

AN ANALYSIS OF SERVICE AVAILABILITY AND LIFE SATISFACTION OF
SENIOR CITIZEN APARTMENT DWELLERS

BY

JACQUELINE J. GAUTHIER

A Thesis
Submitted to the Faculty of Graduate Studies
in Partial Fulfillment of the Requirements
for the Degree of

MASTER OF ARTS

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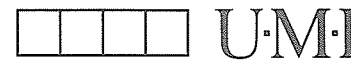
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ABSTRACT

The objectives of this thesis are twofold. The main objective is to conduct an exploratory investigation of life satisfaction and routine travel behaviour among residents of two senior citizen apartment (SCA) buildings. The buildings are located in two contrasting service environments in Winnipeg, Manitoba. A secondary objective is to examine socio-demographic characteristics and travel modes of SCA residents. The specific objectives of the thesis are to compare the two housing site residents with regard to (i) evaluation of residential location; (ii) life satisfaction; (iii) trip frequency. Five hypotheses are formulated in accordance with these three specific objectives.

Data are elicited by a questionnaire/interview survey, which includes the Life Satisfaction Index B (Neugarten et al., 1961). Respondents for the survey were randomly selected from each of the two senior citizen apartment buildings. The survey obtained information regarding respondents' socio-demographic characteristics, travel activities, and travel modes. In addition, data were collected concerning satisfaction with proximity to activity sites and life satisfaction in general.

Objective statistical inferential procedures were used to analyze the data and subsequently test the five research hypotheses. The findings disclose that (i) life satisfaction and satisfaction with proximity to service activity sites are related to residential location; (ii) life satisfaction and satisfaction with proximity to service activity sites are positively associated; (iii) trip

frequencies to service and social activity sites are unrelated to residential location. Relevant policy issues regarding the siting of services and senior citizen apartment buildings are discussed.

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CHAPTER ONE

INTRODUCTION

1.1 Objectives

The objectives of this thesis are twofold. The main objective is to conduct an exploratory examination of life satisfaction and routine travel behaviour among residents of senior citizen apartment (SCA) buildings situated in two contrasting service environments of Winnipeg, Manitoba. A secondary objective is to conduct a descriptive analysis of the socio-demographic characteristics of SCA residents. It is intended that the findings of this research will contribute to a greater understanding of the urban elderly who are domiciled in government-subsidized age-segregated apartment buildings.

Life satisfaction may be defined as overall satisfaction with life in general (Kozma et al., 1991) as a result of long-term cognitive assessment of progress toward, or attainment of, one's goals (Bauer and Okun, 1983). Life satisfaction is one of a number of terms that have been used to define and measure psychological well-being. Other terms that have been employed include adjustment, morale, competence, happiness, affect, mental health, mood, and well-being (Neugarten et al., 1961; Reker and Wong, 1984; Gibson, 1986; Kozma et al., 1991). The majority of the terms are global in nature and take into account a person's state of mind and mental capacity. The term life satisfaction is used in the present study given its

applicability to different domains of one's life (e.g., health, housing, finances, etc.) (Kozma et al., 1991:11), thus differentiating it from the other constructs. Life satisfaction also differs from other constructs in that state of mind is not a defining attribute of satisfaction as it is with some of the other constructs (e.g., adjustment, mood, and affect).

The Life Satisfaction Index B (Neugarten et al., 1961) is employed in the present study to measure life satisfaction among the elderly. Additionally, the life satisfaction of the elderly will be presented within the framework of "the ecological model of aging" (Lawton and Nahemow, 1973). This model is used in order to relate aging individuals to their environment and to determine the effect of the latter on life satisfaction.

The elderly are defined, in this study, as those people who are 65 years of age (Canadian retirement age) and over. This definition has previously been used in several research studies concerning the elderly (Cutler, 1975; MacLean et al., 1985; Graham et al., 1991). However, some of the respondents in the study are between the ages of 55 and 64. They were included due to their similar lifestyle (i.e. retired and receiving pension) of those respondents aged 65 and older. The service environment is assessed in terms of proximity to the following activity sites: (i) a supermarket, (ii) a pharmacy, (iii) a medical service, (iv) a bank, (v) recreational activities, and (vi) public transportation. In addition, the social environment is evaluated in terms of proximity to the following activity sites: (i) homes of friends and (ii) homes of relatives. Routine travel

behaviour is assessed in terms of trip frequencies to service and social activity sites.

The specific objectives of this thesis are:

1. to compare evaluations of proximity to out-of-home activity sites by elderly persons living in two contrasting service environments;
2. to compare levels of life satisfaction of elderly persons living in two contrasting service environments;
3. to compare trip frequencies to out-of-home activity sites by elderly persons living in two contrasting service environments.

The following five hypotheses are formulated in relation to these objectives.

The hypotheses concerning evaluation of proximity to out-of-home activity sites are:

Hypothesis I: that the elderly's satisfaction with proximity to service activity sites is related to residential location.

Hypothesis II: that the elderly's satisfaction with proximity to social activity sites is not related to residential location.

The hypotheses concerning levels of life satisfaction are:

Hypothesis III: that the level of life satisfaction of elderly persons is positively related to their satisfaction with proximity to activity sites.

Hypothesis IV: that elderly persons living in a service-rich environment will have higher levels of life satisfaction than elderly persons living in a service-poor environment.

The hypothesis concerning trip frequency is:

Hypothesis V: that trip frequency to activity sites is greater for those elderly people living in a service-rich environment than for those living in a service-poor environment.

The secondary objective of the thesis involves a descriptive analysis of socio-demographic characteristics of SCA residents. These characteristics include age, gender, health, length of residence, and travel modes to activity sites.

1.2 Organization of the Thesis

In the remainder of Chapter 1 the field of gerontological geography is reviewed and relevant concepts are defined. The theoretical

perspective of the ecological model (Lawton and Nahemow, 1973) is then discussed in relation to the present study. Chapter 2 of the thesis involves a review of literature relevant to the study. The life satisfaction and well-being of the elderly are first discussed. This is followed by an examination of geographical research on the elderly's usage of their proximate environment and the services that it offers. A discussion of work that addresses the influence of the environment on life satisfaction of the elderly concludes the literature review.

Chapter 3 offers detailed discussions of the hypotheses and the data collection procedures. In Chapter 4 the data analysis is presented. The first part offers a descriptive analysis of the data. The second part involves the use of objective statistical inferential tests to evaluate the differences between the two groups of elderly residents concerning their levels of life satisfaction, satisfaction with their proximity to activity sites, and trip frequency to activity sites. Finally, Chapter 5 of the thesis offers a summary of results and an overview of the entire project. This chapter also considers the policy implications of the findings and suggests directions for future related research.

1.3 Gerontological Geography

The study of social gerontology is a rapidly growing area of interdisciplinary research to which significant geographical contributions have been made. Warnes states that:

"The overall objective of social gerontology is to increase understanding of human ageing processes, of age-related changes in human behaviour, attitudes and circumstances, and of our society's responses to the requirements and preferences of different age groups, particularly those in later life" (Warnes, 1990:25).

Geographical contributions to this field include several demographic studies of population aging (Warnes, 1982, 1990; Longino Jr., 1988; Grigsby, 1991). All countries experience a demographic process that produces population aging given certain changes in fertility and mortality rates over time. Grigsby (1991) applied the demographic transition theory to several countries, demonstrating the need to incorporate aging policies within broader public policy. Warnes (1990) also examined population aging of various countries. He concluded that adoption of a global perspective in studying the regional variations in the circumstances of the elderly would provide an original and significant contribution to the field of gerontological geography.

The geographical literature concerning the spatial distribution of the elderly is fairly extensive (Smith and Hiltner, 1975; Graff and Wiseman, 1978; Warnes and Law, 1984; McCracken, 1985; Tierney, 1987; Logan and Spitze, 1988; Rosenberg et al., 1989; Golant, 1990; Rosenberg and Moore, 1990). Several processes have been found to be responsible for elderly spatial distributions, i.e. low fertility, high mortality, aging-in-place, in-migration of elderly, and out-migration of younger persons. Specifically, studies have been focused at the national (Graff and Wiseman, 1978; Warnes and Law,

1984), regional (Rosenberg et al., 1989), and urban (Smith and Hiltner, 1975; Golant, 1990) scales.

In the United States, spatial concentrations of the elderly have generally been found in sunbelt areas and in resort areas. For instance, Graff and Wiseman (1978) focused on the changes in spatial patterns of the elderly in the United States between 1950 and 1970. They investigated the factors responsible for these changes and discovered an increasing number of elderly persons relocating not only in Florida, but also in newer resort areas of the north and north-west. Studies at the regional level have commonly indicated increasing spatial concentrations of the elderly in urban centres (Rosenberg et al., 1989; Rosenberg and Moore, 1990). For instance, Rosenberg et al's (1989) regionally based study concluded that high growth rates of the elderly population occurred in both metropolitan and high amenity areas in Ontario. In relation to studies at the urban level, earlier results offered evidence of significant concentrations of elderly in inner cities (Smith and Hiltner, 1975). However, recent research (Golant, 1990) has confirmed a trend of suburbanization of the elderly in the United States during the past two decades.

Migration patterns and behaviour of the elderly have also been the subject of numerous geographical studies at various scales (Wiseman and Virden, 1977; White, 1983; Gober and Mings, 1984; Rogers and Watkins, 1987; Bohland and Rowles, 1988; Northcott, 1988; Serow and Charity, 1988; Watkins, 1990). Reasons for migration moves at the national and regional levels include retirement. Retirement moves are usually to either an area of

amenity (Gober and Mings, 1984), or the place of one's home origin (Serow and Charity, 1990). Many of the amenity moves are temporary, with the duration of stay coinciding with the winter months. The term "snowbird" has thus been used to denote those elderly persons who live in a warmer climate during the winter season and return home for the remainder of the year (Happel et al., 1988). Watkins (1990) examined migration in two sub-regions of Appalachia - eastern Kentucky and western North Carolina. He found that processes of out- and in-migration of elderly individuals and aging-in-place contribute to existing age structures of the regional populations. In their study of national migration, Serow and Charity (1988) found that return migration to the home origin accounts for an increasingly large share of interstate moves by the U.S. elderly for the period of 1975 to 1985.

Migration at the urban level usually consists of one of two types: suburbanization or inner city relocation. For instance, Wiseman and Virden (1977) identified two groups of elderly migrants: those moving away from the central business district (CBD) and those moving toward it. The examination of migrants' socioeconomic profiles reveal that those moving away from the CBD are apt to be homeowners, have possession of an automobile, and be financially stable. Conversely, those moving toward the CBD are likely to rent their housing and be less financially secure.

Various geographical aspects of housing for the elderly have been examined in several studies (Mercer, 1979; Varaday, 1984; Phillips and Vincent, 1986; Phillips et al., 1987; Joseph and Fuller, 1990). The results disclose that factors precipitating a move into age-

segregated senior citizen apartment buildings include a reduction in income, mobility constraints, and the high cost of maintaining a house in the community. As a result, the majority of residents of this type of accommodation are single, female, lower income tenants, and users of public transportation. However, moves into age-segregated housing do not always involve freedom of choice. Mercer's (1979) survey in Vancouver, British Columbia concluded that, although most elderly people wish to remain in their home neighbourhood, this is often impossible. Housing projects are frequently situated in peripheral locations where cheap land is available and not in areas where a sizeable number of applicants are located. Mercer states that negative social and psychological consequences may result from housing being located at these sites. A lack of choice in housing may also be experienced at the rural level. Joseph and Fuller's (1990) results clearly suggest a lack of intermediate forms of housing, such as retirement homes or enriched (sheltered) housing, for the semi-independent elderly in rural Ontario communities. Instead, the most common forms of housing available for the rural elderly are houses, apartments and mobile homes.

In recent years, geographers have been giving increased attention to the repetitive travel patterns of the aged (Hanson, 1977; Peace, 1982; Robson, 1982; Rowles, 1986; Golant et al.; 1989; Rollinson, 1990). On account of mobility constraints, the older person's activity space is likely to be more restricted than that of younger individuals (Peace, 1982; Robson, 1982). However, Hanson (1977) found that mean travel distances of elderly and non-elderly

residents of Uppsala, Sweden were similar over a 35-day study period. Rollinson (1990) examined the daily activity patterns of poor, elderly hotel tenants in Chicago over a two-year period. He concluded that there are several constraints on the mobility of the elderly. These constraints include the threat of crime and the presence of physical barriers such as busy intersections. Thus, the residents are characterized as independent but isolated.

