

AVAILABILITY OF DIAL-A-RIDE AND VEHICULAR
MOBILITY AMONG THE AGING

Sharon M. Lieberman

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ABSTRACT

SHARON M. LIEBERMAN

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The position taken in this study is that the availability of appropriate transportation can enhance vehicular mobility among the aging and thereby increase the range and the levels of social activity in later life. The evidence amassed by the researcher suggests (1) that the elderly are increasing in number and are also increasingly immobile; (2) that elderly persons are subjected to a multidimensional process of biological, psychological, and social forces which can render them inactive; (3) that immobility is forced upon the aging as a result of health problems and as a result of societal withdrawal; and (4) that the elderly can maintain or re-establish themselves in social activity if transportation programs are planned and developed to increase vehicular mobility in later life.

Data for this study are obtained through interviews with 170 non-institutionalized respondents age fifty-five and older residing in the core (ten blocks) of the Cote des Neiges community. The subjects are chosen by random selection from a larger group of elderly persons participating in a Dial-a-Ride Demonstration project. Consideration is given to absolute percentage differences, to levels of statistical significance, and to the relative strength of the relationships between availability of Dial-a-Ride and vehicular mobility for social activity among control categories.

In accord with the hypotheses of this study, the findings indicate (1) that for the passengers, vehicular mobility for social activity is higher with the availability of Dial-a-Ride than without the availability, (2) that differentials in availability of Dial-a-Ride are of greater importance for the vehicular mobility for social activity of the aged who report physical limitations on mobility, and (3) that differentials in availability of Dial-a-Ride are particularly important for those who need special transportation. Additional hypotheses are generated and tested, and recommendations for further research and for the planning and development of special transportation services are made. The study also includes a methodological appendix.

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CHAPTER I

INTRODUCTION

RATIONALE OF RESEARCH

This study presents research on a major metropolitan area of Quebec with a particular focus on the elderly of a special community area. Underlying this research is the belief that an examination of the elderly's vehicular mobility can be useful in planning for their needs and in understanding more about aging.

The Canadian age structure has been changing since the turn of the century. A recent report from Statistics Canada indicates that ". . . the percentage of senior citizens (65 years of age and over) is rising steadily from eight per cent of the population in 1971 to 10 per cent, or over two million, in 1976—with a sizeable percentage presumed to be living alone." (Armstrong 1978: B1)

A marked increase in the proportion of the elderly population this century is largely a consequence of achievements in the field of medicine and of improved social conditions. The increase and the fact that the birthrate has decreased indicate that Canada is moving to a major shift in age structure this century (Goar 1978). Moreover, a changing age structure will definitely have important implications for society, the economy, and the elderly population's capacity for independent living.¹

Since 1900, there has been a steady movement of persons away from the more agrarian and rural areas towards the more industrial and urban areas. In addition, the years of education required to obtain employment have been prolonged. Furthermore, compulsory retirement policies have been introduced, and the traditional position of elderly persons within both family and society has changed.

Increasing trends of urbanization and industrialization as well as the mobility of the labour force are associated with the altered position of elderly persons within the nuclear family and modern society. Today, a significant

Number of elderly persons are either living alone and maintaining their own households or institutionalized, retirement is required at age 65, and the income of elderly persons comes primarily from Old Age Security Pension.

The position of the aged in modern society is influenced by factors such as acquired knowledge and skills, material and financial resources, degree of control over opportunities within the environment, and the presence of interaction with family and friends. There are persons for whom functional ability, income, activities, and relationships are not severely reduced with age. However, there are undoubtedly many who increasingly (with age) experience physical, mental, and social changes which confine them to their homes, or to an institution, and especially to a specific geographic location. In particular, the development of complex and highly technological transportation systems has reduced the mobility and increased the travel problems of a considerable number of non-institutionalized elderly persons. Consequently, there is a growing need to provide the expanding elderly population with means whereby they can gain access to the immediate environment and interact with others.

A significant portion of research on aging is aimed at identifying the nature of the process of aging and at prolonging the human life span (Burgess 1960; Environics Research Group 1972; Schonfield and Stewart 1970; Shock 1957; United States, Department of Health, Education, and Welfare, Administration on Aging 1970b; United States Senate, Special Committee on Aging 1970a; 1971). Despite the lack of a unified theory on aging, gerontologists and investigators of related disciplines agree that aging is a process of human development which takes place through the interaction of biological, psychological, and social processes of change (Birren 1959; 1964; Busse and Pfeiffer 1969; Neugarten 1968b; Tibbitts 1960). Although the onset of old age varies among individuals, students of aging tend to define the last stage of human development by a chronological age which is at best an imprecise indicator of the elderly's position on any one of the dimensions of aging.²

Current studies on aging are improving the established notions of growing old. Interest in the aged's abilities to maintain independent life styles and a sense of belonging and participation in society is developing rapidly.

Several studies find that an aged person often stops doing things he or she can ordinarily do as a consequence of physical and mental difficulties, low income, loss of peers, and reduced social opportunities. Investigators are becoming more and more concerned with the withdrawal of elderly people from a rapidly changing world as the aged themselves steadily increase in numbers. Many elderly persons are typically found to be disengaged from outdoor activities in societies which do not offer senior citizens the opportunities to exercise their own capabilities, especially in their own communities.

Various programs on the government and community levels have been conducted in response to the problems of aging and to the changing needs of the elderly in both the United States and Canada. A number of such efforts include areas such as retirement and old age pension schemes, health services, housing and residences for senior citizens, social welfare benefits, and social services for the aged. Research and program planning directed towards the transportation needs of elderly persons, however, have only been recent (ABT Associates, Incorporated 1969; Cantilli and Shmelzer 1970; Carp 1971a; 1971b; Golant 1972; United States, Department of Transportation 1969; United States Senate, Special Committee on Aging 1970b).

The proliferation of research, which has resulted from the growing awareness of the needs and problems of the aged, clearly indicates that the majority of elderly persons possess similar characteristics and that these characteristics are largely assigned by the external, physical and social world. A number of studies show that the barriers and constraints of the urban environment are reflected in the elderly's vehicular mobility for social activity. More specifically, vehicular mobility among the aging—which ought to be representative of their needs and wants—is not an accurate reflection of the non-institutionalized elderly's desires and abilities to travel.

NOTES

¹ A recent publication from Statistics Canada has some relevant observations concerning a shift in age structure: "It says the government should be planning its programs and institutions for a society which by 2031 will see

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every senior citizen supported by three working Canadians, compared with the seven at present. . . .

Retired Canadians now make up nine per cent of the population. By the year 2000, the proportion is expected to increase to 12 per cent. Within the next 50 years, it should rise to about 20 per cent.

At the same time, the report predicts the fertility rate will continue to drop from the present level of 1.8 births per woman to 1.5 by the mid 1980s. After that, it is expected to stabilize.

The study says the two trends will work in opposite directions and leave Canada's dependency ratio at about the present 65 per cent of the population. That is those between zero and 17 years and those over 65 will comprise 35 per cent of the population and will be supported by the remaining 65 per cent." (Goar 1978: A15)

² Despite its limitations, chronological age is a convenient index in society. It is of some importance as an indication that one is either young or old. When associated with social definitions, it can be meaningful in determining the boundaries of successive life stages. Chronological age is the measure which demographers find useful, and it frequently plays an important role in assigning persons to specific social age groups. For a discussion of this matter see chapter III.

CHAPTER II

THE ELDERLY POPULATION

Introduction

The population of primary concern for this study is the elderly who, for most demographic and gerontological studies, are usefully, although imprecisely, designated by age 65 and over (Cutler and Harootyan 1975; Williams 1960). The number and the proportion of persons 65 and over have been increasing since the turn of the century (Bengston and Haber 1975; Brotman 1970; Cutler and Harootyan 1975). Although the elderly population is growing in size, there has been relatively minimal increase in life expectancy. Brotman observes that individuals are not living longer when compared with persons the same age living in the past: "Compared with 1900, life expectancy at birth has jumped more than 20 years but has increased only a few years at 65." (Brotman 1970: 11)

The increasing proportion of aged in the general population is the result of improved health care, better nutrition and sanitation, and reductions in infant mortality. Industrial development, medical technology (which eliminated contagious diseases), scientific agriculture, public-health policies and organized public health, and elaborate transportation systems are primarily responsible for these improvements and changes (Berger and Berger 1975; Brotman 1970). The decreasing birthrate is an additional factor contributing to the unprecedented number of aged in the population (Cutler and Harootyan 1975).

It is also significant to note that there are more than five women for every four men in Canada (Statistics Canada 1973a). The life expectancy for women has grown at a faster rate than for men due to the fact that certain causes of mortality have been found to affect males more than females. As a consequence, the majority of today's urban aged are women and a large number of elderly persons are widows (Brotman 1970; Cutler and Harootyan 1975). Due to a significantly longer life expectancy, the percentage of elderly females can be expected to increase at a higher rate than the percentage of elderly males (Auerbach and Gerber 1976). However, in view of the fact that more men and

women are living to older ages within the total population, there are bound to be urban problems specific to the aged (such as housing, cost of living, transportation, over-crowding/congestion) and of major concern to persons who are interested in the health and well-being of the elderly (see Canadian Conference on Aging 1966).

The Aging and Changing Population

National Context

Canada is classified as an "aged" country (Auerbach and Gerber 1976: 7). The rate of increase in the number of elderly in Canada is significant in view of the fact that the aged (usually defined as persons who have reached age 65) constitute a sizeable fraction of the Canadian population.

Between 1901 and 1911, the percentage of persons age 65 and more decreased slightly from 5.1 to 4.5. However, between 1911 and 1956, there was a notable increase from 4.5 to 7.9 percent of persons over 65 years of age, and the median age of the total population increased from 22.9 to 27.3 years. There had been a decline in the proportion of persons age 65 and over between 1956 and 1961, after which the proportion had levelled to 7.7 percent reaching a substantial absolute size of 1,539,548 persons out of a total number of 20,014,880 persons by 1966 (Golant 1972: 22-23). The Canadian population is estimated to have doubled between 1943 (11,795,000) and 1972 (21,830,000) (Baum 1974: 251-252).

The elderly population is increasing at a much higher rate than the population as a whole. The 0-19 and 20-44 age groups more than doubled in absolute size between 1921 and 1971. However, despite the high fertility rate of the baby boom years, both age groups decreased as a proportion of the Canadian population. Nevertheless, the 45-64 age group increased as a percentage of the Canadian population, tripling in size. Recent studies show that there are four times as many persons age 65 and more in 1971 compared with 1921 (Auerbach and Gerber 1976: 7).

Another significant feature is the dramatic projections for the growth of the Canadian elderly population. It is estimated that the size of the elderly population will have doubled from about 1.7 million in 1971 to approximately 3.3 million by the year 2001. The population age 65 and over is projected to double again after 2001 and by 2031, so that an estimated 12 percent of the Canadian population will be 65 years or more by the year 2001, and 20 percent may be over 65 by 2031. The projected increase for the very elderly (age 85 and over) is from 142,000 in 1971 to 351,000 in 2001, whereas from 1971 to 2001 the number of aged over 80 years is projected to increase by 130 percent. While the median age of the Canadian population declined from 27.7 in 1951 to 26.3 in 1961, 1971, this aspect of age structure is also projected to increase to 35.7 by 2001 (Auerbach and Gerber 1976: 14).²

The growth of the elderly in Canada is attributed to various causative elements. Statistics Canada (1973a) indicates a decline in fertility rate since 1960. According to Statistics Canada, life expectancy for Canada and the provinces is projected to be "... 72.8 years for males and 79.1 years for females by the year 2001." (Auerbach and Gerber 1976: 14) An important source of Canadian population growth and of the growth of Canadian cities has been migration from other countries: over 10 million immigrants have arrived in Canada since Confederation, and it is estimated that 3.7 million immigrants have been admitted since the Second World War (Kelly 1975). In this regard, it is interesting to note that, on the average, the present foreign-born constitute a significant proportion of the aged population in Canada (Auerbach and Gerber 1976).

Internal migration is indicated as the dominant factor in the redistribution of the Canadian population (Golant 1972). It is interesting to note that the aged have had a tendency over the last decades to migrate from rural farm areas to rural non-farm areas or to small urban areas. In 1971, the proportion of aged persons is estimated to be higher in small urban areas and non-farm areas than either in large urban centers or in farming regions (Statistics Canada 1973a). Today, therefore, a majority of Canadian elderly may be foreign-born, widowed, and living in small urban areas or non-farm areas--although some large urban centers may also attract a number of retired people.

Provincial Context

The estimated percentage of elderly persons living in Canada in 1971 is 8.1 percent and the proportion of aged in the province of Quebec is approximately similar to that of the country as a whole (Statistics Canada 1973a). Post-war immigration has favored Ontario and Quebec, whereas smaller percentages arrived in British Columbia, the Atlantic Provinces, and the north (Department of Manpower and Immigration, 1971). The greatest post-war inter-provincial migration had occurred in Ontario, British Columbia, and Alberta; and net migration had been responsible for the notable percentages of urban demographic growth in British Columbia (50 percent), Ontario (47 percent), and Quebec (35 percent) (Kelly 1975: 23). The unexpected decline in the current birthrate in Quebec has recently received much attention from planners, and it is noted that:

Quebec's population (6,027,764 in 1971) has been projected to grow relatively slowly, to 7,250,000 in 2001, assuming the currently low birthrate and the historically low share of immigrants. But some students expect many more migrants, Canadian and foreigners, to be attracted to Quebec. (Kelly 1975: 26)

Another notable observation is that the rate of inter-provincial migration tends to increase with advancing age, especially after age 65 or in association with retirement (Golant 1972). While the percentages of the total elderly population are similar for Canada and Quebec, there is a lower percentage of aged in Quebec relative to its total population size (Statistics Canada 1973a). Montreal, Quebec, however, is one of the three largest Canadian metropolitan areas containing the largest number of elderly persons in Canada.

TABLE 1
 POPULATION DISTRIBUTION BY PROVINCE
 (Based on 1971 Census Data)

Province	Total No.
Newfoundland	332,000
Prince Edward Island	113,000
Nova Scotia	794,000
New Brunswick	642,000
Quebec	6,059,000
Ontario	7,825,000
Manitoba	992,000
Saskatchewan	916,000
Alberta	1,655,000
British Columbia	2,247,000
Yukon	19,000
Northwest Territories	36,000

Source: Baum 1974: 251-252

Metropolitan Context

An estimated 76.1 percent of Canada's entire population is living in cities and towns, and approximately one third of the population is concentrated within three metropolitan regions: Montreal, Toronto, and Vancouver (Statistics Canada 1973a; 1973d). Most of the 122,000 immigrants arriving in Canada in 1972 were received in Toronto (34 percent), Vancouver (27 percent), and Montreal (15 percent). In 1971, Toronto, Vancouver, and Montreal—three large Canadian cities—can be noted to have the highest percentages of foreign-born (Statistics Canada 1973b). Accordingly, net migration has been the major source of population growth within these metropolitan centers (Kelly 1975).

The expansion of cities is magnified by factors which have reinforced urban migration: decreasing agricultural employment in rural areas, centralization of population within rapidly developing areas, and increasing growth and concentration of organizational and service employment in large metropolitan areas. Such forces have been reinforced by the capacity of highly developed and advancing technology: much of the continuing trend toward provincial urbanization and densely populated metropolitan regions resulted from communication (e.g., mass media) and increasingly accessible transportation.

The current trend to urbanization and the rapid growth of population in most major cities and larger metropolitan areas are expected to persist. Continued city growth, however, may engender specific problems, especially in relation to existing transportation systems. The increasing demand for a more adequate servicing of mass transportation in terms of size and location is largely unfulfilled: existing urban transit systems are over-taxed by an ever-increasing centralized employment sector and are unable to service the travel needs of various sectors which are dispersed within the metropolitan region. As a consequence, a marked increase in usage and ownership of the private automobile and its negative aspects (such as pollution, noise, fumes, accidents, traffic congestion) are in evidence (Kelly 1975). It is clear that certain population groups and/or individuals may not have access to a private vehicle, and that those with inferior knowledge and skills may be more affected by public transit which is inadequate for their needs.

Conclusion

The development of a better way of life for the elderly population may depend on science and technology. Life stresses and inactivity--which are induced by the external environment and associated with loneliness, isolation, and fear--are common experiences among many of today's urban aged. The elimination of age-specific and income-specific travel barriers, for example, may be most important for alleviating impediments to their use of urban transit. Moreover, as society changes to an older age structure, the problem of designing flexible transportation that is adapted to the needs and abilities of the elderly and is economically accessible to them will undoubtedly become increasingly

vital, especially for those with physical impairments. Thus, technologies and facilities should be designed to service differing urban areas, to consider different age groups, and to accommodate a much larger aged population and their needs as the membership continues to grow.

Urban City Growth and the Elderly

Urban city growth has an historical link with the development of interurban transportation.³ Around the turn of the century, high density development had been expanding physically into the countryside and in close proximity to the interurban railway system (Bruck 1970). Prior to the development of interurban lines, mobility was determined by the personal ability to travel either by foot, animal, or water. Travel for the purpose of pleasure was limited to the very rich (Auerbach and Gerber 1976). Like today, therefore, mobility at the turn of the century was constrained by physical weakening or impairment and by limited financial resources.

Historically, this century also began with an aging population; however, the aged were considerably more rare in both proportion and absolute numbers in comparison to the remainder of the population (Bengston and Haber 1975). Unlike today's more mobile society, relationships in the past were more confined to the local community. The necessity to travel considerable distances to work and to related activities was non-existent. In contrast to the elderly of today, the aged of 1900 were not differentiated from others in terms of work and life style. In this regard, Bengston and Haber observe that:

The elders in a rural multigenerational family were respected for their useful information and skills. As rapid industrialization drew families into the city, the shortage of existing housing led to similar three-generational households and comparable respect in an urban context; the elderly served as a source of valuable information within a stable environment The older urban person was appreciated in a time when the community itself was an important and satisfying social resource. (Bengston and Haber 1975: 81)

Sometime after the turn of this century and in association with the arrival of a new mode of transportation, the automobile, significant changes occurred in the pattern of spatial location in terms of concentrations of population and employment centers. The automobile reinforced a low density

development of relatively unsettled and open land situated between the existing areas of high density development. Prior to the arrival of the automobile, the concentrations of population and work locations had extended outward from the center of urban areas, along the lines of earlier forms of transportation into the countryside. Mass transportation by means of the automobile, therefore, reinforced "urban sprawl" (Bruck 1970: 107).

The establishment and development of new cities this century is a reflection of the importance of the railway and the automobile (and later on the airplane) as modes of transportation. The primary purpose of establishing elaborate and fairly rapid systems of transportation was to transfer raw materials and goods, whereas the movement of persons was important solely for the processing and the transportation of goods. Eventually, the demand for an efficient movement of people emerged (Auerbach and Gerber 1976).

Steady increases in both earnings and economic productivity accompanied the aging of structures within central urban areas and the increasing development of industrial centers situated at the periphery of urbanized areas. Those relatively advantaged by higher incomes and financial resources were able to move outward while low-income populations remained in the central city. In fact, ". . . the decade of the fifties, and even more markedly, the decade of the sixties, saw general movement outward from earlier concentrations of population and job locations." (Bruck 1970: 108)

The rapid growth and expansion of cities is also associated with a low and decreasing participation of elderly persons in the labour force. Current income levels provided by retirement programs are based upon lower wage earnings of the past. Despite increasing needs and desires to consume, the consumption pattern of most aged persons is restricted to the purchasing of essential necessities: most spend a larger proportion of their income on food, medical care, housing, and a smaller proportion on other needs such as clothing, recreation, and transportation. For many, even the cost of satisfying these basic needs may be difficult to meet (Bengston and Haber 1975; Brotman 1970). In addition, a small proportion of elderly persons live with either their children or their relatives (Shanas et al. 1968). Although evidence shows a recent increase

in the number of aged segregated from the larger society in either retirement communities, public housing for senior citizens, and homes for the aged (Breen 1960), the majority reside in deteriorated dwellings (rented) and are largely isolated from the mainstream of modern life (Clark 1976; Clark and Anderson 1967). Thus, a combination of factors such as current inflation, compulsory retirement, and low, fixed incomes (associated with the age of retirement) are detrimental to the growing elderly population in modern cities. "Food, housing, and health care costs are rising far more quickly than are the economic resources of older people, especially those not in the labor force and those located in central cities." (Cutler and Harootyan 1975: 63) "Representation of the special needs of the elderly seems to be weak in the city because they have no fixed relationship with industry, nor are they particularly good consumers." (Birren 1976: 13) Furthermore, many are unable to afford alternative accommodations other than low-cost housing (Clark and Anderson 1967). As a consequence, the quality of life in later years is largely deteriorated, especially for those residing in the inner city. In this regard, Clark provides an interesting observation:

Suddenly, we have become aware that "geriatric ghettos" have sprung up within the last two decades in the downtown areas of our principal cities.

This phenomenon is relatively new Many factors (historical, economic, political) can account for this age-specific concentration of people. It is consistent with the general social pattern of the polarization of many low-status groups in our society and their segregation from the mainstream of . . . life. (Clark 1976: 341)

The Urban Aged

An environment which provides an adequate life space is one that supports the individual physically, emotionally, and socially—that is, it provides persons, regardless of age, with opportunities for privacy, social contact, and the fulfillment of needs. The urban environment is comprised of both the dispersion and the clustering of services and activities for all age groups. Persons capable of higher mobility may be able to adapt with ease in more than one environment and may participate in a variety of activities that are geographically organized in a widely-scattered manner. The modern city offers people the freedom to make personal decisions and a wide range of social options. In brief, it can relate both individual and society.

The life space of city residents is largely determined by the availability of facilities and opportunities which enable them to express differences in needs and desires. Large shopping complexes, for example, are readily available to consumers who have access to an automobile. Most specializations that are dispersed throughout the larger metropolitan area are also accessible to the general public by means of institutionalized, fixed-route mass transit systems.

Unfortunately, the aged do not benefit from city life. Today's urban aged are separated from many of their adult roles and concomitant statuses in a world of impersonal corporations and rapid technological changes. There is reason to believe that their opportunities for social contact are minimal (Clark and Anderson 1967) and that a significant proportion of the elderly have difficulty in using mass urban transit systems (Cantilli and Shmelzer 1970).

Considerable evidence shows that most people, including the aged, have unfavorable attitudes toward older people, and negative views of physical and mental symptoms of aging (Barron 1961; Berger and Berger 1975; Breen 1960; Busse and Pfeiffer 1969; Carp 1970a; Loether 1975; Rose and Peterson 1965).⁴ The urban aged are negatively stereotyped as a consequence of chronological age and are not implicated in the community structure to the same degree as persons judged to be of social use and importance (Baum 1974; Clark and Anderson 1967; Loether 1975; Talmon 1968). Some investigators, in fact, have raised the question as to whether the aged may be regarded as a minority group (Barron 1953; Breen 1960; Palmore 1969; Rose 1968b; Streib 1968).⁵ Among the stereotypes, which may affect the aged's performances and participation in society, the most common depict elderly persons as follows: largely inactive; poverty-stricken; unhappy; bored; lonely; isolated; progressively declining in health, physical endurance, sensory and perceptual abilities; forgetful; spending much time indoors due to frequent illness; and unable to fulfill basic needs independently (Palmore 1969; Shanas et al. 1968).

Research shows that the ability to perform major tasks and activities and the maintenance of self-care in later years may be limited by chronic conditions (Riley and Foner 1968; Shanas et al. 1968). Visual and auditory disorders are most prevalent among chronic impairments,⁶ and a majority of

elderly persons are afflicted with one or more chronic condition which may lead to temporary or long-term disability (Atchley 1972; Confrey and Goldstein 1960; Riley and Foner 1968). Population studies reinforce the notion that biophysiological and socioeconomic factors interact and determine the state of physical and mental well-being (morbidity) in later life (Riley and Foner 1968). According to the evidence, the prevalence of chronic illness and disability increases in later life with lower levels of income (Shanas and Maddox 1976). Although the number of persons living below the level of poverty is decreasing, the aged form an increasing proportion of the total poor population (Brotman 1970). Income tends to drop considerably after retirement or at age 65, even among those living below the poverty line at this time (Orbach and Tibbitts 1963; Rosow 1967).⁷ In fact, an estimated 50 percent of persons age 65 and more are poor (Birren 1976). The financial situation of the Canadian urban aged is vividly expressed as follows:

the income of the vast majority of older Canadians is at the poverty line. The . . . Canadian Special Senate Committee on Poverty . . . in 1974 . . . found that nearly two-thirds of those over 65 in 1967 fell below poverty income levels. In 1970, more than 470,000 pensioners, or 28 percent of the total, had no other source of income than Old Age Security Allowance. An additional 347,000 or 20.5 percent had an outside source of income that came to less than \$62.00 a month. . . .

Statistics of the Department of Health and Welfare in March 1973 show that for all of Canada, there were 1,808,000 pensioners, and over 55 percent of these received Guaranteed Income Supplement which, as you know, is intended to bring pensioners' income close to the poverty line--not over it, but close to it. (Baum 1974: 1-2, 232)

For those retiring in 1975, the maximum federal pension (a combination of the Canada Pension Plan . . . and Old Age Security . . .) is approximately \$2990 for a single person and \$5980 for a couple. (The poverty line in 1975, according to Statistics Canada, is \$2520 for an individual and \$4199 for a couple.) However, many pensioners do not have even this much. For those not eligible for the Canada Pension Plan, and without other sources of income, the government provides . . . Old Age Security plus a Guaranteed Income Supplement In 1975, this means \$2520 for a single person, just at the poverty level. (Maximum benefits are as of 1 April 1975.) (Auerbach and Gerber 1976: 30)

In order to compensate for societal deprivation, many elderly persons may select to associate with people possessing similar attitudes, interests, experiences, or problems. Observations show that the aged (over 60) perceive

their social status in terms of health and social activity rather than in terms of either income, occupation, or social power (Rose and Peterson 1965; Rosow 1967). Their self-images and their subjective perceptions of specific life stages (such as retirement, old age, illness and disability, widowhood, death) suggest that peer group contact is a major source of social identity and behavior in later life (Bengston and Haber 1975; Blau 1973; Kutner et al. 1956). Peer group contact may be conducive to the persistence of certain norms, roles, and activities of earlier years, especially among those having similar backgrounds or residing in close proximity to one another (Rose and Peterson 1965; Rosow 1967; 1968). Nevertheless, peer group membership cannot eliminate the fact that as members of the age-diverse metropolitan community, the elderly have the greatest need to gain access to activities in an urban society which discriminates against the chronologically-aged, forces them from the "mainstream of economic life" (Baum 1974: 231), and deprives them of their basic satisfactions.

