.

Sub-group comparison is a tenuous basis for generalization beyond any given sample, but it is one method we continually employ in daily life, and in the absence of definitive data, it provides good suggestive evidence. When we perceive some difference between two subgroups of a population, we commonly assume that similar differences will be manifest between similar subgroups of quite different populations. That older people are less active than younger people in the United States, leads us to think that the same is true in other countries despite the fact that "old" people in some countries may be much younger, or much older, than "old" people in the United States, and average levels of activity may also be different. But the association between age and activity has a peculiarly firm basis in physiology. The same is not true for most of the correlations we are interested in. Nonetheless, if we find that a correlation between disability and travel, for example, is relatively constant as we go from a sample to various other samples and subsamples, our confidence in the prevalence of that correlation is strengthened. It is by such comparative means that we have attempted to assess the generality of our findings from the public housing sample.

Table V - 2 presents the standardized and unstandardized regression coefficients and the contribution toward the explained variance (R^2) of each of the 7 independent variables in six separate samples or subsamples. The dependent variable is the annual number of trips and the samples are as follows: 1) the public housing sample and two sub-samples, 1(a) Lower East Side public housing residents, and 1(b) the subsample of Easyride users; 2) the Easyride registrants sample; 3) the homecare sample; and 4) the visually impaired sample.

In the Public Housing Sample, relatively large contributions derive from mobility impairment, frequency of visiting, and travel mode. This pattern recurs in the other samples but with frequency of visiting playing a much smaller role. The contribution of mobility impairment is large and, of course, negative in every sample but one, the homecare, a finding whose peculiarity we commented on earlier. The basis for selecting the homecare sample had implications for their disability as demonstrated by the fact that disability in this sample has a considerably smaller variance (or standard deviation) than in the other samples (see Table V-3). Thus, the universality of the relationship between mobility impairment and travel is, if anything, supported by this apparent counter example.

Curiously, in the sample of Easyride registrants, which is most like the homecare sample in terms of a high average level of disability, the annual number of trips is affected more by disability than in any other sample. Travel mode and the farthest distance travelled together contribute at least half of

TABLE V-2: Regression Analysis Results on Annual Number of Trips:
 Regression Coefficients and Contributions to R² for Various Samples

		Independent Variables									
SAMPLES	TRAVEL MODE	DISTANCE	MOBILITY	PERS'L CARE	VISITING	VISITORS	SSI				
1. Public Housing											
N = 525											
b ₀ = 142.9	A) *	19	.34	.07	.32	-.06	-.03				
R ² = .33	B)	20.1	18.6	14.5	19.9	-3.8	-9.8				
	C)	.13	.03	.00	.09	.01	.00				
1a. Lower East Side											
N = 318	A)	.06	.23	.07	.26	-.01	-.01				**
b ₀ = 149.3	B)	11.9	24.4	13.6	17.5	-.6	-				
R ² = .30	C)	.05	.10	.00	.07	.00	-				
1b. Easy Ride Sub-Sample											
N = 80	A)	.25	.25	.11	.14	.06	.09				
b ₀ = 89.5	B)	54.6	28.4	21.2	10.2	4.8	37.4				
R ² = .34	C)	.19	.06	.01	.02	.00	.01				
2. Easy Ride Registrants											
N = 54	A)	.21	.09	-.152	-.08	.04	.05				
b ₀ = 248.7	B)	35.6	9.8	-44.6	-5.0	-2.8	18.7				
R ² = .46	C)	.24	.01	.18	.00	.03	.00				
3. Homecare											
N = 59	A)	.35	.30	-.16	.19	-.11	-.15				**
b ₀ = 9.4	B)	65.2	27.4	-17.6	11.4	-6.2	-				
R ² = .39	C)	.25	.08	.01	.03	.02	-				
4. Visually Impaired											
N = 74	A)	.15	.20	.36	.03	-.03	-.15				
b ₀ = 102.6	B)	31.9	22.0	-40.8	7.7	-1.9	-29.0				
R ² = .31	C)	.19	.04	.06	.00	.00	.02				

*For each sample, line A=the standardized regression coefficient; line B= the unstandardized regression coefficient; and line C = the contribution to R².
 ** Some cells are empty because the contribution of the independent variable to the total R² was too small. Where that contribution is listed as .00 it was, in fact, sufficiently greater than 0 to make a statistically significant contribution.

the total explained variance of the annual number of trips in each sample. Travel mode by itself makes the largest contribution in every sample except in the Lower East Side subsample of the public housing residents (1a), where the farthest distance travelled is the chief contributor.

Visiting others in one's apartment building has a noticeable positive influence on the annual number of trips primarily in the public housing sample, but to a much lesser extent in the other samples. This leads to speculation that housing for the elderly provides opportunities for visiting that exist to a much lesser extent in other situations. But this is not so, as can be seen from the fact that the average frequency of such visiting does not vary greatly from sample to sample. (See Table V-3). Rather, the difference between the public housing and other samples in this regard may reflect the existence of an interaction effect, between disability and visiting on travel: visiting makes more of a difference to the total annual trips among the less disabled than it does among the more disabled.

There is one more independent variable, receipt of Supplementary Security Income (SSI), whose contribution to the annual number of trips differs somewhat in the different samples. Where in the total sample (1) SSI had a small negative regression coefficient, in the Easyride using subsample (1b) it has a large positive one. Since it is a "dummy" variable, the meaning of the unstandardized regression coefficient is particularly trans-

parent: In the total public housing sample, (A) those who receive SSI make, on the average, 9.8 fewer trips per year than do those who do not receive SSI. Among the Easyride using respondents (1b) in this sample, those who receive SSI make, on the average, 37.4 more trips annually. Besides the Easyride using subsample, the sample of Easyride Registrants (2) is the only sample in which receiving SSI implies a larger annual number of trips.

It is difficult to say how this relationship between travel and SSI comes about so exclusively for Easyride users. It seems likely that those who, by self-selection, or whatever mechanism, become Easyride registrants or riders have some characteristics which, when combined with SSI are associated with more travelling. Perhaps these people always travelled more and were more aggressive about getting services of any kind, including SSI, Easyride, and, perhaps, medical services.

This hypothesis gains some plausibility when one examines the distributions of the annual number of trips in the Easyride using subsample of the public housing sample. In Table V-4 one notes that the Easyride users have a bimodal distribution which is high at both ends. However, the explanation for this bimodality is immediately available in the corresponding distributions for those who use Easyride once a month or more, and those who use it less frequently. The heavy users provide the mode at the lower end (in the lowest quartile) of the annual trips distribution, while the light users provide the mode in

TABLE V-3: Means & Standard Deviations of Variables in the Regression Analyses, Various Samples & Sub-Samples

		<u>Public Housing Sample</u>	<u>Lower East Side</u>	<u>Easy Ride Users</u>	<u>Easy Ride Regist.</u>	<u>House-bound</u>	<u>Visually Handi-capped</u>
Annual Trips	M ¹	232	238	250	185	179	269
	S.D. ¹	174	182	205	162	160	182
No. of Destinations ²	M	3.2	3.1	3.2	2.7	2.8	3.5
	S.D.	1.9	1.9	2.1	1.5	1.7	1.9
Trips to Grocery	M	4.2	4.1	3.0	3.0	2.7	4.2
	S.D.	2.7	2.8	2.9	2.9	2.9	2.8
Trips to Social Ctr.	M	2.1	2.0	3.0	1.6	2.0	1.2
	S.D.	2.8	2.8	3.2	2.7	2.9	2.4
Travel Mode	M	1.9	1.9	1.6	1.6	1.8	2.2
	S.D.	1.0	.9	.9	1.0	.8	.8
Farthest Distance	M	3.8	3.7	3.6	3.9	4.4	4.6
	S.D.	1.7	1.8	1.7	1.4	1.7	1.6
Farthest On Foot	M	1.9	2.0	1.8	2.0	1.7	2.2
	S.D.	1.7	1.4	1.4	1.3	1.4	1.4
Distance to Grocery	M	2.4	2.3	2.3	2.3	2.4	2.3
	S.D.	.8	.7	.7	.6	.5	.5
Scale of Mobility Impairment	M	2.0	2.0	2.7	3.3	3.5	1.9
	S.D.	2.0	2.0	2.0	1.9	1.5	1.6
Scale of Personal Care Disability	M	.4	.5	.7	1.1	.6	.7
	S.D.	.9	.9	1.0	1.3	.9	.8
Visits To Friends	M	2.2	2.0	2.2	2.0	1.7	1.9
	S.D.	2.8	2.7	2.7	2.5	2.6	2.6
Visits From Friends	M	2.5	2.4	2.6	2.7	2.2	2.6
	S.D.	2.8	2.8	2.7	2.6	2.9	2.6
SSI ³	M	.42	.43	.51	.28	.08	.241
	S.D.	.49	.50	.50	.45	.28	.428

¹M = Means S.D. = Standard Deviation

²In this line, as in most that follow, the means are means of quite artificially constructed, though ordered sequences of categories, named 1,2,3.....

³This is a "dummy variable", 1 if a respondent receives SSI, 0 otherwise. The "mean" of such a variable is the percentage of 1's; the standard deviation is given by the usual expression for a binomical variable, $S = \sqrt{pq}$.

TABLE V-4: Annual Trips in the Public Housing Sample and Various Subsamples

Public Housing Sample

Annual Trips Quartile	Total	Chelsea & Bronx	Lower East Side	1(b)			
	1		1(a)	Easyride Users	1X/month or more	less than 1X/month	Non Users
				Total			
1 1-99	25.0	25.4	24.7	31.8	40.6	26.4	22.3
2 100-206	25.5	23.8	26.5	18.8	9.4	24.5	29.1
3 207-321	24.6	29.0	22.0	18.8	25.0	15.1	23.1
4 323+	25.0	2.18	26.8	30.6	25.0	34.0	25.5
(N)	(525)	(193)	(332)	(85)	(32)	(53)	(247)

the highest quartile. Easyride provides transportation for those who travel little. Indeed, those who travel very little, are relatively heavy users of the service, while those who use it less frequently include a disproportionately high number of relatively active travellers.

We close our discussion of the regression analysis of the annual number of trips with some questions about Mode of Travel. Since, in the regression analyses, travel mode plays such an important role, we must ask why it is less important for the Lower East Side subsample. Only in this instance do we find much lower regression coefficients for travel mode than for the farthest distance travelled, and the former's contribution to R^2 is sub-

stantially less than is the latter's in this subsample. The lesser effect of travel mode on the number of trips on the Lower East Side might be explained in terms of an impression we had about the LES residents compared to other public housing residents. It seems likely that people on the Lower East Side who moved into public housing lived nearby within the neighborhood before their move. Thus, at least a large fraction of their social connections are still within reach. Where that is not the case, for example, in the buildings in the Bronx, according to a conjecture we made on the basis of informants' comments during the field work maintaining contact with one's old neighborhood involves a great deal more travelling, and, in all probability, much greater dependence on public transportation. In fact, of the respondents who reported visiting friends, 60% of those on the Lower East Side, but only 18% in the other buildings said that their friends lived six blocks or less from their own home. For relatives visited, the percentages are 21% and 7% respectively.

Thus, it may be that Lower East Side residents are generally less dependent on public transportation for visiting friends and relatives than are other public housing residents. That would be reflected in the lower explanatory power of mode use among the Lower East Side residents. If they are less dependent on public transportation, the number of trips they make, being largely confined to a smaller radius, are less related to the kind of transportation they use.

G. Summary of Regression Findings Regarding Annual Number of Trips

The regression analyses on the annual number of trips reveal several notable findings. It is clear that across the samples, ancillary travel variables and disability play dominant roles. The ancillary travel variables, travel mode and the distance of the destination farthest from a respondent's home where he goes at least once a month taken together, have the most weight in determining the annual number of trips. Moreover, mode of travel is the single most important variable in all samples and subsamples, save one. These ancillary variables may either be indicators of the respondents' ability to travel, or may be considered a part of his general travel pattern.

If the means of travel one uses and the distance one travels are seen as determinants of how many trips one makes, then the question naturally arises about the degree to which these ancillary travel variables are themselves determined by one's ability to get around, or rather to what degree disability is reflected in these travel variables. Even though the ancillary travel variables in every one of our samples appear to have a much stronger influence on the total annual number of trips, the disability variables account for a large fraction of all the other influences considered.

In every sample, the scale of mobility impairment makes a far larger contribution to the annual number of trips than does the scale of personal care disability. As expected, this contribution is negative--the greater the disability, the fewer the annual number of trips. That is what one would conclude from the

correlations of the disability variables and the annual number of trips. However, the regression analysis confirms this only for the scale of mobility impairment. The personal care disability scale, on the other hand, has small but consistently positive regression coefficients, indicating that the greater this type of disability, the more people travel. This paradox must be understood in the context of the regression model. The two disabilities measures are highly, and positively, correlated with each other. Thus, the positive contribution of the personal care measure to the number of annual trips may be interpreted as a small adjustment after the large negative contribution of the mobility impairment variable has been taken into account. It may also be (but this is very conjectural), that those who have more personal care impairments get more help with going out. We do know that a disproportionately large fraction of those reporting some personal care disability, have used the Easyride service.