Other geographical studies of travel activity patterns have focused on specific types of trips. Shannon et al. (1985) investigated pharmacy patronage among the elderly and found that, although "neighbourhood" pharmacies are viewed as being very important, relatively few elderly use the most geographically convenient outlet. Graham et al. (1991) studied the activities of elderly people in a shopping mall. They state that for many aged individuals going to a shopping mall is an important social and leisure activity. Smith (1991) examined grocery shopping patterns of the urban elderly and concluded that their shopping activities are largely confined to the home neighbourhood.

The spatial variation in service availability for seniors has also been studied by many geographers. Rural areas have been found to possess fewer services than urban centres, a problem which is often exacerbated by the lack of public transportation (Gant and Smith, 1988; Joseph and Fuller, 1991). Furthermore, higher rates of service utilization have been found among those elderly who live alone and/or experience moderate to severe physical limitations (Iutovich and Iutovich, 1988; Pinch, 1991). Meyer states that, "spatial concentrations of different types of older people are likely

to lead to spatial variation in need and utilization" (1990:398). For instance, age-segregated housing sites concentrate the demand for services (e.g. medical) which can ultimately reduce the cost of providing such services. Meyer (1990) also suggests the need for geographical theory and perspective for dealing with service delivery to the elderly.

Finally, a number of studies have focused on the life satisfaction of the elderly and the influence of various environmental and physical factors (Cutler, 1972,1975; Bohland and Herbert, 1983; Ward, 1984; Reitzes et al., 1991). The results of this work will be reviewed in Chapter Two.

1.4 Conceptual Framework

A comprehensive theory relating the individual, the environment, and the aging process has been proposed by Lawton and Nahemow (1973). The theory is known as the "ecological model" and it is comprised of the following components: degree of individual competence, environmental press, adaptive behaviour, affective responses, and adaptation level.

The theory states that a person's adaptation to the environment depends on the interaction of the two basic elements of individual competence and environmental press (Lawton and Nahemow, 1973). The former refers to a person's level of health, sensorimotor functioning, perception, cognitive skill, and ego strength. In addition, external factors such as loss of income, forced retirement, or loss of spouse may reduce a person's level of competence (Lawton

and Nahemow, 1973). The concept of environmental press refers to the behavioural demands that the environment places on individuals. Press may be differentiated in terms of their normative stress-producing properties and the scale at which they offer support or demands to an individual. The theory also states that environmental press will vary from time to time as the environment, and the individual's needs and competence, change temporally.

The model proposes that the level of individual competence may range from "low" to "high", while the degree of environmental press may range from "weak" to "strong". The interplay of individual competence and environmental press is also affected by individual differences in need and the ability of the environment to suffice. When competence and press are in balance, the result is the occurrence of a positive mental state.

The model has been revised with the introduction of the "environmental proactivity" hypothesis (Lawton, 1987). This hypothesis was formulated in response to the criticism that respondents were viewed as being passive and not trying to fulfill their needs through the use of environmental resources. This amending theory states that aged persons use personal resources to actively adapt their physical and social environment before the environment creates pressure for change.

The present study will be formulated within the ecological model of aging. In the thesis, residential location and proximity to the sites of services and social contacts are considered to be forms of environmental press; self-reported health a form of individual competence; trip frequencies to service/social activity sites as

adaptive behaviour; and life satisfaction an affective response. Life satisfaction will also be related to the ecological model concept of the "adaptation level". Individuals tend to establish their own adaptation level whereby external stimuli are perceived neither as strong nor weak, but as indifferent. Positive affect, a feeling of comfort within one's environment, occurs near adaptation level (Lawton and Nahemow, 1973). It is therefore proposed that a higher level of life satisfaction will be reflected in satisfaction with the surrounding environment.

In relation to competence, the elderly represent a unique subset of the population due to their increased rate of health problems and the subsequent limitations on their activity levels. For example, in the General Social Survey of 1985 which was conducted in Canada, 55% of respondents over the age of 65 reported arthritis/rheumatism, 39% reported hypertension, and 26% reported heart trouble. In addition, one in three senior citizens reported some degree of limitation on activities (Health and Welfare Canada, 1989). The increased rate of health problems and related physical limitations reduce the competence of the elderly. It may therefore be proposed that behaviour of the elderly becomes increasingly dependent on environmental conditions, thus constricting their activity space. The extent to which each individual's behaviour is dependent on such conditions will thus be determined partly by their health status (level of competence). In the present study health was assessed by each respondents self-rating of "excellent", "good", "fair", "poor", or "bad".

In the present study, environmental press includes the location of services, friends, and family, and the availability of transportation in relation to these locations. Lawton and Nahemow (1973) state that levels of press exist in a neutral state, and are defined as positive or negative by each individual who interacts with them. Thus, it is further proposed that the more proximate and accessible services and social contacts are, the more satisfied the elderly person will be with his/her residential location and life in general. This satisfaction is viewed as an affective response in the thesis. Lawton and Nahemow (1973:659-660) state that "while affective responses include aesthetic and other evaluative attitudes toward the environment, they are meant to include much more broadly any emotional states that are involved in the environment-behaviour transaction".

1.5 Contribution of the Study to Gerontological Geography

This study will offer three contributions to the field of gerontological geography. First, there is a significant dearth of information concerning effects of the environment upon the life satisfaction of the elderly. According to Warnes, "only very recently have there been signs that questions of access, surveillance, the relationship between proximity and interaction, and the importance of the residential environment are becoming accepted as important issues in the quality of life of elderly people" (1990:40). Thus, the present study will add to the geographic knowledge of this area by

studying the effect of service and residential location on the well-being of the elderly.

Second, few studies have attempted to observe the influence of variations in urban residential location and service environments upon life satisfaction of the elderly. Past work has mainly focused on the elderly residents at only one urban location (Berghorn et al., 1978; LaGory et al., 1985), and on the influence of sociodemographic variables upon life satisfaction (Chatfield, 1977; Wells and McDonald, 1981). In contrast, the present study attempts to compare the life satisfaction of elderly persons residing at two urban locations with contrasting local service environments. An attempt will also be made to determine the extent to which characteristics of the elderly person's local service environment influences his/her level of life satisfaction. Third, the present study will provide descriptive data concerning senior citizen apartment dwellers. This data will be used in the testing of the five hypotheses formulated specifically for this research project.

From a policy perspective, the results will assist geographers and social planners in developing a better understanding of the advantages and disadvantages of choosing particular sites for senior citizen housing. In addition, the implications of the findings for siting various services (i.e. shopping, medical, recreational) for seniors will be considered. In particular, the site selection process for senior housing should be coordinated with service delivery planning for residents. This coordination must also involve transportation planning since the travel mode used by the elderly

person may extend or restrict his/her access to virtually all services.

1.6 Summary

The general objectives of thesis are (1) to examine the life satisfaction and routine travel behaviour of elderly people in two contrasting service environments and (2) to conduct a descriptive analysis of the socio-demographic characteristics of SCA residents. In particular, the study attempts:

1. to compare evaluations of proximity to out-of-home activity sites by elderly persons living in two contrasting service environments;
2. to compare levels of life satisfaction of elderly persons living in two contrasting service environments.
3. to compare trip frequencies to out-of-home activity sites by elderly persons living in two contrasting service environments.

The role of Lawton's ecological model of aging in the present study is discussed. The organization of the thesis is then outlined. Finally, the contributions of gerontological geography are discussed, and the intended contributions of the thesis to existing knowledge are explained.

CHAPTER TWO

REVIEW OF THE LITERATURE

The manner in which the elderly utilize their environment has received a great deal of attention from geographers and researchers in cognate disciplines. Much of this attention has focused on the residential location and daily activity patterns of the elderly. However, few geographers have investigated the effects of the physical environment on the general life satisfaction of the elderly. The purpose of this chapter is to review the work that has been conducted on areas of life satisfaction of the elderly, their utilization of the environment, and their location in the environment.

The first part of the chapter discusses general aspects of the life satisfaction of the elderly and relevant methodology. This is followed by a review of literature explicitly concerned with life satisfaction of the elderly from a geographical perspective. A review of the literature regarding service provision and utilization by the elderly is then presented, followed by an examination of various aspects of senior citizen housing. Finally, a summary is given which explains the place of the present study within existing literature.

2.1 Life Satisfaction of the Elderly

Most of the literature concerning the life satisfaction of the elderly has been produced by psychologists and sociologists

(Palmore and Kivett, 1977; Dickie et al., 1979; Fengler and Jensen, 1981; Bearon, 1989). Their examination of the life satisfaction of the elderly has traditionally investigated various socio-demographic, health, and activity factors. Furthermore, a wide variety of techniques have been used to determine level of life satisfaction among the elderly. This section initially examines the stability of life satisfaction among the elderly. This is followed by a review of various factors affecting life satisfaction of the elderly, with emphasis on the effects of institutionalization.

2.1.1 Stability of Life Satisfaction Among the Elderly

Several studies have focused upon the stability of life satisfaction among the elderly (Palmore and Kivett, 1977; Lohmann, 1980; Bauer and Okun, 1983; Herzog and Rogers, 1986; Folkman et al., 1987). The findings of these studies indicate an overall picture of stability in life satisfaction among elderly individuals. That is, life satisfaction among older people appears to remain constant over time.

Palmore and Kivett's (1977) longitudinal study of adults, 46 to 70 years of age, included a day-long series of physical, mental, and social examinations repeated at two-year intervals, and culminating in three sets of data after a period of six years. Life satisfaction was measured using the "Cantril ladder" technique (Cantril, 1965). Each respondent was presented with a picture of a ladder numbering from zero on the bottom rung (representing the worst possible life)

to nine on the top rung (representing the best possible life). He/she then had to indicate on the ladder where they felt they stood at the present time. In addition, five variables were initially found to be significantly related to life satisfaction: "self-rated health", "organizational activity", "social activity hours", "productive hours", and "sexual enjoyment". The results of the study concluded that, relative to a person's own expectations, there was no significant change in life satisfaction of people age 46 to 70 over the six year period. Also, of the five significant variables at the beginning of the study, only three retained significant predictive power in determining life satisfaction: "self-rated health", "sexual enjoyment", and "social activity hours". Self-rated health had the most predictive power, while the other two variables were significant to a lesser extent.

Bauer and Okun (1983) collected data from 105 non-institutionalized elderly in 1977 and subsequently from 91 of the 94 surviving respondents in 1980. Life satisfaction was measured on both occasions by Form B of the Life Satisfaction Index (LSIB) (Neugarten et al., 1961). This index consists of 17 open-ended questions which are then scored on a two- or three-point scale. Bauer and Okun concluded that life satisfaction remained unchanged over the three year period. This finding lends support to continuity theory which states that people maintain their levels of life satisfaction over time. Their results also reveal that, while self-perceived health is a significant predictor of LSIB scores, perceived adequacy of income and locus of control were non-significant.

2.1.2 Factors Influencing Life Satisfaction of the Elderly

Several factors influencing life satisfaction of the elderly have been investigated. Gibson (1986) studied the relationship between social interaction and well-being in old age. His results confirm the hypothesis that it is the respondents' perception of the adequacy of interaction, rather than the amount of interaction, which is important to well-being.

Bearon (1989) proposed that there are qualitative differences in the nature of life satisfaction between older (age 65 to 75) and middle-aged (age 40 to 50) women. Her results reveal that although levels of satisfaction were similar in the two groups, the salient sources of satisfaction differed noticeably. The more notable findings include the greater significance of health status to older women compared to their younger counterparts. In addition, older women strove to maintain their present status, whereas middle-aged women looked forward to future achievements and acquisitions.

Shmotkin (1991) explored the role of time orientation in life satisfaction across the life span. Data were collected from respondents ranging in age from 18 years to over 71 years. The findings indicate an age-related pattern where increasing age was associated with declining ratings for the future, a milder decline for the present, and relative increase for the past. In other words, up to about age 60 people aspire to a distinctly better future than the past and present. Following age 60, the importance of past experiences in determining a person's present state of well-being increases. Shmotkin states that "this attests to the importance of past

accomplishments in allowing the elderly to reconcile themselves to the hardships of the present and their diminishing resources for the future" (1991:248).