Evidence shows that the "...ability to interact with the environment is controlled by social, economic and societal policies manifest by the built environment." (Regnier 1975: 297) Thus, a significant part of activity losses and limitations in later life may be due to the behaviors and attitudes of others which encourage the elderly to understand their life situation in a certain way and to behave in a particular manner. In fact, Shanas and associates find that self-health assessments of aged persons are highly correlated with sensory impairments, basic task performance, mobility restriction, and, more important, the cultural and national context in which the aged reside.⁸ They claim that:

Whether or not an old person says his health is good or poor is related to . . . the culture or style of life of the country in which he lives. . . .

The majority of people will not say they think their health good when they are housebound or unable to go about alone. (Shanas et al. 1968: 53, 56)

Much of the societal deprivation and inactivity among the urban aged is reflected in the non-availability of community facilities, services, and resources suited to their levels of income and degrees of competence (Carp 1966; 1970a; 1970b). When considering that mobility is one of the most important needs of the aged (Clark and Anderson 1967), the loss of mobility for an elderly person may mean a decrease in the ability to do things independently and restriction

from activities and interests that are highly appropriate to daily living.

According to Clark:

Retaining one's mobility allows for freedom and autonomy; it permits one to remain open to new possibilities and other alternatives in the environment; it allows the older person to reach for the opportunities in his society. Immobility, on the other hand, is life in an ever-shrinking world, forcing a slow attrition in many other areas of an individual's personal and social system and resulting in an impoverishment of all segments of life. (Clark 1976: 345)

It is increasingly clear that a significant proportion of elderly persons have a social life space which is constricted in quality and size and less differentiated, flexible, and permeable (Gelwicks 1970) than those able to enjoy the options offered by the modern city. Moreover, activity limitation, loss of independence, and the inability to manipulate control over the external world may be more characteristic of aged persons affected by an environment which is physically and socially uninviting. The United Nations, Department of Economic and Social Affairs clearly states this fact and provides some "food for thought":

"Strongly competitive societies in which too much emphasis is given to an individual's worth in terms of productive work and achievement, in which inactivity is somewhat suspect and leisure highly commercialized and, therefore, expensive are not congenial environments in which to grow old. (United Nations, Department of Economic and Social Affairs 1975: 11)

Conclusion

There is a need to provide specific resources and facilities that serve to reduce the deprivation and immobility of a growing and increasingly isolated population segment. To respond to this need, it is of vital importance for society to develop opportunities for elderly persons by implementing programs that would (1) motivate the aged to participate in the external world and (2) enable many to reach activities which ought to be accessible to them. Thus, any change in existing transportation ensuring that certain barriers to their effective use are reduced or removed for the aged population would have important implications for the mobility of the elderly and their access to social opportunities.⁹

NOTES

¹ The "baby boom" cohort is the group of individuals born between 1947 and 1965.

² A recent report on population projections for the United States indicates that the "... fertility rate had declined from 3.8 children per woman in 1957 to 1.8 in 1976. . . . [The] median age of Americans was under 28 in 1970, will probably be 35 by the year 2000 and almost 40 by 2030." (Klein 1977: F1) These figures are approximately identical to those for Canada and Quebec.

Kelly, however, points out that such "... Projections depend on assumptions other than purely demographic factors. They all implicitly presuppose the absence of external influences such as war, the creation of North American common market, and civil or political disorders in Canada or in the United States. They also ignore whole classes of secondary factors, whether economic (such as the price of energy or large-scale business depression) or technological (such as the availability of cheaper or novel systems of transportation and communication)." (Kelly 1975: 25-26)

³ The historical link between urban city growth and transportation development is well stated by Auerbach and Gerber (1976: 65).

⁴ Many members of the general public as well as a number of health professionals are unable to relate effectively to aging persons, their problems, and their constricted life space situation. This fact is suggested by Busse and Pfeiffer: "Many members of the health and welfare professions have difficulty relating effectively to elderly persons. . . . We all instinctively fear physical and mental decline. When we observe a patient deteriorating despite our best efforts to the contrary, we are reminded that we, too, are vulnerable and will inevitably experience the changes of the aging process, including death. Also, members of the health disciplines are frequently frustrated because elderly patients often have multiple and chronic physical as well as psychological complaints which, moreover, are often exacerbated by the patients' life circumstances. The physician is made to feel he is of little value since he cannot relieve the symptoms, and he has neither the knowledge nor the prerogative of altering the socioeconomic conditions" (Busse and Pfeiffer 1969: 5)

⁵ There is considerable disagreement concerning the extent to which the aged represent a minority group or a sub-culture (see, in particular, Rose 1968b; Streib 1968). The diversity is reflected in current public policy changes which may alter many features of the daily lives of the urban aged. However, Breen suggests that despite their differences, the majority of elderly persons have similar characteristics. He expresses his argument as follows: "In many respects the aged show characteristics of a minority group. They are subject to categorical discrimination, they have relatively high visibility, and, in many parts of our society, they constitute a functioning subgroup. Stereotypes are held about the group, and individuals are judged thereby. Prejudice is not uncommon, especially in industry, where persons over age 40 are discriminated

against in employment practices. Thus the ingredients necessary to the development of minority-group status are present for the aged. . . . The wide literature on minority-group behavior clearly would be applicable to the aged also." (Breen 1960: 157)

⁶ Respiratory conditions (such as asthma, bronchitis, hay fever), diabetes, and peptic ulcers are less prevalent among chronic conditions following age 65. Chronic conditions which may account for activity limitation after age 45 include: heart disease, arthritis, rheumatism, high blood pressure, visual deficits, and auditory losses. Reports of illness and disability are frequent among women and persons age 75 and more. Specific impairments such as paralysis, loss of teeth, and poor vision and hearing are reported more often following age 65; and over one third are caused by injury (Riley and Foner 1968).

⁷ The following ". . . information . . . comes from the Report of the Special Senate Committee on Poverty (Ottawa: Information Canada 1970). . . .

The Committee recognized poverty as a multidimensional concept encompassing social, psychological and economic malaise. The Committee endorsed definitions which related poverty to a minimum standard of living. It recognized that people consider themselves poor if their standard of living falls markedly below that enjoyed by most people and also if they lack a command of resources over time. The concept of poverty in terms of the income needed to sustain a minimum level of health and capacity for work. . . is necessary both for the measurement of poverty and for the development of programmes to eliminate it. . . .

A poverty line provides an operational definition of poverty. It is conceptual insofar as it permits us to define the scope of poverty in a society, and statistical, insofar as it provides us with a means of counting the number of poor.

In establishing a poverty line the Committee took account of the minimum substance level budget estimates of Statistics Canada; cost of living adjustments; adjustments for family size and of relative income deprivation. Thus, for a family of 4, the Senate Committee Poverty Line stood in 1969 at \$5000. That the former was not unduly generous was substantiated by a Canadian Institute of Public Opinion survey conducted in 1970. The results of this survey indicate that most Canadians considered \$6500 to be the minimum accepted income for a family of 4." (Baum 1974: 239-240)

⁸ An abridged and adapted version of Ethel Shanas et al., "The Psychology of Health," in Old People in Three Industrial Societies (New York, U.S.A.: Atherton Press, 1968), pp. 49-70, appears in Ethel Shanas et al., "The Psychology of Health," in Middle Age and Aging: A Reader in Social Psychology, ed. Bernice L. Neugarten (Chicago, Illinois, U.S.A.: University of Chicago Press, 1968), pp. 212-219.

⁹ This point is discussed in more detail in chapter V and chapter VI.

CHAPTER III

AGING

Introduction

A significant portion of the dependent population is aging (Cutler and Harootyan 1975; Riley and Foner 1968).¹ Aging is a multidimensional process of biological, psychological, and social forces that become increasingly interdependent with age (Birren 1968b). As a product of such forces, aging consists of a sequence of life changes that occur, or can be expected to occur, during the latter course of the human life cycle (Bengston and Haber 1975; Birren 1968a).

The aging are disadvantaged by losses which increase with age (Atchley 1972; Pastalan 1970).² Life cycle changes or major life events normally require new adaptations on the part of the individual. Some changes are directly associated with a specific chronological age while others are less influenced by such formal definitions (Bengston and Haber 1975).³ Among the many changes, the most apparent include: loss of physical strength and performance, loss of physical appearance, loss of the ability to make decisions, loss of spouse, loss of work role, loss of income, loss of status and position, and loss of power or social control.

Life changes often create problems of social adaptation and lead to personal dissatisfaction with life or other problems that are characteristic of the aging (Havighurst 1963; Maddox 1968). A major life change can be distressing and thus disrupt an individual's entire life style (Blau 1973). The aging person may perceive illness or income loss or widowhood as a loss of status and translate "loss" into other aspects of daily living (Birren 1959). Thus, life changes can impede either the maintenance or the replacement of activities and relationships in later years.

The Process of Aging

The aging process consists of biological, psychological, and social processes that change through different age stages of the human life span. At each age, persons utilize diverse physical and mental capabilities and, in relation to one another, perform different roles.⁴ Although biological, psychological, and social characteristics tend to change with age, such changes occur neither simultaneously nor usually together at the same stage of life. Thus, the multidimensional process of aging is an outcome of changes (biological, psychological, and social), and each suggests a different rate of aging. This difference is pointed out by Birren through the following analogy:

One cannot discuss aging without becoming concerned with the nature of time and its measurement. . . . time may . . . have different directions in different portions of the physical universe. From this it might be inferred that parts of the body occasionally have different directions in time, that a function or structure may for an interval reverse its trend in time and grow younger, as during regeneration. Whole individuals move in a direction of the majority of the component systems. By analogy to the physical universe, the individual is viewed as a complex system moving irreversibly forward in time (increased entropy), with subsystems in which the rate of change and even the direction of time may not be the same. The model of the physical universe suggests that biological, psychological, and social functions of the individual, while part of a total complex system, need not be related on a one-to-one or moment-to-moment basis. (Birren 1964: 11-12)

Chronological Aging

The average life expectancy has improved markedly in economically developed countries (Shanas and Maddox 1976), and similar trends are now evident in developing countries (United Nations 1973).⁵ Despite its limitations, chronological age is employed by society to define certain rights and responsibilities and to allocate institutional roles. Sets of rules and expectations govern the relations between persons, and all age groups are subject to regulated behavior as a function of chronological age (Riley, Johnson, and Foner 1972). Thus, age is a useful indicator of an individual's position in an age-grading system⁶ and is meaningful as a criterion for role entry and role exit (Neugarten and Moore 1968; Riley et al. 1969).⁷

Age serves to define the limits of specific life events. Although imprecise by itself as an index of biological, psychological, and social aging, chronological age is frequently used as a measure for aging. Despite its limitations, age facilitates certain government schemes or policies. For example, Old Age Security Pension is associated with the retirement phase of human development and is designed for persons whose eligibility to receive this benefit is based on a specific age. Nevertheless, chronological age is a generalized representation of a complexity of forces. It is a partial indication of human development and may even be inconsistent with observed behavior and existing desires (Birren 1964). A number of persons in a specific chronological age category may deviate from the developmental norm of the age group. Correspondingly, one or more of the particular capabilities of certain members may be inconsistent with the general developmental stage of other capabilities. Similarly, human needs and desires as well as the social opportunities for satisfying such needs and desires may not be in accordance with chronological age norms. Clearly, factors other than chronological age must be considered in understanding the process of aging.

Biological Aging

Biological aging or senescence⁸ is a process of physical deterioration and is observed as organic changes that are frequently accompanied by chronic illness and disability (Shock 1962). Biological processes of aging are associated with the physical changes of the human organism which tend to occur in later maturity. A number of biologists agree that aging consists of a progressive loss of efficiency and functional ability and that the human organism is increasingly vulnerable to deterioration with advancing age (Comfort 1964; Weg 1975).

Some physical symptoms of aging include: changes in physical appearance, decreased physical strength and endurance, motor and sensory losses, chronic illness, and physical impairment. Physical declines require specific adaptations and are likely to restrict activity. Atchley, for example, observes that:

The relatively inefficient operation of the body reduces the energy available to the individual and restricts the number and kinds of things he can do and how he can do them. . . .

Increased susceptibility to disease also restricts activity. Physical impairment and sickness are in some ways more difficult to adjust to than the decline in energy, because physical impairment often dictates the activities that must be dropped.

Inability to recover balance . . . dictates both what things can be done and how.

Deterioration of vision and hearing also restrict older people's activities. (Atchley 1972: 199)

Thus, biological processes of aging are associated with a progressive loss of efficiency and of functional capability which inevitably results in death. Although physical decline does take place with advancing age, biological aging occurs at different rates in different persons, and factors associated with biological processes do not occur with regularity at any specific chronological age (Shock 1962). Biological aging interacts considerably with both psychological and social aging and, therefore, does not take place in isolation of other forces of aging.

Psychological Aging

Psychological aging is a process which involves changes in the complexity of mental faculties and human behavior and is observed as declining psychological functioning and skills, changes in the self, and reducing interpersonal skills (Birren 1964). Psychological processes of aging are associated with mental and personality changes which occur with advancing age. The major psychological signs of aging include: losses in mental functioning such as task performance, intelligence, problem-solving, learning, memory, thinking; declines in perception, in speed of reaction time, in accuracy of response; sensory impairments; a tendency for drives such as hunger and sex to decrease; reduced motivation and emotional response; a negative attitude toward life; the inability to deal with complex situations; increased preoccupation with the inner life and a tendency toward inactivity or passive forms of behavior; and the inability to establish a positive self-concept or to maintain self-esteem (Birren 1959; 1964; 1968a; Neugarten 1968a).

Psychologists suggest that certain mental functions and skills tend to diminish as aging progresses and that the deficit in sensory-motor co-ordination is the most pronounced (Birren 1964; Jones 1959; Riley and Foner 1968; Welford 1959; Welford and Birren 1965; United Nations, Department of Economic and Social Affairs 1975). Although declines in mental functioning and skills vary widely among the aged, several studies show (1) that many aging persons are capable of responding to new life situations and events, (2) that many elderly individuals are able to learn and to perform new tasks,⁹ and (3) that the activities of many persons are not severely diminished by intrinsic age-related changes such as deficits in sensation and perception until after 70 years of age (Birren 1964).

Every person relates the inner workings of the mind to the outer world of reality. Mental functions and skills combine with inner, or covert, responses and outer, or overt, responses that are characteristic of the individual and, together, comprise, what psychologists call, the personality.¹⁰ As aging progresses certain cognitive processes tend to decline in efficiency, the individual tends to withdraw from the external environment and is increasingly preoccupied with the self, the ability to relate emotionally with others is likely to decrease, and the individual tends toward passive forms of behavior (Birren 1968a; Neugarten 1968a). Age-related changes appear consistently within unconscious processes (i.e., those processes over which the person does not have conscious control), and they occur much earlier in life than changes within external processes of personality.¹¹ Changes in overt processes are likely to occur between age 70 to the late seventies and with biological decrement.¹²

Despite declines in the unconscious processes of personality, most aging persons are capable of performing adequately in the external environment until substantial physical and psychological deficits accumulate and, in combination, reduce effective social functioning. For example, chronic heart disease or changing physical features (such as the growth of grey hair or the wrinkling of skin) may influence negative thoughts and feelings about the self¹³ and determine the manner in which the person relates with others. Personality changes, therefore, are also reinforced by the expectations of others. As a

consequence, societal definitions and expectations of age-appropriate behavior, in addition to physical limitations, may influence aging individuals to perceive the self and the life situation in negative terms:

Often the appearance of the individual to himself--his "mirror image" and his self-conception which differs from this image--may affect his mental attitudes both towards himself and his relationship with others. Often the individual becomes self-conscious. He may withdraw from social events and begin to reject his own identity and reinforce what he believes to be society's rejection of him, through its emphasis on youth and physical beauty. (United Nations, Department of Economic and Social Affairs 1975: 10)

While there are significant changes in the self and personality, they tend to be of consequence for covert processes. People undergo certain physical and psychological changes with age. However, in terms of social functioning, a number of persons are neither physically incapable nor psychologically incapable until the late seventies. Neugarten and her associates (1968), for example, studied the personality differences of 59 persons, age 70 to 79, and found that some either re-organized themselves in new activities or devoted themselves to one or two specific activities, while others preferred to withdraw from social roles and activities. According to the study, the 17 men and women with integrated personalities are ". . . well-functioning persons who have a complex inner life and, at the same time, intact cognitive abilities and competent egos. These persons are . . . flexible, open to new stimuli; mellow, mature." (Neugarten, Havighurst, and Tobin 1968: 175) The study also shows that those with unintegrated personalities have marked deficits in psychological functioning and thought processes and are unable to maintain emotional control. Another group of personalities are either striving to maintain themselves in activities and roles of middle age or preoccupying themselves with personal losses and impairments and restricting their social engagements. A fourth group consists of persons with emotional needs for others upon whom they may depend and of persons with passive personality patterns. Consequently, personality changes are likely to result from a combination of factors arising from physical limitations, declining psychological skills, and societal expectations.

As aging progresses, therefore, the ability to perform new psychomotor and intellectual tasks tends to decrease and may affect social functioning. In

addition, personality change tends to be one of increasing separation from the outer world and may be due to an environment which is viewed as increasingly restrictive and unfulfilling to one's needs and desires. Based upon these conclusions, it is clear that social factors are most important for the maintenance of psychological functions and skills as well as for an integrated personality in later years.

Social Aging

Social aging involves certain situational changes and is observed as changes in positions and roles which occur as aging progresses. The social behavior of elderly persons is influenced by their personalities and also by the various positions and roles they may occupy. Every situation consists of positions and related roles which influence daily life experiences and social participation.¹⁴ Expectations and expected social behavior associated with the position "elderly person" determine the rights and responsibilities attached to related roles and the manner in which people ought to conduct themselves in assuming such roles.

Much of the social situation and social behavior of the elderly is an outcome of societal reactions to aging¹⁵ and of the roles that society expects older persons to occupy. Society regulates the extent to which elderly people may participate in various social situations by disinvolving the aging from specific positions and roles and by reducing the number of social opportunities available for the elderly population. A primary criterion for entry into significant positions in modern society is age, and the positions which the elderly can occupy neither require much physical and mental skills nor have much social value.

The elderly are aware of societal expectations by the various situations in which they find themselves and by the situational changes that confront them. Some situational changes which accompany aging involve changes in the following: health status, marital status, work role, and financial status. Consequently, the process of situational change in later life is associated with various role changes; and among these, the major role changes are: illness and disability, widowhood, retirement, and financial dependency (Atchley 1972; Clark

and Anderson 1967; Confrey and Goldstein 1960; Miller 1968; Riley and Foner 1968; United Nations, Department of Economic and Social Affairs 1975).

Good health (physical and mental) is, in addition to age, a primary criterion for eligibility for various positions in society. Disease, illness, and disability are role changes which tend to disqualify the aging from the mainstream of social life. Evidence shows that the incidence and prevalence of chronic conditions increase with advancing age (Confrey and Goldstein 1960; Riley and Foner 1968). Atchley, for example, remarks that:

On the average, older people are comparatively less often afflicted than the young with conditions classified as acute (such as infectious diseases or common colds). They are more often afflicted with chronic conditions (such as heart trouble or deafness), and more likely to suffer disability restrictions on their activity. (Atchley 1972: 114-115)

In addition, the incidence and prevalence of acute conditions reduce with advancing age; although the duration of conditions such as respiratory difficulties, infectious disease, and digestive problems tends to increase (Atchley 1972; Riley and Foner 1968). In this regard, Confrey and Goldstein indicate that:

Regarding acute conditions, . . . there is a definite increase in duration per case from about 10 days per year in the forties to about 20-25 days per year in the late seventies, probably due to declining recuperative powers in the older years. . . . however, the chronic conditions emerge as the principal contributor to the pattern of increase with age in the days of disability per person (Confrey and Goldstein 1960: 173)

Evidence shows that organic illness and declining physical health may be responsible for mental illness in later life (Lowenthal 1968). By social definition, however, loss of health (physical and mental) places the aged in a separate social category. As a result, the aging may need to depend on others for personal care, medical attention, emotional support, and financial security. At the same time, loss of health tends to affect the manner in which an aging individual is treated by family members, by friends, by the local community, and by the larger society. For the aging, therefore, deteriorating health is often associated with a decline in group membership and social support.

Role changes such as widowhood and retirement may also lead to social isolation in later life.¹⁶ The position widowhood is usually occupied by the aging female population. The life expectancy of women is greater than that of men,¹⁷

and, as a consequence, married women are expected to live through a period of widowhood which is usually accompanied by a reduction of income. (Riley and Foner 1968). For some, the new role can bring a sense of freedom, an opportunity to interact with others who may be widowed, and/or new experiences in leisure or educational activities. For most, however, the change to widowhood often means the loss of an intimate and interdependent relationship, a constriction of the physical and social life space, and an increasing need of emotional support from others (Clark and Anderson 1967). The availability of alternative social roles would provide a number of widows or widowers with opportunities to compensate for loss (Riley et al. 1969). In addition, it is likely that the presence of ". . . a close confident increases life satisfaction in old age and close friends and relatives are most important in cushioning against overwhelming sorrow and depression in times of personal crisis." (Woodruff 1978: B2)

A significant role change occurs at retirement--a role change which is usually experienced by the aging male population (Riley and Foner 1968). Age 65 is the major criterion for retirement from most occupational positions in modern society; although physical decline, inadequate knowledge and skills, or the lack of retraining programs for elderly persons may separate the individual from his work role on a permanent basis before the age of retirement. Society has developed a retirement policy for persons who, due to age, are no longer required to work. The implication of this policy is that the retiree receives financial benefits following his removal from a role he can no longer assume. Persons who are so removed, however, experience the loss of a social role and an occupational identity. Work provides a person with a social situation in which to develop a self-concept. The occupational identity distinguishes an individual's position in society and may, facilitate the maintenance of other roles and identities or provide meaning for activity in other social situations. As a consequence, additional role changes are likely to accompany retirement, irrespective of whether retirement is forced or voluntary. Miller, for example, states that:

A society which emphasizes efficiency and production will define the value of the person in terms of his ability to play a functional role in the industrial system. . . .in the case of growing old, an individual . . . must be removed and replaced--hence the development of an industrial policy toward

old age requiring occupational retirement at some point in the life cycle. The industrial changes not only established the occupational role as the basis for social identity but also developed the manner in which that identity could be subverted. The constituent elements of work—a work group and a work situation—are the basis of a culturally approved and personally acceptable self-concept. These are lost to the older person when he is retired from the vocational world to which he has belonged. In place of work, the retired worker is offered leisure which is the opposite of work and of doubtful, if not negative, cultural value. In such cultural circumstances, leisure participation cannot reduce the problem of finding a new identity and role. The lack of an occupational identity is culturally characteristic of the old, and leisure activity only supports the position of the old as non-meaningful, non-functional or, at best, superannuated. (Miller 1968: 367)

For many, reduced income is the most serious problem associated with retirement. Regardless of the existence of retirement pension schemes and of the opportunity to accumulate financial resources prior to retirement, retired persons and aged couples often seek financial aid in order to supplement their fixed incomes. Recent studies have found that:

A loss in earning power implies for a person a loss of status as a breadwinner in the family; for a man, it may mean becoming dependent on his wife. For aged couples, retirement may mean dependence on children who . . . may resent this burden of added responsibility. In the absence of sufficient personal or family resources, the aged person may have to turn to outside assistance for support, the ultimate blow to self-esteem. . . . For the aged, the drop in income is a disorganizing reality that must be faced. (United Nations, Department of Economic and Social Affairs 1975: 30)

The aged are expected to live on a reduced and fixed level of income. When substantial funds are available, the elderly are able to afford such items as health care, food costs, housing expenses, clothing, and various social activities. The aged with financial assets and resources to supplement their incomes may even enjoy extended travel without financial difficulty (Riley and Foner 1968). However, the overwhelming majority do not have substantial incomes and adequate financial resources to pay for basic essentials (Loether 1975; Shanas et al. 1968). For many, the change to financial dependency is forced by the necessity to supplement their meager incomes. In fact, the lack ". . . of financial resources is the most frequent reason that older people cite for having to rely on others—for becoming dependent." (Atchley 1972: 192) Thus, as a consequence of low income and in the absence of additional financial support, many are likely to be subjected to a deteriorating level of living. In this regard, Atchley notes that:

In summary, . . . lowered income produces critical deficiencies in level of living, particularly with regard to food and medical care. All of the basic needs—food, clothing, and shelter—tend to become more difficult to meet with increasing age. At a time in life when expenditures for recreation naturally tend to go up, the older poor are forced to reduce expenditures for recreation. . . . In addition, most older people have no other assets to fall back on. The result is a level of financial support that barely meets physical needs and leaves psychological needs almost totally neglected. (Atchley 1972: 147)

Conclusion

The aging are confronted by a complexity of biological, psychological, and social losses; many which may occur simultaneously. Losses in every aspect of later life tend to force the elderly to spend much of their time and physical and mental energies adapting to changes and to stresses associated with the processes of aging. For the majority, such losses are compounded by deficient living standards. While there is an increase in time available for leisure participation, loss of activity appears to be a predominant theme in characterizing the social experiences of the aging. What is most clear, therefore, and regrettably so, is that the separation of society and the aging is fact.