One notable exception to the contribution of disability to Annual Number of Trips occurs in the Homecare Sample. There, the ancillary travel variables make a particularly large contribution and the influence of disability is relatively negligible. This is probably a consequence of the higher average level of disability and, lesser variance on disability in this sample. The relatively negligible contribution of disability in this sample, therefore, does not contradict the findings in the other samples where the variance of disability is larger.

The level of social contact, which was measured in terms of visiting and being visited, had a notable influence on the annual number of trips in the public housing sample, and to a lesser degree, in the homecare sample. One might assume that public housing for the elderly provides a greater opportunity for contact and mutual visiting within one's own building. But since the frequency of such contact does not vary greatly from sample to sample, it may rather be the nature of the contacts made in public housing for the elderly that influences travel frequency. While the frequency of visits to others in one's own building makes a difference, the frequency of visits received from others has a minimal effect on the annual number of trips taken. This finding leads one to ask whether social support and social contact affect travel, or are indicators of a general level of activity which manifests itself in more travelling. While this question is not fully answerable given the data we have here, one piece of evidence points to another causal sequence that connects social life with the amount of travelling done by these elderly people.

In all but one of the samples, the Easyride using subsample of the public housing sample, the frequency of being visited by others has a negative effect on the annual number of trips. In fact, the zero-order correlations between the number of annual trips and the two visiting variables are quite different. In all the samples, visits to others are more positively correlated with the annual number of trips than are the visits received,

while frequency of visits received is associated in each sample with higher disability. Thus, this variable may be interpreted more appropriately as reflecting a person's inability to go out. If this inability results in being visited more frequently, these visits would seem to constitute a form of social support, which, however, does not lead to more travel.

It was, of course, expected that disability, and in particular the scale for mobility impairment, would have very strong effects on travel. The data from the various samples confirm this expectation. Disability in terms of personal care activities, when considered in conjunction with mobility impairment, may imply an overstatement of mobility impairment, and thus seems to result in a larger annual number of trips; but this relationship requires further study. For example, it is possible that people who have personal care disabilities receive assistance which helps overcome mobility impairment as well and thus increases the amount of their travelling.

The hypothesis that our social contact variables are indicators of social support and would, therefore, positively affect the amount of travel has not been confirmed by the data. Visiting others, rather than being a causal antecedent of more travel, seems more likely to be a manifestation of greater activity in general of which greater travel is simply a part. And being visited by others seems, if anything, to contribute

to less travelling, though it, too, may rather be an indicator of greater disability, which result in less travel, and a larger number of visits by others.

To the degree that receiving Supplementary Security Income differentiates some of the members of our samples as being in more dire economic straights than others, economic level (as measured by this indicator) on the whole has rather little effect on the total amount of travel. Such effects as it does have are somewhat difficult to interpret. While in our largest sample, i.e., the public housing sample, and in the visually impaired sample SSI has a negative effect, it seems to be associated with an increase of the annual number of trips among those who use or are registered for Easyride. Perhaps we are observing an interaction effect here, in which the combination of SSI and Easyride use has a particularly strong effect. It may suggest that those in most trouble, may profit most from certain social programs, or perhaps, from certain combinations of such programs. However, all that our data assert is that in the Easyride using or registered samples, those who receive SSI make more trips annually than do others.

H. Regression Analyses Using Frequency of Grocery Shopping as Dependent Variable

A series of regression analyses were also run using trips to the grocery as the measure of travel behavior. Table V-5 presents the results of these analyses for each of the independent variables in each of the six samples and sub-samples reported on earlier in the chapter.

This set of independent variables accounts for half or more of the variance in each of the samples, except the home-care. Even in the latter sample, the set of variables explains one-third of the variance. Almost exactly half of the explained variance derives from an ancillary travel variable that seems of particular relevance to grocery shopping, that is, the farthest distance gone on foot, or more accurately, the distance of the farthest destination where the respondent goes on foot once a month or more. When this variable is put into the regression equation, travel mode which was the most important variable in relation to annual number of trips, still makes a contribution, albeit, a smaller one. An additional ancillary travel variable was included in these equations, distance to the grocery, which makes its largest, though negative, contribution to the frequency of grocery shopping in the Easyride users sub-sample.

Distance to the grocery also has a high regression coefficient in the visually impaired sample, as does travel mode. Thus, the frequency of grocery shopping in this sample seems particularly sensitive to ancillary travel variables. Receiving Supplementary Security Income seems to result generally in a decrease in the frequency of going shopping. However, this effect seems to be particularly strong in the homecare sample.

Disability has quite a uniform effect on the frequency of grocery shopping, except in the Easyride registrants sample. There mobility impairment shows a very low regression coefficient, while evidencing a strong negative effect in all the other samples.

TABLE V-5: Regression Analysis Results on Frequency of Grocery Shopping
Regression Coefficients and Contributions to R² for Various Samples

Samples	MODE	Independent Variables									
		DISP. ON FOOT	DISP. TO GROCERY	MOBILITY	PENSL CAHE	VISITING	VISITORS	SSI			
1) Public Housing N = 525 b ₀ = -4.37 R ² = .56	A) *	.12	.31	-.10	-.37	-.13	.03	.03	.03	-.06	
	B)	.33	.61	-.35	-.43	-.39	.03	.03	.03	-.34	
	C)	.09	.30	.01	.13	.01	.01	.01	.00	.00	
1a) Lower East Side N = 318 b ₀ = 5.20 R ² = .59	A)	.02	.39	-0.16	-.37	-.16	-.03	-.03	.05	-.07	
	B)	.06	.76	-.60	-.52	-.47	-.03	-.03	.05	-.41	
	C)	.05	.33	-.03	.15	.02	.00	.00	.00	.00	
1b) Easy Ride Sub-Sample N = 80 b ₀ = 5.30 R ² = .52	A)	.07	.38	-.25	-.22	-.20	-.08	-.01	-.05		
	B)	.21	.82	-1.05	-.32	-.58	-.08	-.01	-.27		
	C)	.03	.30	.07	.02	.08	.00	.00	.02		
2) Easy Ride Registrants N = 54 b ₀ = 3.2 R ² = .49	A)	.10	.27	-.08	-.03	-.36	.05	.06	-.15		
	B)	.29	.58	-.38	-.05	-.85	.06	.08	-.98		
	C)	.08	.24	.04	.00	.10	.01	.00	.02		
3) Homecare N = 59 b ₀ = 4.95 R ² = .33	A)	.07	.28	-.06	-.37	.06	-.11	-.01	-.15		
	B)	.22	.60	-.33	-.74	.20	-.12	-.01	-1.56		
	C)	.06	.16	.00	.08	.00	.00	.00	.01		
4) Visually Impaired N = 318 b ₀ = 5.20 R ² = .59	A)	.02	.39	-.16	-.37	-.16	-.03	.05	-.07		
	B)	.06	.76	-.60	-.52	-.47	-.03	.05	-.41		
	C)	.05	.33	.03	.15	.02	.00	.00	.00		

* In each sample, line A = the standardized regression coefficient; line B = the unstandardized regression coefficient; and line C = the contribution to R².

As if to compensate for the depressed effect of mobility impairment, the personal care disability variable has its highest regression coefficient among the Easyride registrants and accounts for more than one-fifth of the explained variance in that sample.

This is not to suggest that mobility impairment has no effect in this sample. Knowing that the two disability measures are highly correlated, it is safer to infer that in every one of our samples, the common element of disability which is at the root of this correlation is tapped by one or the other of the disability variables.

This problem, sometimes referred to as "the multicollinearity problem", dogs regression analysis. There are methods of assessing the relative contributions made by each variable and by what they have in common, but such refined analyses do not seem crucial for our purposes. We are satisfied that disability, in terms of our two variables, plays an important role, and that mobility impairment appears most often as the most influential aspect of disability, even though we cannot quite tell how much of this contribution is due to the specific mobility aspect of disability or to the more general aspect that the two variables share.

I. Reconsidering the Importance of Social Support

It was not all abstract theorizing that led us to include some variables indicative of social contact and, inferentially, of social support. There were many correlations that led us to think of social support as a potentially important mediating factor between disability and travel. It was surely not a far-fetched idea that social support might in some ways compensate

for disability. Contact with others provides not only emotional support, but also occasionally active help. In other words, we expected that disability would have its greatest effect on travel where people were most isolated.

Such a hypothesis is at variance with the (homoscedasticity) assumption of an ordinary (linear) regression model, though under some circumstances a transformation of variables might put the relationship into linear form. At any rate, in the light of the relatively small contributions that the "visiting" variables made in our regression analyses, it seemed worth our making another attempt.

The suggestion that disability would have a greater effect on travel where people are more isolated is, after all, consistent with data from the public housing sample. Both the annual number of trips and the frequency of grocery shopping have increasing negative correlations with disability for categories of respondents with decreasing social contact. This is true when the frequency of visiting a friend in one's own apartment building is used as our measure of contact. This kind of effect is not evident when contact with children, by phone or face-to-face is the indicator.

Table V-6 indicates that the relationship between disability and travel is relatively modest for people who have a high level of social contact, but that this relationship is much stronger for people who have less social contact.* While this three-way relationship applies with respect to total trips, it is even stronger when trips to the grocery store are our concern. This

* We would argue that social contact provides various aids to making trips, at least the essential ones, and thus diminishes the correlation between travel and disability.

accords with the idea that travel to essential destinations, for example, the grocery, is more highly dependent on others' help than is travel to some of the less essential destinations included in the annual trips count. Thus, the correlation with disability will be more attenuated where help is available which we, in turn, assume is related to the frequency of social contacts. That same correlation will be maximized for those with least contact and help, and more so for daily chores like grocery shopping than for occasional trips for which help may be more easily available.

TABLE V-6: The Effect of Social Contact on the Correlations Between Travel and Disability, Using the Scale of Mobility Impairment as the Measure of Disability

Frequency of Visiting Friend in Own Apartment Bldg.

<u>Dependent Variable:</u>		<u>Often</u>	<u>Infrequently</u>	<u>Never</u>
Annual Trips	r	-.294	.347	-.475
	N	.297	.377	.518
Grocery Shopping	r	-.260	-.398	-.521
	N	.269	.444	.599
(N)		(112)	(102)	(243)

The conclusion from this somewhat complicated inference is that if people lack social contact or support, and are being thrown on their own resources, disability will reduce their freedom of movement much more than if they have more contact, and therefore more support from others. The use here of the correlation ratio, besides the correlation coefficient, is by way of eliminating an irrelevant element of correlation coefficients,

one which can easily be in error. We are here, after all, not interested in how the number of trips might affect disability. We are very clearly concerned with an asymmetric relationship. Eta, the correlation ratio, is an asymmetric analog of the correlation coefficient, and the fact that it increases more rapidly than does the correlation coefficient gives us a somewhat stronger basis for our point.

CHAPTER VI

The Consequences of Travel for the Morale of the Elderly

Introduction

When this research was begun, it was to assess the effectiveness and consequences of a transportation system for the elderly. At the time it seemed likely that improved transportation would increase and diversify the kinds and amount of travel done by the elderly, and that these changes in travel behavior would have a positive effect on the morale of those who experienced them. Thus, we were interested in morale chiefly as a consequence of travel behavior and that interest persisted even after the evaluative purposes of the research were abandoned. While we do not have data describing changes in travel behavior, we can still explore the relationship between travel patterns and the way our sample members felt about themselves and the lives they were leading at the time and the data were collected. This chapter reports on the results of that exploration.

A) The Significance of Morale Among the Elderly

Morale is an abstract idea which is often conceptualized in terms of indicators such as life satisfaction and subjective well-being. "Life Satisfaction" captures part of what is commonly meant by morale and is empirically measurable through people's responses to questions about their satisfactions and dissatisfactions with their health, their activity level, their formal and informal group participation, their education, and their

income (Edwards and Klemmack, 1973). " Subjective well-being, " on the other hand, seems a more inclusive concept (Larson, 1978) which is measured by placing people's affective experiences along a positive-negative continuum. A yet more specific concept of morale is the feeling of independence. This concept includes at least two quite different elements: first, a person's ability to get along without other's help - "practical independence"; and second, the feeling that one can manage, is not a burden to others, and is able to cope with the world - a "sense of independence". That older people should be supported in ways which maximize their independence is often mentioned as a principle behind public policy regarding services for the elderly. Part of this policy is oriented towards the minimization of public expense. Another part includes as a goal not merely "practical independence" but also the "sense of independence". (HEW, #20, 1970)

Much of the literature about elderly people's morale indicates a high correlation between morale and self-assessments of health, various socio-economic factors, and level of social interaction. Several studies conclude that marital status and aspects of elderly people's living arrangements are related to such factors of morale as subjective well-being and feelings of satisfaction. The literature also suggests that the distributions of well-being measures tend to be roughly equivalent for samples of married persons and for samples of persons who were never married, while

widowed, divorced and separated people tend to report lower levels of well-being (Pihlblad and Adams, 1972).