2.1.3 Institutionalization and Life Satisfaction

Studies of life satisfaction have also taken into account the impact of institutionalization upon life satisfaction of the elderly (Campbell et al., 1976; Dickie et al., 1979; Wells and MacDonald, 1981; Harel and Noelker, 1982; Parmalee, 1982; Pearlman and Uhlmann, 1986). Dickie et al. (1979) hypothesized that institutionalized older adults, if they are generally in poorer health and participate less in social activities, would report lower life satisfaction than comparable non-institutionalized older adults. Subjects were asked to rate their own health and to indicate the amount of time spent participating in various activities. They were also required to complete the Life Satisfaction Index A (LSIA) (Neugarten et al., 1961) which consists of 20 attitude items. The results revealed that the two groups (institutionalized and non-institutionalized) did not differ on measures of self-perceived health, although the institutionalized group did report lower activity levels. Contrary to the researchers' expectations, the hypothesis was not supported as the institutionalized sample did not report lower life satisfaction than the non-institutionalized group.

Wells and MacDonald (1981) investigated the amount of disruption in close, personal relationships created by institutional relocation. Consideration was also given to the possibility of a link between

these relationships prior to the move and successful physical and ensuing psychological adjustment. The Life Satisfaction Index Z (LSIZ), a 13-item questionnaire, was used as a measure of morale. This index is an abbreviated version of the LSIA (Neugarten et al., 1961), and was administered before and after institutional relocation. The research concludes that the existence of a close inter-personal network, with both staff and ties outside the home, was linked to successful adjustment to relocation in terms of life satisfaction, and physical and mental functioning.

Finally, Pearlman and Uhlmann (1986) compared the quality of life between elderly nursing home and community residents. Three aspects of quality of life were examined. First, a global rating of quality of life was measured using a six-point Likert scale. Second, participants indicated whether 33 specific attributes (e.g. "How often I am sad" and "How often I feel sick") had affected their quality of everyday life, and if so to what extent. Third, respondents were asked to list any events, changes, or situations that had improved or reduced their quality of life during the preceding 12 months. Although different factors significantly affected the quality of life of the two groups, their global ratings were remarkably similar. The authors conclude that health care providers cannot assume that nursing home residents perceive their quality of life to be worse than that of other elderly persons.

The foregoing discussion discloses two important conclusions regarding life satisfaction of the elderly. First, level of life satisfaction of the elderly remains relatively stable over time. Second, levels of life satisfaction among groups differing in age or

in type of residence are remarkably similar, although sources of satisfaction may differ. This conclusion lends support to the contention that life satisfaction is an individual's subjective, cognitive assessment of his/her own life (Bauer and Okun, 1983).

2.2 Geographical Perspectives on Life Satisfaction of the Elderly

Few studies have been concerned with the geographical perspectives on the influence of the physical environment upon life satisfaction of the elderly. In fact, several of the life satisfaction studies reviewed in this section are the work of non-geographers (Cutler, 1972, 1975; LaGory et al., 1985; Reitzes et al., 1991). However, their work does provide geographical perspectives and is thus considered important and relevant to the present study.

Cutler (1972, 1975) studied the effects of residential location and availability of personal transportation on the life satisfaction of the elderly. He concluded that lower levels of life satisfaction were characteristic of those elderly lacking available transportation and living at greater distances from most of the facilities and services of the community.

Fengler and Jensen (1981) analyzed a needs assessment survey of 1405 elderly urban and non-urban residents in Vermont to determine the effects of objective and subjective conditions on life satisfaction. The results disclosed that few differences exist among the sample in terms of such objective factors as incapacity, income, and education. However, the non-urban elderly felt subjectively that they were better off regarding social support,

income, and transportation. Furthermore, self-perceived income, participation in organizations, trouble getting around due to poor transportation, and having someone to turn to in times of crisis were found to be much stronger predictors of life satisfaction in the city than in the country.

Peace (1982) compared the activity patterns and life satisfaction of elderly people in residential care homes to elderly community residents. Data from earlier research conducted in Swansea, South Wales and the South East of England revealed lower activity levels among residents of care homes as compared to community based elderly. The life satisfaction of respondents was assessed using Bradburn's Affect Balance Scale (Bradburn and Caplovitz, 1965). The results indicated a positive relationship between activity and psychological well-being. Peace concluded that significant consideration should be given to whether the lives of residents in care homes would be enhanced through increased use of their neighbourhood, and how this could be achieved.

Bohland and Herbert (1983) investigated the direct and indirect effects of an elderly person's competency on the relationship between morale and neighbourhood attributes. A simple recursive model was developed for this purpose, taking into account personal characteristics, health, and social class of the residents. The model also examined three neighbourhood variables i.e. neighbourhood friendliness, aesthetic quality, and convenience of social activities and commercial services. They stated that these variables create a specific set of circumstances for each individual to interact with. The extent to which these circumstances determine morale will vary

over time, depending on the individuals changing personal circumstances and competency level. For instance, the convenience of facilities/services does not influence the morale of those elderly residents who are in good health. For those less healthy, however, convenience is important and does begin to impinge upon their sense of well-being (1983:941). Furthermore, they concluded that since personal competency dictates the extent to which an individual may utilize the resources of his or her environment, it thus ultimately contributes to a state of personal well-being.

LaGory et al. (1985) also examined the determinants of neighbourhood satisfaction among the elderly. Their results show that objective and subjective environmental factors are significant in predicting neighbourhood satisfaction. However, differences do exist in the sources of satisfaction for low- and high-competence individuals. For example, only subjective perceptions of the neighbourhood (e.g. safety and convenience) influenced the overall satisfaction of the low-competence group. On the other hand, both subjective and objective (e.g. percentage of vacant housing units and degree of urbanism) factors determined overall satisfaction in the high-competence group. The final conclusion of the research states that perceptions of the neighbourhood are the most significant source of neighbourhood satisfaction.

The environmental dimension of life satisfaction among the elderly has also been examined by Berghorn et al. (1978). The results of their analysis reveal three major networks of environmental factors that are related to life satisfaction. The first of these, "Age Concentration" focuses upon the density of elderly people residing in

the neighbourhood. The second factor "Physical Security", focuses in two determinants of satisfaction: condition of the neighbourhood and income adequacy. The third factor, "Self-Transportation", encompasses variables which reflect a person's level of mobility. Specifically, high levels of life satisfaction were found among those elderly living in neighbourhoods with high concentrations of older residents, and which were assessed as being in good condition. In addition, higher levels of mobility, good access to transportation, and a favourable perception of one's own income were also associated with high life satisfaction.

Finally, Reitzes et al. (1991) observed the relationship between location and well-being among retired men. Their findings revealed that retired men living in suburban locations reported greater levels of well-being than those living in central city locations. However, poor health was found to reduce the well-being of retired men in the suburbs to a greater degree than their central city counterparts. Poor health and its subsequent limit on physical mobility exacerbates the problem of distance from many services when living in a suburban location.

In summary, this section has dealt with life satisfaction from a geographical viewpoint. The literature has revealed that life satisfaction is certainly influenced by the physical environment and by access and proximity to services and facilities. However, this relationship has also been found to be mediated by the competency level of the individual.

2.3 Services for the Elderly

The quality of the neighbourhood and community have important effects on the well-being of older people (Ward, 1984). One aspect of this quality is proximity and accessibility to community services and facilities. This section examines literature concerning the provision of services for senior citizens and their utilization of these services. This is followed by a review of overt movement patterns and mobility among the elderly. Furthermore, the use of transportation modes and travel behaviour of the elderly is examined.

2.3.1 Provision of Services for the Elderly

"The large majority of older people show needs for certain programs, facilities and services to promote customary life styles and standard of living and to improve the quality of life" (Lawton et al., 1976:228). Several recent studies have compared patterns of specific services with estimates of need (Kaiser et al., 1987; Gant and Smith, 1988; Pinch, 1991). For instance, Pinch (1991) found relatively strong associations between indices of need and the provision of meals-on-wheels services and residential accommodation in Adelaide, Australia. The allocation of community services to the areas of greatest need is due to the regionally-based geriatric service in Adelaide. In contrast, Melbourne, with a relatively decentralized administrative structure, shows little or no coordination of these services with estimates of need. Kaiser et al.,

(1987) on the other hand found that census measures of demographic and economic need were unsatisfactory in predicting the availability of long term care for the elderly in rural communities in the United States. Instead, political factors such as strong local leadership were better predictors of service availability.

Other studies have examined the location and availability of services for the elderly. Meyer and Cromley (1991) used an interaction model to examine availability of a congregate meal program, with the model accounting for both quantity and location of supply and demand. They conclude that this model can be used to evaluate alternative scenarios for particular services. Cromley and Shannon (1986) proposed and demonstrated the activity-space strategy with regard to planning the physical location of ambulatory medical care services for the elderly. Their findings reveal that financial and psychological travel costs of the elderly may be reduced if medical care facilities are located within their activity spaces. Such location of facilities may also encourage their use.

2.3.2 Variation in Utilization of Services Among the Elderly

Several studies have examined variation in the utilization of services by senior citizens. Findings reveal that elderly people with moderate to severe physical limitations and who live alone typically have higher rates of utilization of services (Iutovich and Iutovich, 1988; Smith and Hiltner, 1988; Strain, 1990). Strain (1990) found that elderly individuals with more chronic health problems, with poorer perceived health, and with some difficulty in activities of

daily living, make significantly more physician visits than the remaining older population.

Availability of specific service resources also appears to have some effect on utilization rates. Yeatts et al. (1992) found that seniors were less likely to use a service if its location is beyond the clients means of transportation. Furthermore, elderly public-housing tenants with an on-site medical clinic had higher rates of hospitalization than their community based counterparts. Meyer's (1981a) review of the social and geographical equity of a federally funded nutrition program for the elderly disclosed that the presence of nutrition sites, the size of the elderly population, and variation among the nutrition projects were related to elderly equity. She also found an emphasis on serving the rural elderly population which subsequently reduced the availability of services in metropolitan areas.

Finally, the role of informal support systems has been examined in association with service utilization. Several studies have concluded that the family often is the major informal resource providing needed supportive services (Shapiro and Tate, 1985; Chappell, 1991; Myles, 1991).

2.3.3 Overt Movement Patterns

The need and preference for certain services by the elderly is reflected in their daily patterns of travel. These patterns also aid in revealing any difficulties in obtaining these services. Several authors investigating the daily travel patterns of the urban elderly

have found that their activity spaces tend to be more restricted than those of younger people (Peace, 1982; Robson, 1982; Smith and Gant, 1982; Wachs, 1988; Rollinson, 1990). The results of Smith and Gant's (1982) study reveal that the elderly were more likely to use the nearest available facilities (i.e. post offices, grocery stores, doctors' offices, social/recreational facilities) than the non-elderly. Furthermore, Hopkin et al. (1978) found that the elderly in Britain travel 22% fewer miles than the population as a whole.

Several research studies have examined the trip frequency of elderly people, often with contrasting results. It has been stated that trip frequency consistently diminishes with age (Carp, 1979; Skelton, 1982; Wachs, 1988). However, some authors have obtained results to the contrary. Hanson's (1977) findings reveal that the elderly participate in all out-of-home activities as frequently as younger persons, with the exception of trips for employment purposes. Furthermore, Stutz (1976) found that the elderly undertake social/recreational trips, shopping trips, and medical trips more often than the non-elderly population. It has therefore been suggested that any declines in trip frequency are attributable to retirement from employment and the subsequent elimination of the journey-to-work trips (Hanson, 1977; Wachs, (1988).

The decrease in aggregate trip frequency among the elderly may also be due to other factors. Several authors have found that the elderly often embark on multi-purpose trips, visiting more than one destination and/or accomplishing several tasks in the same outing (Stutz, 1976; Mason and Beardon, 1978; Smith, 1984). Shannon et al. (1985) found that although "neighbourhood" pharmacies were

perceived as being very important by the elderly, relatively few use the most geographically convenient outlet. The authors believe this is probably due to a pharmacy visit being part of a multi-purpose trip, especially in association with a visit to a physician who is usually located further away from the home origin than the nearest pharmacy. Furthermore, Smith (1991) found that many urban elderly combined their grocery shopping trips with visits to financial institutions or to friends.