NOTES

¹ Of particular use to both gerontologists and demographers is the "dependency ratio"—a measure which summarizes the relationship between two classes of individuals, namely, ". . . the 'dependent' population and the supportive or working population. . . .

The dependent population typically has two components: the young and the old." (Cutler and Harootyan 1975: 47)

² The process of personal loss which is associated with advancing age is also categorized as a loss continuum (Pastalan 1970).

³ Bengston and Haber (1975) indicate three major sociological factors which tend to influence human aging: socioeconomic status, the nature of one's work role or work context, and ethnicity. Socioeconomic status, for example, is a significant determinant of specific life events during the course of the human life cycle. A socioeconomic class level which is high may be responsible for delaying the occurrence of certain major life cycle events.

⁴ The distinction between biological, psychological, and social forces of aging is pointed out by Birren (1968b). Biological age is useful to designate the positions of persons along the life span. At present, chronological age seems to be the best general index to measure the longevity of seemingly healthy individuals and to predict mortality. Psychological/social psychological age refers to age-related adaptive capabilities and is measured by achievement and potentiality. Psychological age is employed as a measure of the ability to modify the environment by adaptation. Social age refers to acquired social habits and statuses or roles within the existing culture or within a given social group and is useful to measure the performance of social roles. Consequently, it is meaningful to discuss chronological age as well as biological age, psychological age, and social age.

⁵ Modern industrial societies have ensured the survival of increasing numbers of persons into the later years of life. Shanas and Maddox observe that in recent decades, ". . . industrial societies . . . have committed an increasingly large proportion of their economic resources to the development and maintenance of organizations designed to control illness and to restore sick individuals to maximum functioning." (Shanas and Maddox 1976: 592)

⁶ Age-grading systems are characteristic of the religious, educational, economic, legal, and political institutions in modern society. Chronological age is defined in most societies by three major age-grades or age-strata such as children, adults, and the aged. The social age structure is fundamental to regulating relationships between members, and age-grading facilitates the employment of individual physiological and social psychological capabilities. In modern societies, where age-grade parameters are strictly and clearly defined, the aged are included in certain activities within the social system and excluded from participating in others. Retirement communities, for example, are age homogeneous and may provide the elderly residents with settings which facilitate friendships between persons of the same age and a sense of community involvement. However, structural and spatial factors play a significant part in the isolation of elderly persons and in the formation of negative attitudes about the aged at all levels of society and in all age groups. Thus, the segregation of persons by age diminishes social experiences and social exchanges between age groups and is also conducive to the formation of age stereotyping.

⁷ Age status is basic to social ranking and also serves as a basis for social role behavior. Elderly persons are ranked by age and other age categories, and they are also allotted certain age-related roles. Age status accompanies age-grading, and societal attitudes toward the elderly reflect the changing of age status which takes place as persons grow older.

⁸ Senescence is a term employed by biologists and refers to biological aging. Atchley provides a concise explanation: ". . . the aging of the human body manifests itself in . . . the deterioration of the irreplaceable organs and systems of the body. The heart, lungs, nervous system, liver, kidneys, and digestive system all show a loss of function as the organism ages. This factor is very much related to a second, the loss of the ability to withstand disease. A

strong, efficiently functioning human body has an amazing capacity to ward off disease. With advancing age, however, the body becomes less efficient and less capable of resisting disease. These factors in combination make up . . . senescence." (Atchley 1972: 48)

⁹ Recent studies on aging indicate that ". . . each age group lives and grows up during a different period, with different events and social situations. It has been demonstrated that intellectual decline is more related to illness and disease than to aging.

Intelligence is of particular importance in later life as the older person must increasingly use this ability to assess, interpret and manipulate his environment. Those older people who may have a measurable decline of cognitive functioning can nevertheless deal with their environment in non-intellectual ways. Experience and life-long routine may compensate, but to the casual observer they may appear to suggest rigidity in the life style or response patterns of the older person to his environment. In reality they may prove to be the only way such individuals can continue to function in complex environments when there are increasing losses in visual and hearing stimuli which heretofore served to give appropriate signals to the individual as to how he might respond to his environment.

A number of studies . . . indicate that older . . . subjects seem to require a longer beginning phase in relating to new information than do younger subjects. However, . . . while memory and recall seem to take longer for older people, there seems to be little difference in performance after a given task is learned.

Studies of mental functioning seem to indicate that only certain functions are directly affected by age. Numerical calculations and speed of response seem to diminish somewhat with age. Verbal functioning apparently continues to increase almost throughout the life span.

There is strong evidence that persons continue to learn and respond to new experiences until death. The older person may be slower in relating new experiences and more formal learning to his vast life experiences and may be less motivated toward success . . . than his younger counterpart. However, research has shown that the capacity to learn does not diminish with age. The fear of failure, however, may remove older persons from competitive learning situations." (United Nations 1975: 9-10)

¹⁰ The distinction between inner, or covert, responses and outer, or overt, responses is provided by Birren: "There are two broad categories that the individual makes, an inner, or covert, response and an outer, or overt, response. Inner responses consist of the ways in which we see ourselves, other people, and events; our thoughts and associations about them; and the meanings we read into them. We also respond in terms of moods. Our perceptions and motivations may lead to actions controlled in a way typical of us. Our overt actions involve other people; e.g., whether we characteristically move toward or away from others. Among other traits, whether we are friendly and interested in other persons or are suspicious and withdrawing, whether we are disposed to action or passivity, characterize our styles of responding and acting and are elements of our personality." (Birren 1964: 223-224)

11 Neugarten makes a distinction between unconscious aspects of the personality, or internal processes, and conscious aspects, or external processes, as follows: "... covert processes (those not readily available to awareness or to conscious control and which have no direct expression in overt social behavior), do not reflect attempted control of the self and of the life situation." (Neugarten 1968a: 141)

12 Biological declines tend to influence personality changes in later maturity at approximately age 70. According to Neugarten, biological maturity extends from "age 20 ... to approximately 70." (Neugarten 1968a: 142)

13 The self consists of both self-concept and self-esteem. Atchley distinguishes between the two as follows: "The interpretation of perceived feedback from within ourselves and from others defines the self. ... The self. ... is an intrapsychic system which depends in part on feedback from others but which also feeds back upon itself.

The self is comprised of both cognitive and emotional elements. The cognitive element is called the self-concept. It is basically the individual's description to himself of who he is and what he is like. The emotional element of the self is called self-esteem. It is basically how the individual feels about his self-concept in comparison with some ideal. . . . Both self-concept and self-esteem represent a syntheses of data about the self which derive from both inside and outside the individual. (Atchley 1972: 86-87)

Social expectations provide the individual with a self-conception as well as a way in which to interpret the conception other persons may have of him. The individual who is unable to maintain important roles may experience a change in self-conception. Moreover, if his self-ideal is out of line with his self-concept, he is likely to have a low self-esteem. Thus, low self-esteem seems to be the consequence of role performance that is perceived to be inadequate because the individual's self-concept does not correspond with his self-ideal.

14 Atchley distinguishes between positions and roles as follows: "Positions are categories of individuals which are collectively recognized in society. They are based on common attributes . . . or on similarities in behavior Older person is a position based on a common attribute, age. By contrast, the position computer operator is based on behavior computer operators have in common. . . .

A social role can mean any one of three things: 1) what is expected of a person in a given position, 2) what most people do in a given position, or 3) what a particular person does in a given position. . . . The first meaning is by far the most frequently used. . . .

Roles . . . are attached to positions. "What is expected of us depends in large part on the positions we occupy (everyone occupies many positions, often simultaneously). Thus, we often need not know much about an individual to . . . predict his behavior; we need only know his position. . . .

The importance of any position and role depends upon the status or prestige, the wealth, or the influence attached to the position." (Atchley 1972: 99-100)

¹⁵ See, for example, chapter II.

¹⁶ "Studies have revealed that loneliness, desolation and isolation characterize the social lives of many of the aged, particularly in developed countries. Loneliness is reported with great frequency by older women who have been surveyed in some of these countries. Desolation is described as the sense of loss that occurs with the death of the spouse. Social isolation refers to the situation in which the aged find themselves as a result of mandatory retirement policies which cut them off from work relationships; mobility of children; death of spouse, relatives and friends; and loss of membership in organizations." (United Nations, Department of Economic and Social Affairs 1975: 26)

¹⁷ See chapter II.

CHAPTER IV

AGING IN SOCIOLOGICAL THEORY

Introduction

Perhaps the most controversial theoretical issue in the sociological theory of aging is the argument between disengagement theorists and activity theorists. Both theories discuss aging in the context of human development. Both endeavor to explain the relationship which exists between the aged and society as well as the process through which this relationship develops in later life. According to the theorists, aging is a process of adaptation to the changes which take place within the person and to the changes which occur within society. Both disengagement and activity theorists claim their perspective of aging predicts life satisfaction and a high level of morale in later years. In particular, both theories deal with disengagement as a process that is characteristic of the aging, but it is in their explanations of the process that the two disagree.*

Disengagement Theory

Rudiments of the claims of the disengagement theory can be found as early as the 1940s.¹ Cumming and Henry's (1961) disengagement theory marks the first serious attempt to formulate a systematic theory of the process of aging. The theory is based on a five-year empirical investigation which took place in Kansas City, U.S.A. Working within a functionalist framework and basing their theory on the universality and inevitability of human mortality, they assume that:

aging is an inevitable mutual withdrawal or disengagement resulting in decreased interaction between the aging person and others in the social system he belongs to. The process may be initiated by the individual or by others in the situation. The aging person may withdraw more markedly from classes of people while remaining relatively close to others. His withdrawal may be accomplished from the outset by an increased preoccupation with himself; certain institutions in society may make this withdrawal easy for him. When the aging process is complete, the equilibrium which existed in middle life between the individual and his society has given way to a new equilibrium characterized by a greater distance and an altered type of relationship. (Cumming and Henry 1961: 14-15)

In the original formulation (Cumming and Henry 1961) and in the revised version (Cumming 1963) disengagement is inevitable, progressive, and irreversible. As a process, it is primarily intrinsic and secondarily responsive. Proponents of the theory claim that biological deterioration and declining physical strength increase as persons grow older and that aging can be expected to begin sometime during middle age. As an intrinsic process, therefore, disengagement is inevitably progressive and irreversibly inherent within human development; and death is the ultimate disengagement. As a responsive process, disengagement consists of psychological and social adaptations. Psychological disengagement involves increased preoccupation with the self and a complete withdrawal of emotional investment from the external world. Central to the theory is the notion that in all societies and cultures, the aging and others in the social system prepare for eventual death by participating in a gradual and mutually satisfying process of disengagement (Cumming 1963; 1964; Cumming and Henry 1961). Social disengagement consists of reduced involvement in social roles/relationships and activities as well as a change in goal structure. However, proponents of the theory presume that psychological disengagement occurs with, or precedes, social disengagement. When disengagement is complete, the relationship between the person and the environment is characterized by a socio-psychological withdrawal which has an ultimate biological basis.

According to the theory, biological deterioration and declining physical strength affect the manner in which persons grow older. Old age is a unique stage of human development that differs qualitatively from middle age. The theorists propose that the inevitability of death is the most important change in perception that occurs during the human life cycle. Psychological disengagement normally begins during middle age--that is, when persons become increasingly aware of their own mortality and voluntarily relinquish their roles and activities, alter their attitudes and the quality of their interpersonal relationships, and reduce their social needs. Persons are ready to disengage psychologically when they accept their own diminishing health (physical and mental) and the inadequacy of their knowledge and skills. Psychological

disengagement is desired by aging individuals and involves a change from active to passive mastery which is characterized by increased self-preoccupation or inward orientation. This half of the inevitable withdrawal is conducive to life satisfaction, to a constriction of the social world, and to the weakening of societal constraints. Focusing their attention on perceived constriction of the social life space in old age, Dean and Newell suggest that:

the perception of constriction seems to occur before the extensive constriction actually takes place. . . .

It is suggested that the modal middle-aged, or engaged, state is that of acting in a large life space and perceiving it as stable, while the aged, or disengaged, state is that of acting in a small life space and perceiving it as constricted. (Dean and Newell 1961: 101)

Social disengagement is another aspect of the inevitable withdrawal which takes place in later life. From the individual's experience, social disengagement involves the departure of children (loss of family role), retirement (loss of work role), widowhood, loss of kin and peers, reduced social interaction, and decreased social activities. From the perspective of society, however, social disengagement is characterized by "... a thinning out of the number of members in the social structure surrounding the individual, a diminishing of interactions with these members and a restructuring of the goals of the system." (Newell 1961: 37)

According to the theory, the death of a participating member unstabilizes the social order. It is therefore a functional necessity to classify persons with knowledge and skills that are increasingly inadequate as old, and to replace these members by persons whose knowledge and efficient skills are more useful to society and conducive to its continuity (Newell 1961). The withdrawal of roles and activities from the aging is facilitated by the institutionalization of the process of disengagement. Society offers the aging both permission to withdraw and freedom from social constraints. Social disengagement enables society to gradually transfer social controls and resources from older to younger members and to expect normative behavior from the disengaging aging.

In formulating the theory of disengagement, the proponents use measures of social involvement/engagement such as role count (an inventory of the number of roles/relationships in which a person is currently active/involved),

interaction index (a measurement of the density of interactions based on a subjective rating of the amount of each day a person spends in normatively governed interaction with other people), and social life space (an estimation of the number of separate contacts a person has with other people within a monthly period). Their findings show that the number and/or variety of roles increasingly (with age) decrease; and the major roles losses are family and work roles. According to the investigators, the "... shrinkage in the number of roles played ... squares with ... retirement, widowhood, and withdrawal from voluntary organizations." (Newell 1961: 39) The findings also show that the density of interactions steadily decreases with age. Using certain categories of people (e.g., spouse, household relatives, friends, neighbors, fellow workers, special people), the investigators find that the unemployed increasingly (with age) see fewer kinds of people but continue to see specific people such as other shoppers, travellers, and so on. They predict from the disengagement theory that roles become fewer, freedom from social norms controlling daily interaction increases, and constriction of the social life space increases as persons grow older. The investigators conclude that:

It is interesting that for all three measures of social involvement ... decrease in involvement is abrupt The aging person sees fewer kinds of people, less often, and for decreasing periods of time as he grows older. (Newell 1961: 50-51)

Activity Theory

The activity theory of aging, which emerged in the late 1940s and early 1950s, was largely descriptive until the competing theory of disengagement made its appearance in the early 1960s.² Early proponents of the theory claimed that persons with high levels of activity in various roles, or in a single role, would be better adapted to aging and more satisfied with life than those with low levels of activity (Havighurst and Albrecht 1953). According to the theory, aging consists of interdependent biological, psychological, and social factors; and activity in later life is mainly reduced by social aspects. Activity theorists contend that levels of social activity established in middle years may persist into old age and that aging involves either the maintenance of middle age roles and activities or the replacement of lost roles and activities (Havighurst 1960; 1963; Maddox

1968). The maintenance of interpersonal relationships or activities and the replacement of lost roles or activities are conducive to successful adaptation and high levels of life satisfaction in later years.

Havighurst (1972) attempts to show that social role participation is conducive to successful adaptation in later life. He finds that the majority of people who compensate for the loss of active roles of middle age are more able to adapt to aging than those who do not compensate for losses. He claims: "... especially in urban societies, older people are thrown more and more upon the roles beyond work and family for satisfaction. If they fill these roles well, they are likely to be happy and well-adjusted people." (Havighurst 1960: 301) Havighurst indicates that disengagement from active roles leaves open to the elderly the choice to engage or re-engage in new social roles (e.g., citizen, friend, grandparent, club or association member, and so on). He says:

Some people—a minority—accept disengagement from active roles of middle age with pleasure and "retire gracefully." Others—the majority—seek to compensate for enforced disengagement by doing other things. (Havighurst 1972: 107-108)

Havighurst points out that some roles may be reduced or relinquished in later years while others may be intensified, or cultivated with hard work. To change roles and re-engage requires what he calls "... a new and flexible program of role-reorganization." (Havighurst 1972: 112) Havighurst suggests the following pattern for adapting social roles in a flexible manner:

- (1) Develop and expand the family roles—especially that of grandparent, and that of home-maker. Men ... may spend more time with gardening and other homemaking activities.
- (2) Develop and expand roles of community activity—church member, club member, citizen, friend, neighbor.
- (3) Cultivate a new and active hobby or leisure activity ... such as art, foreign travel, stamp and coin collecting, or handicrafts.
- (4) A general ... slowdown of activity ... to be happy and busy over a period of several years of reducing physical vigor. (Havighurst 1972: 113)

According to the activity theory, middle age needs and problems are essentially the same in old age, and disengagement in later life may reflect a life style which "antidates" old age (Maddox 1968). Proponents argue that disengagement is neither a voluntary response nor an intrinsic and inevitable process. Disengagement, which is usually characteristic of the very old and ill,

is forced upon persons as a consequence of physical changes and major health problems. Disengagement is also a consequence of societal withdrawal which discourages the "old" from maintaining or replacing certain activities and roles (Havighurst 1960; 1963; Maddox 1968). Supporters of the theory emphasize the importance of the external environment in determining disengagement. They argue that social disengagement either precedes or occurs in the absence of psychological disengagement. Psychological disengagement may occur, but it is in response to social forces. According to the theory, therefore, continued involvement with the external world is important to life satisfaction in later years. In this regard, Maddox observes that:

With few exceptions, research ... has consistently supported the hypothesis that, among the elderly, maintenance of contact with the social environment is a condition of maintaining a sense of life satisfaction. (Maddox 1968: 181)

Activity theorists suggest that reduced activity--which is characteristic of old age and is forced upon the aging by societal withdrawal--is neither desired nor accepted by most aging persons. Psychological disengagement is a consequence of external influences, and environmental/extraneous disturbances (which increase with age) are more responsible for social disengagement than intrinsic biological changes. Contrary to disengagement theory, therefore, disengagement in activity theory refers primarily to a social process imposed upon the aging and determined by environmental disturbances and extraneous circumstances (such as loss of health status, loss of spouse, loss of work role, and so on).

Related Studies

A review of the literature shows that many scientific investigators of aging and social gerontologists refute the claims of disengagement theory (Busse 1969; Havighurst, Neugarten, and Tobin 1968; Hochschild 1975; Maddox and Douglass 1976; Rose 1968a; Videbeck and Knox 1965). It can also be noted that empirical testing of parts of the theory suggests the need for modified theory (Bell 1976; Neugarten 1968a; Riley and Foner 1968). Close inspection of previous research shows that empirical findings in support of disengagement theory are largely inconclusive whereas the predictions of activity theory are validated in

different contexts (see Havighurst 1960; Riley and Foner 1968). Contrary to the claims of the theory of disengagement, the most consistent findings are those which show a positive association between social activity and morale/life satisfaction (Kutner et al. 1956; Lemon, Bengston, and Peterson 1976; Maddox 1968). Considerable evidence, then, provides empirical support for the activity theory and suggests that disengagement is not as desirable for the aging as the theory of disengagement would lead one to believe.

One cannot ignore the fact that disengagement theory does not place enough emphasis on society's role in determining societal opportunities that would influence psychological withdrawal and structure the social circumstances of the aging. According to the activity theory, social circumstances have a major part to play in the initiation of disengagement and in the progress of the processes of disengagement (social and psychological). An important neglect of disengagement theory, therefore, is that disengagement is imposed on the aging and that social factors have a greater influence than psychological factors on reducing activity, morale/life satisfaction, and the number of roles played in later life. Two empirical studies lend support to this criticism.

The social aspect of the problem has been studied by Margot Tallmer and Bernard Kutner (1976) who set out to test a proposition by Cumming and Henry, namely, social withdrawal is a normal consequence of aging. Their concern was to evaluate the impact of stress-inducing environmental and circumstantial disturbances in producing social disengagement. Tallmer and Kutner employed the same measures of social engagement utilized by Cumming and Henry (i.e., role count, interaction index, social life space). They also selected illness, widowhood, and retirement as stress factors or stress situations.

Tallmer and Kutner proposed that social disengagement is a consequence of a concomitant of physical or social stresses (i.e., correlates of old age) which force the aging to withdraw from activity. The results of their study supported their hypothesis. They found that most of the association between age and engagement was due to the association between age and stress. Tallmer and Kutner interpreted their findings as supporting the idea that:

the social withdrawal suggested by Cumming and Henry as being a normal consequence of aging obscures the fact that certain concomitant stresses associated with aging could produce the effects termed disengagement. . . . Using the technique of partial correlation, there appears to be evidence for our hypothesis that disengagement among the aged can be predicted to occur as a concomitant of physical or social stresses which profoundly affect the manner in which the life pattern of the person is redirected. Because they have ignored the definitive effect of such factors on disengagement, Cumming and Henry were led to the conclusion that advancing age was a sufficient explanation of the facts obtained in their study. It is not age which produces disengagement in our investigation but the impact of physical and social stress which may be expected to increase with age. (Tallmer and Kutner 1976: 48-49)

Implicit in these conclusions is the idea that disengagement is primarily an external, or extrinsic, process rather than a process which is ultimately internal or intrinsic—that is, contrary to Cumming and Henry's proposal, social withdrawal is a consequence of social factors rather than psychological factors. Thus, environmental and circumstantial disturbances (e.g., retirement, widowhood, lack of social opportunities, and so on) have a greater influence on constriction in later life (i.e., decreasing social engagement) than personal decisions or desires.

The psychological aspect of the problem has been studied by Raymond C. Kuhlen (1968) who set out to test a major hypothesis implied by Cumming and Henry, namely, in later life persons are motivated to disengagement, and the disengaged state is desired by the aging. He proposed that the disengaged state is not something desired for itself. People are disengaged psychologically because they are forced to withdraw from central roles due to societal rejection or because there is no other way to avoid the frustration and stress associated with the inability to participate in significant roles. Utilizing the data from a report by one of the supporters of the disengagement theory,³ Kuhlen found substantial evidence for his hypothesis, namely, persons increasingly (with age) are unhappy because they are not actively engaged in the outside world. He reports:

The basic data in this study involved responses to questions "What are the best things about being the age you are now?" and "What are the worst things. . .?" . . . "Output: responses emphasize active engagement in the social environment, with a focus on achievement, responsibility, power and influence, utility, knowledge, experience." . . . "Frustrated output: The obverse of the above. Responses emphasize loss of ability to do, to achieve,

to assume responsibility; loss of respect from others. This category includes responses about physical weakening, if this weakening is seen primarily as interfering with 'doing.'" It is significant that in response to the question concerning "best things" the "output" responses decline from 37 percent in the fifties to 3 percent in the eighties. This decline . . . does not indicate purposeful disengagement. Indeed, that people increasingly (with age) resent the loss of opportunity to achieve and assume responsibility is implied in the increasing frequency of responses to the "worst things" question The percentages for four successive age groups (50's, 60's, 70's, 80's) were 21, 33, 53, and 48. In the two oldest age groups . . . this response was the most frequent category suggesting very real unhappiness at their inability to remain "engaged." (Kuhlen 1968: 123-124)

Kuhlen interpreted his findings as supporting the idea that the data bearing on the disengagement hypothesis (which suggest disengagement is desired for its own sake) are inconsistent. He also suggests anxiety/stress (i.e., unhappiness, negative self-concept, loss of self-confidence) and vulnerability to threat tend to increase with advancing age and that this circumstance constitutes an important source of motivation to disengagement. Implicit in these conclusions is the idea that the majority of aging persons desire to remain engaged and that external forces create a situation which makes the maintenance and the re-establishment of social engagement difficult for them--that is, an elderly person is unlikely to be disengaged psychologically when there is compliance between the personal desire to remain engaged and the situational opportunities for engagement. Thus, formalized pressure for discontinuing active engagement (i.e., the external environment) can be a major negative source of motivation in later life. Kuhlen emphasizes:

It is a . . . conclusion from psychological research . . . that even relatively satiated human desires can be aroused given the proper environmental stimulation, that motives may be weakened to the point of near disappearance if long periods of years are encountered with little opportunity for gratification of reinforcement, and that new motivational tendencies may appear if new types of stimulation or expectation (and reinforcement) are encountered. A society or culture decrees in many subtle ways, and in some not so subtle, that certain types of stimulation will be brought to bear on certain age groups and largely withheld from those of other ages. . . .

There seems to be general agreement that . . . society tends to idealize youth, with the result that older individuals not only are frustrated somewhat with respect to status needs, but are very likely to encounter reduced opportunities for gratification of other rather important needs. (Kuhlen 1968: 115, 117)

The findings of these studies suggest that disengagement is initiated less by the personal desires of the elderly than it is by the social decisions which often exclude the aging from the ongoing social order. Declining health, loss of spouse, loss of work role, and reduced income are stressful experiences for the aging primarily because the social environment discourages the widowed, the retired, and particularly those with low income and declining physical energy from active engagement. For many aging persons, therefore, disengagement may actually mean the inability to re-engage in social activity.

Conclusion

Despite the claims of the theory of disengagement, most empirical findings show (1) that the majority of aging persons strive to remain engaged; (2) that continued social involvement is important in later life, especially for morale/life satisfaction; (3) that disengagement is not inevitable until very old age; and (4) that those who are disengaged earlier are critically affected by environmental factors because there is very little societal support to ameliorate certain losses of aging. These findings suggest that the social world of elderly persons constricts as a consequence of a larger complex environment that is not tailored to meet their needs. The importance placed by activity theorists on the role played by external factors in restricting the range and the variety of contacts with the larger society reflects the concern by gerontological theorists, namely, physical, mental, and social support systems should be built into the social environment to provide the elderly who are affected by the pressures of a taxing environmental context with (1) an external world that is suited to their levels of competence and (2) better control and manipulation over their surroundings (Lawton, Newcomer, and Byerts 1976; Regnier 1975). That the activity theory has important implications for the aging today and is especially applicable to North American societies is emphasized by the following observations:

one thing is quite clear: very widely, old age means a loss of status in contemporary society. Among most men and many women, this loss of status is the direct result of retirement. Among housewives it is due to a loss of functions after their children have grown up and left the home. . . . This loss of status becomes particularly painful because it is generally

coupled with declining income and declining health. (Berger and Berger 1975: 356-357)

In sum, societal contributions for transfer to widowhood, as for transfer to retirement, appear generally inadequate While negative pressures foster withdrawal from the previous role, there are few positive incentives for involvement in the new one. (Riley et al. 1969: 969)

. . . only 1 million of the 20 million 65+ Americans are institutionalized, but another million are housebound and nearly 5 million live alone.