Other studies conclude that age, sex, race, and employment show no consistent relationship to morale, especially when controls are introduced for variables associated with age such as decreased health and financial resources, widowhood and loss of friends, and decreased activity (Edwards and Klemmack, 1973; Thompson, 1973; Clemente and Saver, 1974). Thus, poor health, low income, and lack of social interaction are among other factors, related to the expression of low morale. In addition, Reed Larson (1978) claims that negative situational factors, particularly low income, make older people more vulnerable to experiences detrimental to morale.

As Morris and Sherwood (1975) make explicit, most studies of elderly people's morale assume that morale can be conceived of consisting of a series of interrelated parts, some of which can be measured by self report items. Most studies concede that one of the most important elements in older people's life situations, and the one which most strongly relates to subjective well-being, is how elderly people assess their health. Measurements of health are often based on respondent's self-assessments which have been shown to reflect actual health status (Fillenbaum, 1979), though they vary with such factors as social isolation, socio-economic status (SES) (Maddox and Eisdorfer, 1962), and degree of social activity. Relative to medical evaluations of their conditions,

many elderly people assess their health quite positively; having learned, presumably, to accept certain disabilities and limitations. Various studies also have found that poor health has a greater impact on the well being of older persons of lower, rather than higher socio-economic status. However, it must be emphasized that persons with poor health are less likely to participate in surveys, leaving only the reports of those who consider their health to be better. For these people, lowered well-being is associated with the pain, confinement, and uncertainty which accompany ill health.

Socio-economic status and such related variables as income, occupational success, and education also help to determine elderly people's morale (Larson, 1978). Larson found that older persons of lower SES tend to have lower subjective well-being and appear to be more vulnerable to the vicissitudes of life. Maddox (1966) found that individuals maintaining a pattern of high activity and high satisfaction, in contrast to those maintaining low activity levels and low satisfaction, are likely to have a higher socio-economic status as well as be somewhat younger, in better health, and higher in average intelligence. Larson (1978) also implies that while SES is associated with a person's day to day morale, it is still more highly correlated with a long term sense of well-being. He also suggests that there is a level of sufficient income, above which additional income is less consequential in determining elderly people's sense of well-being.

Yet another important predictor of elderly people's morale is their level of activity and social interaction. Those elderly people with low over-all activity levels tend to be comparatively dissatisfied and feel lonely, useless (Maddox, 1963) and no longer the objects of affection (Kutner, et al, 1956). Yet individuals develop widely different modes of adjustment and styles of life, each of which can lead to feelings of satisfaction (Binstock and Shanas, 1976). As Larson (1978) indicates, it is not clear whether old people who choose to withdraw from social activity are more satisfied than are those whose withdrawal has been forced upon them. Nor do we know whether or not measures of well-being reflect life long personality characteristics, which are not likely to be influenced by an increase or decrease in activity.

The need for further research on the relationship between elderly people's morale and their level of activity and social interaction becomes clear; if one looks at specific areas of their social life. Larson (1978) believes that no studies have succeeded in correlating well-being with frequency of contact with family. (Edwards and Klemmack, 1973; Martin, 1973). However, he reports that studies across diverse populations have associated well-being with general measures of activity (Wylie, 1970; Havighurst, Newgarten and Tobin, 1968), though these relationships are not as strong for elderly people with higher socio-economic status and good health. Cutler (1973) and

Edwards and Klemmack, (1973) found that, when health and SES controls were introduced, participation in voluntary associations has a much weaker relation to well-being.

Much of this literature on activity level and social interaction has been criticized by Lowenthal and Haven (1968) for not considering the quality and intimacy of elderly people's activities. In their study, "Interaction and Adaptation: Intimacy as a Critical Variable", they found a significant relationship between morale and respondents' reports as to whether or not they had a confidant. They also found that for people who had a confidant, changes in activity had no relation to morale. Other studies found that physical disability and the absence of a confidant tend to be associated with greater vulnerability and that effects of negative life situations are multiplicative.

In a study of life satisfactions, Wolk and Telleen (1976) looked at the psychological and social correlates of life satisfaction as a function of residential constraints. They wanted to find out if there are social-psychological variables which consistently relate to satisfaction across the types of settings in which elderly people live. They found that self-assessed health, level of activity, economic sufficiency, and success with developmental tasks were significant predictors of life satisfaction. In this article, they defined developmental tasks as biological, psychological, or social age-related challenges which require a degree of successful resolution if development is

to proceed. They discussed developmental tasks of later maturity as "defensive strategies" during which elderly people must work harder to stay where they are. In this article, they quote from Lawton, Nahemow, and Teaff (1975), who found that elderly people residing in high-rise buildings manifested lower satisfaction and lower mobility. They also reported on Cutler (1972, 75) who demonstrated a significant relationship between well-being and the availability of transportation. Wolk and Telleen also found that the social-psychological constraints placed upon elderly people by their residence influence both their level of satisfaction and the nature of the most important correlates of satisfaction.

Earlier, Smith and Lipman (1972) investigated environmental constraints and stressed the importance of elderly people's ability to perform various self-care tasks, to move about, and to be gainfully employed, facets of their lives which can be facilitated by accessible, available transportation. Accessible, available transportation, in turn, influences elderly people's perception of their environment and their feelings about the amount of autonomy they have.

After reviewing the relevant literature and considering the various methodological cautions, Riley (1968, vol. 1) offered the following observations about the morale of the elderly;

1. Old people seem to be generally positive (or at least neutral) in their self-assessments, although individuals show considerable variation.

2. Only a small minority of elderly people appear to be either predominantly rejecting (negative) or ambivalent (equally positive and negative) in their self-concepts.
3. Elderly people's self-images are better among men than woman, among those who have higher SES, and among those who are living in communities rather than in institutions.
4. A lower proportion of old people 65 and over than of younger people state that their health in general is good or excellent.
5. Older people have less sense of mastery over the conditions of their lives than do younger people and consider the world potentially less changeable.
6. In periods of worry or unhappiness, there is a decrease with age in seeking help from family and friends and an increase in seeking help through prayer.
7. Contrary to popular assumptions, old people are not exclusively preoccupied with personal concerns. Conditions in the world at large hold notably greater salience for old than young, although older people may be more pessimistic.
8. Older people are less likely to voice feelings of positive gratification.
9. Age is associated with a general diminution of opportunities for satisfaction.
10. Happiness reflects primarily the gratification derived from individuals' central relationships, especially those within their family.

11. Widowed elderly people may, on the average, feel less overall satisfaction with their lives than do married elderly people and are thus less likely to show high morale.

B) Morale Indicators Used in the Study

With this information in mind about the morale of elderly people, we attempted to study the relationship between travel and morale. However, before this task could be accomplished, we had to select and in some cases devise questions to tap various aspects of morale. We were particularly anxious to identify those dimensions of morale which might react to improvements in the ability to get around. We focussed on the following dimensions: interest in surroundings, interest in activity, feeling safe and free to go out, the absence of anxiety, restlessness, loneliness, positive evaluations of "life these days", and feelings of autonomy and trust. In addition we also asked for assessments of satisfaction in several areas of life, including housing, social life, neighborhood, health care and transportation. (See Appendix A, especially pp. 9, 10, 11, 12, 13, 19 and 20 for the particular questions asked.)

Seventeen of the morale items were subjected to a factor analysis.* On the basis of this procedure, four indices of morale

* The initial factor analysis upon which our indices are based was a principal components analysis, which orders factors in terms of their total contribution to the initial correlation matrix. Thus, the first factor of necessity will consist of relatively large "factor loadings," whose products will give relatively good

were constructed and given names to reflect what the content of the constituent items seemed to indicate. "Activity" is an index that reflects a respondent's interest in activity and the sense of being active. "General satisfaction" represents a respondent's positive and negative feelings about his life. "Trust" is intended as a measure of the degree to which respondents have faith in other people. "Upset" reflects sentiments from which one may infer that a person feels troubled or emotionally disturbed.

Continuation ...*/
approximations to the correlations with which the procedure started out. However, these correlations, it must be clear, were correlations only between items that were to tap elements of morale; they were not travel items at all. If our hypothesis is that there should be some correlation between travel and some aspects of morale, then the first factor, which summarizes more of the "common meaning" of all the correlations might also manifest a stronger relationship to travel variables than do subsequent factors. This is still true when, instead of the original principal components, we consider the rotated factors. Or at least it is true after the particular rotation of the coordinate system which gave us the basis for our indices. This (varimax) rotation resulted in factor loadings which made the task of index construction remarkably simple: On the first three factors we simply chose all those items which had factor loadings greater than .5, giving us three mutually disjointed sets of items; on the fourth factor, we picked all items with factor loadings greater than .3. This set of items also did not overlap with the other three sets. While this left six items which were not included in any of the four indices, the clarity with which the factors identified the indices seemed to warrant either forgetting about these items or using them independently of the indices. The indices were labelled to reflect what appeared to be substantively common among the items in each.

The material below describes these indices in detail, listing the questions which make up each, and presents the distributions of responses across the four main samples.

(a) Activity: Four questions were combined to make up the activity index, see table VI-1. In examining the distributions of the responses to these items one is immediately struck by the small percentage of the visually impaired sample that gives a "low morale" response to any of the four items, and conversely, the high percentage that gives "high morale" responses. On the other end of the scale, we find the homecare and the Easyride registrant samples with notably similar response distributions. The public housing sample regularly falls between these two extremes.

Comparing the items, we see that in all samples the response "young" (as the high morale response on item #1) seems to be the most difficult to give. Even in the visually impaired sample only a little over half give this response. Perhaps the question was answered more factually than expressively. The other three items do not differ greatly, the only notable figures being the 81% of the visually impaired who feel useful and the 31% of the Easyride registrants who feel energetic.

TABLE VI-1

MORALE INDEX: ACTIVITY
ITEMS AND THEIR RESPONSE DISTRIBUTIONS IN VARIOUS SAMPLES

	<u>Public Housing Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>	<u>Easyride Registrants Sample</u>
<u>1. All in all these days do you feel young or old?</u>				
Old	61	70	25	75
Neutral, no Answer	10	3	20	3
Young	30	27	56	24
(N)	(525)	(60)	(65)	(61)
<u>2. All in all these days, do you feel useful or useless?</u>				
Useless	33	55	17	59
Neutral	10	2	3	5
Useful	57	43	81	34
(N)	(524)	(60)	(65)	(61)
<u>3. All in all these days, do you feel trapped or free to go out?</u>				
Feel Trapped	34	57	27	55
Undecided	3	-	2	2
Feel Free to go out	63	43	71	43
(N)	(524)	(60)	(65)	(61)
<u>4. All in all these days, do you feel energetic or have no pep?</u>				
Have no pep	36	61	25	64
Undecided	9	-	2	5
Energetic	55	38	74	31
(N)	(521)	(60)	(64)	(61)

According to this first of the morale indices the visually impaired seem to have the highest morale; the homecare respondents and the Easyride registrants the lowest, and the public housing sample is in between. If anything, the Easyride registrants have somewhat lower morale than the homecare, though the differences tend to be very small. But between these two samples and the other two the differences are large and consistent.

(b) General Satisfaction: While relatively few of the respondents of any sample claim to be very happy (the public housing sample is high with 14%), in Table VI-2 each of the General Satisfaction items, except "happiness", gets the most positive response from half or more of the respondents in both the public housing sample and the visually impaired sample. Again, the visually handicapped seem to have a higher morale than any other sample, though the public housing sample is very similar in two of the items. The homecare and Easyride registrants samples, generally showing a larger proportion of "low morale" responses, are more differentiated here than in the items that compose the Activity Index. The homecare claim in larger proportions to be not very happy, to have a hard life, and to have an unpleasant life, while the Easyride registrants are more likely to say that their life is boring.

(c) Trust: The responses to the items that make up this index (Table VI-3) yield somewhat different distributions than do the

TABLE VI-2

MORALE INDEX: GENERAL SATISFACTION
ITEMS AND THEIR RESPONSE DISTRIBUTIONS IN VARIOUS SAMPLES

	<u>Public Housing Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>	<u>Easyride Registrants Sample</u>
<u>1. Taking all things together, how would you say things are these days?</u>				
Not very happy	42%	59%	25%	36%
Pretty happy	44	32	63	57
Very happy	14	10	13	7
(N)	(523)	(60)	(64)	(61)
<u>2. Do you find that your life these days is easy or hard?</u>				
Hard	47%	79%	45%	52%
Neutral	6	-	5	8
Easy	45	20	50	38
(N)	(524)	(60)	(62)	(61)
<u>3. Do you find that your life these days is boring (and monotonous) or is interesting (and varied)?</u>				
Boring	40%	52%	33%	59%
Neutral	9	-	5	9
Interesting	51	49	62	33
(N)	(525)	(60)	(65)	(61)
<u>4. Do you find that your life these days is pleasant or unpleasant?</u>				
Unpleasant	34%	58%	23%	51%
Neutral	9	-	5	4
Pleasant	57	42	72	39
(N)	(525)	(60)	(65)	(61)
<u>5. These days do you have a lot to complain about?</u>				
A lot	31%	40%	33%	44%
Neutral	7	2	5	13
Little	63	58	63	42
(N)	(523)	(60)	(65)	(61)

index discussed so far. The homecare sample has for each item the highest proportion of "low morale" responses, while the Easyride registrants are much more positive. The visually impaired sample, while most positive in three of the four items, has a remarkably high percentage of its members saying that "people care only about themselves."