Other work has considered the importance of the shopping mall for the recreational activities of the aged. In general, "elderly people have adapted a facility designed for commercial purposes into something to meet their social and leisure needs" (MacLean et al, 1985:121-122). Many elderly people perceive social opportunities in these shopping centres. In fact, Graham et al. (1991) state that this form of leisure contributes to the well-being of the elderly. Sedentary activities such as reading, talking, and strolling are popular in shopping centres because of the pleasant indoor environment and the absence of a fee for being there (MacLean et al. , 1985)

Many reasons have been given for the particular activity patterns that characterize the elderly. Several authors have discovered health to be an important indicator of the trip frequencies and trip distances of the elderly (Peace, 1982; Robson, 1982; Bohland and Herbert, 1983). The elderly often experience failing health and a decrease in personal capabilities which create difficulties in the usage of many modes of transportation (e.g. bicycling, walking, and driving a car).

A reduction in income, which is experienced by a significant number of elderly people, has also been cited as a reason for reduced mobility (Robson, 1982; Skelton, 1982). Cutler and Coward (1992) found that the more financially stable elderly were more likely to have access to personal transportation than those elderly with fewer financial resources.

It is clear that the elderly often possess more restricted activity spaces than their younger counterparts, due mainly to decreases in physical mobility and financial resources. As a result, the elderly are likely to patronize those services and facilities that are most proximate to their residential location, provided that they are available locally.

2.3.4 Transportation Modes and Travel Behaviour of the Elderly

Transportation is an important consideration in service usage by the elderly. Any difficulties in obtaining transportation affects access to virtually all services and may thus restrict the lifestyle of older individuals. Given that many of the elderly experience lower income and/or poorer health "the impact of unavailable or inadequate transportation services may.....prove to be far more serious for the older person because of its cumulative effect" (Golant, 1976:283).

One of the most common forms of transportation for the elderly is walking (Stutz, 1976; Hanson, 1977; Carp, 1979; Peace, 1982; Robson, 1982; Rollinson, 1990; Smith, 1991). Robson (1982) found that more than half of all trips made by the elderly are on foot. In

his study of the grocery shopping patterns of the urban elderly, Smith (1984) discovered that walking was the sole mode of transport for 29% of elderly central city apartment dwellers, as compared to only 16% of their younger counterparts. An examination of elderly travel patterns and demand for transportation in a small city revealed that walking was one of the major modes of travel for the elderly (Meyer, 1981b).

The literature clearly reveals that automobile use is much more widespread among the non-elderly population than it is among the elderly (Golant, 1976; Hanson, 1977; Peace, 1982; Skelton, 1982; Smith and Gant, 1982; Smith, 1984,1991). Older persons have a lower rate of automobile ownership and are also less likely to have a valid driver's license than the younger population (Golant, 1976). Cutler and Coward (1992) found that even though 76.6% of community dwelling elders had access to personal transportation, a much lower percentage had a valid driver's license. They also state that certain factors contribute to the probability of lack of access to personal transportation: increasing age, being female, and living in the central area of a city. Furthermore, Hanson (1977) found that only one-third of elderly respondents in Uppsala, Sweden, had either a driver's license, or access to an automobile, compared to two-thirds of the non-elderly respondents.

Research findings generally reveal that the elderly are more likely to be car passengers than drivers (Smith 1984,1991; Wachs, 1988). Carp (1979) found that elderly people are often provided rides by members of their families for family visits, physician appointments, and food shopping. Peace (1982) also found that

family members play a major role in providing transportation for elderly kin. She found that the majority of visits among elderly people and their relatives involved the former being collected by a grown child and driven to his or her home on a weekly basis.

Because older people are less able to drive and own cars, many rely heavily upon public transit services for their main mode of transportation (Golant, 1976; Carp, 1979; Peace, 1982; Smith, 1984; Wachs, 1988). Smith (1984) found that 70% of an elderly sample residing in the central city area use the bus for grocery shopping on at least an "occasional" basis compared to 52% of the non-elderly. Peace's (1982) study on the activity patterns of elderly people in Swansea, South Wales and South-East England reports an even higher percentage. She found that 80% of all elderly who make trips to their town centre rely on the local bus service.

Unfortunately, the elderly often experience several problems with public transportation (Golant, 1976; Carp, 1979; Skelton, 1982; Wachs, 1988; Smith 1991). For instance, Wachs (1988) recognized two major problems with the public transit system. First, a person who uses mass transit is limited to choosing destinations that are serviced by the transit, and to travelling at hours of the day when service is conveniently available. These constraints subsequently limit an individual's access to service opportunities. A second problem with public transit is the presence of numerous barriers that impede its use. Often elderly people must walk long distances, cross busy streets, and be exposed to inclement weather before they are able to board a bus. Wachs (1988) also states that elderly transit patrons are quite frequently the victims of criminal actions

that occur either while waiting for, or leaving a bus. Additional physical and operational barriers include difficulties in boarding and alighting from the bus, maintaining footing if one has to stand on the bus, and in getting in and out of seats (Carp, 1979). Smith (1991) further notes that elderly grocery shoppers use the bus only occasionally for this purpose, citing the difficulties in boarding and leaving the bus while carrying heavy packages.

Cost represents another impediment to using public transit. This is demonstrated by Rollinson's (1990) investigation of elderly single-room occupants in central city Chicago. He found this group of elderly to be very poor and therefore they considered the cost of public transportation to be too high to allow for regular use. The presence of concessionary fares for the elderly can ease travel costs for elderly people and therefore encourage the use of public transit (Robson, 1982; Smith, 1991).

In general, most elderly people rely on public transit and walking as their main modes of transportation for their daily activities. Car ownership and possession of a valid driver's license is shown to decrease considerably with age and with various related factors such as failing health and a reduction in income. As a result, elderly individuals are compelled to utilize other methods of travelling. In addition, while getting a ride from a family member or friend is also a significant mode of transport for the elderly, the costs of taxi services are prohibitively high for most older people.

2.4 Senior Citizen Housing

Various aspects of housing for the elderly have been examined in several studies (Gutman, 1978; Mercer, 1979; Varady, 1980, 1984; Beland, 1984; Stephens and Bernstein, 1984). These studies have attempted to determine the reasons for moving into senior citizen housing units and the well-being and social support of the residents of such housing. Furthermore, the location of this type of housing has also been examined.

Varady's (1980) study examined the mobility of elderly people in Hamilton County, Ohio. He found that housing problems, particularly crime, had a significant influence on moving plans. Characteristics also contributing to the likelihood of planning a move included: age, illness or functional ability, living in a racially changing area, living in public housing, and living alone. Varady concluded that these results justified an expansion of government programs aimed at helping the elderly who want to remain in their homes and cope with rising housing costs, deteriorating housing, failing health, and neighbourhood crime. In a follow-up study using the same data, Varady (1984) stated that elderly individuals who are deprived and yet show relatively little interest in senior citizen housing may not have been informed of their options for this type of accommodation.

Beland (1984) also examined the reasons why elderly people leave their homes to reside in senior citizen housing. Interviews were conducted with elderly persons in three different areas of Montreal. He found that senior housing represents a place where some protection is available, but where autonomy is also possible. Elderly individuals interested in this type of housing were those who had a higher education, rented their dwelling, were located on an upper

floor, had a good memory capacity, had friendships with others the same age, and who were a short traveling time to the nearest relative. On the other hand, those elderly desiring institutionalization were of advanced age, widowed, possessed limited living space, had subjectively poor health, and were a long traveling time from the nearest relative. Beland further stated that the overall housing situation explained housing preferences, whereas help received from home care did not.

Stephens and Bernstein (1984) examined the extent of social isolation and support experienced by residents of senior citizen apartments. They concluded that although interactions with other residents occurred more frequently than interactions with family and nonresident friends, it was the latter who were the primary providers of support. They further stated that proximity alone does not outweigh such factors as family bonds and longevity. Therefore the design of activity programs within housing facilities and within the community could aid in the development of supportive relations among individuals with chronic health problems who are frequently isolated from others.

Facilities combining housing and personal care have been recognized as potentially stress minimizing for those elderly forced by failing health to seek more services. However, there is concern that the morale of the well-elderly may be undermined by those less competent and that these multi-level facilities may draw mainly the sick and/or marginally competent resulting in a "hospital atmosphere" (Gutman, 1978). Gutman conducted a longitudinal study of tenants in a facility combining housing and personal care.

Interviews were also obtained from tenants of a senior's facility offering only self-contained suites and with community residents who had not applied for any form of retirement housing. The findings reveal no evidence of differential decline in the health status, activity level or level of interaction with family or friends among those elderly who moved to multi-level accommodation. In fact, benefits seemed to have accrued in the form of higher morale and increased interaction with neighbours. Gutman concludes that data currently available support the sponsoring or building of multi-level accommodation for seniors.

Obtaining sites for senior citizen housing is often subject to several barriers. Gutman (1980) stated that sites for retirement housing are often selected on mainly economic grounds, a conclusion shared by Mercer (1979). Gutman cited this as the probable reason why transportation services are among those services used most by tenants in retirement housing. Furthermore, poor site location may also be the reason why transportation was among those services for which there is greatest additional need.

An additional barrier to development of housing for the elderly is community resistance. Mangum (1985) found that organized and vocal minorities can effectively oppose and prevent the building of housing for the elderly. Furthermore, a survey of those opposed to this type of housing in Florida revealed that the main reason for this opposition was that respondents believed that it should not be located in a neighbourhood of single family homes and that it would be out of place in such a neighbourhood (Mangum, 1985:112). Mangum recommends that housing for the elderly should be built in a semi-

commercial area if possible and that housing sponsors should obtain community input. Finally, Mangum states that if a compromise cannot be reached between housing sponsors and present community residents then another site should be sought, rather than imposing senior's housing onto an un-welcoming neighbourhood.

2.5 Summary and Place of the Present Study Within the Literature

Previous work clearly indicates the lack of geographic knowledge regarding life satisfaction of the elderly. The literature review indicates that most research concerned with the examination of life satisfaction of the elderly has been conducted by gerontologists (Bearon, 1989; Pearlman and Uhlmann, 1986) and by psychologists (Dickie et al., 1979; Reker and Wong, 1984; Shmotkin, 1991). However, geographical perspectives in this field of study suggest that the relationship between environmental factors and life satisfaction of the elderly is important. A major purpose of the present study is to expand the existing literature concerning environmental needs and life satisfaction of the elderly.

The literature employing geographical perspectives has examined the relationship of life satisfaction of the elderly with activity spaces (Peace, 1982), neighbourhood characteristics (Bohland and Herbert, 1983), and residential locations (Reitzes et al., 1991). In addition, accessibility to transportation and to services has previously been shown to have a significant influence on the life satisfaction of the elderly (Cutler, 1975; Lawton et al., 1980). The present study will contribute to this literature by comparing life

satisfaction of two groups of the urban elderly with different levels of accessibility to services, family, friends and transportation. The present study's contribution is distinctive due to its focus on senior citizen apartments as sources for data. Furthermore, elderly life satisfaction will also be examined in terms of the frequency of trip activity.

An active and satisfying old age clearly requires the opportunity to engage in a variety of essential and social activities at reasonable costs with regard to time and effort. Therefore, the quality of life depends upon the quality of the service environment and the availability of transportation to make it accessible. The present study attempts to contribute to the literature concerning life satisfaction of the elderly. In particular, it is anticipated that the present study will aid in the process of community design and planning that may subsequently enhance the life satisfaction of elderly individuals.

CHAPTER THREE

HYPOTHESES AND DATA SOURCES

This chapter first offers an explanation of the Life Satisfaction Index (Neugarten et al., 1961) used in the present study. The following section provides a rationale for each of the five hypotheses. Finally, the data sources of the present study, including the study area and the questionnaire/interview survey, are presented.

3.1 The Life Satisfaction Indices

In this section, the Life Satisfaction Indices developed by Neugarten et al. (1961) are examined. Of particular importance is the Life Satisfaction Index B which represents a major method used for the testing of two of the hypotheses.

The Life Satisfaction Index A (LSIA) and the Life Satisfaction Index B (LSIB) are short, self-administered instruments that were derived from the Life Satisfaction Ratings (LSR). The LSR scale takes into account five components: (1) zest (vs. apathy), (2) resolution and fortitude, (3) congruence between desired and achieved goals, (4) positive self-concept, and (5) mood tone (Neugarten et al., 1961). On the basis of these components, taken in turn, individuals are viewed as being in a positive state of psychological well-being if they take pleasure from day to day activities, regard their lives as meaningful, feel that they have accomplished their ambitions,

possess a positive self-image, and maintain a cheerful and optimistic mood. Each of the components is rated on a five-point scale (with five being "high") by the interviewer. Thus, the ratings are based on the inferences made by the rater from all of the information gathered from the respondent.