Many of these are taking active part in community life, but many more are "left out,"

"This is isolation created by the attitudes of society which ignores the value of skills and experience of its older citizens," "It is a society which finds it easier to shut out millions of individuals than to make minor adjustments or develop specialized services and facilities to make possible their involvement and participation in the life of this Nation." (United States, Department Health, Education, and Welfare, Administration on Aging 1970a: 13)

rejection by our society . . . is . . . one of the most powerful factors in making many of the elderly feel like unwanted hangers-on. (Nouwen and Gaffney 1976: 35)

Options are not available to older persons. Without money the only choice available to the "senior citizen" is marginal existence or death. . . .

there is in our society, pervasive discrimination against low-income people--discrimination which consciously or unconsciously, permeates the policies of most of our major institutions. Through this discrimination the poor are excluded from the broader social and economic participation which is open to others. It is the exclusion of low-income people, when this exclusion is not voluntary on their part, which we define as the essence of poverty

The older worker, and certainly the . . . housewife, is forced to rely on the federal social security structure which is designed to . . . provide mere subsistence. Under such circumstances can it be truly said that society has done anything other than lead its older citizens to the dead end of poverty and loneliness? . . .

Society's destruction of older people takes on both economic and social tones. Having removed from or failed to integrated older people into the life process, society then denies them the means to live decently. What society does provide is the means to distinguish between levels of poverty. For the older person who is part of the work force . . . there is . . . social insurance in the form of the Canada Pension Plan, combined with Old Age Security. For the older person, such as the housewife, who is not part of the work force, there is welfare in the form of Guaranteed Income Supplement. . . .

The old have been forced from the mainstream of economic life . . . and assigned to the public dole. The old poor have attained their unfortunate state in no small measure because of the indifference of society and not because of themselves. . . .

We have tried to identify some of the root causes for society's role in making old age a misery instead of a joy. Removal from the work force is one of the causes. The failure of society to maintain the old, so removed, in decent conditions is another. (Baum 1976: 1, 2-3, 4, 228, 230-231, 232)

NOTES

¹ See T. Parsons, "Age and Sex in the Social Structure of the United States," in American Sociological Review, 7 (1942), 604-616. This source is pointed out by Clark Tibbitts, "Origin, Scope, and Fields of Social Gerontology," in Handbook of Social Gerontology: Societal Aspects of Aging, ed. Clark Tibbitts (Chicago, Illinois, U.S.A.: University of Chicago Press, 1960), p. 16.

² See Ruth S. Cavan, E. W. Burgess, R. J. Havighurst, and H. Goldhammer, Personal Adjustment in Old Age (Chicago, Illinois, U.S.A.: Science Research Associates, 1949). This source is pointed out by Clark Tibbitts, "Origin, Scope, and Fields of Social Gerontology," *op. cit.*, p. 6.

³ Kühlen utilized data from a report by Lois R. Dean, "Aging and the Decline of Instrumentality," in Journal of Gerontology, 15 (1960), 440-446. Dean interprets her findings to show that people increasingly (with age) desire to disengage and are happy about/satisfied with the loss of opportunities to do, to achieve, and to assume responsibility in society.

CHAPTER V

MOBILITY OF THE AGING

Introduction

Activity limitation in the aging population ranges from the chronologically-old with minimal or no mobility restrictions to those severely immobilized by a concomitant of physical, mental, socioeconomic, and other social factors. The elderly have a need to maintain mobility; and this need is reflected in specific travel purposes such as medical appointments (e.g., to clinics, treatment centers, and hospitals), shopping, senior citizen centers, social service centers, and so on. Many are incapable of reaching the activities they desire and the resources they may need. In general, the urban aged tend to reside in community areas that are poorly served by public transportation (United States Senate, Special Committee on Aging 1974). Some, moreover, are more isolated from available transportation than others (United States, Department of Health, Education, and Welfare, Administration on Aging 1970a; United States, House of Representatives, Select Committee on Aging 1976b). Thus, the mobility problem of the aging is complex and multifaceted, and would appear to be increased by the character of their transportation problems:

The elderly, like everyone in society, must depend upon the ability to travel for acquiring the basic necessities of food, clothing, shelter as well as employment and medical care. The ability to travel is also necessary for their participation in spiritual, cultural, recreational, and other social activities. To the extent the aged are denied transportation services, they are denied full participation in meaningful community life. (White House Conference on Aging 1971: 665)

Definition

Mobility is the capability, the capacity, and the social opportunity to move within the external world by vehicular and non-vehicular (walking) modes of travel (Cantilli and Shmelzer 1970). Mobility consists of physical, psychological, and social aspects which, although distinctly different, often complement each other. A number of elderly persons are severely impeded from gaining access to urban activities as a consequence of such facets of mobility.

The mobility of the aged is often constrained by chronic illness, disease, and disability (Carp 1970a; Libow 1970; United States, House of Representatives, Select Committee on Aging 1976b).¹ Some factors affecting mobility are as follows: reduced physical energy and agility; visual and auditory difficulties (ranging from slight loss of vision and use of hearing aids to blindness and extreme hearing loss); decreases in speed of reaction, in walking speed, and in speed of performance of other motor tasks; and reduced ability to co-ordinate properly as well as to respond correctly to complex situations (Birren 1964; 1968a; Jones 1959; United States, House of Representatives, Select Committee on Aging 1976a; Welford 1959).² During the course of growing older, moreover, persons accumulate a repertory of cognitive maps and sensory-motor capabilities that "... may interfere with, rather than facilitate, the new skills which must be acquired to be mobile." (Carp 1970a: 23) Clearly, then, there is a large proportion of non-institutionalized elderly persons for whom restricted mobility means the inability to utilize community facilities and services, the unfulfillment of needs, and the inability to maintain social activity.

Specific physical problems (such as declining energy and endurance, visual and auditory deficits, and reduced walking speed and distance) can be major barriers to the mobility of the aged. Many elderly persons are unable to manage adequately when outdoors. Without additional support (such as a cane or the assistance of another) they are restricted from the outside world and, as a result, housebound (Shanas et al. 1968; United States, Department of Health, Education, and Welfare, Administration on Aging 1970a). The aged are also restricted to making short, rather than long, trips by vehicular transportation. For some, the short trip may be too difficult to complete. Even short trips on foot (e.g., visiting a neighbor across the street or nearby, shopping at a local store) can be infrequent if walking is a physical problem (Carp 1971b). Thus, the mobility of the aging can decrease as a consequence of decreasing physical capability, and as the spatial area for travel increases (Carp 1970a; Golant 1972).

Persons normally decide to travel because they desire to reach various destinations where they can fulfill their material and/or social needs. Some are able to exercise personal choice between satisfying needs by leaving the

residence and fulfilling needs without leaving home--by telephone, mail, or home delivery; by family members or friends; by television, newspaper, or radio (Hammel 1970). Most elderly persons, however, must leave the place of residence for medical appointments, food shopping at reasonable prices, and recreational or social activities. For the aged, travel by vehicular or non-vehicular (walking) modes is determined not only by their physical capabilities and the spatial area that separates them from their needs, but also by their personal decisions to spend energy (physical and mental), time, and, perhaps, money to traverse the spatial area between the point of departure and the location of the need. Thus, the ability to satisfy needs is also influenced by motivating factors.

Psychological barriers can play a major part in reducing mobility. The aged are often well-aware of the decrements of aging--specifically, of an increasing loss of physical energy, a diminishing ability to adapt to changes within the self and within the external environment, and a reduction in the social life space as well as in the quality of the relationship between the self and the external world. For many, declining strength, visual or auditory problems, and reduced walking speed may decrease the certitude of adequate functioning (Libow 1970). The consequent loss of certitude, moreover, may reduce the desire to leave the place of residence or to utilize facilities and services (Carp 1970a). In addition, loss of certainty reflects an external environment which is inconvenient, incomprehensible, unpredictable, and distressing for aged persons (Libow 1970; United States, House of Representatives, Select Committee on Aging 1976b). Many elderly persons are unable to cope with complexity and change and are largely discouraged from going outdoors ". . . by a succession of obstacle that would not inhibit the young, e.g. high bus steps, the need to cross busy streets to catch a bus, the fast timing of traffic lights, high curbs, and inadequate labelling of buildings." (Birren 1976: 11) Thus, the mobility of the aging can be minimized by an external world which neither motivates them to gain confidence in their capabilities nor invites them to leave the place of residence.

Mobility as an opportunity to move within the external world can be severely impeded by the lack of financial resources and by the absence of

societal facilities (United States, House of Representatives, Select Committee on Aging 1976a). To provide for their vital needs, the elderly are likely to require access to a variety of services, resources, and activities that are situated within various communities of the larger metropolitan area. The extent to which they use transportation facilities to reach their destinations determines the various kinds of social encounters and life experiences they may have. While it is very likely that use of certain types of facilities declines with age, it is also likely that a decrease in the use of a particular facility is affected by intervening factors such as the need for the facility, the cost to use the facility, and the accessibility and flexibility of the facility.

Transportation is a major means of travel for most city dwellers; and it connects them with a large part of the external world (Cantilli and Shmelzer 1970). Vehicular modes of transportation may enable elderly persons to increase the size of their social world and to improve the quality of their relationship with the physical and social environment. Consequently, transportation is a vital need of the aging and a major feature of their mobility problem.³

Each vehicular mode of travel has inherent obstacles that affect the mobility of the aged. Those unable either to perform the required travel functions or to endure specific travel operations are unlikely to use certain modes of transportation. Those capable of travelling, however, may be impeded from completing trips due to either the lack of capacity to travel (e.g., unpredictable changes in urban travel procedures, the autobus or the Metro is filled to capacity, and so on), or the lack of opportunity to travel (e.g., a private automobile is non-available, mass transit routes and time schedules are designed to meet the needs of business and industry, and so on). Thus, mobility can be affected when the capacity to travel is lacking and when the opportunity to travel is not conveniently available, even though some may have the capability to use transportation (Carp 1970a; Hammel 1970).

Limited finances can be a major travel barrier for the aged. Research suggests that persons at the age of retirement usually have approximately less than one half the median income of younger consumers and that the total yearly income of an estimated 25 percent is below or at the level of poverty (Brotman

1970).⁴ Many elderly persons are barely able to afford the expense of furniture and clothing and tend to spend a small portion of their money on transportation and social activity. The fixed incomes of aged persons can be a prime deterrent to their mobility. For example, with no alternative other than commercial and public transportation,⁵ many may be restricted to using the autobus because they cannot afford the cost of taxi services. In order to complete a trip by autobus an elderly person must be able to locate the bus stop; await the arrival of the vehicle; alight the vehicle; deposit the "exact fare"; either maintain balance while negotiating for a seat or grasp a hand bar until a seat is available; and avoid pushing, stumbling, and disturbing other passengers while managing to exit at the proper destination (ABT Associates, Incorporated 1969; Carp 1970b; United States, House of Representatives, Select Committee on Aging 1976a; 1976b; United States Senate, Special Committee on Aging 1970b). Those unable to perform these specific functions may decide not to travel by autobus. As a consequence their needs may remain unfulfilled. Thus, travel functions, the cost of items, and travel time (which can involve waiting for an autobus and enduring long trips) are additional deterrents to mobility for the population segment on fixed and low incomes.

The mobility of the aging, therefore, can be constrained by transportation which is neither accessible nor flexible. To be useful to the aged, transportation must be easy-to-reach, convenient, and comfortable. By its accessibility and flexibility, vehicular transportation can serve as an important physical connection between the elderly and their social world. The need for such a facility makes the accessibility more important for social encounters or life experiences and for fulfillment of basic tasks or desired activities. If the elderly are to be motivated to leave the place of residence, to interact with the general public, to attend medical appointments, to complete shopping trips, and to participate in recreational and social activities, then, the opportunity to reach needs and to meet with others ought to be accessible to them:

... the satisfaction of basic needs and desires, access to existing services, and participation in the society at large for many of the elderly are suffering because of their inability to cope adequately with the mobility demands being placed upon them. In greater numbers than any other single social group, they are bearing the burden of such demands in the form of reductions in physical well-being and opportunity for social contributions.

...senior citizens...must not be shut off from the mainstream of activity. These individuals should be assured of reasonable access to their doctors, shopping areas, social events, and friends. (United States, House of Representatives, Select Committee on Aging 1976a: 10)

Conclusion

The elderly participate very little in society in relation to most population groups. Urban development and an increasing density of the city are associated with the creation of complex transportation systems; however, advanced technology affects the mobility of persons with chronic illnesses; respiratory difficulties; ambulation problems; and perceptual, sensory, and psychomotor deficits. An over-whelming number of aged persons do not benefit from the larger society and are unable to utilize specific facilities due to inadequate incomes or financial resources and due to the absence of opportunities to interact with others. Most of the income of the aging is spent primarily on food, health care, household maintenance, and only secondarily on transportation. Moreover, many elderly are socially isolated as a consequence of the lack of social opportunities or of limited access to the few opportunities which may be available for them.

Society ought to encourage the aged to engage by providing them with essential resources and a low-cost, facilitating means of reaching various destinations. Modified vehicular designs and transportation programs for the aging would improve their opportunities for mobility and should enable an increasing number of aged persons to manage in the community. Therefore, the availability of appropriate transportation can allow elderly persons to increase their mobility and, at the same time, to overcome some of their major barriers to the outside world.

NOTES

¹ Mobility is restricted, for example, by vascular disease of the brain. Cardiovascular disease, however, does not necessarily constrain mobility. Libow explains that: "Cardiovascular disease affects a high percentage of the elderly and accounts for approximately 50 percent of the deaths among them ...; however this does not necessarily put significant limits on their ability to get around. Medications often restore the heart function, either partially or fully." (Libow 1970: 15)

² Evidence shows that as persons grow older they are generally more inclined to experience loss of physical strength and agility, in addition to visual and auditory deficits (Birren 1959; 1964; Libow 1970). Slow performances among the aged are caused primarily by sensory-motor changes (Birren 1964). Where speed is necessary, decreases in sensory-motor capabilities affect body balance, task performance, and the maintenance of physical strength and agility (Welford 1959). Of equal importance is the reduced ability to respond to external events as a consequence of perceptual-motor changes (Birren 1959; 1964).

³ "Mobility is an end, transportation one means to that end. Mobility implies the exercise of personal judgment and capacity for movement, transportation implies a means of movement." (Cantilli and Shmelzer 1970: 1)

⁴ See, for example, chapter III.

⁵ There are two basic types of transportation services available to the general public; both are used frequently, and each has a unique fare system. Travel cost by commercial vehicle (such as the taxi) is based on distance. Irrespective of direction, the cost of a single trip by commercial transportation is per-mile. Travel cost by public or mass transportation (such as the autobus, the Metro/subway) is based on direction or route. Irrespective of distance, the cost by public transportation is fixed per one-way trip.

CHAPTER VI

TRANSPORTATION AND THE AGING

Introduction

As cities continue to grow and modern technology advances, mobility in the outside world by means of complex and high speed systems of transportation increases in importance. The private automobile, commercial transportation services, and public (mass) transportation are three major modes of travel which people may employ in order to reach different locations in the urban environment.¹ The private automobile, the principal form of transportation, has significant implications for personal mobility and is more available for physically, mentally, and financially self-sufficient persons than it is for those lacking the necessary driver skills and/or unable to afford and maintain a personal vehicle (Carp 1971a).² Consequently, a small proportion of elderly persons own a private automobile (United States, House of Representatives, Select Committee on Aging 1976a).

Many aged persons are unable to afford the cost of taxi services on a weekly or daily basis (Carp 1970b). In addition, those who must depend on public transportation often experience difficulty in using the system. For instance, planners tend to neglect the travel demands of the aged. As a result, public transportation is oriented to work-related routes and schedules whereas the travel needs of elderly persons are poorly served. In this regard, Auerbach and Gerber note that:

Most transportation planning is based on demographic data that emphasize household and employment location.... Indeed, the data is often inadequate to determine the travel needs of even the most active segments of the population, let alone minority groups such as the elderly or disabled. (Auerbach and Gerber 1976: 66)

An overwhelming majority of elderly persons, therefore, are faced with a transportation problem which prevents them from gaining access to the urban environment and which often involves, for example, cost, quality of service, vehicular design, routes, and schedules (American Academy of Arts and Science

1968; Carp 1970a; 1970b; United States, House of Representatives, Select Committee on Aging 1976a; 1976b; United States Senate, Special Committee on Aging 1970a; 1970b; 1971; 1974; White House Conference on Aging 1971). In fact, the recent developments of special transportation programs and reduced-fare for senior citizens not only suggest that mass transit is a physical and financial burden for the aged but also clearly indicate that an increasing number of elderly persons do not have sufficient vehicular mobility to fulfill their needs and wants.

Vehicular Transportation

Vehicular transportation plays a major role in determining the boundaries of a series of social settings occupied by the elderly during the course of daily living. It is a major resource which circumscribes other activities and facilitates social integration. The prime significance of the role of transportation is the dependence of many other activities on transportation services (Cantilli and Shmelzer 1970). Vehicular transportation, then, can be essential for the fulfillment of societal objectives.

Transportation assists with the physical task of reaching needs and wants. If appropriate, it can place minimal demands on sensory and perceptual processes. It can also increase the importance of the residential location and enable the aged to receive the benefits of local health services, shopping centers, recreational areas, and other activities that might allow them to increase their mobility. Carp, for example, observes that: "Transportation is the mediator between the person and much of his environment. It determines whether the community is a useless facade or a dynamic social system." (Carp 1970a: 25)

Transportation is an important need in later life. It enables the elderly to have the vehicular mobility they require in order to gain access to the places they want to reach in a convenient way. In addition to facilitating societal transaction, it is, itself, a social activity. Transportation, then, can enrich the lives of elderly persons by allowing them the opportunity for independent living and can provide them with the social encounters that may be necessary for the maintenance of their social world.

Transportation as a Problem to the Aging

The transportation problem of the elderly may be viewed as follows: (1) barriers which aging individuals experience or which generally limit the elderly users of vehicular transportation and (2) barriers or constraints associated with the facilities they may utilize for travel purposes. The following will deal with: (a) transportation barriers that are unique to the aging and (b) specific features of vehicular transportation that are inappropriate for the aged.

Factors Limiting the Elderly Users

Limitations which confront the elderly users of vehicular transportation are as follows: (1) the physical inability to negotiate private and public transportation, (2) loss of self-confidence and lack of certainty when outdoors, (3) the inadequacy of a low, fixed income, and (4) a basic orientation to the private automobile.

The ability to adapt to changes in the outside world is reduced with advancing age by diminishing physical strength and agility, sensory and perceptual changes, and slowness of reaction time.³ As a consequence, few elderly persons are licensed to drive (Libow 1970),⁴ and many are unable to learn new transportation skills (Carp 1970a). Cardiac and cerebral diseases, poor vision, and loss of hearing, for example, increase the driving risk for aged drivers. Turning, changing lanes, passing, intersections, traffic flows, rush-hour driving, night or winter driving, and driving on highways or speedways are some of the major driving aspects that may constrain the elderly driver (Cantilli and Shmelzer 1970; Planek, Condon, and Fowler 1968). The aged are also disadvantaged by licensing restrictions (e.g., compulsory daylight driving, mandatory use of hearing aid, or other medical and non-medical restrictions). Failure to complete periodic examinations at the license bureau may cancel their rights to drive. The elderly, moreover, have a number of problems in using mass transit systems (autobus and Metro) and in transferring from one to the other. Many are unable to endure the long waiting periods and time schedules, the rush-hour crowding, and the acceleration and deceleration associated with public transportation. Studies have found that travel by autobus, for example, "... was

not only tiring and uncomfortable, but also made it difficult for them to keep their footing" (Carp 1970b: 85) Thus, as a consequence of inadequate skills, use of vehicular transportation can be restricted for many elderly persons.

The aged often have difficulty in comprehending traffic signals and complex travel procedures. The experience of misunderstanding, moreover, may lead to a fear of negotiating high speed and busy traffic flows. Many lose confidence in their abilities to perform adequately when outdoors. As a result, they may elect either to remain at home or to limit the frequency and duration of time spent outside. Thus, uncertainty when outdoors can be distressing to the aged and detrimental to their use of vehicular transportation. Accordingly, Gelwicks notes that:

For, those who do not see or hear well, or respond rapidly, minor inconveniences such as illegible graphics, inaudible words and impatient direction-givers can become serious deterrents to mobility. . . . There is reasonable evidence to lead one to the conclusion that . . . uncertainty is a cause of anxiety and stress among the aged. (Gelwicks 1970: 21)

The number of transportation alternatives is also reduced due to a sudden drop in income which occurs either after retirement or as the result of other changes which emerge in later life (Rosow 1967). Many are unable to maintain a private vehicle and to utilize taxi services due to their financial circumstances. The aged also have difficulty affording public transportation and can be inconvenienced by the "exact fare" policy (Carp 1970b).

Society is largely oriented to the private automobile; however, personal use of the private vehicle declines in later life and in association with a reduced sense of independence. A large proportion of elderly persons, moreover, have never taken the autobus. Those who take the bus (an estimated 20 percent) use it rather infrequently (weekly or less) either to visit the doctor or to shop for food (Carp 1970b). Contributing to this problem are fears associated with crowds and heavy traffic; apprehensions about long routes and rough surfaces; and the absence of benches, resting areas, and shelter from weather elements. As a consequence of living in an automobile-oriented environment, therefore, elderly ex-drivers and ex-automobile passengers may have serious difficulties in adapting to mass transit as an alternative mode of transportation. Moreover,

they may be highly motivated to depend on their families for rides which are barely sufficient to meet their needs (Carp 1971a).

Transportation Barriers or Constraints

The major barriers or constraints which are associated with the facilities the aged may utilize for travel purposes are as follows: (1) the attributes of accessible transportation and (2) the non-availability of appropriate transportation.

The large majority of elderly persons are non-drivers, and a significant proportion among them have difficulty in gaining access to public transportation (ABT Associates, Incorporated 1968; 1969; Cantilli and Shmelzer 1970; United States, House of Representatives, Select Committee on Aging 1976a; 1976b; United States Senate, Special Committee on Aging 1970a; 1970b; 1974; White House Conference on Aging 1971). Use of mass transit systems is characterized by the need for steady movement and rapid response as well as by the need to transfer from vehicle to vehicle. Considerable evidence shows that most elderly bus passengers are constrained by travel time, inflexible routes, fixed schedules, and unmodified transportation services. Their daily trip activities are hampered, for example, by doors that close suddenly, the rapid start and acceleration of the vehicle, insufficient seating or standing area, deceleration, and abrupt stops of the vehicle (Cantilli and Shmelzer 1970). Many limitations are also architectural. The aged are discouraged, for instance, by high steps, inadequate or complex information signs, escalators, stairways, and long walks to and from the train platform (Metro). Moreover, benches are rarely present at most bus stops, and where "... a bench is provided, it is usually ... placed so close to the curb that unpleasant ... sensations are produced when the bus does pull up." (Gelwicks 1970: 22) Living at a considerable distance from the bus stop can also reduce access to the autobus (Carp 1970b). For the elderly passenger, therefore, public transportation is non-accessible and inflexible, and, as a consequence, "... the "captive" user of public transit is placed at a disadvantage." (Golant 1972: 168)

The non-availability of transportation in later life is reflected in the rapid changes which take place in society, in the unfavorable attitudes toward

old age and aging, and in the income levels of elderly persons. Mass transportation systems are designed to meet the needs of business and industry. In addition, vehicular trips by public transportation to areas that are peripheral to those of business and industry are required by a relatively small segment of the population. As a consequence, these peripheral areas are poorly served by mass transportation. The elderly, however, normally require public transit during off-peak hours, and most of their destinations are usually located in the peripheral areas.⁵ Many in need of medical services, social or recreational activities, and religious services often find that they cannot fulfill these needs due to an absence of transportation (Carp 1966). The non-availability of suitable transportation, then, can be a major source of inactivity and of low levels of life satisfaction in later life (Carp 1970a; Cutler 1976). It can be, moreover, a prime cause of increasing confinement to the home. Focusing specifically on the non-availability of appropriate transportation, Carp observes that:

Lack of appropriate transportation constricts the life-space of any person, limits his capacity for self-maintenance, restricts his activities and his contacts with other people, and may contribute to his alienation from society, and his experience of anomie. (Carp 1970a: 25)

Considerable evidence shows that there are aged persons who have difficulty in adapting to changes which take place in the external world, and it is unlikely that such persons would be able to maintain substantial levels of activity to fulfill their needs and desires without additional vehicular support. The availability of flexible transportation, therefore, can benefit the elderly by reducing environment-induced stresses and by enhancing their opportunities for social interaction and activity. In brief, "... it can increase the capacity for mobility among the aged; ... it can promote a sense of independence ...; it can lead older people to have some control over their environment" (Cutler 1976: 285)

Conclusion

Only a small proportion of the elderly can fulfill their needs by walking, and the majority of elderly pedestrians are forced to restrict their activities to the immediate area. An overwhelming majority of the elderly population require vehicular mobility in order to gain access to resources and facilities and to social

activity. Most aging persons, however, are unable to afford and maintain a private automobile. In the absence of private transportation, few are able to afford the high cost of commercial transportation, and many are unable to fulfill their needs by public transit systems.

As persons grow older, the ability to use public transit as an alternative mode of transportation is limited by diminishing sensory and perceptual capabilities and low levels of income, irrespective of the spatial structure of the community (Cantilli and Shmelzer 1970). These restrictions, however, are complicated by mobility constraints that are built into public transportation systems. As a result of the character of mass transit systems (i.e., the spatial configuration, physical design, travel fare, and quality of service), the transportation needs of elderly persons are inefficiently satisfied. Public transportation, then, is non-accessible to the majority of aging persons.