(d) Upset: While the visually impaired generally lead the other samples in the proportion of "high morale" responses, that is true for only one item on this index--the belief that "others care". There are some of the other irregularities in response. Easyride registrants claim to worry less than the other samples, but because they gave so many "undecided" responses it is difficult to place this sample relative to the others with regard to restlessness and being easily upset. More of the visually impaired, claim to be easily upset than would be expected from their responses to the other indices, while the public housing sample appears to be the most relaxed.

Overall, Tables VI-1 through VI-4 show a good deal of regularity from sample to sample. The finding that the distributions of the morale items in the various samples are quite similar, no matter which dimension of morale we consider, suggests that our indices taken together, are tapping a phenomena which has some underlying unity.

TABLE VI-3

MORALE INDEX: TRUST
ITEMS AND THEIR RESPONSE DISTRIBUTIONS IN VARIOUS SAMPLES

	<u>Public Housing Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>	<u>Easyride Registrants Sample</u>
<u>1. Do you feel most people care only about themselves or are they helpful?</u>				
Only About Themselves	47%	70%	54%	43%
Undecided	11	-	9	13
Are Helpful	43	30	38	44
(N)	(522)	(60)	(64)	(61)
<u>2. Do you feel most people can be counted on?</u>				
Can't be counted on	38%	63%	35%	48%
Undecided	12	2	9	10
Can Be	50	35	56	42
(N)	(521)	(60)	(64)	(61)
<u>3. Do you feel most people are friendly or unfriendly?</u>				
Unfriendly	23%	46%	15%	23%
Undecided	8	-	13	12
Friendly	69	53	72	66
(N)	(523)	(60)	(64)	(61)
<u>4. Do you feel that most people can be trusted or that they will take advantage of you?</u>				
Will Take Advantage	40%	58%	33%	43%
Undecided	11	5	8	13
Can Be Trusted	49	37	60	44
(N)	(525)	(60)	(65)	(61)

TABLE VI-4

MORALE INDEX: UPSET
ITEMS AND THEIR RESPONSE DISTRIBUTIONS IN VARIOUS SAMPLES

	<u>Public Housing Sample</u>	<u>Homecare Sample</u>	<u>Visually Impaired Sample</u>	<u>Easyride Registrants Sample</u>
<u>1. Do you worry Alot?</u>				
Worry a Lot	32%	42%	27%	34%
Sometimes	43	35	52	22
Rarely	25	23	22	43
(N)	(511)	(60)	(64)	(58)
<u>2. These days do you feel alone or that others care?</u>				
Feel Alone	26%	35%	14%	31%
Undecided	9	7	3	5
Others Care	66	58	83	64
(N)	(525)	(60)	(64)	(61)
<u>3. All in all these days do you feel relaxed or restless?</u>				
Restless	49%	.63%	57%	52%
Undecided	6	-	2	10
Relaxed	45	36	41	38
(N)	(522)	(58)	(63)	(61)
<u>4. All in all are you easily upset or do you take things calmly?</u>				
Easily Upset "	43%	48%	60%	39%
Undecided	7	-	5	14
Take Things Calmly	50	52	35	48
(N)	(523)	(60)	(65)	(59)

C) Correlations Between Travel and Morale

Table VI-5 presents the correlation coefficients that describe the relationship between seven different measures of travel and the four indices of morale. The correlations with travel variables are greatest for the activity index, followed by those for the general satisfaction index.

TABLE VI-5

CORRELATIONS BETWEEN TRAVEL VARIABLES AND MORALE INDICES:

PUBLIC HOUSING SAMPLE, N = 492

	<u>MORALE INDICES</u>			
	<u>Activity</u>	<u>General Satisfaction</u>	<u>Upset</u>	<u>Trust</u>
Annual Trips	.42	.30	.23	.13
Destinations	.40	.33	.21	.19
Grocery Trips	.44	.25	.09	.03
Social Center Trips	.17	.16	.11	.13
Travel Mode	.37	.22	.09	.10
Max Distance on Foot	.31	.22	.08	.10
Farthest Distance	.11	.13	.03	.08

Correlations with the upset index are of a generally lower order and they are lower still for the trust index.

The fact that the indices have systematically changing correlations with the travel variables is to some extent an artifact of our method but an artifact consistent with a substantive hypothesis relating travel and morale (see the explanatory footnote

regarding the indices on p. 186). When we consider the content of the items which were jointly made into indices by this method we note a degree of substantive unity. Having named the different indices in accordance with what seemed to be the common element in their constituent items, we may then ask whether the decreasing correlations of the four indices with the travel variables make any substantive sense. Certainly, it stands to reason that an index labelled "activity" should have the highest correlations with travel variables; if "general satisfaction" and "upset" do in fact tap positive and negative aspects of affective tone, we might expect the positive aspect to be somewhat more strongly correlated with travel than the essentially negative items in the latter index.

In general, these correlations lead to the conclusion that increased travel improves morale and decreased travel undermines it. The more people travel; the more varied their travels; the farther they go; the farther they can go on foot, and the more able they are to make use of difficult modes of transportation, the higher their morale will be. However, not all of the data consistently support these generalizations. The deviations deserve comment.

The annual number of trips is consistently, positively and strongly related to all four of the morale indices. The greater the number of annual trips, the greater the percentage of respondents who fall into the upper ranges of the morale indices. However, this kind of consistency is not evident when trips to

the grocery is used as a travel variable.

Trust scores seem to be completely unaffected by this variable. Upset and general satisfaction scores go up and down. Activity is N-shaped and dips down in the "several times a week" category of grocery shopping, the same category where general satisfaction has its high point. This category, several times a week, contains almost 40% of all respondents. In this group are relatively many respondents who feel old, useless, trapped, or lacking in energy as well as relatively many who feel they are pretty happy and that life is interesting and easy rather than hard. This may suggest that there are a number of resigned individuals in this group for whom grocery shopping is a form of social life, which, while not relieving the negative feelings noted on the activity index, does provide some of the positive experiences noted on the general satisfaction index.

Another important travel variable in its relationship to morale is travel mode. This variable is somewhat ambiguous in that it is not totally clear that the category of respondents who use no vehicular means of transportation once a month or more are better off than those who use only door to door transportation. However, in terms of both the activity and the general satisfaction indices, those who are restricted to door to door transportation seem to have a lower morale than do those who do not use any motorized transportation. There is no difference between

these two groups on the upset index, although they are both much more inclined to be upset than are those who use the bus or the bus and subway. Given the fact that the latter two categories of respondents include the most mobile, it is not surprising that they score very high on all four dimensions of morale. It seems worth noting, also, that door to door users, who most often get the lowest morale scores, get high scores on the trust index more frequently than do those who do not use motorized transportation at all.

The proportion of trips made on foot is another somewhat ambiguous travel variable, in that a relatively large proportion could signify good health and extensive social contact, or, alternatively, the inability to use other modes of transportation. We have tended to accept the latter interpretation. That interpretation is made more plausible, we believe, by our finding that those who score lowest on this variable (make less than 20% of their trips on foot) have the lowest morale scores on all four indices. The second quartile on this variable spans a large range, from 21% to 71% of all trips being made on foot. In every case this category manifests a higher morale than those who make less than 20% of their trips on foot. In the case of the activity and upset indices, this quartile manifests the highest morale, while in regard to general satisfaction and trust, the third quartile shows the highest morale. These differences are small, and it should be noted that all together

the differences in the graphs for general satisfaction, trust, and upset are smaller than are those in the activity graphs. To some extent, these differences are an artifact of the factorization which gave us these indices and which we have mentioned before.

The distance of the farthest destination where people go with some regularity is related to morale in an interesting way. The lowest category on the travel variable (also evidencing the lowest morale) is actually a group of respondents who were coded "Does Not Apply." This response means, in most instances, that they made no trips out of the house to any destination as often as once a month. The next four categories, ranging from "under three blocks" to "twenty or more blocks within the borough," seem by and large to make no difference to morale. However, the category "under three blocks" masks the fact that those who go less than 1 block have considerably lower morale on all indices than those who go 1 or 2 blocks. Those in the next to the last travel category, "out of borough" have high morale, but morale drops again for those in the most distant category, "beyond the city."

D) The Interaction of Travel, Disability and Morale

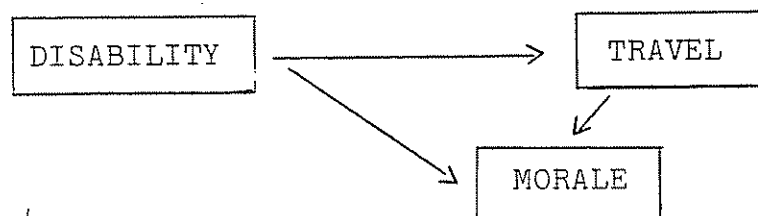
Our principal purpose in this chapter is to determine whether or not travel has an effect on the morale of elderly people. The data presented so far clearly indicates that it does. Although this is generally true for all of the travel indicators we have used, the effect is strongest in relation to the annual number of

trips taken. However, we know that travel behavior is highly correlated with disability, and it is quite conceivable that disability would exert a direct effect on morale, as well. Therefore, we must try to determine the effect that travel exerts on morale when disability is taken into account.

This may be done in a number of ways; here we shall try to separate the contributions of travel and disability by the most elementary model of "path analysis", a regression method which demands a commitment to a scheme of causal priorities. The "path" diagrams in Figure VI-2 describes the direction of causal influence hypothesized here. The model does not suggest, of course, that other factors do not play a role in determining morale. It merely specifies the direction of causality which we wish to test among the variables at our disposal.*

FIGURE VI-2

PATH DIAGRAM: HYPOTHESIZED CAUSAL INFLUENCES



* In fact, such a model is based on the assumption that other factors are not a strong influence on the causal process which the diagram represents, or that the other factors cancel each other out in a way that permits the consequences of the hypothesized process to manifest themselves in the data.

We shall restrict our discussion to eight causal models, determined by four dependent variables (the morale indices), by two travel variables, (the annual number of trips and the frequency of grocery shopping), and a single disability variable (the scale of mobility impairment). Causal effects in a path analysis are of three types: Zero-order (i.e., ordinary) correlations measure direct effects, where no specified prior or intervening factors are taken into account; partial correlations or regression coefficients measure direct effects after one or more other variables have been taken into account; and indirect effects. In our example these are the effects of disability on morale mediated by travel, measured as the products of the partial regression coefficients associated with the links of the diagram that constitute the causal path. Non-causal effects are measured as that which is attributable to something other than variables in the model. The total causal effect is measured by the square of the multiple correlation coefficient (R^2), so that the non-causal or random effects are measured by $1 - R^2$.

We must first study the degree to which our model of relationships explains the dependent variables, and next concern ourselves with the role that transportation variables play in that explanation. The correlation and regression coefficients and their products which are presented in Table VI-6 explain only as much of the variance on each dependent variable as the square of the multiple correlation coefficient in column (8) indicates. We

can see that the amount of explained variance is rather low for all morale variables, except that measured by the activity index (lines T_1M_1 and T_2M_1). The activity index has about one third of its variance accounted for by either the number of annual trips in conjunction with the disability scale, or by the frequency of grocery shopping in conjunction with disability. The amount of explained variance also exceeds 10% for the general satisfaction index, but trust and upset scores seem to be influenced only very slightly by travel and disability.

We recall from our earlier discussion of regression that R^2 indicates how much the independent variables determine the dependent variable in the sense that if $R^2 = 1$ there is a clearcut linear relationship, while however much R^2 is less than 1 indicates how cloudy the distribution is, the degree to which it fails to be concentrated in the regression line (or plane). The other interesting information to be derived from models of this sort is how much the average of the dependent variable changes in relation to changes in the independent variables. This is what the pattern of correlation, regression, and effect coefficients in columns (2) to (7) of Table VI-6 tells us.

Consider the first full line of table VI-6, which gives the relevant coefficients for the causal structure relating disability, annual trips and the activity index. Column (2) gives the (zero-order) correlation (.42) between the transportation variable,

TABLE VI-6

PATH ANALYSIS OF MORALE INDICES IN TERMS OF DISABILITY AND TRAVEL

D = Disability, measured by the Scale of Trichotomies
 T_i = Travel: T₁ = Annual Trips T₂ = Frequency of Grocery Shopping
 M_j = Morale: M₁ = Activity M₂ = General Satisfaction M₃ = Upset M₄ = Trust

Vari- ables (1)	Regression Coefficients (Columns 2-7)								R ² (8)
	Mani- fest (2)	TM Direct Causal(3)	Non Causal (4)	DM Mani- fest(5)	DM Direct (6)	DM Indi- rect (7)			
DT ₁	-.45								
T ₁ M ₁	.42	.22	.20	-.55	-.45	-.10		.33	
T ₁ M ₂	.30	.19	.11	-.33	-.25	-.09		.13	
T ₁ M ₃	.23	.17	.06	-.20	-.12	-.08		.06	
T ₁ M ₄	.13	.11	.02	-.09	-.04	-.05		.018	
DT ₂	-.66								
T ₂ M ₁	.44	.15	.29	-.55	-.45	-.10		.31	
T ₂ M ₂	.26	.07	.19	-.33	-.28	-.05		.11	
T ₂ M ₃	.09	-.08	.17	-.20	-.25	.05		.04	
T ₂ M ₄	.03	-.06	.09	-.09	-.13	.04		.01	

annual trips, and the activity index of morale, while column (5) shows the correlation (-.55) between disability and the same morale index. The two columns that follow each of these columns split these correlations into two parts. In column (3) the regression coefficient .22 indicates that when disability is taken into account, an increase of one (standard deviation) unit of annual trips increases the morale index by .22. Since our model does not specify any other source of systematic variation in the dependent variable, the remainder of the zero-order correlation (i.e., $.42 - .22 = .20$, in this case) must be ascribed to chance. This "non-causal" factor is indicated in column (4).