Neugarten et al. (1961) viewed the LSR as being too cumbersome to use on a large scale (i.e. in a study involving a large sample), given its requirement of at least one long interview with each respondent. Therefore, an attempt was made to devise a self-report instrument that could be administered in a short time. A sample of 60 cases, from a larger group for whom LSR scores were available, was selected that represented people age 50 and over. Of these 60 cases, the high scorers and the low scorers on LSR were used as criterion groups. The criteria that differentiated the two groups were determined by studying responses to a list of items and open-ended questions from previous LSR interviews with the respondents. In addition, certain new items were written which reflected each of the five components of life satisfaction. These items complemented those that were extracted from the LSR interviews. Both sets of items were used as a basis for the formation of the Life Satisfaction Indices A and B (LSIA and LSIB).

The LSIA consists of 20 attitude items for which only a response of "agree" or "disagree" is required. For instance, "I am just as happy as when I was younger". The LSIB consists of 12 open-ended questions, or checklist items, that are scored on a two- or three-point scale. For example, "What are the best things about being the age you are now?". One point would be awarded for a positive

answer and no points would be awarded if the respondent stated that there was "nothing good about it". The LSIB has a theoretical range of 0 to 21 points, with higher scores indicating greater life satisfaction.

Use of the LSIA appears frequently in the literature regarding life satisfaction of the elderly (Cutler, 1975; Dickie et al., 1979; Bearon; 1989). The LSI-Z, an abbreviated version of the LSIA, has also been used (Chatfield, 1977; Wells and MacDonald, 1981). The LSIB is employed in the present study given its ease of administration, a quality shared by the LSIA and LSI-Z. The LSIB has also been proven to be consistent and reliable (Lohmann, 1977; Bauer and Okun, 1983).

3.2 The Hypotheses

In accordance with the thesis objectives, the following hypotheses are formulated. The rationales for the hypotheses are mainly based on previous research findings.

3.2.1 Hypotheses Concerning the Evaluation of Out-of -Home Activity Sites

It has been found that services and resources available in the local community are a very important determinant of neighbourhood satisfaction for elderly people (Carp, 1976,1979; Howell, 1976; Warnes, 1987; Ward et al., 1988). A desirable site for housing is viewed as one that offers proximity to a grocery store and

pharmacy, and the availability of public transportation. The latter will usually provide access to other facilities such as churches, banks, post offices, and recreational activities (Carp, 1976; Howell, 1976). In the present study, residential location and proximity to the sites of services and social contacts are conceptualized as environmental press in the context of the ecological model of aging (Lawton and Nahemow, 1973). A housing location is viewed negatively by the elderly if there is an absence of amenities or shops locally (Warnes, 1987; Ward et al., 1988). It is therefore anticipated that the elderly's evaluation of the residential environments will reflect the quality of the local service environment. On the basis of the above arguments, Hypothesis I is:

that the elderly's satisfaction with proximity to service activity sites is related to residential location.

It is logical to assume that the locations of friends and family are not related to the local service environment, and are in fact highly variable in their proximity to respondents at both housing sites. On the basis of this logic, Hypothesis II is:

that the elderly's satisfaction with proximity to social activity sites is not related to residential location.

3.2.2 Hypotheses Concerning Life Satisfaction

Life satisfaction may be regarded as a surrogate for the ecological concepts of "affect" and "adaptation level" in the ecological model (Lawton and Nahemow, 1973). A general conclusion of several studies is that neighbourhood satisfaction contributes significantly to general feelings of well-being (Howell, 1976; Berghorn et al., 1978; Lawton et al., 1978; Ward, 1984; Ward et al., 1988). Ward states that "housing has a potentially decisive impact on the.....well-being of older people" (1984:248). He defines housing as the total "context for living" in which the older individual is embedded. Furthermore, Lawton et al. (1978) confirm that favourable neighbourhood and residential factors are associated with positive effects on the well-being of the elderly. Poor housing sites may actually result in adverse social and psychological consequences such as depression and withdrawal (Howell, 1976). Hypothesis III therefore states:

that the life satisfaction of elderly persons is positively related to their satisfaction with proximity to activity sites.

Several studies have demonstrated that a relationship between psychological well-being and proximity to services does exist (Cutler, 1972; Kahana et al., 1976; Lawton et al., 1980; Bohland and Herbert, 1983; Reitzes et al., 1991). It is evident that this relationship is positive (Kahana et al., 1976; Lawton et al., 1980).

Specifically, higher levels of psychological well-being are experienced by those elderly who live at relatively short distances from community facilities and services (Cutler, 1972). The effect of the service environment on well-being has also been found to be indirect (Bohland and Herbert, 1983; Reitzes et al., 1991), with personal factors such as health and social support mediating the relationship. In the present study, self-rated health of the respondents represents their level of "competence" (Lawton and Nahemow, 1973). Thus, it is reasonable to propose that the character of the local service environment does influence the level of life satisfaction of elderly people. On this basis, Hypothesis IV is:

that elderly persons residing in a service-rich environment will have higher levels of life satisfaction than elderly persons residing in a service-poor environment.

3.2.4 Hypothesis Concerning Trip Frequency to Out-of-Home Activity Sites

Trip frequency to out-of-home service/social activity sites may be viewed as an expression of "adaptive behaviour" (Lawton and Nahemow, 1973). Findings regarding the relationship between trip generation and the location of services have been contradictory. While some studies have concluded that no relationship exists between accessibility to services and trip frequency (Hanson, 1982;

Wermuth, 1982; Hanson and Schwab, 1987) others have offered contrary results (Wiseman, 1975; Robinson and Vickerman, 1976; Ghosh and McLafferty, 1984). Specifically, these latter results conclude that low accessibility levels are related to lower trip frequencies. These opposing views exist due to the differences in the urban centres where research has been conducted. Studies in European cities have often revealed little or no association between accessibility and trip frequency (Hanson, 1982; Hanson and Schwab, 1987). However, similar research conducted in North American cities have revealed that the demand for travel is a function of accessibility to opportunities (Wiseman, 1975; Sheppard, 1980; Ghosh and McLafferty, 1984). Thus, it is reasonable to propose the aforementioned relationship in the context of the present study site of Winnipeg, a North American city. On this basis, Hypothesis V is:

that trip frequency is greater for elderly people living in a service-rich environment than for those living in a service-poor environment.

3.3 The Data Sources

3.3.1 Study Area

The samples for this study were drawn from two senior citizen apartment buildings in Winnipeg, Manitoba, the provincial capital and largest settlement. The census metropolitan area has a population of 652,354 of which 12.9% are age 65 years or over (Statistics

Canada, 1992). This is higher than the national average of 11.6% (Statistics Canada, 1992). Located in the city are 117 age-segregated apartment complexes (Age and Opportunity Housing Guide, 1992). Of these complexes, 45 are classified as public housing and 72 as non-profit or private sponsored housing. The apartment buildings investigated in the study are both located in the northwest area of the city known as West Kildonan (Figure 1).

The first residence, Monash Manor, is a nine-story highrise structure which contains 131 suites (Figure 2) and is owned and managed by the provincial government. The number of suites occupied at the time of the study was 128, with a total of 130 tenants. Two different bus routes are near to the building, offering "downtown" service and "crosstown" service. Services and amenities within one block of the structure include a bus shelter with a bench, two corner grocery stores, a hair salon, and a restaurant. A supermarket, a shopping centre, a pharmacy, and a hospital are all located within 1.4 kilometres of the apartment building (Table 1). In fact, Monash Manor is located within 1.5 kilometres of three shopping centres (Garden City Shopping Centre, Garden City Square Shopping Centre, and Northgate Shopping Centre).

Table 1: Distance between the senior citizen residences and the most proximate services (in kilometres).

SERVICE/FACILITY	MONASH MANOR	ANATOLE PARK
Supermarket	1.0	1.5
Pharmacy	1.0	1.2
Shopping centre	1.3	2.6
Hospital	1.4	2.7