Vehicular transportation becomes increasingly non-available in later life, even among those dependent on family members and relatives to drive them. In addition, a small proportion of elderly persons can go outdoors without mobility restrictions. Clearly, the mobility of the aging ought to be, and can be, improved by the availability of appropriate transportation.

NOTES

¹ Some elderly persons are obliged to rely on walking as a mode of transportation due to factors such as low income or poverty, living alone, the inability to gain access to a private automobile, and the inappropriateness of public transportation. Elderly pedestrians, however, generally limit their trips to short distances and have difficulty in negotiating curbs and in crossing busy streets and traffic intersections (Carp 1971b). Among those who are capable of walking, only a small proportion reside in close proximity to urban facilities and resources. As a result, few are able to attend to needs or to participate in various activities by walking.

² Those for whom the private automobile is unlikely to be available may include the following: the very young, the disabled or handicapped, the poor, and the elderly.

³ For source material see chapter III and chapter IV.

⁴ Many aging women have never driven (Carp 1970b), and to acquire a license to drive is likely to be most difficult for them.

⁵ Destinations which may be difficult for elderly persons to reach by public transportation are as follows: hospital centers and health clinics; small community shopping areas; social clubs and recreation areas; and the homes of their children, relatives, and friends.

CHAPTER VII

A PROBLEM FOR RESEARCH

Introduction

Studies of aging began in the early 1940s and provided basic facts and observations which had relevance for improving the health and social welfare of the aged (Tibbitts 1960). Interest in aging as a process, however, emerged by 1948 in a research planning report which focused on social adjustment in old age (see Pollak 1948). The first of three major volumes documenting the scope, concepts, and methods of studies of aging appeared in the late 1950s (see Birren 1959; Burgess 1960; Tibbitts 1960). The volumes emphasized the need for a multidisciplinary approach to the scientific study of aging and indicated that aging consists of biological, psychological, and social aspects. Chronological age, although convenient, was considered to be an imprecise measure of aging. Combined, the volumes provided a comprehensive bibliography of the studies of aging since the early 1940s. In the late 1960s gerontological research had been compiled and organized to bring together, in a single volume, the major empirical findings of published research on aging (see Riley and Foner 1968). The findings presented in this volume as well as in later publications, however, reflect the little attention transportation had been receiving from students of aging (see, for example, Binstock and Shanas 1976).

Description and documentation of the transportation and mobility problems in later life is only recent. "The Gerontologist has no articles on transportation back to 1961. The Journal of Gerontology (italics mine) has one article since 1960." (Carp 1970a: 26) A bibliography of references pertaining to specific transportation problems of the aged, however, appears in 1969 (see United States, Department of Transportation 1969). Recent transportation research and planning indicates that the aged's changing needs and immobility are, in fact, differentiating them from most population groups (see Auerbach and Gerber 1976; Cantilli and Shmelzer 1970; Golant 1972; United States, Department of Health, Education, and Welfare, Administration on Aging 1970a;

United States, House of Representatives, Select Committee on Aging 1976a; 1976b; United States Senate, Special Committee on Aging 1970b; 1974; White House Conference on Aging 1971). A particular assumption is that since the aged have lower incomes and less access to the private automobile than the population as a whole and because they are also more dependent on public transportation, they should be encouraged by reduced-fare to increase their mass transit trip activity. Of major interest is the relative increase, with age, in the need for vehicular transportation for shopping and social/recreational purposes, and the relative decrease, with age, in the need for non-work-related trips. Another prime concern is the decrease in vehicular trip activity among the aging, even in the absence of health problems and financial constraints.

Considerable description and documentation calls attention to the poor quality of life in later years. A synthesis of this literature shows that the aging need to depend on community, that they can manage in the outside world as long as society allows them to, and that they would be more mobile if they were provided with essential resources which would encourage their activity. Studies of the transportation needs of the aging and examinations of modified transportation systems clearly indicate that transport is a major problem and that the aging require transportation with specific design characteristics. For example, empirical analysis shows the reduction in vehicular trip activity, which occurs in later life, is associated with reduced income (American Academy of Arts and Science 1968; Markovitz 1970; United States Senate, Special Committee on Aging 1970b). The findings also reveal that decreased income is associated with a corresponding decrease in the number of aged using private transportation and with a corresponding increase in the number depending on public transit.

A major response of public transit planners toward meeting the travel demands of the aging has been in developing reduced-fare programs.¹ Reduced-fare encourages the more active aged to increase their use of public transportation; however, for the majority, reduced-fare does little to make the system more amenable to their specific travel needs primarily because the routes and schedules are unchanged. As a result, the quality of service for the

aged remains poor. Thus, income, by itself, does not account for low levels of vehicular mobility among the aging. Although policies and programs have emerged to motivate the aged and to make transportation available, public transit systems cannot provide the type of vehicle that is needed to service the elderly population. Mass transit, therefore, fails to provide an adequate basis for improving the mobility of the aged (United States, House of Representatives, Select Committee on Aging 1976a).

Empirical research shows a positive relationship between mobility and both health (Carp 1970a) and proximity of the home to the bus stop (Carp 1970b). This suggests that there is a need for special transportation and that when those who are able to manage in the community are removed from the analysis, vehicular mobility should increase with the availability of flexible and easy-to-use transportation, especially among persons with health problems. The need for special transportation services is pointed out by Libow: "... special bus-taxi services, rather than alterations of existing mass transit systems, appear to hold greater promise of fulfilling older people's transportation requirements." (Libow 1970: 18)

A particular response toward meeting the elderly's need for special transportation services has been in developing transportation that is characterized by a dial-a-ride approach to service—that is, a demand-responsive type of service which can reach persons living in isolated areas. Such transportation is designed to provide door-to-door flexible services and modified routes in order to meet the special mobility needs of the aging. The service usually offers group rides (such as trips to grocery stores and shopping centers, parks and recreational areas, senior centers) rather than individual trips (such as family visits). The service, moreover, is economically viable since it can be used by other population groups with similar needs for transportation (e.g., the handicapped, the poor). Some major requirements are as follows: free or reduced-fare service, daily door-to-door service, either pre-scheduled trips (24 hours) or on-demand servicing, punctuality, driver's help to and from the door (when necessary or if weather conditions are poor), assistance in getting into the vehicle, smooth acceleration and deceleration techniques, and assistance with parcels (when necessary).

That the elderly need a demand-responsive and flexible transportation system is shown by a number of successful dial-a-ride transportation projects which were implemented in the United States to increase the vehicular mobility of the rural elderly. The aged residents of Choanoke, North Carolina; Belvedere, New Jersey; and other rural regions in the United States, were provided with federally subsidized transportation programs which offer them a dial-a-ride service by either automobile, van, or mini-bus. A recent article in the New York Times relates:

Without that mobility, said James T. Barnett, executive director of the Choanoke Area Development Association in North Carolina, "they simply die earlier"... Last October, a study commissioned by the Federal Department of Transportation outlined 75 projects initiated under a \$500 million rural mass transportation grant program through 1980. The study by the department's office of Technology Sharing found that, "while some public transportation exists in rural areas, generally it is inadequate."

The plight of the rural elderly, poor and handicapped—often the three are one—emerged in interviews by correspondents of the New York Times in seven selected regions where special transportation programs were under way: Warren and Hunterdon Counties, N.J.; Raleigh County, W. Va.; a Choanoke area in eastern North Carolina; Hamilton, Columbia and Suwanee Counties, Fla.; most of Missouri; Placer County, Calif.; and Klamath Falls, Ore. (Blumenthal 1977: 1, 20)

A most extensive rural transportation project in the United States is the OATS system (Older Adult Transportation Service) sponsored by the Missouri State Office of Aging. The service is a personal membership, door-to-door system of transportation, with approximately 100 vehicles. OATS serves 16,000 people in 90 of Missouri's 114 counties. The riders pay a small membership fee and a moderate annual fee. OATS is an expanding service and relies heavily on volunteers in various roles (United States, Department of Health, Education, and Welfare, Administration on Aging 1976).

The DATS Demonstration Project (Disabled Adults Transportation System) is the first comprehensive plan of its type developed in Canada. DATS, which was implemented in 1975, offers door-to-door transportation service to persons who experience difficulty in using the public transit system. Developed by the City of Edmonton, the Project provides for five types of transportation services, namely, reservation service, subscription service, demand-response

service, after hours service, and charter service. All eligible persons must be registered with the DATS project to use the service, and priority is given to group trips and to trip purposes which cover situations such as medical/dental, shopping, recreation, personal business, employment/volunteer work, and educational. The DATS vehicles operate Monday through Sunday from 6:30 A.M. to midnight, and the cost per trip is fifty cents (exact fare only). For all types of transportation service, excluding demand-response service, riders must call 24 or 48 hours in advance of intended trips. Demand-response service is provided on the same day the request is made, and requests for trips, by this type of service, may be refused if seat spaces are non-available (City of Edmonton, Transportation Planning Branch 1975).

Unfortunately, for the urban aged, continued operation of demand-response and flexible transportation is considerably constrained by the absence of financial support. In cases where private funds are obtained, service is intended primarily for a small group and is usually short-run (3 months). That the need for demand-responsive transportation for the urban elderly will increase is well stated by Bruck:

. . . cities are likely to grow during the next thirty years The type of transportation service that seems desirable for the year 2000 is a transportation service that provides door-to-door, continuous operation with a maximum of flexibility and connectivity, and a relatively high range of average speed. Within the technology that is essentially ready for implementation at the present time, there is much that can contribute toward attaining these kinds of urban transportation objectives. (Bruck 1970: 112)

The Research Problem

If transportation is to be convenient for the urban aged, it must be adequate--that is, it must be accessible and flexible. To be accessible, the service should be designed in view of aging changes which affect mobility--that is, it must be easy-to-reach, low cost, and easy-to-use. To be flexible, the service should be designed in view of the purposes for which the aging would use it--that is, it must offer them service to the places they need and want to go. Perhaps the most relevant place to start, then, is with a study of vehicular mobility with the availability of a dial-a-ride transportation service.

Considerable evidence indicates that many of the elderly need door-to-door transportation. Yet, inasmuch as transportation is a major problem for the elderly, relatively little is known about the transportation and mobility problems of the aging in Montreal, Quebec. Moreover, little attention has been given to their needs for a "special transportation service." Indeed, many are not engaging in various activities because they cannot use the existing modes of vehicular access to the facilities and resources of their communities and of the larger society. For the large majority, the spatial structure of the community, the high cost of travel, and the physical exertion and perceptual-motor skills that are required to utilize public transit tend to reduce the accessibility of most types of transportation. As a consequence, vehicular mobility is most restricted for the elderly who need transportation and are disadvantaged by poor health and low income (e.g., Old Age Security Pension).² To exemplify this point: The private vehicle is usually available for travel purposes at any time of the day for the few who are able to purchase and maintain personal transportation and for those whose family members, relatives, or friends can guarantee the availability of a private automobile. Both commercial and public transportation offer them different service at different times during the day; however, these transportation modes are likely to affect their mobility--service by autobus tends to be less frequent during off-peak hours; service by Metro, which is accessible by autobus and stairway, is available to persons who are physically capable; taxi service is generally available to those able to afford the cost and tends to be more difficult to secure during rush-hour. Based upon cost, the autobus and Metro seem to be more desirable than either the privately-owned automobile or transportation by taxi.³ In regard to service, the autobus is less adequate (especially for night travel or when weather conditions are poor), and the Metro is less accessible than alternative modes of transportation.

Despite the availability of transportation in Montreal, the options are non-accessible to the elderly on an equal basis. Moreover, evidence shows that although the typical elderly person does not leave home with much frequency for medical visits (several times a year), food shopping (once a week), general shopping (less than once a year), vacations (once a year or never), and social or

leisure-time activities (never) (Carp 1970a), many do desire to travel in groups, especially on social trips (Dove 1970). This special mobility need, however, cannot be met by the Montreal public transit system primarily because meeting at bus stops or Metro stations and transferring makes group trips particularly difficult for the aged.

Although transportation plays an important role in the daily lives of the aging, very little has been done to implement planned changes to provide the non-institutionalized elderly of Cote des Neiges with transportation for social activity. To exemplify this point: at the time of study, the Volunteer Bureau of Montreal offers free door-to-door transportation service for indigent outpatients of all ages. Most are cancer or kidney dialysis patients who cannot afford taxi fares and are physically unable to travel to hospitals on buses or the Metro. Service is provided by volunteer drivers and covers the island of Montreal. A 24 hour notice is required. All passengers must be referred by a social agency and reasonably mobile (no wheelchair patients). Forest Minibus Inc. is the only door-to-door transportation service in Montreal "designed" for handicapped persons of all ages. The door-to-door service is funded by provincial government grants and private donations. The company has four mini-bus vans available from 7:30 A.M. to 11:30 P.M. Monday to Friday at fifty cents a trip. The majority of passengers are quadraplegic, paraplegic, and persons with extreme handicaps. Notice is required two or three days in advance, and service is provided for either medical visits, educational purposes (i.e., CEGEP and university students), or employment purposes. The mini-buses make 13,000 trips a year and service approximately 6,000 clients in the area bounded by Decarie Boulevard, Sauve Street, Georges V Street, and the St. Lawrence River. Lethbridge Rehabilitation Center provides a door-to-door service for outpatients who are neither able to walk nor physically able to travel on buses or the Metro to and from the Center. The service operates from 7:30 A.M. to 4:30 P.M. and consists of two mini-buses and five station wagons. The cost is \$1.00 per trip. The Golden Age Association, in Cote des Neiges, offers a free door-to-door mini-bus service to certain members participating in social programs at the Association. Service is provided on an individual basis, and the need for service is determined by the Golden Age staff. The majority of other special

transportation services in Montreal are privately-owned, too expensive, and in operation only until 5:00 P.M. (e.g., travel fare by mini-car is \$17.00).

A notable exception, however, is a Dial-a-Ride Demonstration Project offering free transportation to the elderly of Cote des Neiges in March through July 1977.⁴ The door-to-door service is designed for non-institutionalized persons in the 55 and older age category. The Project is subsidized by the federal government and sponsored by the Golden Age Association in Cote des Neiges. The service has a nine-passenger station wagon available from 9:00 A.M. to 3:00 P.M. on Friday, and from 9:00 A.M. to 9:00 P.M. Monday to Thursday and Sunday. Dial-a-Ride transportation is offered to elderly persons who reside in the area bounded by Wilderton Avenue, Plamondon Avenue, Decarie Boulevard, and Edouard Montpetit Boulevard. All passengers must be ambulatory (no wheelchairs) and must register with Dial-a-Ride to be eligible to use the service. A personal interview is required for registration purposes. Priority is given to elderly persons who are unable to use the public transit system for physical, emotional, and social reasons. Registered passengers are requested to telephone 24 hours in advance of their intended trips. The Dial-a-Ride system covers trip purposes such as medical/dental appointments, shopping, senior citizen clubs, and leisure-time/social excursions for three hours (day and evening).

This study proposes to examine the elderly's vehicular mobility under a Dial-a-Ride transportation program for which persons age 55 or older are eligible. In the sense of this study, vehicular mobility implies that the elderly are employing vehicular transportation in order to gain access to social activity. The study reflects an attempt to undertake a statistical analysis of the consequence of implementing a special transportation system such as Dial-a-Ride—a consequence which has important implications for aging theory and which is extremely important to future policy planning and to the people who can be expected to benefit from it.

Activity theorists argue that disengagement is neither intrinsic nor voluntary, but is a process that is imposed upon the elderly. Proponents of the theory emphasize that the social world of elderly persons may constrict either as a consequence of societal withdrawal or as a consequence of health problems.

According to the theory, inactivity/immobility is forced upon the aged by societal expectations (i.e., the aged are forced to withdraw from social activity because society does not provide them with opportunities and supports which would encourage activity), or by physical limitations. In the light of these claims, this research focuses on considering how differentials in availability of Dial-a-Ride relate to vehicular mobility for social activity, and also considers this relationship in connection with the elderly's reports of physical limitations on mobility. Moreover, passengers and non-passengers are taken into account. While a considerable amount of research focuses on the users of reduced-fare and special transportation for elderly people, there is little in the literature concerning the users and the non-users. While she is not dealing specifically with both users and non-users of a dial-a-ride service, a most lucid statement comes from Carp: "Adequate transportation ... supports the individual's capacity for independent living ..." (Carp 1970a: 25) One explanation of her statement is that the elderly for whom existing transportation is inadequate would desire passengers to increase their vehicular mobility, while those for whom social engagement is facilitated by existing vehicular modes would not need to participate in a dial-a-ride service to increase their vehicular mobility. This would suggest that in the absence of Dial-a-Ride, vehicular mobility would be lower among those who report physical limitations on mobility and that, when taking Carp's statement into account, the availability of Dial-a-Ride would be more critical for the vehicular mobility of those who need special transportation than for the vehicular mobility of those who do not need the service.

Hypotheses

1. For the elderly passengers of the Dial-a-Ride transportation service, vehicular mobility for social activity will be higher with the availability of Dial-a-Ride than without the availability.

2. Since the availability of Dial-a-Ride should be of greater importance for the vehicular mobility of the aged with physical limitations on mobility, then, for the elderly passengers of the Dial-a-Ride transportation service, the relationship between availability of Dial-a-Ride and vehicular mobility for social

activity should be stronger among the aged who are reporting physical limitations on mobility than among those who are not reporting physical limitations.

3. When considering potential users and non-users in the absence of Dial-a-Ride, vehicular mobility for social activity should be lower among those who report physical limitations on mobility than it is among those who do not report physical limitations.

4. Where Dial-a-Ride is available to enable the elderly with diminished vehicular mobility to overcome the barriers presented in its absence, and since appropriate transportation is assumed to support the capacity for independence and to increase engagement and activity, vehicular mobility for social activity should be higher with the availability than without the availability among the aged who need special transportation than among those who do not need the service.

In attempting to test these hypotheses, the study represents one of the first attempts to examine the vehicular mobility of the aging—a group whose vehicular mobility for social activity usually does not surpass that of the general population in Montreal and that of other "captive riders" who are largely reliant on public transit.

NOTES

¹ See Cantilli and Shmelzer (1970) for an excellent source on reduced-fare for senior citizens.

² The majority of the aged depend on various forms of government assistance as primary sources of income. At the time of study, the basic Old Age Security Pension is \$141.34 a month for a single, widowed, or divorced person; the maximum Guaranteed Income Supplement is \$240.47. For married pensioners, the combined Old Age Security Pension and maximum Supplement is \$458.74 (Callaghan 1976). See also appendix A for a stimulating discussion of the financial benefits that are available for the elderly residents of Quebec, Canada.

³ The Montreal Urban Community Transit Commission offers people age 65 and over a special low rate for the Metro and MUCTC buses: eight tickets for \$1.00.

⁴ Dial-a-Ride transportation for the senior residents of Cote des Neiges is a federally subsidized transportation Demonstration Project (Project no. CH-2464-6) sponsored by the Golden Age Association in December 1976 through July 1977. The demand-responsive and flexible transportation system had been implemented (March 1977) to service the elderly residents of a ten-block area central to the Cote des Neiges community. The Association did not plan to use the service for Golden Age programs. The objective was to provide the citizens of the area (55 years and older) with a facilitating means to reach health centers and clinics, local grocery stores and shopping centers, and to respond to their needs for social activity.

CHAPTER VIII

RESEARCH METHODS

Introduction

The Côte des Neiges community¹ has a population of approximately 16,250 in the 55 and older age category, and some 83 percent reside within the area bounded east and west by Wilderton Avenue and Decarie Boulevard, north and south by Plamondon Avenue and Edouard Montpetit Boulevard along Cote Ste-Catherine Road (Statistics Canada 1973c). Two hundred and twenty-four subjects of this study live in this particular area and constitute approximately 1.7 percent of the population age 55 or older (see appendix B). The respondents are selected from a group of elderly persons who, at the time of study, are in the 55 and older age category and qualify for demand-response transportation (Galtung 1969; Kerlinger 1973; Kolstoe 1973).

Data Collection

The data for this research come from a survey of a randomly selected sample of 170 non-institutionalized respondents. The 170 subjects are users and non-users who had been selected prior to the implementation of Dial-a-Ride from a sample of 224 potential users and non-users--that is, from a purposively selected sample by area (the Dial-a-Ride service area) and age (55 years or older)--who had been informed about the availability of Dial-a-Ride. The respondents were approached door-to-door, were referred, or had requested Dial-a-Ride service (appendix C describes the way they were informed).

Interviews were conducted prior to the implementation of Dial-a-Ride over a three-month period in December 1976 to March of 1977. These interviews provided information about the respondents (i.e., background) and about their vehicular mobility for social activity (i.e., having the use of vehicular transportation to engage in social excursions/sightseeing and to visit parks and other sites). The respondents' vehicular mobility for social activity was also observed after the implementation of Dial-a-Ride in a follow-up study that was

conducted over a six-week period in March and mid-April of 1977: 100 of these subjects used Dial-a-Ride transportation to engage in social excursions/sightseeing and to visit parks and other sites while the non-users (70) employed alternative modes of vehicular transportation for these social purposes (see appendix C).

The collection techniques employed to obtain information for this study involve the following: (a) a structured interview schedule² which provides background material and information pertaining to the respondents' vehicular mobility (on private, public, and commercial modes) in the absence of Dial-a-Ride transportation (December 1976 to March of 1977), and (b) a vehicular trip record schedule which provides material pertaining to the vehicular mobility of the users (obtained from a Dial-a-Ride Trip Record) and the non-users (learned while calling them) in the presence of Dial-a-Ride transportation (over a six-week period in March and mid-April of 1977)³ (Sjoberg and Nett 1968; Thomlinson 1965; United States, Department of Health, Education, and Welfare, Administration on Aging, Institute of Public Administration 1975). As a result of data collecting, the variables were coded and recoded, and transferred to a computer for tabulation purposes (Klecka, Nie, and Hull 1975).

Variables

Certain aspects of the community area, in which the respondents reside, are of importance to the analysis. First, the area contains a high concentration of elderly residents, and specific features of the area would continue to attract the aging (e.g., low income, low rents, a high concentration of community-based services and facilities, and a high degree of centralization with regard to the public transportation available within the area). Second, dependence on a dial-a-ride system of transportation would be high in this area. The community area contains a high proportion of elderly persons of low economic means. Without adequate income, vehicular mobility would be related, for the most part, to the availability of flexible, low-cost or free transportation. Third, the area contains a concentrated distribution of services and facilities; however, certain characteristics of the environmental context can have a negative affect on the elderly. Some delimiters which may be perceived as

hazardous include: street accidents at busy traffic intersections, bus routes, street crimes (especially at night), and walking distance to bus stops and to other destinations (Carp 1970b; Regnier 1975; United States, House of Representatives, Select Committee on Aging 1976a; 1976b; United States Senate, Special Committee on Aging 1974). Heavy traffic, in addition to the fact that isolated streets are identified within the community area, restrict access to urban services and facilities. For example, many do not travel during early morning, noon, and mid-day-to-early evening in order to avoid rush-hour traffic. For those who use the autobus during off-peak hours and evening hours, the waiting period is prolonged due to a low level of public transit use. As a consequence, social trips, which may also extend into evening hours, are infrequent. This specific problem, moreover, is surmounted for elderly persons with visual difficulties since many streets within the community do not provide adequate light after sunset. Because much physical exertion is required to gain access to various locations within the local area, differentials in accessibility of services and facilities would be related, in part, to the physical limitations on mobility which elderly people experience (Cantilli and Shmelzer 1970; United States, House of Representatives, Select Committee on Aging 1976a; 1976b). Fourth, a flexible and free transportation system would facilitate the elderly's trips to areas outside the community area and would also enable them to travel in groups. Public transportation within the community links the area with other areas of the city; however, as a mode of access to sites outside the community area, public transit may be helpful only to a few individuals. While the private automobile of a family member or a friend may provide more transportation for social purposes than any other mode, the opportunity to utilize the automobile of a family member or friend tends to be infrequent, and automobile transportation is usually non-available to suit the needs of elderly persons (Carp 1970a). For those who cannot rely on others to drive them or who prefer to maintain a sense of independence, vehicular mobility would be related, in part, to the need for special transportation. The primary independent variables, therefore, are based on differentials in availability of Dial-a-Ride, differentials in reporting physical limitations on mobility, and differentials in need for special transportation:

AVAILABILITY OF DIAL-A-RIDE (D-a-R): In this study, Dial-a-Ride is available as a result of the implementation of a demand-

response system of transportation for persons age 55 or older residing in a community area where alternative modes of vehicular transportation exist (i.e., public transit; commercial transportation; private automobile). For the absence of Dial-a-Ride (a three-month period in December 1976 to March of 1977), the community is without the availability which is designated as "no". For the presence of Dial-a-Ride (a six-week period in March and mid-April of 1977), the community is with the availability which is designated as "yes".

REPORTING PHYSICAL LIMITATIONS ON MOBILITY: In this study, the subject's reports of physical limitations on mobility are based on answers to the question, "Are you kept from outdoors due to health problems (physical)?" Respondents reporting that they are not kept from outdoors (i.e., able to go outside without difficulty) are designated as "no"--not reporting physical limitations on mobility. Respondents reporting that they are kept from outdoors (i.e., unable to go outside because they are experiencing either difficulty in walking distances, difficulty in reading traffic signals, physical weakness, and other physical problems which interfere with the ability to go outdoors) are designated as "yes"--reporting physical limitations on mobility. (4)

NEED FOR SPECIAL TRANSPORTATION: For present purposes, respondents who do not prefer to register for Dial-a-Ride service are designated as "no"--do not need special transportation. Those who choose to register for service are designated as "yes"--need special transportation.