The path model which we are testing assumes that disability influences morale both directly and indirectly, through its effects on travel. These two types of effects are reported separately in column (6) (the direct effect $-.45$, in this case) and in column (7) (the indirect effect $= -.55 - .45 = -.10$, in this case : $-.10 = (-.45) \times (.22)$, the appropriate product of coefficients for each part of the path from disability to morale through transportation.)

Thus, there are two causal effects attributable to the travel variable: a direct effect and the indirect contribution travel makes by mediating the effects of disability. On the one hand, a unit of annual travel directly increases morale .22 units; on the other hand, travel transmits a .10 unit decrease in morale deriving from the effect of disability on travel. This latter effect is in addition to the .45 unit decrease in morale which

disability causes directly.

We may now consider the effects discernible in Table VI-6 on each of the morale indices. When we compare the effects of annual trips on activity ($T_1 M_1$) with those of frequency of grocery shopping ($T_2 M_1$), we notice a quite surprising similarity. However, there is a difference--the direct effect of grocery shopping on activity is proportionately smaller (.15/.44) than is the direct effect of annual trips (.22/.42). Both travel variables contribute the same indirect effect, (-.10) of disability on activity.

If we restrict our discussion to effect coefficients of a size greater than or equal to .10, we note that annual trips has a direct effect of this size for each of the morale indices, while the frequency of grocery shopping has a direct effect of this size only on the activity index.

On common sense grounds it would seem that the annual number of trips would have a more potent influence on morale inasmuch as travel, in general, provides for a variety of experiences, while trips to the grocery encompasses a rather restricted range of experiences. The fact that the random (non-causal) effects in column (4) are consistently larger for the path analyses involving the grocery shopping variable may also be taken as evidence that

* Alternatively, considering only the numerical value of the coefficients in column (3), we note that for every morale index, annual trips has a larger direct effect than the frequency of grocery shopping.

annual trips is more determinative of morale than is grocery shopping frequency.

E) Summary of Findings

The principal purpose of this analysis was to determine whether or not travel behavior has an effect on the morale of elderly citizens and, if so, to assess the nature and strength of that effect. Toward that end, four different indices of morale were constructed and their correlations with several different measures of travel behavior were determined.

Positive correlations were discovered between virtually all of the morale indices and all of the travel measures. The correlations between the "activity" and "general satisfaction" indices of morale on the one hand and several different indicators of travel were notably strong. Clearly travel behavior does effect the morale of our sample members.

In recognition of the strong correlation between disability and travel, and the likely direct effect of disability on morale, path analyses were run to determine whether or not the effect of travel on morale is still in evidence when disability is controlled for.

While disability clearly exerts a direct effect on morale, and although that may be greater than the effect exerted by travel, the path analysis indicates that travel does have a direct positive impact on morale even when disability is taken into account. Thus, improvements in the availability and effectiveness

of transportation facilities could be expected to improve the morale of the elderly citizens included in our samples. What of our original scheme of analysis, in which not only disability was to have been taken into account, but also a large array of background variables, and especially the social support, or connectedness of people? Why were these not included in our regression analyses?

Regression analyses were performed where morale variables were the dependent variables, and various social and background variables were part of the battery of independent variables. But in every case, the contributions of these variables to the total R^2 were so small, that it appeared that one was only including a large number of random disturbances into the regression equations, rather than substantively related variables. That is why they were left out. We do not think that social background or social support are irrelevant to the relationship between travel and morale of elderly people. But the question may have to be reformulated, concepts redefined, a different structure of relationships between these variables may have to be built into the explanatory model for an understandable picture to crystallize. For the time being we must be satisfied with the fact of the contribution that travel makes to morale.

CHAPTER VII

The Consequences of Travel for the Utilization of
Health Care Services

A. Introduction

It is known that the poor receive fewer health services relative to need than do the affluent (Dutton, 1978). When the Easyride transportation service was designed, it was believed that the travel limitations of the elderly poor might contribute to an under-utilization of health care services by this population. Hence, by making its clients more mobile, Easyride might enable those in poor health to secure more of the health services they need. While the data required to evaluate Easyride's impact are not available, we are able to explore the relationship between the travel behavior of our sample members and their use of various health services in the city. Moreover, by controlling for the self-rated assessment of health it is possible to identify specific groups within the sample who appear to need more services, and who would be likely to get them, if accessible transportation were available.

B. Trips to the Doctor

Table VII-1 shows the relationship between self-rated health and the frequency of trips to the doctor. One would expect a strong negative correlation between the two variables indicating that the better one feels, the less often one visits the doctor.

TABLE VII-1 Frequency of Going to A Doctor
By Self-Rated Health.
Public Housing Sample.

Frequency of Doctor Visits.	<u>Self Rated Health.</u>			
	<u>Poor</u>	<u>Fair</u>	<u>Good</u>	
Rarely or never	20%	33%	47%	
Once a year or more, less than once a week	66	55	44	
Once a week or more	14	12	9	
(N)	(148)	(233)	(131)	(512)
Distribution of Self-Rated Health	29	45	25	100%

The data presented in this table clearly confirm that expectation. However, it is also notable that 20% of those who rate their health as poor visit the doctor either rarely or never. The bulk of the remainder are classified as making such visits at least once a year, but less frequently than once a week. Thus, it is likely that a fairly substantial proportion of those in poor health do not visit the doctor as often as they should.

Of course, there are many factors that might contribute to this phenomenon. Given our particular concerns in this study, we sought to determine whether the availability of accessible transportation is of any relevance to the relationship

between health and frequency of doctor visits. In terms of our usual classification of respondents by travel mode, we found that poor health and frequent visits to the doctor are strongly correlated only for those who are able to use the most difficult mode, subway as well as bus (Table VII-2). For those using all other modes of travel to get to a destination they visit once a month or more, there is no statistically significant correlation between health and doctor visits.*

* The correlations in question should be measured by some index appropriate for correlating ordered trichotomies. Kendall's taus are most appropriate. They are in agreement with Pearson's r as well as chi-squares that the correlation for the subway users is significantly greater than zero beyond all usual significance levels ($r = .37$) while for none of the other travel mode groups is there a correlation significant at any conventional level.

TABLE VII-2 Respondents Going Ever to The Doctor (i.e., More Often Than "Rarely or Never"), and Percentages of These Going Once a Week or More; By Travel Mode and Self-rated Health: Public Housing Sample.

Self-Rated Health:		Travel Mode			
		<u>None</u>	<u>Door-to-Door</u>	<u>Bus</u>	<u>Subway</u>
Poor	Ever to Doctor (N)	59% (22)	80% (45)	82% (61)	95% (20)
	Of these, once/week (N)	8% (13)	20% (36)	18% (50)	21% (19)
Fair	Ever to Doctor (N)	59% (22)	67% (27)	66% (109)	69% (75)
	of these once/week (N)	15% (13)	23% (18)	17% (72)	17% (52)
Good	Ever to Doctor (N)	50% (14)	69% (13)	67% (42)	40% (62)
	of these, once/week (N)	19% (7)	0% (9)	28% (28)	12% (25)

The table indicates that the strong negative correlation between quality of health and visits to the doctor is clearly present only among those classified as subway riders. Among those respondents, the proportion who ever go to the doctor (meaning more than "never or rarely"), and the proportion who go once a week increase steadily as the quality of health becomes worse. However, only the subway users' figures clearly distinguish both those in

fair health from those in good health. While this finding is statistically significant only for the category of respondents ever going to the doctor, the percentages going once a week consistently change in the same direction.

Despite the small numbers on which these percentages are based, there are many interesting consistencies in this table. Focussing first on the group that rates its health poor, we note that the percentage ever going to the doctor increases steadily with increased ability to use more demanding forms of transportation. Of those who use no motorized transportation, fewer ever go to the doctor, and fewer go once a week than do those using any of the other three travel modes.

(This last difference is not statistically significant.)

In fact, those who use no motorized form of transportation regularly have a smaller percentage who ever go to the doctor, regardless of the quality of their health. These people are surely less agile than those who can use the bus. It seems plausible that a more available door-to-door service might increase their visits to the doctor.

The idea that those capable of using more demanding modes of transportation are more likely to go to the doctor is confirmed by the subway users in poor health, but seems contradicted by the subway users in good health who, of all categories in the table, are least likely ever to go to the doctor. We assume that there the combination of good health and agility imply a lesser need for a doctor's attention. With this exception, the data consistently imply that although better health is

correlated with lower utilization of physicians' services, for a given level of health, use of more demanding forms of transportation implies greater use of physicians' services.

C. An Index of Health Care Utilization

Ideally, health care utilization would be measured by an index, or even a number of different indices, based on many details about the variety of health services received, and the frequency with which they were received. We shall use, however, an Index of Health Care Utilization consisting of only two items -- the frequency of physician visits, and the frequency of hospitalization within the past year. Several questions in our interview related to the first of these variables and the consistency of responses attests to its reliability. In addition, the very dramatic nature of hospitalization suggests that the responses can be trusted, at least in the aggregate (see p. of Appendix A).

The Health Care Utilization Index constructed from these two items is a simple three step scale: The most intensive users are those who were hospitalized at least once during the past year; intermediate users are those who have seen a physician at least once a month or more often, but have not been hospitalized during the past year; and rare utilizers are those who neither have been hospitalized during the year nor have seen a physician once a month. A small number of respondents (seventeen in the Public Housing Sample) claim to have been hospitalized during the past year, but have seen a physician less often than once a month. They would make

an interesting study in themselves; but for our purposes, it seemed simplest to include them in the category of intensive users, where they belong by virtue of their hospitalization. Most of those who were hospitalized during the year past, also saw a physician at least once a month (93 out of 110 or 85%).

The validity of the Index is suggested by the fact that self-reported health, the number of health conditions respondents report, especially the number of these that interfere with travel, and the frailty index, all correlate strongly with this index of health care utilization.

We looked to see if travel mode affects the health care utilization index as it does physician visits. The relationships shown in Table VII-3 are similar to, but sharper than, those between travel mode and physician visits.*

For those able to use the subway, rare utilization of health care services is clearly associated with good health (0 for those in poor health, 28% for those in fair health and 56% for those whose health is good). Once again, the relationships are in the expected direction for the most mobile in our sample.

* Similarity is expected but they could not be identical, since the "MD visits only" category excludes those who were hospitalized and refers to doctor visits at least once a month. This is not as stringent as the "once a week" category used in Table VII-2.

TABLE VII-3 Distributions of the Health Care Utilization Index by Self-Rated Health And Travel Mode: Public Housing Sample

(Underlined percents based on those not hospitalized during the past year)

Self-Rated Health	Health-Care Utilization Index*	Travel Mode			
		<u>None</u>	<u>Door-to-Door</u>	<u>Bus</u>	<u>Subway</u>
Poor	Rare Utilization	36%	13%	14%	0
	Intermediate Utilization	36% <u>50%</u>	42% <u>76%</u>	56% <u>80%</u>	75% <u>100%</u>
	Intensive Utilization	27%	44%	30%	25%
	(N)	(22)	(45)	(63)	(20)
Fair	Rare Utilization	44%	33%	33%	28%
	Intermediate Utilization	44% <u>50%</u>	48% <u>59%</u>	51% <u>61%</u>	63% <u>69%</u>
	Intensive Utilization	12%	18%	16%	9%
	(N)	(25)	(27)	(110)	(75)
Good	Rare Utilization	53%	31%	36%	56%
	Intermediate Utilization	40% <u>43%</u>	31% <u>50%</u>	48% <u>57%</u>	23% <u>29%</u>
	Intensive Utilization	7%	39%	16%	20%
	(N)	(15)	(13)	(44)	(64)

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* Rare = no hospitalization in last year; doctor visits less than once a month, if at all.

Intermediate = no hospitalization in last year; doctor visits once a month or more often

Intensive = hospitalized at least once in last year.

The association between rare utilization and poor health appears to be true also for bus users and those who use no motorized transportation, but it is considerably weaker than among subway users. For those who use door-to-door transportation, the relationship is not clear at all, in that the percentage of rare utilization is lower among those who rate their health as good than among those in fair health.