Figure 1: Location of Study Sites in Winnipeg

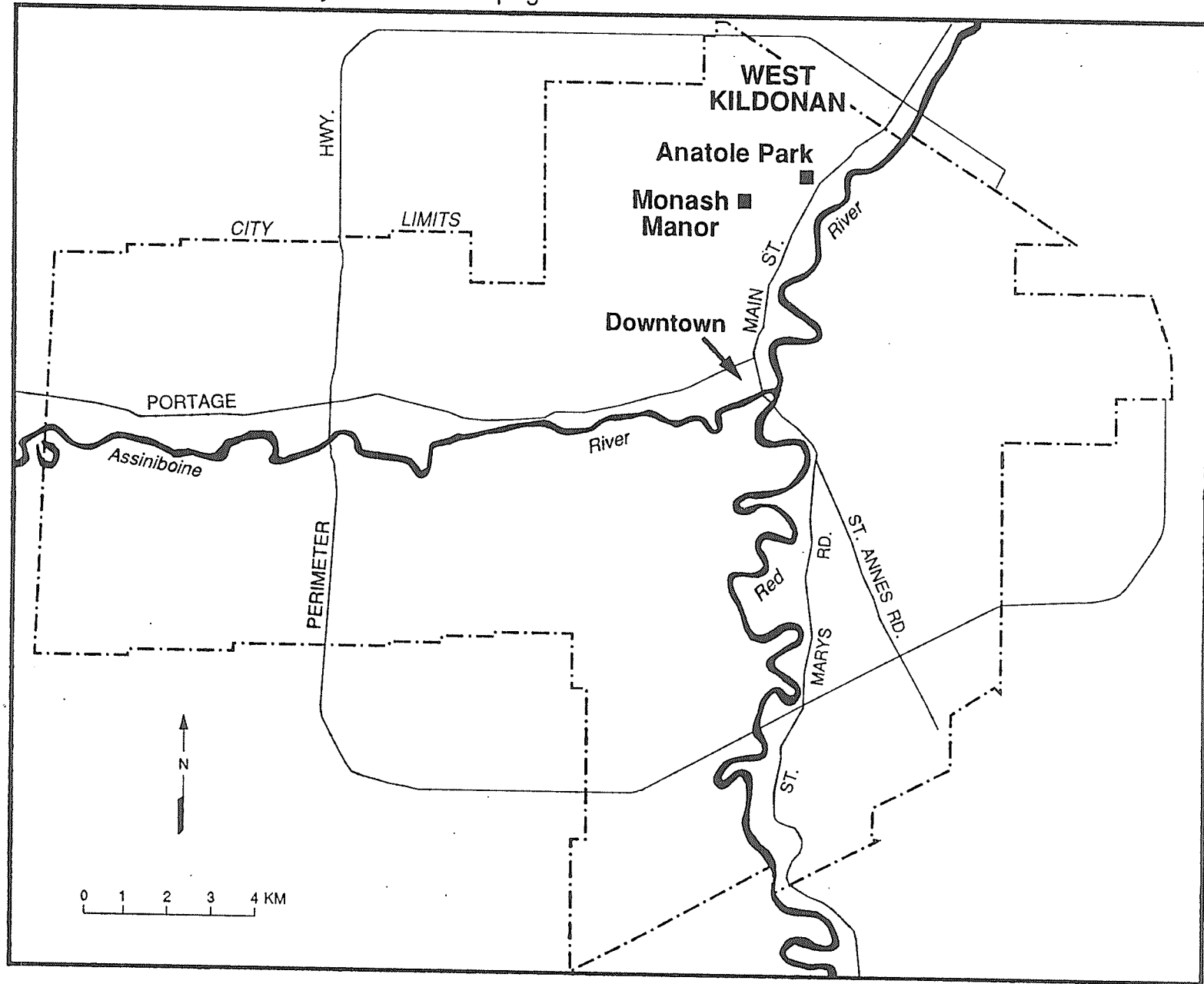


Figure 2: Location of Services Most Proximate to Monash Manor

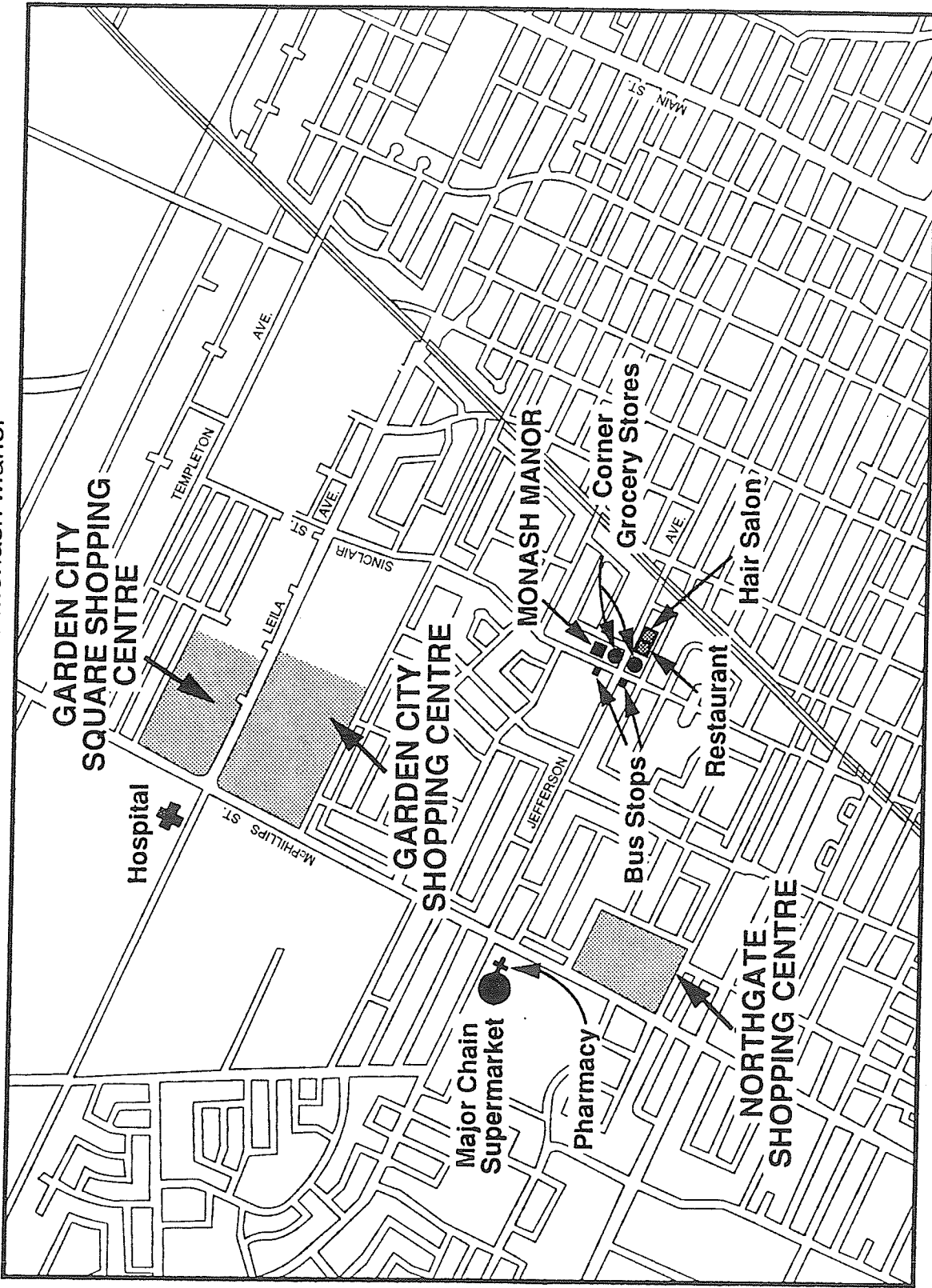
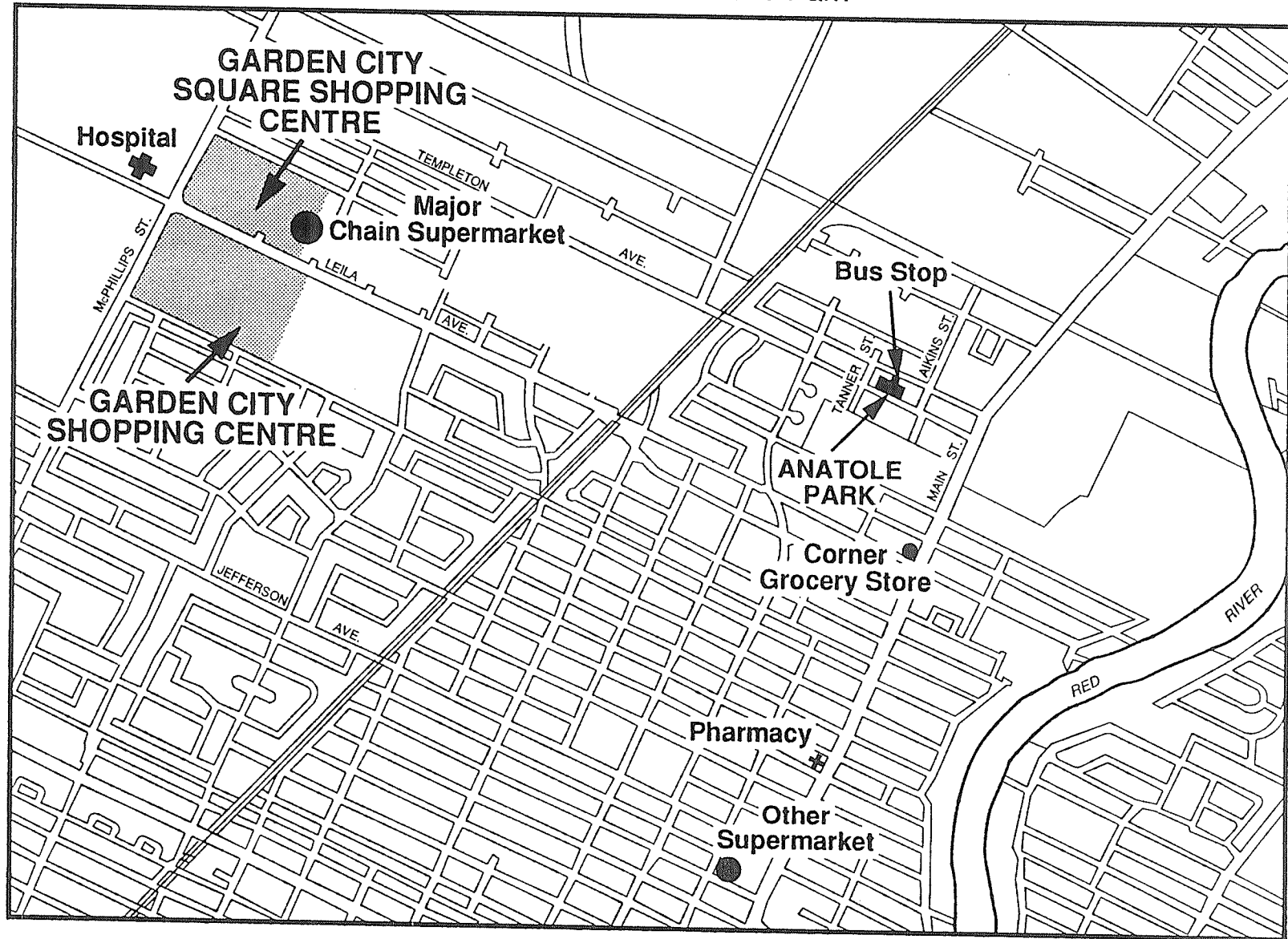


Figure 3: Location of Services Most Proximate to Anatole Park



The second residence, Anatole Park Senior Citizens Home, comprises a series of one- or two-story apartment buildings (Figure 3). There are 124 suites in total, with the majority (90) being in single story buildings. At the time of the data elicitation, 123 suites were occupied with 129 tenants. The single story buildings have common (shared) verandas and all residents have access to garden space on the premises. There is one bus stop near the apartments, without a bus shelter or bench, and which is serviced by only one route. This is a feeder route which means that travel is limited to the immediate area. However, the bus route does terminate at a major shopping centre, Garden City, where transfer to a downtown or crosstown bus is available. The bus route is also limited in its scheduling, compared to those servicing Monash Manor, because it does not operate on Sundays/holidays or at late evenings during the week. Anatole Park is more distant from all services than Monash Manor (Table 1). The greatest disparity between the two sites exists regarding distance to a shopping centre; Anatole Park is situated twice as far from the nearest facility (Garden City Shopping Centre) compared to Monash Manor. A distance of 0.5 miles (0.81 km) has often been suggested as the maximum distance that elderly pedestrians should travel to obtain services (Howell, 1976; Peace, 1982). The distance of services from Monash Manor approximates this requirement, unlike Anatole Park.

It is evident that the two study sites of Monash Manor and Anatole Park possess differing service environments with regard to proximity and accessibility to services. Essential services are located closer to Monash Manor than to Anatole Park. The residents

of Monash Manor also have greater access to these services due to more extensive bus service than that at Anatole Park.

3.3.2 Field Survey

3.3.2.1 Sampling Procedures

Permission to conduct the study was obtained from the caretakers of each building. In addition, they provided a list of the suite numbers in their respective apartment buildings, 131 suites for Monash Manor and 124 suites for Anatole Park. 60 suites were randomly selected from each list for interviews. This number represents 45.8% of the suites at Monash Manor and 48.4% of the suites at Anatole Park. The data were elicited by means of face to face interviews during the period of August 20 to August 30, 1992. These interviews were all conducted by the same person, with each being approximately 20 minutes in length.

3.3.2.2 Administration of the Questionnaire

The questionnaire (Appendix 1) was divided into two main parts: (1) a series of structured and open-ended questions formulated specifically for the present study, and (2) the Life Satisfaction Index B (Neugarten et al., 1961). Part 1 of the questionnaire involved questions concerning types of intra-urban trips made by the respondent, frequency of trips, and mode of transportation used. Specifically, information was elicited regarding seven trip purposes:

grocery shopping, patronizing a pharmacy, visiting a physician or hospital, banking, visiting friends, visiting relatives, and partaking in recreational activities. Respondents were also asked to indicate their satisfaction with the location of each of these services or social contacts on a seven-point Likert scale. The poles were labelled as "7=very satisfied" and "1=very dissatisfied". Satisfaction with the local transit service was also assessed by this rating scale. Furthermore, a global rating of satisfaction was also determined using this seven point scale.

Respondents were also required to indicate which of five modes of transportation (car-driver, car-passenger, bus, walking, or bicycling) they used for each of the seven trip purposes. The frequency with which these modes were used was determined through the use of a five-point scale question. Respondents noted "always", "usually", "occasionally", "infrequently", or "never" when presented with each of the five modes. Information was also requested regarding length of residence at present address, automobile ownership, and presence of immediate family in Winnipeg. This information was garnered through open-ended questions. Each respondent's sex was also noted by the interviewer.

Part 2 of the questionnaire consisted of the 12 open-ended questions and check-list items from the Life Satisfaction Index B (Neugarten et al., 1961).

3.3.2.3 Response Rates

Interviews were entirely completed by 30 respondents at Monash Manor, thus representing a response rate of 62.5%. In relation to the breakdown of non-responses, 8.3% were ineligible due to health reasons, 6.7% did not speak English, 15.0% could not be contacted or were unavailable, and 20.0% refused to be interviewed (Table 2).

At Anatole Park, interviews were completed by 31 residents, yielding a response rate of 67.4%. Reasons for non-responses are as follows: 5.0% were ineligible due to health reasons, 8.3% did not speak English, 11.7% could not be contacted or were unavailable, and 23.3% refused to be interviewed (Table 2).

Table 2: Breakdown of Non-responses for Interviews Conducted at Monash Manor and Anatole Park.

REASON FOR NON-RESPONSE	Monash Manor		Anatole Park	
	n	%	n	%
ineligible due to health reasons	5	8.3	3	5.0
did not speak English	4	6.7	5	8.3
unable to be contacted or unavailable	9	15.0	7	11.7
refused to be interviewed	12	20.0	14	23.3

n= number of non-respondents

Response rates for the two samples vary only slightly. Ineligibility due to health reasons subsumed both acute and chronic conditions. One non-respondent from each sample was confined to a wheelchair, while the other non-respondents cited various temporary ailments (e.g. influenza, cold). A similar percentage of non-respondents in both samples spoke little or no English. The percentage of people who were unavailable or refused to be interviewed was 35.0% for each sample. A substantial number

refused on the basis that they were too busy and were going out for the day. Several respondents informed the interviewer that the Canada Pension Plan cheques (as well as other government assistance cheques) had arrived during the time of interviewing (August 20 to 30). They stated that several people would not be at home or would be unavailable as this was a time when several people would be shopping and patronizing their financial institution. In total, fully completed interviews were obtained from 61 senior citizen apartment residents, yielding a response rate of 50.8%.