VEHICULAR MOBILITY: For study purposes, vehicular mobility, the dependent variable, is defined as having the use of transportation facilities for social activity which would be directly visible to an observer--that is, employing vehicular transportation to engage in social excursions/sightseeing and to visit parks and other sites. Pedestrians are excluded before percentaging in all of the tables presented, unless otherwise indicated. Respondents who have not employed vehicular transportation for these social purposes (i.e., not within the past year or two) are designated as having a "low" level of vehicular mobility for social activity, while those who have employed vehicular transportation for such purposes (i.e., within the past year) are designated as having a "high" level of vehicular mobility for social activity.

Data Analysis

For purposes of analysis, all data are dichotomized and presented in fourfold contingency tables. In order to determine whether the variables are independent of each other or associated, the chi-square statistic is employed. One degree of freedom is associated with χ^2 when a 2 X 2 table is used for chi-square. In a two-way classification with one degree of freedom a correction

known as the Yates correction for continuity is applied. Throughout the analysis, therefore, the χ^2 test of statistical significance with the Yates correction for continuity is used, and all differences are statistically significant at the 5 percent level (Ferguson 1966; Kolstoe 1973).

In addition to considering absolute percentage differences and levels of statistical significance, the analysis considers the relative strength of the relationships. A specific index which permits an unambiguous statement indicating the degree of relationship between two variables is known as the contingency coefficient.⁶ For the analysis, the technique employed for computing an index of association between variables is the contingency coefficient (C) which uses the statistic known as chi-square (χ^2). Adjusted coefficients of contingency (C_{adj}) are presented in this study for comparison purposes (Ferguson 1966; Kolstoe 1973).

NOTES

¹ The City of Montreal has a population of approximately 230,765 in the 55 and older age category, and approximately 7 percent reside in the community of Cote des Neiges (Statistics Canada 1973a; 1973c).

² The final interview schedule was administered after revisions indicated by pretesting.

³ These schedules were supplemented with a structured interview schedule which provides data on the opinions and reactions of the passengers towards the Dial-a-Ride service after having used the service for six weeks, and informal follow-up interviewing which focuses on the subjective experiences of those who were exposed to the Dial-a-Ride service or allows them to reflect objectively upon their own transportation situation. The data were obtained for the methodological appendix of this study.

⁴ "It is true that ... these ... are self-reports and that there is no medical corroboration of the claims of any respondent. However, in the light of evidence that symptom reports and general self-assessments are medically reliable indicators of health status, it seems reasonable to accept these data at face value." (Smith 1966: 236)

⁵ Chi-square refers to the theoretical distribution, and χ^2 refers to the statistic computed from the data.

⁶ For a square table, "...the maximum value the coefficient could take would be $\sqrt{1/2} = .707$." (Kolstoe 1973: 177)

CHAPTER IX

THE RESULTS OF THE STUDY.

Demographic Characteristics of the Respondents

In general, the respondents are an aging population. The 170 non-institutionalized subjects of this study are in the 55 and older age category, and the mean age for these respondents is 74. In addition, 46 percent are still married and living with their spouse; approximately one half are widowed (49 percent) while five percent are either single or divorced. As is typical of an elderly population, there is a preponderance of women (71 percent). The typical length of residence at the present address is five years or more (63 percent) and most are living in an apartment dwelling (87 percent).

An overwhelming majority of the respondents have at least one major health problem (91 percent). In addition, the majority receive Old Age Security Pension (82 percent) and over one half are supplementing this with pensions (56 percent). Moreover, 96 percent of the subjects are not working, and there are neither professionals nor persons who own or manage businesses; thus, indicating that the respondents are primarily middle- and working-class people.

Results

The first hypothesis proposes that for the elderly passengers of the Dial-a-Ride transportation service, the availability of Dial-a-Ride will facilitate their employment of vehicular transportation to engage in social excursions/sightseeing and to visit parks and other sites in Montreal. Vehicular mobility, therefore, should be higher with the availability of Dial-a-Ride than without the availability. The data presented in table 2 do provide support for this hypothesis: with the availability of Dial-a-Ride, 68 percent of the elderly have high vehicular mobility, whereas without the availability, only 46 percent have high vehicular mobility ($p < .01$). Thus, the presence of Dial-a-Ride would

appear to be associated with higher levels of vehicular mobility for social activity. Absence of Dial-a-Ride, however, is associated with lower levels of vehicular mobility.

TABLE 2
RELATIONSHIP BETWEEN AVAILABILITY OF DIAL-A-RIDE AND
VEHICULAR MOBILITY FOR SOCIAL ACTIVITY

Vehicular Mobility	Availability of D-a-R	
	No	Yes
Low	54%	32%
High	46	68
(N)	(86)	(100)
C_{adj}	.202	
	$\chi^2 = 7.908$	$p < .01$

Previous research has pointed to a positive relationship between income and vehicular mobility, that is, those with high levels of income are more likely to have high vehicular mobility than those with low levels of income (Cantilli and Shmelzer 1970). In the present sample (passengers), 81 percent report Old Age Security Pension and supplemented Old Age Security Pension as their means of income. When considering that 73 percent of those having high vehicular mobility engage in social activity by means of a private vehicle in the absence of Dial-a-Ride, then, higher vehicular mobility with the availability of Dial-a-Ride may indicate that 'Dial-a-Ride' is a more viable alternative for the elderly and that the service can enrich their ability for independent living.

The second hypothesis specifies that for the elderly passengers, the relationship between availability of Dial-a-Ride and vehicular mobility will vary when controlling for reports of physical limitations on mobility. Since the availability of Dial-a-Ride should be of greater importance for the vehicular mobility of the aged with physical limitations on mobility, a stronger relationship between availability of Dial-a-Ride and vehicular mobility for social activity should be in evidence among the aged who report physical limitations on mobility than among the aged who do not report limitations. The data presented in table 3 show support for this hypothesis. For the elderly reporting physical limitations on mobility, 69 percent with the availability of Dial-a-Ride and only 40 percent without the availability of Dial-a-Ride have high vehicular mobility ($p < .01$).

TABLE 3
RELATIONSHIP BETWEEN AVAILABILITY OF DIAL-A-RIDE AND
VEHICULAR MOBILITY FOR SOCIAL ACTIVITY, CONTROLLING FOR
REPORTING PHYSICAL LIMITATIONS ON MOBILITY

Vehicular Mobility	Reporting Physical Limitations on Mobility			
	No		Yes	
	Availability of D-a-R		Availability of D-a-R	
	No	Yes	No	Yes
Low	39%	33%	60%	31%
High	61	67	40	69
(N)	(26)	(36)	(60)	(64)
C_{adj}	.019 ns		.263 $\chi^2 = 9.207$ $p < .01$	

The relationship between availability of Dial-a-Ride and vehicular mobility

appears to be somewhat less significant for the elderly who are not reporting physical limitations on mobility. There is a slight inclination among the aged who are not reporting physical limitations to have higher vehicular mobility with the availability of Dial-a-Ride than without the availability; however, the stronger relationship between availability of Dial-a-Ride and vehicular mobility among those who report physical limitations is reflected in the difference between the magnitudes of the contingency coefficients: .263 for those who are reporting physical limitations on mobility and .019 for those who are not reporting physical limitations on mobility. Thus, the absence of Dial-a-Ride seems to be less of a problem for those who do not report physical limitations on mobility as it appears in vehicular mobility for social activity and may be indicating, moreover, that the elderly who are not reporting physical limitations can employ alternative modes of vehicular transportation to engage in social activity without the availability of Dial-a-Ride.

In the absence of Dial-a-Ride, the respondents were asked, "How do you rate your satisfaction with your life at the present time?" The basic response categories were high and low, and the subjects qualified their responses by selecting "dissatisfaction/low satisfaction" and "satisfaction/high satisfaction". Previous research, which is in accord with the predictions of activity theory, has indicated a positive relationship between life satisfaction and both social activity and self-reports of health—with the respondents having high levels of social activity or providing a positive self-assessment of health more likely to have high life satisfaction than those having low levels of activity or providing a negative self-assessment of health (Kutner et al. 1956; Maddox 1968; Riley and Foner 1968). In regard to the present sample, the cumulative importance of these findings, especially in the absence of Dial-a-Ride, is that potential users who are not reporting physical limitations on mobility should be more inclined to have high life satisfaction than potential users who are reporting physical limitations. To provide support for this hypothesis, table 4 presents the relationship between reporting physical limitations on mobility and life satisfaction.

The data in table 4 are in accord with this hypothesis: 54 percent of those who do not report physical limitations on mobility have high life

satisfaction while only 27 percent of those who report physical limitations on mobility have high life satisfaction ($p < .02$). The greater tendency among potential users who do not report physical limitations to have high life satisfaction suggests that the range and the levels of social activity, which also predict life satisfaction (according to activity theory), are increased for those who do not report physical limitations on mobility and, in regard to the data in table 3, also suggests that Dial-a-Ride is a more viable alternative in maintaining life satisfaction/social activity for the elderly who report physical limitations on mobility.

TABLE 4

RELATIONSHIP BETWEEN REPORTING PHYSICAL LIMITATIONS ON
MOBILITY AND LIFE SATISFACTION

Life Satisfaction	Reporting Physical Limitations on Mobility	
	No	Yes
Low	46%	73%
High	54	27
(N)	(35)	(63)
C_{adj}	.242	
	$\chi^2 = 6.089$	$p < .02$

The third hypothesis proposes that when considering potential users and non-users in the absence of Dial-a-Ride, vehicular mobility for social activity should be lower among those who report physical limitations than it is among those who do not report physical limitations. The data given in table 5 do provide support for this hypothesis: 51 percent of the aged who report physical limitations on mobility have low vehicular mobility while only 27 percent of those who do not report physical limitations on mobility have low vehicular mobility' ($p < .02$). Thus, where Dial-a-Ride is absent, the aged who report physical limitations on mobility would appear to have lower levels of vehicular

mobility whereas those who do not report physical limitations have higher levels of vehicular mobility. These findings suggest that where Dial-a-Ride is absent, vehicular mobility for social activity will be lower among those who need special transportation than it is among those who do not need the service. To determine whether this is so, table 6 presents the relationship between need for special transportation and vehicular mobility for social activity.

TABLE 5

RELATIONSHIP BETWEEN REPORTING PHYSICAL LIMITATIONS ON
MOBILITY AND VEHICULAR MOBILITY FOR SOCIAL ACTIVITY

Vehicular Mobility	Reporting Physical Limitations on Mobility	
	No	Yes
Low	27%	51%
High	73	49
(N)	(41)	(109)
C_{adj}	.205	
	$\chi^2 = 6.304$	$p < .02$

The data in table 6 show that where Dial-a-Ride is absent, 54 percent of the aged who need special transportation have low vehicular mobility for social activity while only 33 percent of those who do not need special transportation have low vehicular mobility ($p < .02$). Thus the aged who need special transportation would appear to have lower levels of vehicular mobility. Those who do not need the service, however, have higher levels of vehicular mobility. Contrary to the predictions of disengagement theory, the data suggest that immobility is forced on the aged, that the elderly desire to remain engaged, and that they would engage, or re-engage, when the opportunity to do so is available.

TABLE 6

RELATIONSHIP BETWEEN NEED FOR SPECIAL TRANSPORTATION
AND VEHICULAR MOBILITY FOR SOCIAL ACTIVITY

Vehicular Mobility	Need for Special Transportation	
	No	Yes
Low	33%	54%
High	67	46
(N)	(64)	(86)
C_{adj}	.189	
	$\chi^2 = 5.538$	$p < .02$

The fourth hypothesis specifies that the relationship between availability of Dial-a-Ride and vehicular mobility will vary with the need for special transportation. Where Dial-a-Ride is available to enable the elderly with diminished vehicular mobility to overcome the barriers presented in its absence, and since appropriate transportation is assumed to support the capacity for independence and increase engagement and activity (Carp, 1970a), vehicular mobility for social activity should be higher with the availability than without the availability among the aged who need special transportation than among those who do not need the service. The data presented in table 7 show support for this hypothesis. Among the respondents who need special transportation, 68 percent with the availability of Dial-a-Ride and only 46 percent without the availability of Dial-a-Ride have high vehicular mobility ($p < .01$). Among the respondents who do not need the service, 68 percent with the availability of Dial-a-Ride and 67 percent without the availability of Dial-a-Ride have high vehicular mobility. The stronger relationship between availability of Dial-a-Ride and vehicular mobility among those who need the service is reflected in the

difference between the magnitudes of the contingency coefficients: .202 for those who need special transportation and .011 for those who do not need the service. Thus, differentials in availability of Dial-a-Ride are more critical for the vehicular mobility of the aged who need the service and may indicate that special transportation such as Dial-a-Ride can enable a higher proportion of the elderly to achieve a sense of independence and to maintain social interaction, engagement, and activity in later life.

TABLE 7

RELATIONSHIP BETWEEN AVAILABILITY OF DIAL-A-RIDE AND VEHICULAR MOBILITY FOR SOCIAL ACTIVITY, CONTROLLING FOR NEED FOR SPECIAL TRANSPORTATION

Vehicular Mobility	Need for Special Transportation			
	No		Yes	
	Availability of D-a-R		Availability of D-a-R	
	No	Yes	No	Yes
Low	33%	32%	54%	32%
High	67	68	46	68
(N)	(64)	(65)	(86)	(100)
C_{adj}	.011		.202	
	ns		$\chi^2 = 7.908$ p < .01	

Conclusion and Summary of Important Findings

In general, the data of this study indicate that the elderly who use vehicular transportation go outdoors infrequently and that they have minimal vehicular mobility for social activity in the absence of Dial-a-Ride. While private automobiles provide most of the transportation for social purposes among the 83 potential users and non-users who employ vehicular transportation (77 percent), public transit and commercial transportation, which pose many problems for elderly persons, are barely used (23 percent). In addition, among the 83 elderly who use vehicular transportation for social activity, 55 percent of those who do not need special transportation are able to maintain high vehicular mobility for social activity by private automobiles while only 34 percent of those who need special transportation have high vehicular mobility for social activity by this mode.

The findings of this research support the hypotheses on which they are based. For the elderly passengers, vehicular mobility for social activity is higher with the availability of Dial-a-Ride than without the availability (table 2). Among those reporting physical limitations on mobility a rather marked relationship between availability of Dial-a-Ride and vehicular mobility for social activity is in evidence (table 3). Comparison of the contingency coefficients and the percentage differences between passengers who do not report physical limitations on mobility and passengers who report physical limitations suggests that the absence of Dial-a-Ride poses less of a problem for those who do not report physical limitations on mobility. Dial-a-Ride, therefore, is a more viable alternative in maintaining social activity and can enhance the capacity for independent living in later life for those who report physical limitations on mobility.

How satisfied with life are the elderly passengers without the availability of Dial-a-Ride? Are potential users who report physical limitations on mobility less likely to be satisfied than potential users who do not report physical limitations on mobility? When considering potential users and non-users in the absence of Dial-a-Ride, would those who report physical limitations on mobility have lower levels of vehicular mobility for social activity?

In this study, respondents were asked, "How do you rate your satisfaction with your life at the present time?" The basic response categories were high and low. Ratings of life satisfaction are available for 167 subjects (3 unspecified) and only for the absence of Dial-a-Ride (December 1976 to March 1977). The typical respondent's life satisfaction was low (57 percent). Fifty percent of those who expressed that they did not need special transportation and 62 percent of the respondents who expressed the need for special transportation had low levels of life satisfaction.

The data in table 4 show that without the availability of Dial-a-Ride, potential users who report physical limitations on mobility are less inclined to have high life satisfaction than potential users who do not report physical limitations on mobility. Generally, the data would suggest that the aged are forced to remain indoors as a result of physical limitations on mobility and that the satisfaction derived from the ability to remain socially engaged is diminished for elderly people who need special transportation. Furthermore, it may be argued that elderly people desire to remain engaged, and that it is wrong to force immobility upon them by depriving them of appropriate transportation facilities which could alleviate their vehicular immobility and enable them to participate in social activity.

In addition, when considering potential users and non-users in the absence of Dial-a-Ride, the data given in table 5 reveal that vehicular mobility for social activity is lower among those who report physical limitations on mobility and may indicate that lack of suitable transportation is constricting the social world of a number of elderly people in this community.

The data in table 6 show that where Dial-a-Ride is absent, vehicular mobility for social activity is lower among those who need special transportation and would suggest that, contrary to the predictions of disengagement theory, generally, the aged desire to remain engaged in social activity and that they would be more active if society would either improve existing transportation or implement appropriate transportation facilities to enhance the vehicular mobility of the elderly population.

When considering the magnitude of the percentage differences, the

absence of statistical significance, and the moderately low coefficients of contingency among those who do not need special transportation (table 7), it can be concluded that while having Dial-a-Ride available is of little importance for the vehicular mobility for social activity among the aged who do not need the service, the vehicular mobility for social activity of these respondents remains stable. However, differentials in availability of Dial-a-Ride are especially important for the vehicular mobility for social activity of the aged who need special transportation and would suggest that Dial-a-Ride enables these respondents to increase their vehicular mobility for social activity to the extent that when compared with those who do not need the service they are equally able to maintain social interaction, engagement, and activity.

In summary, where a Dial-a-Ride system of transportation is absent, as it is in the Cote des Neiges community, physiological and social characteristics of the elderly can interact with the characteristics of existing modes of vehicular transportation and, in combination, can create barriers to vehicular mobility in later life. Where the employment of vehicular transportation is further restricted, as it is in this community by the absence of a Dial-a-Ride system of transportation, dependence on alternative modes of vehicular transportation—none of which are ideally suited to providing adequate vehicular mobility for social activity—is increased and their utilization becomes especially important in determining the capacity for vehicular mobility and the quality and size of the social world of elderly persons. What this research supports, therefore, is that the absence of Dial-a-Ride is associated with diminished vehicular mobility in later life. The analysis, moreover, points to the importance of considering that differentials in availability of Dial-a-Ride are of greater importance for the vehicular mobility of the elderly who report physical limitations on mobility and who need special transportation. Furthermore, Dial-a-Ride is a more viable alternative in maintaining social activity where existing modes of vehicular transportation are not tailored to meet the social needs of elderly persons. The results show that, for the users, vehicular mobility is higher with the availability of Dial-a-Ride than without the availability and, in general terms, the direction is away from social disengagement or inactivity. The

findings of this research strongly suggest that Dial-a-Ride is a success in meeting the needs of the respondents and that the importance of having Dial-a-Ride available, in terms of vehicular mobility for social activity in later life, should not be underestimated, especially with elderly people who are subjected to physical limitations on mobility. The generality of these findings can be tested only in a new study of different elderly persons residing in another community where a Dial-a-Ride system of transportation is implemented.

CHAPTER X

CONCLUSIONS AND SUGGESTIONS FOR RESEARCH

Although the need to maintain vehicular mobility encompasses all age groups, it is critical for the elderly. The purpose of this study was to examine vehicular mobility in later life by considering how differentials in availability of Dial-a-Ride transportation relate to vehicular mobility for social activity. The aim was to focus on the importance of the availability by considering this relationship in conjunction with the elderly's reports of physical limitations on mobility. The respondents were obtained by random selection and the sample, which was subdivided into users and non-users, was representative of the Dial-a-Ride population (Cote des Neiges) which arose out of a community effort to secure a ridership for Dial-a-Ride transportation.

Being sensitive to the needs of the aging, the researcher assumed that many elderly persons experience loneliness from unnecessary social isolation primarily because of immobility. With financial constraints and often with physical limitations on mobility, many elderly people are forced to give up in frustration and, as a result, do not benefit from social activity which is available in the larger society. Knowing that there is often a breakdown of social isolation and substantial increases in the quality of daily living when vehicular mobility is increased, the researcher assumed (a) that there would be real potential for increasing vehicular mobility for social activity among the aging and (b) that a special system of transportation would be a more viable mode of transportation for social purposes, especially for those subjected to physical limitations on mobility.

The research has validated the above hypotheses and has pointed up a serious need for a special system of transportation to effect a more efficient delivery of services which would ensure that elderly persons share equally in the social activities that are offered by the external environment. The present study has demonstrated (1) the importance of examining the relationship between availability of Dial-a-Ride and vehicular mobility for social activity and (2) the importance of considering this relationship in conjunction with the elderly's

reports of physical limitations on mobility. The study, moreover, has demonstrated the importance of considering users as compared to non-users. In general terms, differentials in availability of Dial-a-Ride have a greater impact on vehicular mobility for social activity when characteristics of the aged and those of transportation interact and tend toward reducing the use of transportation alternatives.

By bringing together aging theory and information in the area of transportation for the elderly, this study was able to identify some major problems which arose in this area among the aging. A synthesis of this literature would indicate the following:

1. The elderly, like others in society, must maintain vehicular mobility for acquiring food, clothing, and medical care, and to participate in social and religious activities

2. The elderly, unlike others in society, are confronted with problems associated with incomes that are typically too low to purchase adequate transportation and are faced with physical or psychological deficits which make using transportation most difficult for them

3. Pedestrian and driving difficulties are intimately related to the current orientation in society toward the private automobile

4. The elderly are forced to depend on public transit which is designed to serve the work force

5. The elderly generally live in residential areas poorly served by public transportation, especially during off-peak hours--which makes the level and the quality of public transportation service inefficient and inappropriate for their needs

6. The elderly are discouraged from using public transit by travel barriers associated with existing public transportation systems

The findings of this study provide support for the activity theory of aging. The results show that life satisfaction is lower among those who are kept from outdoors as a consequence of physical limitations on mobility and that the

lack of adequate vehicular mobility for social activity is imposed upon the aged as a result of physical problems and as a result of society's neglect to consider the need for improving transportation to alleviate the vehicular immobility of the aging. The results of this study also demonstrate that without special transportation the elderly are deprived of appropriate transportation and are neither able to fulfill their social needs nor able to take advantage of the opportunities which can allow them to remain active and productive members of the community.

Stated simply, the mobility problem of the respondents is that they are unable to travel without the availability of Dial-a-Ride to and from the places they need, or would choose, to go. The findings show that vehicular mobility is lower without the availability of Dial-a-Ride and that it is higher with the availability, especially for those who report physical limitations on mobility and who express a need for special transportation. Although the results of this study are generalizable for the larger Dial-a-Ride population, it is suggested that diminished vehicular mobility for social activity is especially characteristic of the aging with physical limitations on mobility but is also an unnecessary consequence of a lack of special/appropriate transportation.

While the findings help to identify the need for special transportation among the aging, the researcher feels that there is a need for a longitudinal study where the basic hypotheses of this study could be further explored. It might be beneficial if future study involved a larger sample of users and non-users. Other dimensions that might be explored would include vehicular mobility for shopping purposes (food, clothing, furniture, and so on) and vehicular mobility for medical care (doctor visits, dentist appointments, physiotherapy, and so on). Future study might also include a comparison of users and non-users residing in different community areas, or a comparison of urban and rural areas where dial-a-ride systems of transportation exist. Another possibility might be to compare certain components of vehicular mobility (i.e., private automobile, commercial transportation, public transit, special transportation) or to extend vehicular mobility to include travel by airplane, by ocean liner, by train, or by inter-provincial autobus systems. It might also be advantageous to include

comparisons of different age groups and of the sexes, or to consider financial constraints and psychological limitations on mobility.

In recognition of the need for special transportation as a possible solution to the mobility problems which confront persons as they grow older, it is recommended that:

1. dial-a-ride transportation service be implemented for the aging but also be expanded with additional staff and facilities
2. funds be made available for the purchase and maintenance of dial-a-ride vehicles and for the operation of service
3. those who benefit from the transportation service participate in program decision making and in operating the service
4. dial-a-ride vehicles be designed so that they are adaptable for easy access by elderly people
5. duplication of services be avoided by involving organizations and agencies serving the aging in a co-ordinated effort during the planning and development stages of such a transportation service
6. dial-a-ride transportation programs be implemented and evaluated in both urban and rural areas

There is an obvious need for further research, for program planning, and for action which could be taken at the federal, provincial, and community levels. Some additional suggestions for research would include:

1. data concerning the elderly as a group
2. transportation problems the elderly share with other groups (e.g., the poor, the handicapped)
3. physical limitations on mobility within the group
4. the elderly's use of time and their travel requirements
5. the latent demand for transportation in later life
6. the potential use of time in terms of this latent demand

7. the purpose, frequency, and length of walking trips or of vehicular trips in later life
8. study of improving vehicular design to suit the needs of the aged
9. study of the best means to reduce travel costs for the elderly

Some suggestions for program planning would include:

1. transportation referral service for elderly persons
2. travel assistance for elderly persons whose travels take them to the downtown area and to other busy areas within the larger society
3. a program whereby existing modes of vehicular transportation could be co-ordinated (such as school buses, mini-buses, taxis, autobuses) in order to improve the vehicular mobility of the aged during the off-peak hours
4. reduced-fare programs or free transportation on special modes

Some suggestions for legislative action would include:

1. standardization of vehicular design to ensure that mass transit systems and related facilities accommodate the elderly
2. appropriation of funds to achieve such improvements
3. a law to make it mandatory that special transportation be provided for the elderly who reside in more isolated areas or who are poorly served by public transportation
4. measures to ensure traffic control (signs, signals) and improved standards of street and pedestrian designs



APPENDICES



APPENDIX A

FINANCIAL BENEFITS FOR THE ELDERLY OF MONTREAL

(Effective 1977)

The Canada Pension Plan helps workers build up a pension for retirement and provides benefits for contributors who become disabled, for their dependent children, and for survivors of contributors. Contributions are based on earnings. The monthly retirement pension (\$173.61 maximum) may be drawn at age 65. Persons may continue to work and contribute until age 70. The person can no longer pay into it, once drawing begins. The pension is taxable and the amount received yearly is adjusted in line with the cost of living.