One expects the frequency of doctor visits to go down as the quality of health improves. This expectation is evident among subway and bus users, but not among those who use no motorized transport, or rely on door-to-door modes. It is notable, too, that the expected relationship is much stronger among the subway users than it is for bus users. Indeed, physician visits seem to be more influenced by travel mode than by health status, except within the subway users groups, where health has its strong and clear-cut effect. Again these observations suggest that the travel mode categories may be interpreted as forming a scale of freedom to act upon one's needs, with only the subway users representing a group sufficiently free to travel that a strong correlation between health and physician utilization becomes manifest.

Table VII-3 also indicates that those in poor health have the highest rates of hospitalization. However, with the exception of the door-to-door transportation users, there is no clear relationship between travel mode and hospitalization.

The door-to-door users have the highest hospitalization rates, regardless of the self-rated state of health. This latter finding is consistent with what we know about the considerable difficulties these people have with their health, difficulties which go beyond what is reflected in their health self-rating. Indeed, this is also consistent with the idea expressed earlier that disability is not identical with poor health, although it is, of course, correlated with the health self-rating. The users of door-to-door transportation are relatively disabled, and in view of their high hospitalization rate, their health self-ratings may reflect an overly optimistic view.

It is conceivable that the heavy rates of hospitalization among door-to-door transportation users is, in part, a product of their relative immobility. In the view of some people, it may be easier or more efficient to hospitalize such patients for certain kinds of treatment, rather than require frequent visits which would be difficult for them to make. Our data do not permit us to distinguish such cases, but to the extent that they exist, improved accessibility and availability of transportation might reduce such hospitalization.

It is also noteworthy that those door-to-door users who were not hospitalized in the past year go to the doctor less frequently than do non-hospitalized respondents who were classified as bus or subway users, (except for those subway users who rated their health as good). Given the poor health and general disability of the door-to-door users, if their higher rates of hospitalization are not for the convenience of treatment as the preceding speculation suggests, one is inclined

to conclude that they do not see a doctor as often as they should, given their level of need.

Those who do not use any form of motorized transportation also appear to be getting less health care than they need. They have the highest rate of rare utilization, except for subway users in good health. Those who rate their health as poor or fair make fewer visits to the doctor (intermediate utilization) than do respondents in any other travel mode category. Even the door-to-door users have higher rates of intermediate utilization, despite their considerably higher rates of hospitalization. This latter finding suggested the possibility that the lower rates of utilization might reflect their lower rates of disability. To investigate that possibility, we substituted the scale of mobility impairment for self-rated health. The substitution yielded virtually the same results. While transportation non-users are somewhat less disabled than door-to-door users, they are much more disabled than those who use the bus or subway. Nevertheless, their rates of rare utilization are consistently higher regardless of the level of disability or self-rated health. Thus, for the non-users, the relatively low level of health care utilization is, in part, a product of their inability to get to the services.

Table VII-3 contains another set of figures, the underlined percentages, which shows those reporting doctor visits (intermediate utilization) as a percentage of all those in the cell of the table who were not hospitalized the last year. Given

the small number of cases in each cell, one might expect considerable random variation in the percents hospitalized. Our new index gives a measure of doctor-utilization for those who were not hospitalized. The index shows great regularity throughout the table, excepting again the subway users in good health. There is a strong correlation between poor health and frequent utilization for the subway users, but the relationship is much weaker for the other categories of travel mode. With the exception mentioned, monthly visits to the doctor rise steadily as the ability to use more demanding modes of transportation increases. And, again, this is true regardless of the state of self-rated health.

To sum up, we sought to determine whether the patterns of utilizing health care services were affected by the travel behavior of our elderly respondents. We measured health care utilization by the frequency of doctor visits and by an index which combines such visits with the frequency of hospitalization during the past year. Travel behavior was measured by the travel mode that respondents used. Because of its obvious relevance to the issue, the quality of health, measured by respondents' self-assessments, was controlled for.

The basic findings of these analyses are that the expected negative correlation between quality of health and the extent of health care utilization is clearly and strongly present only among those who use the most demanding mode of transportation (subway). The relationship is either not evident, or only weakly so, among those who use other modes of transportation. Moreover, when the quality of health, or even the extent of

disability is controlled for, the frequency of visiting the doctor increase steadily as the ability to use more demanding modes of transportation increases.

We conclude from these findings that the more able elderly people are to get about, the more they will use health care facilities in the community. Perhaps more importantly there appears to be a portion of the elderly poor, whose health is poor, but who do not use available health care services as much as they should because of the difficulties they experience in getting to those services.

CHAPTER VIII

CONCLUSION

This report has presented a good deal of information about the travel behavior of elderly poor people residing in New York City and the effects of selected variables on that behavior. The independent variables of principal concern were various measures of the respondent's health, disability and social support. In addition, the data was used to assess the effect of travel on the morale of the elderly respondents and the extent to which they used various health care services.

Since the research was originally intended as an evaluative study of a para-transit service for elderly and handicapped residents of the Lower East Side, several samples were selected to permit a comparison of travel patterns among those in the program's catchment area with those of elderly poor people residing elsewhere in the City. For reasons described in the Introduction, the evaluative objectives of the study were dropped and the samples were used for the more general purpose of analyzing travel behavior and selected determinants of that behavior. While this sampling strategy made the analysis presentation of findings more complicated than might otherwise have been the case, it also permitted us to look for variations, among slightly differing samples, in certain patterns of relationship between travel, disability and social support.

The analyses presented in the preceding chapters use an unusually large number of variables. The dependent variable, travel, is measured in ten different ways. The health of the

respondents is measured in three different ways. Four variables are used to measure disability including two indices - an index of mobility impairment and an index of personal care disability. Social support is measured by seven different variables, morale by four principal indices, and the utilization of health care services by the frequency of visits to the doctor and by an index that combines doctor visits with hospitalization during the previous year. Finally, seven of the standard demographic variables, including age, sex and ethnicity, were used in the research.

Given this large number of variables and the use of four, and sometimes five, separate samples, the findings of the research are not easily summarized. Indeed, the utility of this report rests, in part, in the fullness and detail of the descriptive and analytical materials presented in Chapters II through VII. Therefore, we will not attempt to summarize the research findings here. However, there are a few findings which deserve to be highlighted in our conclusion.

In general, the elderly poor in New York do not travel extensively, but many indicate that they would travel a good deal more, if useable transportation were accessible to them. A substantial proportion of the respondents in our samples indicated that they did not use motorized transportation at all or relied on door-to-door transportation when going to destinations that they visited once per month or more (ranging from 21% to 39% of the respondents in the five samples). These were people for whom most forms of public transportation, such as bus or subway,

were not really accessible because those modes of transportation require a level of physical agility which these respondents do not possess.

The two most frequent destinations for the elderly in our samples were the grocery store and medical destinations (doctor's office, clinics, etc.). Yet, between 25% and 49% of the respondents in our samples indicated that they rarely or never made trips to the grocery, while between 50% and 70% of the respondents (except for those in the visually impaired sample) indicated that they left their homes for medical destinations at least once a month. Thus, there was a widespread need for health care services among the respondents and, a substantial portion of them experienced real difficulties in travelling because they were apparently unable to use the more common and cheaper forms of public transportation.

Large percentages of each sample rated their health as poor or fair and indicated that they suffered from various troublesome and travel-restricting health conditions. Between 40% and 77% of the respondents in the five samples scored in the medium and high disability categories on the index of mobility impairment. In general, the research leads to the conclusion that the greater the disability a person suffers, the less he is likely to travel, the shorter the distances involved when he does travel, and the less likely he is to use physically demanding modes of travel.

The various categories of dependent and independent variables were pared down and regression analyses were run to determine the extent to which the travel variable is determined or

statistically predictable by the combined effect of background, disability and social support. We found that the most powerful variables in predicting the number of trips made annually were ancillary travel variables, especially the mode of travel used and the distance of the destination farthest from the respondent's home to which he goes at least once per month. Despite the stronger influence of these ancillary travel variables, mobility impairment exerts a large influence on the number of annual trips made by the elderly poor.

Our hypothesis that our social contact variables are indicators of social support and would, therefore, positively affect the amount of travel was not confirmed by the regression analyses. The data suggest that visiting others may be a manifestation of greater activity in general rather than a causal antecedent of travel. And being visited by others seems to be an indicator of greater disability which results in less travel.

Nevertheless, the influence of social support on travel does seem evident when it is considered in conjunction with disability. The relationship between disability and travel is relatively modest for people who have a high level of social contact, but is much stronger for people who have less social contact. We concluded from analyses on this point that if people lack social contact or support, and are being thrown on their own resources, disability will reduce their freedom of movement much more than if they have more contact, and therefore more support from others.

This research found positive correlations between virtually all the morale indices and all the travel measures we used, thereby indicating that travel behavior does affect the morale of our sample members. In recognition of the strong correlation between disability and travel, and the likely direct effect of disability on morale, a path analysis was conducted to determine whether or not the effect of travel on morale is still operative when disability is controlled for.

The path analysis indicates that while disability clearly exerts a direct and apparently stronger effect on morale, travel does have a direct, positive impact on morale even when disability is taken into account. Thus, improvements in the availability and effectiveness of transportation services could be expected to improve the morale of the elderly poor in New York.

Finally, the research focused on the effect of travel on the utilization of health care services by our sample members. The analyses presented in Chapter VII indicate that the expected negative correlation between quality of health and the extent of health care utilization is clearly and strongly present only among those who use the most demanding mode of transportation, the subway. Moreover, when the quality of health, or even the extent of disability is controlled for, the frequency of visiting the doctor increases steadily as the ability to use more demanding modes of transportation increases.

These findings indicate that the more able elderly people are to get about, the more they will use health care services in the community, regardless of the general state of their health.

Perhaps more importantly, there appears to be a portion of the elderly poor in New York, whose health is poor, but who do not use available health care services as much as they should because of the difficulties they experience in getting to those services.

In conclusion, we have found that the travel behavior of the elderly poor in New York is significantly affected by their level of disability and by the difficulties they experience in using the cheaper, more physically demanding modes of public transportation, the bus and subway. It is likely that the greater availability of more accessible means of transportation would increase the extent and variety of travel among the elderly, especially those who are least able to use existing forms of public transportation. Moreover, the analyses presented here suggest that such increased travel behavior would improve the morale of the elderly poor and increase their utilization of available health care services. The effect could be especially marked among those who are in poor health and are least able to use the bus and subway.

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APPENDIX A

Interview Schedule

Study #

R #

R's Name _____

Address: _____

Tel. #: _____

Date of Interview I: _____

Interviewer #: _____

CIRCLE	M
COMPLETED	T
DAYS	W
	TH
	F
	SA
	SU

CONTACT HISTORY

Dates	Disposition	Initiator of Contact	COMMENTS

I = ..
Interviewed

N.H. =
Not Home

N.H.L.=
Not Home,
left letter

R =
Refused

Lang. =
Language
Problem
(write which
lang. they
speak in
comments)

EDITORIAL COMMENTS: (INTERVIEWERS: DO NOT WRITE BELOW THIS LINE)

Missing or incomplete questions:

1 2
Study

3 4
Deck

5 6 7 8

Day of interview.....

9 10
Day

11 12
Month

13
Year

ay "A" M T W T F S S

Weather.....

ay "B" M T W T F S S

Weather.....

ime: Begin _____

End _____

total # of minutes.....

PLACE OF INTERVIEW

- 1. Personal at senior center.....27/1
- 2. Person respondents home.....2
- 3. Telephone at respondents home.....3
- 4. Telephone at home of relative, friend or neighbor.....4
- 5. Other.....5

HOUSING

- 1. Apt. bldg. for elderly.....28/1
- 2. Other apt. (walk-up).....2
- 3. Other apt. (elevator).....3
- 4. Room in rooming house.....4
- 5. Room in hotel.....5
- 6. Room in apt.....6

LIVES WITH
(by observation)

- 0. Alone.....29/0
- 1. Spouse.....1
- 2. Friend.....2
- 3. Relative.....3
- 4. Other.....4

SEX

- 1. Male.....30/1
- 2. Female.....2

ETHNICITY

- 1. Black.....31/1
- 2. White.....2
- 3. Hispanic.....3
- 4. Oriental.....4
- 5. Jewish.....5
- 6. Other.....6

Interviewer's Signature _____

32 33
Interviewer's #

34 35 36 37
Easy Ride Registration

38 39 40
Sample Selection

	bus	subway	taxi
1. When did you last use	41/	43/	45/
1. within last few weeks (up to 3 weeks)	1	1	1
2. 3 weeks to 4 months	2	2	2
3. 4 months but within 1 year	3	3	3
4. Sometime last year	4	4	4
5. More than 2 years ago	5	5	5
6. Never	6	6	6
9. N.A.	9	9	9
IF			
2. More than 4 months ago	42/	44/	46/
ASK: Why haven't you used (bus, subway, taxi) more often?			
0. Didn't need to	0	0	0
1. Afraid of attack	1	1	1
2. Stop too far away; inconvenient	2	2	2
3. Too expensive	3	3	3
4. Not well enough, physical problems	4	4	4
5. EASYRIDE	5	5	5
6. Too crowded	6	6	6
7. Doesn't take me where I want to go usually	7	7	7
8. Would have to transfer	8	8	8
9. Other (specify) _____			
3. Can you estimate how much money you spent on transportation in the last week (in dollars)?			