3.4 Summary

An overview of the Life Satisfaction Index B is first presented. On the basis of findings of previous research, five hypotheses are derived. Residential location is postulated to be related to satisfaction with proximity to service activity sites (Hypothesis I), but not related to satisfaction with proximity to social activity sites (Hypothesis II). It is hypothesized that life satisfaction is positively related to satisfaction with proximity to activity sites (Hypothesis III), and that it is higher for residents in a service-rich environment (Hypothesis IV). Hypothesis V states that trip frequency is positively related to proximity to opportunities. The derivation of hypotheses is followed by an overview of the data sources and the study area. The sampling procedures and questionnaire/interview survey are then outlined and the response rates explained.

CHAPTER FOUR

THE ANALYSIS

The data analysis is presented in two parts. The first part of the chapter offers a descriptive analysis of selected socio-demographic and travel activity characteristics of the two elderly sample groups. The second part involves the use of statistical inferential tests to test the research hypotheses.

4.1 Characteristics of the Entire Sample and Sub-Groups

This section first offers a description of the socio-demographic and health variables of the entire sample and the two housing site sub-groups. This is followed by the Life Satisfaction Index B (LSIB) scores reported by members of the entire sample, as well as the mean LSIB scores reported by various sub-groups, defined by various profile attributes. This section concludes with a discussion of daily travel activity patterns; specifically, the frequency of trips undertaken by the entire sample, the travel modes used by the entire sample, and a comparison of the travel modes used by the two housing site sub-groups.

4.1.1 Socio-Demographic and Health Variables

The data presented in this section are aggregated in tabular form. (Table 3). These data relate to the following sample

characteristics: sex, age, length of residence, automobile ownership, presence of immediate family in Winnipeg, and health. For each of these characteristics, the data are first presented for the entire sample and then separately for each of the Monash Manor and Anatole Park sub-groups.

Approximately two-thirds (67%) of the entire sample consists of women. However, the sub-samples of elderly respondents are characterized by greatly differing sex ratios. Specifically, the Monash Manor sample consists of 83% females, while females account for only 52% of the Anatole Park sample. The Monash Manor ratio appears to be consistent with the fact that women tend to live longer than men (Chappell et al., 1986:21), and thus usually account for the majority of tenants in senior citizen housing. The relatively balanced sex ratio of Anatole Park, on the other hand, may be explained in part by the fact that this project accepts residents 56 years of age and over as long as they are retired and receiving a pension. In contrast, Monash Manor will only accept residents younger than 65 years if they possess a physical or emotional handicap.

The majority of the entire sample (72%) are between the ages of 65 and 74 (Table 3). The entrance policies of the two housing sites are reflected in the slightly differing age structures of the sub-groups. Specifically, the data reveal that 16% of the respondents at Anatole Park are between the ages of 56 and 64, compared to the 10% of respondents at Monash Manor. At both housing sites, however, all residents in this age cohort are male. The two sub-groups include fairly similar percentages of subjects between the

ages of 65 and 74, with 70% at Monash Manor and 74% at Anatole Park. However, an additional difference in the age structures of the two sub-groups concerns the number of respondents who are age 75 or over. These subjects account for 20% of respondents at Monash Manor, but only 10% at Anatole Park. The difference in age structure between the sub-groups clearly reflects the previously noted gender differences.

Table 3: Compositions of the Entire Sample and Sub-Groups

	Entire Sample (n=61)		Monash Manor (n=30)		Anatole Park (n=31)	
	n	%	n	%	n	%
<i>Sex</i>						
Male	20	33	5	17	15	48
Female	41	67	25	83	16	52
<i>Age</i>						
56-64	8	13	3	10	5	16
65-74	44	72	21	70	23	74
75+	10	16	6	20	3	10
<i>Automobile Ownership</i>						
0 car	42	69	21	70	21	68
1 car	19	31	9	30	10	32
<i>Length of residence</i>						
1-4 years	22	36	10	33	13	42
5-9 years	23	38	11	37	11	35
10+ years	16	26	9	30	7	23
<i>Immediate family in Winnipeg</i>						
yes	45	74	22	73	23	74
no	16	26	8	27	8	26
<i>Self-rated Health</i>						
Excellent	14	23	4	13	10	32
Good	24	39	14	47	10	32
Fair	17	28	11	37	6	19
Poor	6	10	1	3	5	16
Bad	0	0	0	0	0	0

The data on vehicle ownership indicate that 31% of all respondents possess an automobile, with virtually identical levels of ownership in each sub-group. However, there is a substantial difference in

automobile ownership between males and females. Of the 19 elderly persons in the entire sample who do own a vehicle, 12 (63%) are male and only 7 (37%) are female. This clear gender difference in access to personal transportation has been noted in earlier work (Cutler and Coward, 1992). Furthermore, 50% of all males in the present study reported automobile ownership compared to 21% of all females.

The average length of residence for the entire sample is 6.9 years. However, the data concerning length of residence reveal a marked contrast between Monash Manor and Anatole Park subjects. The average length of residence at the former is 8.1 years, while at Anatole Park it is only 5.6 years. Furthermore, 45% of Anatole Park residents report a term at their current address of 4 years or less. In contrast, 67% of Monash Manor residents report a term of at least 5 years. This clearly reflects the previously noted difference in age policy at the two study sites.

Approximately 74% of all persons in the entire sample reported having immediate family in Winnipeg, a percentage that is very similar to both sub-groups. Immediate family is defined as parents, children, or siblings. Of the 45 people having immediate family in the city, 38 (84%) had children, 14 (31%) had siblings, while 7 (16%) had both. No respondent reported having parents living in Winnipeg.

Health status of respondents was determined by their own self-ratings on a 5-point scale ranging from "bad" to "excellent". The majority of respondents in the entire sample (62%) rated their health as "good" or "excellent". However, only 13% of respondents at Monash Manor rated their health as excellent compared to 32% of the

Anatole Park residents. On the other hand, 16% of the Anatole Park respondents rated their health as "poor" compared to only 3% at Monash Manor. There is thus greater variance in self-rated health at Anatole Park perhaps reflecting in part the greater variance in age composition. It is interesting to note that no one rated their health as "bad", the lowest possible self-rating.

4.1.2 Life Satisfaction Scores

Life satisfaction is measured using the Life Satisfaction Index B (LSIB) (Neugarten et al, 1961). Scores can theoretically range from 0 to 21, with higher scores indicating greater life satisfaction. In the present study scores ranged from 9 to 21 for the entire sample (Table 4). The frequency distribution reveals that the majority of respondents reported relatively high life satisfaction levels. This is also reflected in the mean life satisfaction of 17.0 reported by the entire sample (Table 5). It appears that high satisfaction levels are a fairly consistent characteristic of the elderly, a view that is generally supported (Palmore and Kivett, 1977; Bauer and Okun, 1983; Botwinick, 1984; Ward et al, 1988; Bearon, 1989).

Mean life satisfaction is also calculated for sub-groups defined on the basis of socio-demographic and health characteristics (Table 5). These data reveal that men report somewhat higher life satisfaction (17.8) than women (16.2). This may partly be explained by the greater incidence of automobile ownership among men, a factor which has previously been associated with higher levels of life satisfaction (Cutler, 1972, 1975). Life satisfaction exhibits a

negative association with increasing age. This is most likely due to a decrease in mobility and/or increase in physical ailments that usually accompany old age. The presence of immediate family, however, does not appear to have a significant effect on life satisfaction of the elderly. Perhaps this is due to the increased importance of and contact with friends among the elderly (Bauer and Okun, 1983). Life satisfaction scores are similar for lengths of residence of 1-4 years (17.9) and 5-9 years (17.6). However, the mean score is lower (15.8) for those respondents reporting 10 or more years residence at their present address, a situation reflecting advanced age and thus a greater probability of failing health. The results also clearly indicate a positive relationship between health assessment and life satisfaction i.e. the higher one's self-rating of health, the higher the LSIB score.

Table 4: Frequency Distribution of LSIB Scores

LSIB Score	Entire Sample (n)
9	1
10	1
11	2
12	5
13	2
14	4
15	1
16	4
17	8
18	4
19	10
20	5
21	13

n= number of respondents

Table 5: Mean LSIB Scores for Entire Sample and Socio-demographic/Health Sub-Groups.

	n	Average Life Satisfaction
Entire sample	61	17.0
Men	20	17.8
Women	41	16.2
Age 56-64	8	18.9
Age 65-74	44	17.7
Age 75+	10	13.8
Own an automobile	19	17.6
Do not own an automobile	42	16.4
1-4 years at present address	22	17.9
5-9 years at present address	23	17.6
10+ years at present address	16	15.8
Immediate family in Winnipeg	45	17.2
No immediate family in Winnipeg	16	16.9
Excellent health rating	14	19.0
Good health rating	24	18.1
Fair health rating	17	16.5
Poor health rating	6	10.0

n= number of respondents

4.1.2 Daily Travel-Activity Patterns

This sub-section examines data regarding daily travel-activity patterns of the elderly respondents. The data concern the frequency of trips, transportation modes, and satisfaction with the location of services and social contacts. The data on trip frequency and satisfaction levels are provided for the entire sample, while those on transportation modes are also given for the housing site sub-groups. Data for the housing site sub-groups regarding trip frequency and satisfaction levels are presented later in the chapter.

4.1.2.1 Frequency of Trips

Grocery shopping was the most frequently undertaken trip by all respondents, with 75% making this trip at least once a week (Table 6). However, 5% of all respondents report no trips for the purpose of grocery shopping. These respondents stated that they took advantage of the delivery service offered by a supermarket.

Table 6: Frequency of Grocery Shopping Trips.

Frequency of Trips	Entire Sample	
	n	%
at least once/week	46	75
less than once/week	12	20
no trips (groceries delivered)	3	5

n= number of respondents

Another frequently undertaken trip is visiting friends, with 34% of all respondents doing so at least once a week (Table 7). This percentage takes into account only those trips made outside of the housing site. However, the frequency of visiting friends is amplified when visits made to friends on the housing site are also included, with 66% of the entire sample reporting a visit to friends on the basis of at least once per week. Additionally, 18% of the entire sample report not visiting friends.

Table 7: Frequency of Visiting Friends.

Frequency of Trips	Entire Sample	
	n	%
at least once/week	21	34
less than once/week	4	7
no trips	36	59

n= number of respondents

The next most frequent type of trip is visiting relatives. A total of 59% of all respondents make this trip at least once per week (Table 8). Of the 54 respondents who visit relatives, 10 report that this trip extends beyond the city limits. Only 40% of this latter group visit family members at least once a week, with the remainder visiting less frequently. This type of trip was not undertaken by all respondents, however, with 11% reporting no trips of this type were made.

Table 8: Frequency of Visiting Family

Frequency of Trips	Entire Sample	
	n	%
at least once/week	36	59
less than once/week	18	30
no trips	7	11

n= number of respondents

One final type of trip made with considerable frequency by some respondents are those to recreational activity sites. A total of 33% of the entire sample reported visiting some form of recreation site at least once per week (Table 9). This percentage reflects only those trips made out of the housing site to partake in some form of recreation. An additional 24% of the entire sample reported participating in recreation at their respective housing sites.

Table 9: Frequency of Visiting Recreation Sites.

Frequency of Trips	Entire Sample	
	n	%
at least once/week	20	33
less than once/week	1	2
no trips	40	65

n= number of respondents

Less frequently conducted types of trips include those to a financial institution, a physician, and a pharmacy. More than one-half of the entire sample report visiting a financial institution only once or twice per month on average (Table 10). A proportion of 87% of respondents commented that they only went to cash their monthly pension cheque. One-third reported a frequency of twice per month while only 13% reported higher frequencies.

Table 10: Frequency of Visits to a Financial Institution.