The Old Age Security Pension is a pension paid by the federal government to legal residents of Canada, age 65 and over. The rate increases every three months in line with the cost of living. Persons on Old Age Security Pension with little or no other income may apply for an extra amount known as the Guaranteed Income Supplement. The rate is determined by a person's income and revised quarterly in line with the cost of living. The spouse of a pensioner who receives the Guaranteed Income Supplement may be eligible for a pension if he/she is between 60 and 65 years and meets the requirements for Old Age Security. The amount of the spouse's allowance is based on the combined income of the couple. The allowance does not apply to couples who are separated. An article in the Montreal Star relates:

The basic old age security pension will rise in July to \$147.05

The maximum income supplement for a single person or a married person whose spouse is not receiving a pension or spouse's allowance rises at the same time to \$103.14

Married people who are both pensioners will receive a maximum supplement of \$91.53, . . . and the maximum spouse's allowance, paid to people between 60 and 65 married to pensioners, will rise . . . to \$238.63.

Income supplements and spouse's allowances are paid to people whose incomes are somewhat inadequate. ("Benefits Increased for Pensioners" 1977: A17)

In the province of Quebec, the Quebec Pension Plan is additional to the federal government monthly Old Age Security Pension paid to all eligible persons and to any retirement pension that is payable under the Canada Pension Plan. The Quebec Pension Plan provides a monthly retirement benefit, a lump sum death payment, surviving spouse's benefit, disability pension before age 65, and so on. Quebec pensions are indexed annually. Callaghan notes that:

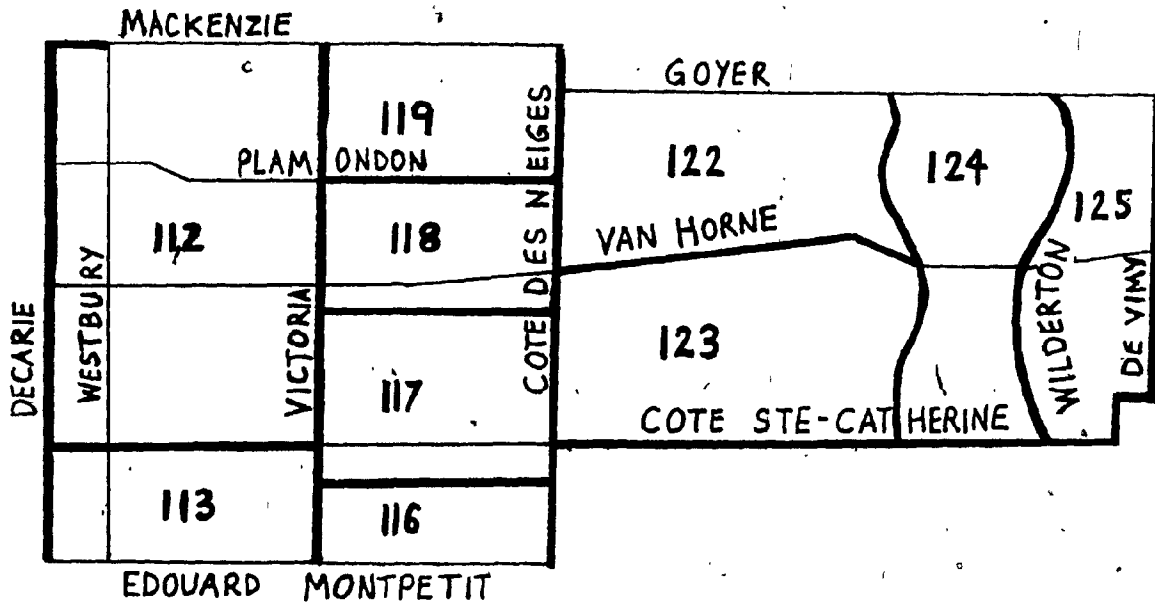
The maximum retirement benefit...will be \$173.61 a month in 1977.....

Those receiving the Quebec pension who continue to work between 65 and 70 have their pensions cut 50 cents for every dollar earned above \$1,620 in 1977. (Callaghan 1976: C1)

The elderly of Montreal may take advantage of certain discounts. For example, they may travel at reduced-fare on MUC buses and on the Metro (8 tickets for \$1.00) or on Voyageur buses (half-fare Monday to Thursday), and they are offered special rates from the Canadian National Railway (up to 20 percent) and from Air Canada (10 percent on regular economy rates). Discounts are also offered at Canadian banks, at all Howard Johnsons restaurants, at Howard Johnson's motor lodges (Canada, United States, Puerto Rico), at all United Theatres (Quebec), at the Famous Players Theatres' Golden Age Movie Club (\$1.00 admission), at many libraries, and at the YM-YWHA or the YMCA. Finally, Bell Canada offers free directory assistance for persons age 65 and more (Callaghan 1976).

APPENDIX B

DIAL-A-RIDE SERVICE AREA, COTE DES NEIGES: CENSUS BOUNDARIES 1971



Source: Statistics Canada 1973c

The Cote des Neiges community has a population of approximately 16,250 in the 55 and older age category (census tracts 112, 113, 116-119, 122-125), and some 13,530 live in the Dial-a-Ride service area (i.e., the area bounded by Wilderton Avenue, Decarie Boulevard, Plamondon Avenue, and Edouard Montpetit Boulevard along Cote Ste-Catherine Road). Two hundred and twenty-four people were informed about the availability of Dial-a-Ride. These informants constitute approximately 1.7 percent of the population age 55 or older residing in the Dial-a-Ride service area. The manner in which they were informed is described in appendix C.

APPENDIX C

METHODOLOGICAL APPENDIX

Preliminaries

The original intent of the study was to examine vehicular mobility in an area which contained a high concentration of non-institutionalized elderly persons. The decision was mainly related to previous experience in working with elderly persons at a rehabilitation center in Montreal. Underlying the selection and preliminary formulation of the research project was the belief that lack of appropriate transportation is a major problem for elderly persons and that problems with transportation make travel in the community difficult or impossible.

The Cote des Neiges community in Montreal was selected due to (1) the high proportion of elderly with a low average income (Old Age Security Pension) and (2) the high concentration of apartment dwellings with low average rent--most of them with stairway entrances. The community was also chosen because it exhibited limited access to resources and facilities and to social activities--that is, specific factors which would reduce vehicular mobility in later life were easily identified, especially in the core of Cote des Neiges.

On close inspection, the community provided a location for basic life-supportive services. A few examples of these include:

Hospitals and Clinics

Cote des Neiges Local Community Service Center (LCSC)
Hertzl Family Practice Center (JGH)
Hertzl Family Practice Center, Dental Department (JGH)
Institute of Community and Family Psychiatry (JGH)
Jewish General Hospital
Montreal Convalescent Hospital
Rehabilitation Institute of Montreal

Individual Help Services

Community Legal Center of Montreal
Cote des Neiges Local Community Service Center (LCSC)
Cote des Neiges Tenants' Association

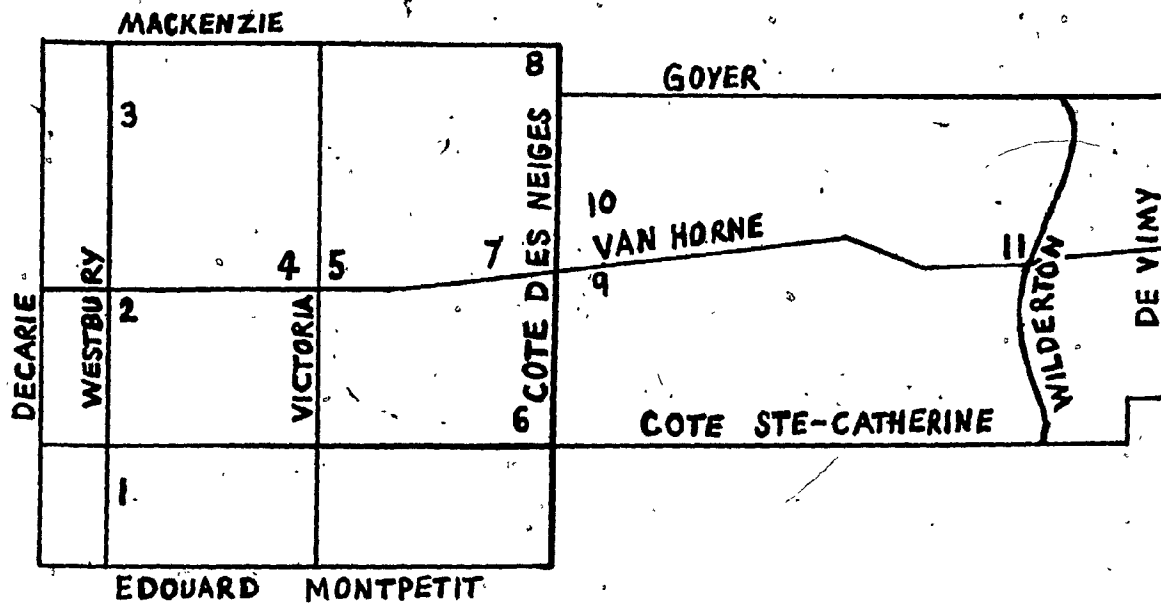
Golden Age Association
 Jewish Family Services
 Meals-on-Wheels

Shopping Centers
 Cote des Neiges Plaza
 Van Horne Shopping Center
 Wilderton Shopping Center

Recreation and Culture
 Golden Age Center
 Golden Age Clubs
 Saidye Bronfman Center
 YM-YWHA

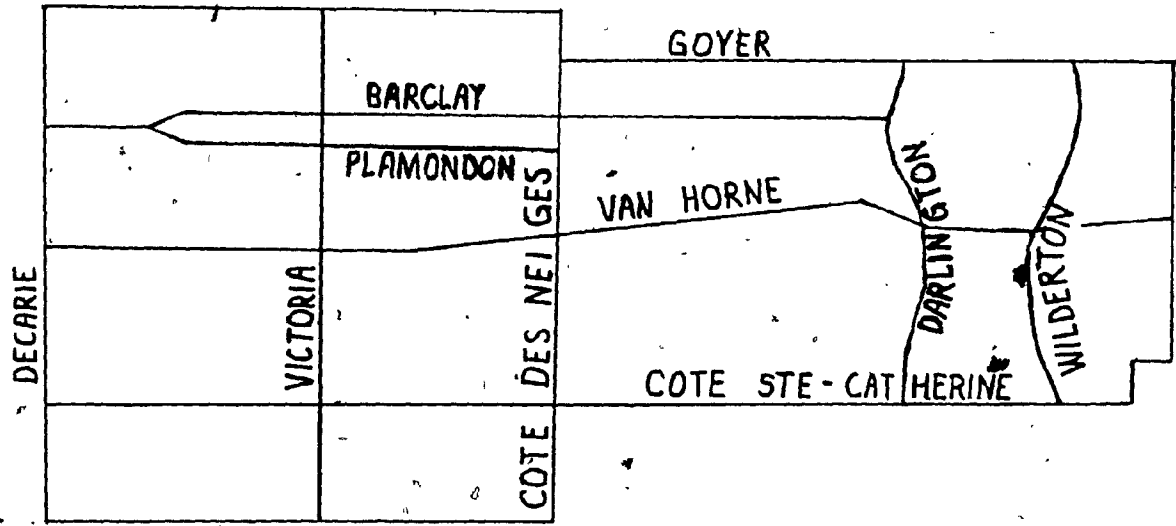
- ° However, various features of the community suggested that limited mobility was a serious problem for the elderly residents who must leave their homes in order to meet their basic life-support needs and to maintain contact with others. Specific factors were immediately apparent. Most services, establishments, and facilities were located along Van Horne Avenue and Cote des Neiges Road. Public parks were situated along Westbury Avenue and Cote des Neiges Road (fig. 1). It was noted (1) that the shortest distance between these locations and the nearest residence was approximately two blocks and (2) that walking to various activities, resources, and facilities could be severely affected by the preeminence of vehicular transportation in the community, by weather conditions, and by the need to traverse congested traffic intersections with adequate speed. In addition, the community exhibited steep hills from west to east, especially along Van Horne Avenue and Cote Ste-Catherine Road. For the elderly pedestrian, the heavy traffic would be an inconvenience. Moreover, the difficulties and hazards of walking would be intensified by poor health, by the need to carry parcels or packages, and by fears of being abused in crowds or in traffic. Even if conditions for the elderly pedestrian had been improved, it seemed unreasonable to expect that the elderly could depend on walking for all travel purposes. It was clear that they required vehicular transportation for medical visits, for social activities, and for shopping at local shopping centers or other stores—that is, factors which lowered the frequency of walking would increase the elderly's dependence on vehicular transportation for access to resources and facilities of the community and to social activities.

Fig. 1 Urban Features of Cote des Neiges



1. Mackenzie Park
2. Westbury Park
3. Park (small)
4. Van Horne Shopping Center
5. Various shops, restaurants, and establishments
6. Jewish General Hospital
7. Van Horne Theatre
8. Cote des Neiges Plaza (various food stores, shops, restaurants, and two cinemas)
9. Medical and dental clinics, private doctors and specialists, pharmacies, restaurants, and establishments
10. Kent Park
11. Wilderton Shopping Center

Fig. 2 Public Transit Routes in Cote des Neiges



- Decarie (17)
- Victoria (124)
- Darlington (128 A.M.)
- Wilderton (128 P.M.)
- Cote-Ste-Catherine (129)
- Plamondon (160)
- Barclay (160)
- Goyer (160)
- Van Horne (161)
- Cote des Neiges (165)

What modes of vehicular transportation did the elderly employ? It should be emphasized that the Cote des Neiges community was a fairly good location for public transportation, (fig. 2) and that dependence on public transportation could have been easily enforced upon the elderly who were deprived of private transportation or who lacked the ability to drive. It should also be pointed out that the public transit within the area could neither meet the needs nor support the capabilities of elderly persons. For the Cote des Neiges elderly, improved transportation was relevant to their travel needs. The Golden Age Association recognized this fact, and I was given the opportunity to work on a Dial-a-Ride Demonstration Project in December of 1976.

The Dial-a-Ride Transportation Program

The Dial-a-Ride transportation program had been developed on the basis of providing free, door-to-door transportation services to senior citizens who (a) did not have transportation available, (b) had difficulty in using public transit, or (c) had found the cost of transportation beyond their financial means. In order to program the services, it was necessary to appoint a project coordinator, a researcher, two additional team members, a daytime driver, and an evening driver. The program was scheduled to run from March 1 to June 23, 1977, Monday to Thursday and Sunday: 9:00 A.M.-9:00 P.M., Friday: 9:00 A.M.-3:00 P.M. The service was offered to persons over 60 years of age (55 years or more was accepted), ambulatory, and living in the Cote des Neiges area bounded by Plamondon Avenue, Wilderton Avenue, Edouard Montpetit Boulevard, and Decarie Boulevard. Priority was given to medical/dental/social service appointments, food shopping trips, and social rides; and a nine-passenger station wagon (rented) was available for these purposes.

Planning the Research

The original conception was that the team members would define the total task and operate without supervision. A key factor in the Dial-a-Ride project was that it have a research component. I was requested to assume this role and was expected to do my share of interviewing. It was agreed that the

research required for my study and the research needed by the Agency could be merged. It was also agreed that this material would be used in my study.

A great deal of the first month of the project was spent in designing interview schedules and in making preliminary plans to secure a ridership. As discussed in chapter VII, my research project was to take into account both users and non-users of the Dial-a-Ride transportation service. I had planned to examine the passengers' vehicular mobility by considering how differentials in availability of Dial-a-Ride relate to vehicular mobility for social activity. The aim was to focus on the importance of the availability by considering this relationship in conjunction with their reports of physical limitations on mobility. I had hoped that it would be possible to generate hypotheses from these findings. I had also planned to examine the vehicular mobility of users and non-users.

Certain methodological decisions followed. The first decision was to select respondents who lived in the designated area in Cote des Neiges. I had reason to expect that the service might be offered to residents of other community areas. My expectations were later confirmed when the Agency requested that Dial-a-Ride provide occasional service for some residents of the N.D.G., Cote St. Luc, and Hampstead communities. This decision, therefore, served as a safeguard against contaminating the sample with respondents who lived outside the experimental area and who may have been interviewed and included in the ridership. The second decision was to select users and non-users prior to the implementation of Dial-a-Ride in order to have an unbiased sampling for the absence and the presence of Dial-a-Ride. The third decision was to be sure the subjects were selected from the Cote des Neiges Dial-a-Ride population--that is, from users and non-users who resided in the designated area and had been approached door-to-door (persons under 55 years were not interviewed); were referred by friends, family members, and social workers; or had requested Dial-a-Ride transportation service--so that they would be representative of this population. Another decision was to use the same questions for users and non-users as well as to design interview schedules which would provide (1) basic demographic information, (2) data pertaining to the

qualifications of the users and non-users and their travel needs, (3) information on their use of vehicular transportation, and (4) the users' reactions towards Dial-a-Ride. It was also more expedient for study purposes to develop a specific schedule which would incorporate these various schedules.

In order to have sufficient time to prepare trip records and travel schedules, the Agency and the team members had agreed that the ridership must be secured by February 11, 1977. In addition, Dial-a-Ride was a one-vehicle service and could provide transportation for a maximum of 175 passengers. These factors precluded the opportunity to obtain a larger sampling of the designated area.

I decided to choose the subjects of this study by February 11. I also decided to obtain a good representation of the Cote des Neiges Dial-a-Ride population by subdividing the population into users and non-users who were residing within the experimental area in Cote des Neiges at the time of study. I categorized the Dial-a-Ride population into those who "will use" Dial-a-Ride and those who "will not use" the service. Respondents who lived outside the area were eliminated from the study. I then proceeded to determine the percentage of the entire population which could be placed in each category. Periodic checking of the Cote des Neiges Dial-a-Ride population--at the end of December, mid-January, and the beginning of February--had showed the percentage of the entire population in each category as follows:

TABLE 8
PERCENT OF POTENTIAL USE OR NON-USE
BY MONTHLY RESPONSE

Category	Dec.	Jan.	Feb.
Will use	60%	58%	59%
Will not use	40	42	41
(N)	(52)	(87)	(155)

By February 11, there was a total of 132 confirmed users and 92 confirmed non-users--a purposively selected sample by area (the Dial-a-Ride service area) and age (55 years and over). I decided to have 100 subjects in the user group and determined that 70 non-users would be required in order to have a large sampling reflecting the same percentage of the total sample in each category as in the Cote des Neiges Dial-a-Ride population. I also decided that the selection of users and non-users would involve random selection--that is, a randomly selected sample of the users of the Cote des Neiges Dial-a-Ride population, and a random sub-sample of a sample consisting of non-users. This was done in an attempt to ensure that disturbing effects of extraneous variables would be equalized for both groups. This would also ensure that it would be possible to generalize from the sample (of users and non-users) to the entire Dial-a-Ride population of Cote des Neiges. Four thousand computer-generated random numbers were used as a source (Kerlinger 1973: 714-717), and both groups were selected independently of each other.

Securing a Ridership

Interviews were conducted during work hours. The team had agreed that an initial interview would be essential to familiarize the respondents with the Dial-a-Ride program and that all respondents (who had been approached door-to-door, were referred, or had requested transportation service) would be re-interviewed to determine exact details of their transportation needs.

The elderly living nearby traffic and service intersections were expected to satisfy their needs by walking. The team reasoned that Dial-a-Ride would be more important to those whose homes were situated at a greater distance from the nearest bus stops and service centers. The team also expected that respondents with low incomes would be residing in substandard housing and depending on the autobus. An attempt to reach these "isolated" and "low income" elderly had been made. More specifically, the team sought to reach every person age 55 or more on Dupuis, Plamondon, Westbury, Cote Ste-Catherine Road, and at Darlington Place (door-to-door survey).

The interview schedules were designed so that all subjects would respond to the same questions. A pretest, which was conducted in December, indicated the need for some minor changes. These changes enabled the team members to feel more comfortable with the interview schedule which was used for the first phase of the project. The members of the team assured me of their full co-operation when conducting interviews with prospective passengers. When an interview was lacking information, I had contacted the respondent after work hours. Persons under 55 years were not interviewed.

Although the research aspect was occupying much of my time, I joined the team on several interview trips to Plamondon, Darlington Place, Dupuis, Westbury, and Cote Ste-Catherine Road. The interviews were very pleasant and lasted about 90 minutes. None refused an interview. All questions were read aloud to the respondents, and their responses were recorded. Some respondents recommended others who they thought could use the Dial-a-Ride service, and some provided details about their transportation problems. Still others refused the service. Confidentiality was assured.

A very interesting discussion took place during the early stages of securing the ridership. A respondent was annoyed with high rent and complained that she was "quite isolated" from community resources and "frustrated" by the inefficient delivery of public transportation. She commented on the fact that there were three inappropriate bus routes within walking distance of Darlington Place: the 160 bus (three to four blocks away) could only indirectly connect her with downtown or with major hospital centers; the 161 bus (two to three blocks away) required that she walk uphill; and the 128 bus was inadequate for her needs since it ran only during rush-hour.

There were many referrals from friends, family members, and social workers as well as a number of requests for Dial-a-Ride transportation service. While some refused, several persons--after having heard about the service through friends and relatives--had expressed an interest in participating in the program. The team decided (a) to notify hospital centers, health clinics, and social agencies (by letters and personal visits) and (b) to place announcements on bulletin boards at shopping centers and religious institutions within the

community area. These techniques were employed in order to provide other elderly residents of the area with an opportunity to use Dial-a-Ride; to accommodate individuals and group needs; and to secure a ridership for medical/dental appointments, social service visits, shopping trips, and social excursions.

It should be pointed out that friction arose between two team members and that three members were replaced in late February. During the interim period (one week) I performed a variety of tasks: co-ordination (I later became chief co-ordinator and mediator), interviewing (by telephone or by personal contact at the Agency), and scheduling future Dial-a-Ride trips. When the new team had been established, approximately 30 interviews (for this study) were incomplete. I made certain that these interviews would be completed before the date of implementation. By March, I had pre-scheduled (i.e., before implementation) the trips of 100 users--a randomly selected sample of the users of the Cote des Neiges Dial-a-Ride population--who were interviewed and registered for Dial-a-Ride service. All non-users were also interviewed (by March), and 70 of these respondents--a random sub-sample of a sample consisting of non-users and carried out, for the most part, in a door-to-door survey--had been selected for this study.

The Non-Users and the Users

At this point, some discussion is appropriate about the non-users and the users of this study.

Only 23 percent of the non-users refused service (by personal decision) due to physical impairment, and the majority of non-users claimed they were able to satisfy their needs without Dial-a-Ride service (77 percent). Some comments from the non-users were as follows:

Physically unable to use Dial-a-Ride--

"I feel too weak to go out."

Able to satisfy needs without Dial-a-Ride--

"We don't need transportation service, but maybe in the future. Our family helps us with transportation."

"I may use Dial-a-Ride when my husband feels well enough to go."

"I may need Dial-a-Ride to visit my wife if she is hospitalized. My wife is very sick. I am taking care of things on my own."

"I really don't need the service right now."

When initially interviewed, those who intended to use the service were considered to be relatively healthy and able to perform at an acceptable level when outdoors. Where there was some doubt as to the physical disability of a person requesting the services of Dial-a-Ride, his/her physician was contacted in order to confirm his/her need for special transportation services. None were excluded on this basis.

The elderly were observed during the availability of Dial-a-Ride for a six-week period in March and April. The non-users did not use Dial-a-Ride transportation, and I learned while calling them that there were no changes in their vehicular mobility for social activity. The users who employed Dial-a-Ride for social purposes, however, were also availing themselves of the service to return home. I had accompanied the users on a few trips and had noted the follows observations:

"I think Dial-a-Ride has a big potential to succeed. I use Dial-a-Ride mainly for medical appointments, and I enjoy shopping and making new friends with the help of the service. I would have to walk to the hospital or take a taxi without Dial-a-Ride. I will be receiving Old Age Pension, and I will try to manage with that; however, taxi fare comes out of food money and other money."

"I am happy to have this service for my weekly physiotherapy appointments. I will miss Dial-a-Ride very much if the service is discontinued. It means so much to me to be taken to medical appointments and to return home with Dial-a-Ride."

"The service is a blessing since I cannot carry parcels home. I enjoy the drive and the help in attending to my needs with this service."

"I was taking a bus before Dial-a-Ride. It was very hard for me to carry parcels from the bus stop to my apartment. I can't afford a taxi and I'm very grateful to Dial-a-Ride for taking me to the shopping center and bringing me home."

"I would much rather wait for a courteous Dial-a-Ride driver to pick me up and provide me with the assistance I need. I don't like waiting for a taxi driver who becomes impatient if I am not waiting for him downstairs when he arrives."

"By having Dial-a-Ride service, I am able to encourage my friend to go out with me. We use Dial-a-Ride for social activity, especially during the evening, and find it a wonderful way to be together."

"The service is invaluable for people like me who don't have a family to take them out, and who don't have this pleasure I have by being with others. I enjoy my evening rides and I hope this will continue for a long time."

"I am meeting all my old friends once again with Dial-a-Ride."

Interviews, of 30 minutes duration on the average, were conducted over a two-week period in mid-April and May. The purpose of these interviews was to determine the users' reactions towards Dial-a-Ride. Most of the passengers not only rated their experiences of the service as satisfactory (96 percent) but also found the scheduling convenient for their purposes (99 percent). In addition, the majority enjoyed the social trips (98 percent) and did not find the ride too tiring (94 percent). Fifty-eight percent were willing to pay fifty cents per one-way trip should Dial-a-Ride continue in the future.

The Dial-a-Ride transportation service terminated at the end of June with a ridership of approximately 200. An estimated 2,000 one way trips were taken by the elderly of Cote des Neiges, and approximately 400 one-way trips were provided for the elderly of other communities. It is interesting to note that the vehicle was serviced for repair on two occasions.

I had contacted some of the passengers after the Dial-a-Ride program had terminated. They expressed themselves as follows:

"There are not enough words to tell you how I feel about the service."

"I have good memories of my outings with Dial-a-Ride."

"I am very glad I was with the Dial-a-Ride people."

"Dial-a-Ride helped me to be with people my age."

"The rides I had did me so much good after sitting in the house all winter."

"I met a friend through Dial-a-Ride and we took each other's telephone numbers."