47, 48

I'd like to ask you how easily you can do things. Can you (prepare your own meals without difficulty; with some difficulty but on your own; or do you need the assistance of another person?)

CIRCLE ANSWER UNDER A. IF SOME DIFFICULTY OR NEEDS ASSISTANCE, ASK B.

A. DIFFICULTY?

B. WHO HELPS?

		W/O DIFF	SOME DIFF	NEEDS ASST	NEVER	N.A.	spouse	CHILD	REL.	FR. NGHR.	PD. HELP	TOTAL	
a.	preparing your meals	4/9	1	2	3	4	9	1	2	4	8	16	50,51
b.	grocery and other shopping	5/2	1	2	3	4	9	1	2	4	8	16	53,54
c.	housework	5/5	1	2	3	4	9	1	2	4	8	16	56,57
d.	going out of doors	5/8	1	2	3	4	9	1	2	4	8	16	59,60
e.	walking up and down stairs	6/1	1	2	3	4	9	1	2	4	8	16	62,63
f.	getting about house/room	6/4	1	2	3	4	9	1	2	4	8	16	65,66
g.	washing/bathing yourself	6/7	1	2	3	4	9	1	2	4	8	16	68,69
h.	dressing/putting on shoes	7/0	1	2	3	4	9	1	2	4	8	16	71,72
i.	cutting your own toenails	7/3	1	2	3	4	9	1	2	4	8	16	74,75
j.	getting out of bed	7/6	1	2	3	4	9	1	2	4	8	16	77,78
START CARD II													
k.	using telephone	9/	1	2	3	4	9	1	2	4	8	16	10,11
l.	getting to Dr. or clinic	12/	1	2	3	4	9	1	2	4	8	16	13,14

4.1 Do you ever use a wheelchair, crutches, walker or cane to get around? If no, circle never for each item. If yes, ask when they need to use aid.

		in & out- doors	out- doors	in occa- 'lly	never
4.1	a wheelchair	¹⁵ / 1	2	3	4
4.2	a walker	¹⁶ / 1	2	3	4
4.3	crutches	¹⁷ / 1	2	3	4
4.4	a cane or um- brella	¹⁸ / 1	2	3	4
4.5	a guide dog	¹⁹ / 1	2	3	4
4.6	other	²⁰ / 1	2	3	4

specify: _____

4.7 IF USES WHEELCHAIR,(Q.4:1) , ASK:

Do you regularly have aid in using the wheelchair or can you manage on your own:

	²¹ /	
Always needs aid.....		1
Can manage indoors only.....		2
Can manage by self indoors and outdoors		3
No Answer.....		9

4.8 In general would you describe your health as excellent, good, fair or poor

	²² /
Excellent	1
good	2
fair	3
poor	4

4.9 Now compared to other people your age, is your health better, worse, or about the same as theirs?

	²³ /
better	1
worse	2
same	3
both better & worse(volunteered)	4

5.1 Did you go out at all today/yesterday?

YES ^{22/} 1 (Go to Chart A)
 NO 2 (Go to Q. 5.2)

IF NO TO BOTH GO TO PAGE 6

5.2 Did you go out yesterday/day before?

YES ^{23/} 1 (Go to Chart B)
 NO 2 (If yes to Q. 5.1 go to p. 7)

CHART A

CHART B

Day- M T W TH F SA SU
^{24/} 1 2 3 4 5 6 7

M T W TH F SA SU

Orbit	Where did you go?	Mode	Orbit	Where did you go?	Mode
	31 32	43/	53 /	59 60	71/
	33 34	44/	54 /	61 62	72/
	35 36	45/	55 /	63 64	73/
	37 38	46/	56 /	65 66	74/
	39 40	47/	57 /	67 68	75/
	41 42	48/	58 /	69 70	76/

5.3 Which place was farthest from your home? _____

5.6 Which place was farthest from your home? _____

5.4 How many blocks away is that? ^{49/} _____

5.7 How many blocks away is that? ^{77/} _____

5.5 All in all, about how many hours were you out of the house? ^{50/} _____

(7= 7 hrs. or more
 8= overnight or longer)
 # of destinations ^{51/} _____

5.8 All in all, about how many hours were you out of the house? ^{78/} _____

(7= 7 hrs. or more
 8= overnight or longer
 # of destinations ^{79/} _____

of orbits ^{52/} _____

of orbits ^{80/} _____

CODES FOR MODE

CODES FOR DISTANCE

(If more than one is used circle larger number)

- 0 Walk or Ride
- 1 Walk, on foot, wheel in wheelchair
- 2 Private car-rider or driver
- 3 Public transportation or taxi
- 4 Taxi
- 5 Bus
- 6 Subway
- 7 Ambulette, Etc.
- 8 EASYRIDE
- 9 N.A.

- 0 Less than 1 block
- 2 1 - 2 blocks
- 3 3 - 6 blocks
- 4 7 - 20 blocks
- 5 More than 20 blocks within Manhattan
- 6 Other boroughs
- 7 N.Y. Metropolitan area
- 8 Out of Metropolitan N.Y.
- 9 N.A.

DO NOT PUNCH

6.1 If NO TO BOTH: Why was that?
(Allow respondent to volunteer answer--but can probe if necessary)

- 1 Wasn't feeling well.....17/1
- 2 Can't go out because of physical condition.....2
- 3 Weather was bad.....3
- 4 Don't go out unless I have to.....4
- 5 Not safe, get mugged.....5
- 6 Didn't feel like it; lazy.....6
- 7 No place to go.....7
- 8 Other.....8

6.2 How many days have you been home without going out?

- 1 Less than a week.....78/1
- 2 1-2 weeks.....2
- 3 3-4 weeks.....3
- 4 More than a month.....4

6.3 Can you go out of the house at least once a week with or without help?

- 1 YES79/1
- 2 NO2

How I would like to ask you how often you go to certain places and how you get there. For example, how often do you go to the doctor? How do you usually get there? How many blocks is that from your home? Would you go there more often if better transportation were available?

START CARD 3

START CARD 4

Destination	Freq.	Cond.	Mode	Dist.	More Often Yes 1; No 2
1. Doctor or clinic	9	27	45	63	9
2. Health center or hospital for trt., therapy.	10	28	46	64	10
3. Shopping for groceries	11	29	47	65	11
4. Work or volunteer	12	30	48	66	12
5. Gov't office (Soc. Sec., Medicaid)	13	31	49		
6. Church or Synagogue services	14	32	50	67	13
7. Church or Synagogue groups, societies.	15	33	51		
8. Visit cemetery	16	34	52	68	14
9. Senior center	17	35	53	69	15
10. Other clubs-social political, union	18	36	54	70	16
11. Games-bingo, cards chess	19	37	55	71	17
12. Entertainment, movies, sports events, theatre	20	38	56	72	18
13. Classes, school, library	21	39	57	73	19
14. Visit relatives (1)	22	40	58	74	20
15. (2)	23	41	59	75	21
16. Visit friends at friend's home.	24	42	60	76	22
17. Visit friend in own apt. bldg.	25	43	61		
18. How often do friends or neighbors visit you?	26	44	62		

Code for Frequency

- 0 Never
- 1 Daily
- 2 Several/wk.
- 3 Once/wk.
- 4 Several/mo.
- 5 Once/mo.
- 6 Several/yr. (occasional)
- 7 Once/yr.
- 8 Rarely
- 9 NA

Code for Condition

- 1 More often--weather
- 2 Less often--weather
- 3 More often with someone
- 4 Less often without " "
- 5 More often if spouse is well.
- 6 Less often if spouse is not well
- 7 More often when I feel better
- 8 Less often when I feel worse
- 0 Other Specify _____
- 9 NA

CODE FOR MODE

- (If more than one is used circle larger number)
- 0 walk or ride
 - 1 walk, on foot, wheel in wheelchair
 - 2 private car--rider or driver
 - 3 public transportation c tax
 - 4 taxi
 - 5 bus
 - 6 subway
 - 7 Ambulette, ETC.
 - 8 EASYRIDE
 - 9 NA

DISTANCE

- 0 1 Less than 1 block
- 2 1-2 blocks
- 3 3-6 blocks
- 4 7-20 blocks
- 5 More than 20 blocks within Manhattan
- 6 Other boroughs
- 7 NY Metropolitan area
- 8 Out of Metro. New York
- 9 NA

77 _____
 78 _____
 79 _____

Some people stay at home when they really want to go out some place. Do you, for example, ever stay home when you want to go out because:

	OFTEN	SOME TIMES	NEVER	N.A.
8.1 You don't want to impose on anyone to take you?	²³ / 1	2	3	9
8.2 You worry about being mugged (during day)	²⁴ / 1	2	3	9
8.3 You are afraid of falling in the street?	²⁵ / 1	2	3	9
8.4 It's too much trouble to go out?	²⁶ / 1	2	3	9

8.5 PROBE: For any other reason I haven't mentioned? _____

8.6 Taking all things together, how would you say things are these days...Would you say you are:

²⁷,
Very happy1
Pretty happy.....2
Not very happy....3

9.1 Compared to a year ago, do you now get out and do things

28/
 MORE OFTEN1
 LESS OFTEN2
 ABOUT THE SAME3

9.2 Compared to a year ago, do your friends and relatives visit you

29/
 MORE OFTEN.....1
 LESS OFTEN.....2
 ABOUT THE SAME.....3
 DOESN'T APPLY4

9.3 Compared to a year ago, do you go out and visit friends and relatives:

30/
 MORE OFTEN.....1
 LESS OFTEN.....2
 ABOUT THE SAME3

9.4 Do you find that your life these days is:

				Just a little	Somewhat	Very
Pleasant	()	—	—	5	6	7
or	()	—	—			
Unpleasant	()	—	—	3	2	1
				31/4		
Boring (and monotonous)	()	—	—	3	2	1
or	()	—	—			
Interesting (and varied)	()	—	—	5	6	7
				32/4		
Easy	()	—	—	5	6	7
or	()	—	—			
Hard	()	—	—	3	2	1
				33/4		

9.5 Most of us worry at times about what is happening to us or about the future. Would you say you worry quite a lot, sometimes, rarely not at all?

34/
 NOT AT ALL0
 RARELY.....1
 SOMETIMES.....2
 QUITE A LOT.....3
 N.A.....9

I would like to find out now about various aspects of your life these days. For each of the things I mention, I'd like to know whether you are satisfied or dissatisfied?

IF SATISFIED: Very Satisfied?

IF DISSATISFIED: Very Dissatisfied?

	1 VS	2 SS	3 MW	4 SD	5 VD	9 NA
10.1 Your housing (the place you live) ^{35/}	1	2	3	4	5	9
10.2 The neighborhood in which you live ^{36/}	1	2	3	4	5	9
10.3 Your social life ^{37/}	1	2	3	4	5	9
10.4 The activities of your senior centers or other social activities ^{38/}	1	2	3	4	5	9
10.5 The health care you receive ^{39/}	1	2	3	4	5	9
10.6 Transportation available to you ^{40/}	1	2	3	4	5	9
10.7 Stores you shop in ^{41/}	1	2	3	4	5	9
10.8 The food you eat ^{42/}	1	2	3	5	5	9

10.9 Do you sometimes not get enough to eat because of money problems?

YES.....^{43/}1
NO.....2

10.10 Do you sometimes not get enough to eat because you can't get to a store?

YES^{44/}1
NO2

10.11 Does anyone who is not a household member help you regularly with any chores (house cleaning, errand running)?

YES (GO TO Q. 8.13).....^{45/}1
NO (GO TO Q. 9.1)....2

10.12 IF YES, (to Q. 10.11) who pays for this help?

Unpaid helper, volunteer.....^{46/}1
Pay for it myself.....2
Half self, half other.....3
Medicaid, OCIM.....4
Medicare.....5
Hospital.....6
A.L.E.S.S., City, Office of Aging.....7
Other (specify).....8

All in all these days do you feel more:

				Just a Little	Somewhat	Very
Young or Old	()	—	— $\frac{47}{4}$	5	6	7
	()			3	2	1
Useful or Useless	()	—	— $\frac{48}{4}$	5	6	7
	()			3	2	1
Trapped in your house or Free to go out	()	—	— $\frac{49}{4}$	3	2	1
	()			5	6	7
Restless or Relaxed	()	—	— $\frac{50}{4}$	3	2	1
	()			5	6	7
Safe or Unsafe	()	—	— $\frac{51}{4}$	5	6	7
	()			3	2	1

Now we would like to ask you some questions about yourself.
These days do you find that:

IS THAT SO;

				Some of the time	Most of the time
Would you like more to do or Would you like less to do	()	—	— $\frac{52}{3}$	4	5
	()			2	1
You are a good manager of (personal affairs) or You are a poor manager	()	—	— $\frac{53}{3}$	4	5
	()			2	1

Cont'd) These days do you find that:

IS THAT SO:

			Some of the time	Most of the time
You are not interested in the news of the day	()	$54/3$	2	1
or	_____	_____	_____	_____
You are interested in the news of the day	()		4	5
<hr/>				
You feel that others care about you	()	$55/3$	4	5
or	_____	_____	_____	_____
You feel alone in the world	()		2	1
<hr/>				
You have a lot to complain about	()	$56/3$	2	1
or	_____	_____	_____	_____
You have little to complain about	()		4	5
<hr/>				
You are energetic	()	$57/3$	4	5
or	_____	_____	_____	_____
You have no pep	()		2	1
<hr/>				
You are easily upset	()	$58/3$	2	1
or	_____	_____	_____	_____
You take things calmly	()		4	5
<hr/>				
You can't get everything done (you need to)	()	$59/3$	2	1
or	_____	_____	_____	_____
You can get most everything done	()		4	5
<hr/>				
You have control over what happens to you	()	$60/3$	4	5
or	_____	_____	_____	_____
You have no control over what happens to you.	()		2	1

Do you feel that most people nowadays:

Do you feel that way;

				Some of the time		Most of the time	
Can be trusted	()	$\frac{6^1}{3}$	4	5			
or	()		2	1			
Will take advantage	()						
of you	()						
Care only about	()	$\frac{6^2}{3}$	2	1			
themselves	()		4	5			
or	()						
Are helpful	()						
Can be counted on	()	$\frac{6^3}{3}$	4	5			
or	()		2	1			
Can't be counted on	()						
Are friendly	()	$\frac{6^4}{3}$	4	5			
or	()		2	1			
Are unfriendly	()						

Now we would like to ask you some questions about your health.
For example:

- a. Do any of the following bother you enough to be a problem?
- b. IF YES, Does that often keep you from going places you'd like to go?

	yes	no	N.A.	yes	no	some times
		4	9	1	2	3
10.1 Trouble breathing, shortness of breath	65/	4	9	1	2	3
10.2 Tiring easily or feel that you have no energy	66/	4	9	1	2	3
10.3 Pain	67/	4	9	1	2	3
10.4 Staying comfortable on very cold and very hot days	68/	4	9	1	2	3
10.5 Memory Problems	69/	4	9	1	2	3
10.6 Fainting spells, dizziness	70/	4	9	1	2	3
10.7 Aches, swelling, sick feeling	71/	4	9	1	2	3
10.8 Weakness, lack of strength	72/	4	9	1	2	3
10.9 Nervousness, tensions, depression	73/	4	9	1	2	3
10.10 Weak bladder	74/	4	9	1	2	3
10.11 Problems seeing	75/	4	9	1	2	3
10.12 Problems hearing	76/	4	9	1	2	3

GO TO NEXT PAGE

15.1 During the last two weeks, did you for any reason stay in bed all or most of the day? IF YES, how many days?

number of days _____
9 10

15.2 Did you stay in bed because you were ill, or was it that you just couldn't get going?

- 1. You were ill¹¹/1
- 2. You were injured in an accident 2
- 3. You were mostly tired 3
- 4. You just couldn't get going4
- 5. Other reason (specify) _____ 5

15.3 Were there any (other) days during the two weeks that you cut down on the things you usually do because of illness or injury?

Yes.....¹²/1
No 2

15.4 Were there any days during the two weeks when you probably should have stayed in bed but didn't for some reason?

Yes (GO TO Q. 11.5)¹³/1
No (GO TO NEXT PAGE)..... 2

15.5 (IF YES TO Q. 11.4)
Why didn't you stay in bed _____

¹⁴/

- 16.1 I have just asked you about the last 2 weeks, now, how many days, if any, over the past year did you spend in bed because you were sick?
- 16.2 Now looking back over the whole year, how many days, if any, did you spend in bed because you were tired and exhausted?
- 16.3 Over the whole year, how many days, if any, did you spend in bed because you just couldn't get going?
- 16.4 Over the whole year, how many days, if any, were you sick enough to stay in bed but remained up and around anyway?
- 16.5 About how many times did you go to the doctor over the last year? (DON'T COUNT THE TIMES YOU SAW THE DOCTOR WHILE IN THE HOSPITAL)?

15

None...../0
 1-7 days1
 8-14 days.....2
 15-30 days3
 1-2 months4
 3-6 months.....5
 6 months or more..6
 Don't know].....9
 N.A. 16

None/0
 1-7 days1
 8-14 days.....2
 15-30 days3
 1-2 months.....4
 3-6 months.....5
 6 months or more.6
 Don't know].....9
 N.A.

17

None...../0
 1-7 days.....1
 8-14 days.....2
 15-30 days.....3
 1-2 months.....4
 3-6 months.....5
 6 months or more..6
 Don't know].....9
 N.A.

18

None/0
 1-7 days1
 8-14 days2
 15-30 days3
 1-2 months4
 3-6 months5
 6 months or more..6
 Don't know].....9
 N.A.

19

None or once...../1
 2-3 times.....2
 4-9 times3
 10-24 times.....4
 25 or more times..5
 Don't know.....9

7.1 Were you in a hospital, nursing home, or convalescent home overnight or longer during the past year? 20

(go to 13.2) YES 1
 (go to 14.1) NO 2

IF YES, find out the following for each hospitalization: (We are interested only in number of hospital nights. Ask only enough to get this information. Also month of discharge.

	<u>MOST RECENT</u>	<u>NEXT</u>	<u>MOST REMOTE</u>
7.2 Where was that?			
7.3 When did you go in (date)			
7.4 When were you discharged? (month)	<u>21</u>	<u>25</u>	<u>29</u>
7.5 How many nights were you there? (interviewer can figure out)	<u>22</u> <u>23</u>	<u>26</u> <u>27</u>	<u>30</u> <u>31</u>
7.5 What was wrong with you?	<u>24</u>	<u>28</u>	<u>32</u>

7.7 Who took care of you when you got out?

33/

- spouse.....1
- family.....2
- homemaker.....3
- hired someone.....4
- neighbor.....5
- nobody.....6
- other (spec).....7

GO TO NEXT PAGE

SKIP 34, 35, 36

Now I would like to ask you a few question about your children.

- A. How many living children do you have 52? (IF ZERO GO TO NEXT PAGE)
- B. Tell me (his, her, their) first name. (USE BACK IF NECESSARY)
- C. Ask sex only if necessary. CIRCLE NUMBER
- D. Where does name live? CIRCLE NUMBER

A. Names:

b. <u>Sex</u> : Male	53/1	54/1	55/1
Female	2	2	2

c. <u>Where lives</u> :	56/1	57/1	58/1
With respondent	1	1	1
Same building as respondent	2	2	2
Walking distance	3	3	3
Within city limits	4	4	4
In metro. area	5	5	5
Beyond metro. area	6	6	6

d. <u>Does he/she live with spouse?</u>	59/1	60/1	61/1
YES	1	1	1
NO	2	2	2

e. <u>How often are you in touch with them by phone?</u>	62/1	63/1	64/1
Daily	1	1	1
At least once/wk	2	2	2
Couple of times/yr	3	3	3
Once a month	4	4	4
A few times a month	5	5	5
Once a year or less	6	6	6

f. <u>How often do you see each child?</u>	65/1	66/1	67/1
Daily	1	1	1
At least once/wk	2	2	2
Couple of times/yr	3	3	3
Once a month	4	4	4
A few times a month	5	5	5
Once a year or less	6	6	6

(CIRCLE THE APPROPRIATE PERSON)

1. If some emergency came up in the lives of your (children) or (close friend) is it likely that you would go and help out?

- 1. Very likely.....⁶⁸1
- 2. Somewhat likely.....2
- 3. Not likely at all.....3

2. If some emergency came up, can you depend on one of your (children) or their (spouses) or (close friends) to come over and help you out?

- 1. Yes, definitely.....⁶⁹1
- 2. Yes, probably.....2
- 3. Unlikely.....3
- 4. Definitely No.....4

3. If you needed help for a longer period--say a couple of weeks--can you depend on one of your (children) or their (spouses) or a (close friend) to help you out during that time?

- 1. Yes, definitely.....⁷⁰1
- 2. Yes, probably.....2
- 3. Unlikely.....3
- 4. Definitely No.....4
- 5. Would send money or other help.....5

4. What kind of health and hospitalization insurance do you have?

- 0 None⁷¹0
- 1. Medicare--pays for hospital costs only.....1
- 2. Medicare--pays for doctors and outpatient clinic visits--with a deductible and you pay \$7.60 every month.....2
- 3. "Blue Cross 65"--Insurance that pays for Medicare deductible.....3
- 4. Medicaid (pink card).....4
- 5. H.I.P.....5
- 6. Medicare Plus.....6

We need to know all the sources (NOT THE AMOUNTS) of money senior citizens have to pay their household bills each month. On this card (HAND CARD TO RESPONDENT) would you tell me which applies to you--you can just tell me the letter.

(BE SURE THE RESPONDENT CAN READ EASILY ENOUGH) Make checkmarks in boxes

21.1

Social Security

- | | |
|--|-----|
| | 72/ |
| A. Social security (green check)..... | 1 |
| B. SSI/ Old Age Assistance (gold check)..... | 2 |

Pensions

- | | |
|---------------------------------------|-----|
| | 73/ |
| C. Union, employee pensions..... | 1 |
| D. Veterans or military pensions..... | 2 |
| | 74/ |
| E. Medical Disability pension..... | 1 |
| F. Railroad retirement pensions..... | 2 |

Savings

- | | |
|--|-----|
| | 75/ |
| G. Withdrawal from savings accounts..... | 1 |
| H. Interest, dividends, annuities..... | 2 |

Employment

- | | |
|------------------------------|-----|
| | 76/ |
| I. Full-time employment..... | 1 |
| J. Part-time employment..... | 2 |

Contributions by others

- | | |
|---|-----|
| | 77/ |
| K. Regular contributions from boarders or household members, including family members with whom you live..... | 1 |
| L. Contributions from family members and friends, who don't live in the same household..... | 2 |

Others

- | | |
|---------------------|-----|
| | 77/ |
| M. Food Stamps..... | 1 |

21.2

Which of the following four statements describes your ability to get along on your income?

- | | |
|--|-----|
| | 78/ |
| I can't make ends meet..... | 1 |
| I have just enough, no more..... | 2 |
| I have enough, a little extra sometimes..... | 3 |
| I always have money left over..... | 4 |

21.3

Would you say the way you are living is better than, worse than, or about the same as that of most of your friends and acquaintances?

- | | |
|----------------------|-----|
| | 79/ |
| Better | 1 |
| Worse | 2 |
| About the same | 3 |

21.4

As you grow older, do you find that things are better, worse, or about the same as you expected?

- | | |
|----------------------|-----|
| | 80/ |
| Better..... | 1 |
| Worse | 2 |
| About the same | 3 |

22 .1 Have you heard of a transportation service called EASYRIDE?

- 1 Yes (GO TO Q. 18.2).....⁹/1 _____
- 2 No (GO TO Q. 20.1)..... 2 _____
- 3 Vague (GO TO Q. 18.2)..... 3 _____

IF RESPONDENT ANSWERED "1" or "3" to ABOVE QUESTION:

22 .2 How did you hear about Easyride?

- 1 Agency.....¹⁰/1 _____
- 2 Doctor or hospital..... 2 _____
- 3 A friend or relative 3 _____
- 4 Saw a sign 4 _____
- 5 Social worker 5 _____
- 6 Tenants Committee 6 _____
- 7 Other 7 _____

22 .3 Have you ever used it?

- 1 Use it 1x/wk. or more or regularly....¹¹/1 _____
- 2 Use it 1x/mo. or more or occasionally 2 _____
- 3 At some time in the past as individual rider..... 3 _____
- 4 Occasional group trips only 4 _____
- 5 Never (GO TO Q. 20.1)..... 5 _____
- 6 DNA..... 9 _____

22 .4 How did you make the trips you now make with Easyride (before EASYRIDE was available?)

- 1 Taxi or car¹²/1 _____
- 2 Bus or subway 2 _____
- 3 Walk 3 _____
- 4 Didn't make them..... 4 _____

22 .5 Has it made much difference to you having EASYRIDE available?

- 1 Yes (IF SO, HOW?) _____¹³/1 _____
- 2 No _____ 2 _____

13.1 What problems have you had with EASYRIDE?

13.2 We have talked about transportation, health, and how you're feeling about things. Now to finish, would you tell me what you would like in the way of transportation that would make your life easier or better? And what changes would make you happier about the health care you're getting?

We would like to keep in touch with you so that we can talk to you some more about the transportation problems for senior citizens.

I would like to call you on the phone next _____.

What would be a good time to call you? _____.

(If Respondent gives a time in the middle of the day, say that morning or evening is better----or late afternoon.)

By the way, what is your telephone number? _____.

(Ask this question only if you didn't get the phone number at the beginning of the interview on the fact sheet.)

Just so you remember when I call you, my name is _____ and I work for the Vera Institute.

By the way, what is your name? _____
(Ask only if you didn't get the name at the beginning of the interview on the fact sheet.)

THANK YOU VERY MUCH.

* Is there someone we can contact if we want to reach you, someone who will always know how to get in touch with you?