"I enjoyed Sunday and evening rides. I haven't seen Montreal in years!"

TABLE 9
REACTIONS TOWARDS DIAL-A-RIDE

Item	Response Percent	
	No	Yes
The vehicle is too crowded	98%	2%
The driver is courteous	5	95
I feel safe in the vehicle	2	98
I enjoy the company of others	1	99
The vehicle is comfortable	0	100
I am picked up on time	9	91
I reach my destinations on time	6	94

Based on a sample of 100 Dial-a-Ride users, Cote des Neiges, March and April 1977.

SELECTED BIBLIOGRAPHY

- ABT Associates, Incorporated. Qualitative Aspects of Urban Personal Travel Demand. Springfield, Virginia: National Technical Information Service, 1968.
- Travel Barriers: Transportation Needs of the Handicapped. Springfield, Virginia: National Technical Information Service, 1969.
- American Academy of Arts and Science. Conference on Transportation and Poverty. Springfield, Virginia: National Technical Information Service, 1968.
- Armstrong, Julian. "The Single Shopper Gets a Break." Montreal Star, 12 April 1978, p. B1.
- Atchley, Robert C. The Social Forces in Later Life: An Introduction to Social Gerontology. Belmont, California: Wadsworth Publishing Company, Inc., 1972.
- Auerbach, Lewis, and Gerber, Andrea. Implications of the Changing Age Structure of the Canadian Population. Perceptions, Vol. 2. Ottawa, Ontario: Supply and Services Canada, 1976.
- Barron, Milton L. The Aging American: An Introduction to Social Gerontology and Geriatrics. New York: Thomas Y. Crowell Company, 1961.
- Baum, Daniel J. The Final Plateau: The Betrayal of Our Older Citizens. Toronto, Ontario: Burns and MacEachern Ltd., 1974.
- Bell, Bill D., ed. Contemporary Social Gerontology: Significant Developments in the Field of Aging. Springfield, Illinois: Charles C. Thomas, 1976.
- "Benefits Increased for Pensioners." Montreal Star, 11 June 1977, p. A17.
- Bengston, Vern L., and Haber, David A. "Sociological Approaches to Aging." In Aging: Scientific Perspectives and Social Issues, pp. 70-91. Edited by Diana S. Woodruff and James E. Birren. Toronto, Ontario: Van Nostrand Reinhold Ltd., 1975.
- Berger, Peter L., and Berger, Brigitte. "Old Age, Illness and Death." In Sociology: A Biographical Approach. 2d enl. ed. New York: Basic Books, Inc., 1975.
- Binstock, Robert H., and Shanas, Ethel, eds. Handbook of Aging and the Social Sciences. Toronto, Ontario: Van Nostrand Reinhold Ltd., 1976.
- Birren, James E. The Psychology of Aging. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1964.

- "Aging: Psychological Aspects." In International Encyclopedia of the Social Sciences. Vol. 1: 177-186. New York: Macmillan, 1968a.
- "Principles of Research on Aging." In Middle Age and Aging: A Reader in Social Psychology, pp. 545-551. Edited by Bernice L. Neugarten. Chicago, Illinois: University of Chicago Press, 1968b.
- "The Aged in Cities." In Contemporary Social Gerontology: Significant Developments in the Field of Aging, pp. 7-13. Edited by Bill D. Bell. Springfield, Illinois: Charles C. Thomas, 1976.
- ed. Handbook of Aging and the Individual: Psychological and Biological Aspects. Chicago, Illinois: University of Chicago Press, 1959.
- Blau, Zena S. Old Age in a Changing Society. New York: New Viewpoints, A Division of Franklin Watts, Inc., 1973.
- Blumenthal, Ralph. "Rural Dial-a-Ride Service Breaks Isolation of the Poor and Elderly." New York Times, March 1977, pp. 1, 20.
- Breen, Leonard Z. "The Aging Individual." In Handbook of Social Gerontology: Societal Aspects of Aging, pp. 145-162. Edited by Clark Tibbitts. Chicago, Illinois: University of Chicago Press, 1960.
- Brotman, Herman B. "The Elderly as a Significant Population Group." In Transportation and Aging: Selected Issues, pp. 10-13. Edited by Edmund J. Cantilli and June L. Shmelzer. Washington, D.C.: U.S. Government Printing Office, 1970.
- Bruck, H. W. "Emerging and Novel Transportation Systems as They Apply to the Elderly." In Transportation and Aging: Selected Issues, pp. 107-113. Edited by Edmund J. Cantilli and June L. Shmelzer. Washington, D.C.: U.S. Government Printing Office, 1970.
- Burgess, Ernest W., ed. Aging in Western Societies: A Comparative Survey. Chicago, Illinois: University of Chicago Press, 1960.
- Busse, Ewald W. "Theories of Aging." In Behavior and Adaptation in Late Life, pp. 11-32. Edited by Ewald W. Busse and Eric Pfeiffer. Boston, Mass.: Little, Brown and Company (Inc.), 1969.
- Busse, Ewald W., and Pfeiffer, Eric, eds. Behavior and Adaptation in Late Life. Boston, Mass.: Little, Brown and Company (Inc.), 1969.

- Callaghan, Eleanor. "Elderly Facing New Year Bonanza." Montreal Star, 30 December 1976, p. C1.
- Canadian Conference on Aging. Proceedings, 1st Toronto, 1966. Ottawa, Ontario: Canadian Welfare Council, 1966.
- Cantilli, Edmund J., and Shmelzer, June L., eds. Transportation and Aging: Selected Issues. Washington, D.C.: U.S. Government Printing Office, 1970.
- Carp, Frances M. A Future for the Aged: Residents of Victoria Plaza. Austin, Texas: University of Texas Press, 1966.
- _____. "The Mobility of Retired People." In Transportation and Aging: Selected Issues, pp. 23-41. Edited by Edmund J. Cantilli and June L. Shmelzer. Washington, D.C.: U.S. Government Printing Office, 1970a.
- _____. "Public Transit and Retired People." In Transportation and Aging: Selected Issues, pp. 82-92. Edited by Edmund J. Cantilli and June L. Shmelzer. Washington, D.C.: U.S. Government Printing Office, 1970b.
- _____. "On Becoming an Ex-Driver: Prospect and Retrospect." Gerontologist 11 (Summer 1971a): 101-103.
- _____. "Walking as a Means of Transportation for Retired People." Gerontologist 11 (Summer 1971b): 104-111.
- City of Edmonton, Transportation Planning Branch. "Terms of Reference and Objectives, Two Year Pilot Project—Disabled Adult Transportation Service (D.A.T.S.)." Prepared by Gregory R. Latham, Planner, Land Use and Development Section. Edmonton, Alberta, 1975. (Mimeographed.)
- Clark, Margaret. "Patterns of Aging among the Elderly Poor of the Inner City." In Contemporary Social Gerontology: Significant Developments in the Field of Aging, pp. 341-347. Edited by Bill D. Bell. Springfield, Illinois: Charles C. Thomas, 1976.
- Clark, Margaret, and Anderson, Barbara G. Culture and Aging: An Anthropological Study of Older Americans. Springfield, Illinois: Charles C. Thomas, 1967.
- Comfort, Alexander. Ageing: The Biology of Senescence. rev. and reset ed. New York: Holt, Rinehart and Winston, 1964.
- Confrey, Eugene A., and Goldstein, Marcus S. "The Health Status of Aging People." In Handbook of Social Gerontology: Societal Aspects of Aging, pp. 165-207. Edited by Clark Tibbitts. Chicago, Illinois: University of Chicago Press, 1960.

Cumming, Elaine. "Further Thoughts on the Theory of Disengagement." International Social Science Journal 15 (1963): 377-393.

_____. "New Thoughts on the Theory of Disengagement." In New Thoughts on Old Age, pp. 3-18. Edited by Robert Kastenbaum. New York: Springer Publishing Company, 1964.

Cumming, Elaine, and Henry, William E. Growing Old: The Process of Disengagement. New York: Basic Books Company, Inc., 1961.

Cutler, Neal E., and Harootyan, Robert A. "Demography of the Aged." In Aging: Scientific Perspectives and Social Issues, pp. 31-69. Edited by Diana S. Woodruff and James E. Birren. Toronto, Ontario: Van Nostrand Reinhold Ltd., 1975.

Cutler, Stephen J. "The Availability of Personal Transportation, Residential Location, and Life Satisfaction among the Aged." In Contemporary Social Gerontology: Significant Developments in the Field of Aging, pp. 284-291. Edited by Bill D. Bell. Springfield, Illinois: Charles C. Thomas, 1976.

Dean, Lois R., and Newell, David S. "The Evidence for Disengagement in Attitude and Orientation Change." In Growing Old: The Process of Disengagement, pp. 75-105. Edited by Elaine Cumming and William E. Henry. New York: Basic Books Company, Inc., 1961.

Department of Manpower and Immigration. Immigration Statistics, 1970. Ottawa, Ontario: Information Canada, 1971.

Dove, Donald A. "The Los Angeles Multi-Service Transportation (MUST) Program." In Transportation and Aging: Selected Issues, pp. 151-152. Edited by Edmund J. Cantilli and June L. Shmelzer. Washington, D.C.: U.S. Government Printing Office, 1970.

Environics Research Group. The Seventh Age: A Bibliography of Canadian Sources in Gerontology and Geriatrics, 1964-1972. Toronto, Ontario, 1972.

Ferguson, George A. Statistical Analysis in Psychology and Education. 2d ed. Toronto, Ontario: McGraw-Hill, Inc., Book Company, 1966.

Galtung, Johan. Theory and Methods of Social Research. rev. ed. New York: Columbia University Press, 1969.

Gelwicks, Louis E. "The Older Person's Relation with the Environment: The Influence of Transportation." In Transportation and Aging: Selected Issues, pp. 19-22. Edited by Edmund J. Cantilli and June L. Shmelzer. Washington, D.C.: U.S. Government Printing Office, 1970.

Goar, Carol. "Age Balance Shifting from Youth to Seniors." Montreal Star, 30 March 1978, p. A15.

Golant, Stephen M. The Residential Location and Spatial Behavior of the Elderly: A Canadian Example. Research Paper No. 143. Chicago, Illinois: Department of Geography, University of Chicago, 1972.

Hammel, Lawrence V. "Regional Planning and Its Implications for the Elderly." In Transportation and Aging: Selected Issues, pp. 59-66. Edited by Edmund J. Cantilli and June L. Shmelzer. Washington, D.C.: U.S. Government Printing Office, 1970.

Havighurst, Robert J. "Life Beyond Family and Work." In Aging in Western Societies: A Comparative Survey, pp. 299-353. Edited by Ernest W. Burgess. Chicago, Illinois: University of Chicago Press, 1960.

_____. "Successful Aging." In Processes of Aging: Social and Psychological Perspectives. Vol. 1: 299-320. Edited by Richard H. Williams, Clark Tibbitts, and Wilma H. Donahue. New York: Atherton Press, 1963.

_____. "Developmental Tasks of Later Maturity." In Developmental Tasks and Education, pp. 107-116. 3d ed. New York: David McKay Company, Inc., 1972.

Havighurst, Robert J., and Albrecht, Ruth. Older People. New York: Longmans, Green and Company, 1953.

Havighurst, Robert J.; Neugarten, Bernice L.; and Tobin, Sheldon S. "Disengagement and Patterns of Aging." In Middle Age and Aging: A Reader in Social Psychology, pp. 161-172. Edited by Bernice L. Neugarten. Chicago, Illinois: University of Chicago Press, 1968.

Hochschild, Arlie R. "Disengagement Theory: A Critique and Proposal." American Sociological Review 40.(October 1975): 553-569.

Jones, Harold E. "Intelligence and Problem-Solving." In Handbook of Aging and the Individual: Psychological and Biological Aspects, pp. 700-738. Edited by James E. Birren. Chicago, Illinois: University of Chicago Press, 1959.

Kelly, Frank, ed. Population Growth and Urban Problems. Perceptions; Vol. 1. Ottawa, Ontario: Supply and Services Canada, 1975.

Kerlinger, Fred N. Foundations of Behavioral Research. 2d ed. Montreal, Québec: Holt, Rinehart and Winston, Inc., 1973.

Klecka, William R.; Nie, Norman H.; and Hull, C. Hadlai. SPSS Primer. New York: McGraw Hill, Inc., 1975.

Klein, Joe. "Growing Old Sensationally." Montreal Star, 9 July 1977, p. F1.

- Kolstoe, Ralph H. Introduction to Statistics for the Behavioral Sciences. rev. ed. Georgetown, Ontario: Irwin-Dorsey Ltd., 1973.
- Kuhlen, Raymond G. "Developmental Changes in Motivation During Adult Years." In Middle Age and Aging: A Reader in Social Psychology, pp. 115-136. Edited by Bernice L. Neugarten. Chicago, Illinois: University of Chicago Press, 1968.
- Kutner, Bernard; Fanshel, David; Togo, Alice M.; and Langner, Thomas S. Five Hundred Over Sixty: A Community Survey on Aging. New York: Russell Sage Foundation, 1956.
- Lawton, M. Powell; Newcomer, Robert J.; and Byerts, Thomas O., eds. Community Planning for an Aging Society: Designing Services and Facilities. Stroudsburg, Pennsylvania: Hutchinson and Ross, 1976.
- Lemon, Bruce W.; Bengston, Vern L.; and Peterson, James A. "An Exploration of the Activity Theory of Aging: Activity Types and Life Satisfaction among In-Movers to a Retirement Community." In Contemporary Social Gerontology: Significant Developments in the Field of Aging, pp. 51-62. Edited by Bill D. Bell. Springfield, Illinois: Charles C. Thomas, 1976.
- Libow, Leslie S. "Older People's Medical and Physiological Characteristics: Some Implications for Transportation." In Transportation and Aging: Selected Issues, pp. 14-18. Edited by Edmund J. Cantilli and June L. Shmelzer. Washington, D.C.: U.S. Government Printing Office, 1970.
- Loether, Herman J. Problems of Aging: Sociological and Social Psychological Perspectives. 2d ed. Belmont, California: Dickenson Publishing Company, Inc., 1975.
- Lowenthal, Marjorie F. "Social Isolation and Mental Illness in Old Age." In Middle Age and Aging: A Reader in Social Psychology, pp. 220-234. Edited by Bernice L. Neugarten. Chicago, Illinois: University of Chicago Press, 1968.
- Maddox, George L. "Persistence of Lifestyle among the Elderly: A Longitudinal Study of the Patterns of Social Activity in Relation to Life Satisfaction." In Middle Age and Aging: A Reader in Social Psychology, pp. 181-183. Edited by Bernice L. Neugarten. Chicago, Illinois: University of Chicago Press, 1968.
- Maddox, George L., and Douglass, Elizabeth B. "Aging and Individual Differences: A Longitudinal Analysis of Social, Psychological, and Physiological Indicators." In Contemporary Social Gerontology: Significant Developments in the Field of Aging, pp. 63-75. Edited by Bill D. Bell. Springfield, Illinois: Charles C. Thomas, 1976.
- Markovitz, Joni K. "The Transportation Needs of the Elderly." In Transportation and Aging: Selected Issues, pp. 67-81. Edited by Edmund J. Cantilli and June L. Shmelzer. Washington, D. C.: U.S. Government Printing Office, 1970.

Miller, Stephen J. "The Social Dilemma of the Aging Leisure Participant." In Middle Age and Aging: A Reader in Social Psychology, pp. 366-374. Edited by Bernice L. Neugarten. Chicago, Illinois: University of Chicago Press, 1968.

Neugarten, Bernice L. "Adult Personality: Toward a Psychology of the Life Cycle." In Middle Age and Aging: A Reader in Social Psychology, pp. 137-147. Edited by Bernice L. Neugarten. Chicago, Illinois: University of Chicago Press, 1968a.

_____, ed. Middle Age and Aging: A Reader in Social Psychology. Chicago, Illinois: University of Chicago Press, 1968b.

Neugarten, Bernice L., and Moore, Joan W. "The Changing Age-Status System." In Middle Age and Aging: A Reader in Social Psychology, pp. 5-21. Edited by Bernice L. Neugarten. Chicago, Illinois: University of Chicago Press, 1968.

Neugarten, Bernice L.; Havighurst, Robert J.; and Tobin, Sheldon S. "Personality and Patterns of Aging." In Middle Age and Aging: A Reader in Social Psychology, pp. 173-177. Edited by Bernice L. Neugarten. Chicago, Illinois: University of Chicago Press, 1968.

Newell, David S. "Social-Structural Evidence for Disengagement." In Growing Old: The Process of Disengagement, pp. 37-74. Edited by Elaine Cumming and William E. Henry. New York: Basic Books Company, Inc., 1961.

Nouwen, Henri J. M., and Gaffney, Walter J. Aging: The Fulfillment of Life. Garden City, New York: Image Books, A Division of Doubleday and Company, Inc., 1976.

Orbach, Harold L., and Tibbitts, Clark, eds. Aging and the Economy. Ann Arbor, Michigan: University of Michigan Press, 1963.

Palmore, Erdman. "Sociological Aspects of Aging." In Behavior and Adaptation in Late Life, pp. 33-67. Edited by Ewald Busse and Eric Pfeiffer. Boston, Mass.: Little, Brown and Company (Inc.), 1969.

Pastalan, Leon A. "Privacy as an Expression of Human Territoriality." In Spatial Behavior of Older People, pp. 88-102. Edited by Leon A. Pastalan and Daniel H. Carson. Ann Arbor, Michigan: University of Michigan Press, 1970.

Planek, T.W.; Condon, M.C.; and Fowler, R.C. An Investigation of the Problems and Opinions of Aged Drivers. Springfield, Virginia: National Technical Information Service, 1968.

Pöllak, Otto. Social Adjustment in Old Age: A Research Planning Report. Bulletin 59. New York: Social Science Research Council, 1948.

- Regnier, Victor. "Neighborhood Planning for the Urban Elderly." In Aging: Scientific Perspectives and Social Issues, pp. 295-312. Edited by Diana S. Woodruff and James E. Birren. Toronto, Ontario: Van Nostrand Reinhold Ltd., 1975.
- Riley, Matilda White, and Foner, Anne. Aging and Society. Vol. 1: An Inventory of Research Findings. New York: Russell Sage Foundation, 1968.
- Riley, Matilda White; Foner, Anne; Hess, Beth; and Toby, Marcia A. "Socialization for the Middle and Later Years." In Handbook of Socialization Theory and Research, pp. 951-982. Edited by David A. Goslin. Chicago, Illinois: Rand McNally and Company, 1969.
- Riley, Matilda White; Johnson, Marilyn; and Foner, Anne. Aging and Society. Vol. 3: A Sociology of Age Stratification. New York: Russell Sage Foundation, 1972.
- Rose, Arnold M. "A Current Theoretical Issue in Social Gerontology." In Middle Age and Aging: A Reader in Social Psychology, pp. 184-189. Edited by Bernice L. Neugarten. Chicago, Illinois: University of Chicago Press, 1968a.
- _____. "The Subculture of Aging: A Topic for Sociological Research." In Middle Age and Aging: A Reader in Social Psychology, pp. 29-34. Edited by Bernice L. Neugarten. Chicago, Illinois: University of Chicago Press, 1968b.
- Rose, Arnold M., and Peterson, Warren A., eds. Older People and Their Social World. Philadelphia, Pennsylvania: F.A. Davis Company, 1965.
- Rosow, Irving. Social Integration of the Aged. New York: The Free Press, 1967.
- _____. "Housing and Local Ties of the Aged." In Middle Age and Aging: A Reader in Social Psychology, pp. 382-389. Edited by Bernice L. Neugarten. Chicago, Illinois: University of Chicago Press, 1968.
- Schonfield, David, and Stewart, Robert. A Bibliography of Canadian Research in Gerontology, 1949-1969. Calgary, Alberta: Department of Psychology, University of Calgary, 1970.
- Shanas, Ethel, and Maddox, George L. "Aging, Health, and the Organization of Health Resources." In Handbook of Aging and the Social Sciences, pp. 592-618. Edited by Robert H. Binstock and Ethel Shanas. Toronto, Ontario: Van Nostrand Reinhold Ltd., 1976.
- Shanas, Ethel; Townsend, Peter; Wedderburn, Dorothy; Friis, Henning; Milhoj, Poul; and Stehouwer, Jan. Old People in Three Industrial Societies. New York: Atherton Press, 1968.
- Shock, Nathan W. A Classified Bibliography of Gerontology and Geriatrics. Stanford, California: Stanford University Press, 1957.

- _____, ed. Biological Aspects of Aging. New York: Columbia University Press, 1962.
- Sjoberg, Gideon, and Nett, Roger. A Methodology for Social Research. New York: Harper and Row, Publishers, 1968.
- Smith, Joel. "The Narrowing Social World of the Aged." In Social Aspects of Aging, pp. 226-242. Edited by Ida Harper Simpson and John C. McKinney. Durham, North Carolina: Duke University Press, 1966.
- Statistics Canada. Population--Age Groups, Census of Canada, 1971. Cat. no. 92-715. Ottawa, Ontario: Information Canada, April 1973a.
- _____. Population by Birthplace, Census of Canada 1971. Cat. no. 92-706. Ottawa, Ontario: Information Canada, December 1973b.
- _____. Population and Housing Characteristics by Census Tracts, Montreal, Census of Canada 1971. Cat. no. 95-704 (CT-4A). Ottawa, Ontario: Information Canada, May 1973c.
- _____. Urban and Rural Distributions, Census of Canada, 1971. Cat. no. 92-709. Ottawa, Ontario: Information Canada, February 1973d.
- Streib, Gordon F. "Are the Aged a Minority Group?" In Middle Age and Aging: A Reader in Social Psychology, pp. 35-46. Edited by Bernice L. Neugarten. Chicago, Illinois: University of Chicago Press, 1968.
- Tallmer, Margot, and Kutner, Bernard. "Disengagement and the Stresses of Aging." In Contemporary Social Gerontology: Significant Developments in the Field of Aging, pp. 43-50. Edited by Bill D. Bell. Springfield, Illinois: Charles C. Thomas, 1976.
- Talmon, Yonina. "Aging: Social Aspects." In International Encyclopedia of the Social Sciences. Vol. 1: 186-195. New York: Macmillan, 1968.
- Thomlinson, Ralph. Sociological Concepts and Research: Acquisition, Analysis, and Interpretation of Social Information. New York: Random House, Inc., 1965.
- Tibbitts, Clark, ed. Handbook of Social Gerontology: Societal Aspects of Aging. Chicago, Illinois: University of Chicago Press, 1960.
- United Nations. Question of the Elderly and the Aged: A Report of the Secretary General on Conditions, Needs and Services, and Suggested Guidelines for National Policies and International Action (A/9126), 1973.
- _____. Department of Economic and Social Affairs. The Aging: Trends and Policies (ST/ESA/22), 1975.

United States, Department of Health, Education, and Welfare, Administration on Aging. Aging. Pubn. 186. Washington, D.C.: U.S. Government Printing Office, 1970a.

. Words on Aging: A Bibliography of Selected Annotated References Compiled for the Administration on Aging. Washington, D.C.: U.S. Government Printing Office, 1970b.

. Transportation Projects Serving the Elderly. AoA Fact Sheet. Washington, D.C.: U.S. Government Printing Office, 1976.

, Institute of Public Administration. Planning Handbook: Transportation Services for the Elderly. Washington, D.C.: U.S. Government Printing Office, 1975.

United States, Department of Transportation. Transportation for the Handicapped. Bibliographic List No. 1. Washington, D.C.: U.S. Government Printing Office, 1969.

United States, House of Representatives, Select Committee on Aging. Senior Transportation--Ticket to Dignity. Report by the Subcommittee on Federal, State, and Community Services. Washington, D.C.: U.S. Government Printing Office, 1976a.

. Transportation: Improving Mobility for Older Americans (Part II). Hearings before the Subcommittee on Federal, State, and Community Services. Washington, D.C.: U.S. Government Printing Office, 1976b.

United States Senate, Special Committee on Aging. Developments in Aging, 1969. Washington, D.C.: U.S. Government Printing Office, 1970a.

. Older Americans and Transportation: A Crisis in Mobility. Washington, D.C.: U.S. Government Printing Office, 1970b.

. Developments in Aging, 1970. Washington, D.C.: U.S. Government Printing Office, 1971.

. Transportation and the Elderly: Problems and Progress. Hearings before the Special Committee on Aging, pts. 1-4--Washington, D.C. Washington, D.C.: U.S. Government Printing Office, 1974.

Videbeck, Richard, and Knox, Alan B. "Alternative Participatory Responses to Aging." In Older People and Their Social World, pp. 37-48. Edited by Arnold M. Rose and Warren A. Peterson. Philadelphia, Pennsylvania: F.A. Davis Company, 1965.

Weg, Ruth B. "Changing Physiology of Aging: Normal and Pathological." In Aging: Scientific Perspectives and Social Issues, pp. 229-256. Edited by Diana S. Woodruff and James E. Birren. Toronto, Ontario: Van Nostrand Reinhold Ltd., 1975.

- Welford, Alan T. "Psychomotor Performance." In Handbook of Aging and the Individual: Psychological and Biological Aspects, pp. 562-613. Edited by James E. Birren. Chicago, Illinois: University of Chicago Press, 1959.
- Welford, Alan T., and Birren, James E., eds. Behavior, Aging and the Nervous System: Biological Determinants of Speed of Behavior and Its Change With Age. Springfield, Illinois: Charles C. Thomas, 1965.
- White House Conference on Aging. "Recommended for Action: Transportation." 1971 White House Conference on Aging Report. Washington, D.C.: U.S. Government Printing Office, 1971.
- Williams, Robert A. "Changing Status, Roles, and Relationships." In Handbook of Social Gerontology: Societal Aspects of Aging, pp. 261-297. Edited by Clark Tibbitts. Chicago, Illinois: University of Chicago Press, 1960.
- Woodruff, Diana S. "The Future: A 300 Year Lifespan." Montreal Star, 13 April 1978, p. B2.