Frequency of Trips	Entire Sample	
	n	%
once/month	33	54
twice/month	20	33
> twice/month	8	13

n= number of respondents

Frequency of visits to a physician vary widely among the entire sample (Table 11), ranging from as often as once per month to only twice per year. Four times per year is the most frequently reported response among the entire sample, accounting for 38% of all subjects.

Table 11: Frequency of Visits to a Physician.

Frequency of Trips	Entire Sample	
	n	%
once or twice/month	15	25
6-8 per year	6	9
4 per year	23	38
2 per year	17	28

n= number of respondents

The final trip purpose to be examined is pharmacy patronage. 23% of the entire sample pay a visit to a pharmacy once or twice per

week (Table 12). The remainder of respondents report even less frequent visits, with 8% reporting no visits to a pharmacy.

Table 12: Frequency of Visits to a Pharmacy.

Frequency of Trips	Entire Sample	
	n	%
at least once per week	14	23
1-3 per month	33	54
less than 12 per year	9	15
no trips	5	8

n= number of respondents

4.1.2.2 Travel Modes

The use-frequencies of five transport modes employed for seven trip purposes are summarized in Tables 13-19. For each trip purpose, the data relate only to those respondents who reported embarking on such trips outside of their residence. In relation to grocery shopping, public transit (i.e. bus) was the most frequently used transport mode on at least an "occasional" basis by the entire sample (Table 13). However, 50% of all respondents reported that they "never" used the bus to purchase groceries. This probably reflects various disadvantages of bus travel for grocery shopping purposes. Smith (1991:103) states that older shoppers often experience considerable difficulties in boarding and leaving buses while carrying heavy packages. In the present study, approximately 35% of grocery shoppers reported "always" driving or getting a ride for this purpose. Furthermore, very few people walked or used a bicycle due to the difficulty of carrying packages when using these modes. Notable differences between the sub-groups occur regarding the use of transport modes of "car passenger", "bus", and "bike". A

greater number of respondents at Anatole Park report "always" using the bus for trips to food outlets. The lower bus usage at Monash Manor may be accounted for by the large number of respondents who obtained a ride on at least an "occasional" basis, usually from an adult child or a fellow tenant (for the purpose of grocery shopping). In fact, several of these respondents reported either getting a ride from, or giving a ride to, some of the other tenants. The data further reveal that while a few (3) respondents at Anatole Park "occasionally" used a bicycle, no respondents at Monash Manor reported this mode in the context of grocery shopping.

The data patterns concerning transport modes for pharmacy patronage are very similar to those for grocery shopping (Table 14). Notable differences between the two sub-samples are once more revealed regarding the transport modes of "car passenger", "bus", and "bike". These differences are remarkably similar to those reported above regarding transport used for grocery shopping.

The use frequencies of transport modes employed for physician visits are summarized in Table 15. The data reveal that almost one-quarter of all respondents drove a car for this purpose, and that nearly as many receive a ride. However, significantly fewer respondents reported using the "car passenger" mode of transportation at Anatole Park, which partly accounts for their larger percentage frequency of bus usage. The "bike" and "walk" modes were seldom used by any respondents for this type of trip, reflecting the greater distances that physicians are located from the residences.

Table 13: Percentage Use Frequencies of Transport Modes for Grocery Shopping.

Mode	Entire Sample (n=58)		Monash Manor (n=28)		Anatole Park (n=30)	
	n	%	n	%	n	%
<i>Walk</i>						
Always	1	1.7	0	0.0	1	3.3
Usually	2	3.4	1	3.6	1	3.3
Occasionally	4	6.9	3	10.7	1	3.3
Infrequently	0	0.0	0	0.0	0	0.0
Never	51	88.0	24	85.7	27	90.0
<i>Bus</i>						
Always	13	22.2	4	14.3	9	30.0
Usually	9	15.5	5	17.9	4	13.3
Occasionally	7	12.1	3	10.7	4	13.3
Infrequently	0	0.0	0	0.0	0	0.0
Never	29	50.0	16	57.1	13	43.3
<i>Car Driver</i>						
Always	12	20.7	6	21.4	6	20.0
Usually	5	8.6	3	10.7	2	6.7
Occasionally	1	12.1	0	0.0	1	3.3
Infrequently	0	0.0	0	0.0	0	0.0
Never	40	69.0	19	67.9	21	70.0
<i>Car Passenger</i>						
Always	8	13.8	5	17.9	3	10.0
Usually	6	10.3	3	10.7	3	10.0
Occasionally	5	8.6	3	10.7	2	6.7
Infrequently	1	1.7	1	3.6	0	0.0
Never	38	65.5	16	57.1	22	73.3
<i>Bike</i>						
Always	0	0.0	0	0.0	0	0.0
Usually	0	0.0	0	0.0	0	0.0
Occasionally	3	5.2	0	0.0	3	10.0
Infrequently	0	0.0	0	0.0	0	0.0
Never	55	94.8	28	100.0	27	90.0

Table 14: Percentage Use Frequencies of Transport Modes for Pharmacy Patronage.

Mode	Entire Sample (n=56)		Monash Manor (n=28)		Anatole Park (n=28)	
	n	%	n	%	n	%
<i>Walk</i>						
Always	0	0.0	0	0.0	0	0.0
Usually	2	3.6	1	3.6	1	3.6
Occasionally	4	7.1	3	10.7	1	3.6
Infrequently	0	0.0	0	0.0	0	0.0
Never	50	89.3	24	85.7	26	92.9
<i>Bus</i>						
Always	14	25.0	4	14.3	10	35.7
Usually	8	14.3	5	19.2	3	10.7
Occasionally	6	10.7	3	10.7	3	10.7
Infrequently	1	1.8	1	3.6	0	0.0
Never	27	48.2	15	53.6	12	42.9
<i>Car Driver</i>						
Always	11	19.6	6	21.4	5	10.7
Usually	6	10.7	3	10.7	3	10.7
Occasionally	1	1.8	0	0.0	1	3.6
Infrequently	0	0.0	0	0.0	0	0.0
Never	36	64.3	19	67.9	17	60.7
<i>Car Passenger</i>						
Always	7	12.5	4	14.3	3	10.7
Usually	6	10.7	3	10.7	3	10.7
Occasionally	4	7.1	3	10.7	1	3.6
Infrequently	1	1.8	1	3.6	0	0.0
Never	38	67.9	17	60.7	21	75.0
<i>Bike</i>						
Always	0	0.0	0	0.0	0	0.0
Usually	0	0.0	0	0.0	0	0.0
Occasionally	3	5.4	0	0.0	3	10.7
Infrequently	0	0.0	0	0.0	0	0.0
Never	53	94.6	28	100.0	25	89.3

When visiting a financial institution nearly one-third of all respondents reported "always" using the bus and approximately one-fifth reported "always" driving a car (Table 16). Receiving a ride, walking, or riding a bicycle were used relatively infrequently by the entire sample. In relation to the sub-group modal usage patterns, significantly fewer people at Anatole Park drove a car or received a ride to financial institutions, with a greater percentage walking or using the bus.

Table 15: Percentage Use Frequencies of Transport Modes for Physician Visits.

Mode	Entire Sample (n=61)		Monash Manor (n=30)		Anatole Park (n=31)	
	n	%	n	%	n	%
<i>Walk</i>						
Always	0	0.0	0	0.0	0	0.0
Usually	2	3.3	0	0.0	2	6.5
Occasionally	0	0.0	0	0.0	0	0.0
Infrequently	0	0.0	0	0.0	0	0.0
Never	59	96.7	30	100.0	29	93.5
<i>Bus</i>						
Always	13	21.3	5	16.7	8	25.8
Usually	6	9.8	3	10.0	3	9.7
Occasionally	8	13.1	4	13.3	4	12.9
Infrequently	1	1.6	1	3.3	0	0.0
Never	33	54.2	17	56.7	16	51.6
<i>Car Driver</i>						
Always	15	24.6	8	26.7	7	22.6
Usually	2	3.3	1	3.3	1	3.2
Occasionally	0	0.0	0	0.0	0	0.0
Infrequently	0	0.0	0	0.0	0	0.0
Never	44	72.1	21	70.0	23	74.2
<i>Car Passenger</i>						
Always	13	21.3	8	26.7	5	16.1
Usually	3	4.9	1	3.3	2	6.5
Occasionally	3	4.9	2	6.7	1	3.2
Infrequently	1	1.6	1	3.3	0	0.0
Never	41	67.3	18	60.0	23	74.2
<i>Bike</i>						
Always	0	0.0	0	0.0	0	0.0
Usually	0	0.0	0	0.0	0	0.0
Occasionally	1	1.6	0	0.0	1	3.2
Infrequently	0	0.0	0	0.0	0	0.0
Never	60	98.4	30	100.0	30	96.8

The use of various transport modes for the purpose of visiting friends differs from that of the other trip activities. A total of 40% of the entire sample of those who report visiting friends report walking on at least an "occasional" basis to visit friends (Table 17). This was the most frequently used transport mode by the entire sample, followed by "car driver" and "bus". Monash Manor respondents reported a greater frequency of walking to visit friends.

Furthermore, they were more likely to receive a ride than their Anatole Park counterparts.

Table 16: Percentage Use Frequencies of Transport Modes for Visits to a Financial Institution.

Mode	Entire Sample (n=61)		Monash Manor (n=30)		Anatole Park (n=31)	
	n	%	n	%	n	%
<i>Walk</i>						
Always	0	0.0	0	0.0	0	0.0
Usually	3	4.9	1	3.3	2	6.5
Occasionally	2	3.3	0	0.0	2	6.5
Infrequently	0	0.0	0	0.0	0	0.0
Never	56	91.8	29	96.7	27	87.0
<i>Bus</i>						
Always	18	29.5	8	26.7	10	32.3
Usually	7	11.5	3	10.0	4	12.9
Occasionally	7	11.5	3	10.0	4	12.9
Infrequently	0	0.0	0	0.0	0	0.0
Never	29	47.5	16	53.3	13	41.9
<i>Car Driver</i>						
Always	13	21.3	8	26.7	5	16.1
Usually	4	6.6	1	3.3	3	9.7
Occasionally	0	0.0	0	0.0	0	0.0
Infrequently	0	0.0	0	0.0	0	0.0
Never	44	72.1	21	70.0	23	74.2
<i>Car Passenger</i>						
Always	7	11.5	5	16.7	2	6.5
Usually	4	6.6	1	3.3	3	9.7
Occasionally	3	4.9	2	6.6	1	3.2
Infrequently	1	1.6	1	3.3	0	0.0
Never	47	75.4	21	70.0	26	80.6
<i>Bike</i>						
Always	0	0.0	0	0.0	0	0.0
Usually	0	0.0	0	0.0	0	0.0
Occasionally	2	3.3	0	0.0	2	6.5
Infrequently	0	0.0	0	0.0	0	0.0
Never	59	96.7	30	100.0	29	93.5

The most notable result regarding transport modes for visiting family concerns the large number of respondents who reported receiving a ride on at least an "occasional" basis - 69% (Table 18). This mode was the most frequently used alternative by members of both sub-groups. The source of the ride was most often an adult

child. This finding is consistent with the results of earlier relevant work regarding activity patterns of the elderly (Peace, 1982: 289). Anatole Park respondents were more likely to use public transit and less likely to drive an automobile to visit relatives than Monash Manor respondents. This result is surprising since automobile ownership is very similar for the two sub-groups (Table 3) and Anatole Park residents have access to less extensive transit service than Monash Manor residents.

Table 17: Percentage Use Frequencies of Transport Modes for Visiting Friends

Mode	Entire Sample (n=25)		Monash Manor (n=13)		Anatole Park (n=12)	
	n	%	n	%	n	%
<i>Walk</i>						
Always	7	28.0	4	30.8	3	25.0
Usually	2	8.0	1	7.7	1	8.3
Occasionally	1	4.0	1	7.7	0	0.0
Infrequently	0	0.0	0	0.0	0	0.0
Never	15	60.0	7	53.8	8	66.7
<i>Bus</i>						
Always	4	16.0	1	7.7	3	25.0
Usually	2	8.0	2	15.4	0	0.0
Occasionally	1	4.0	0	0.0	1	8.3
Infrequently	0	0.0	0	0.0	0	0.0
Never	18	72.0	10	76.9	8	66.7
<i>Car Driver</i>						
Always	5	20.0	3	23.1	2	16.7
Usually	2	8.0	1	7.7	1	8.3
Occasionally	1	4.0	1	7.7	0	0.0
Infrequently	0	0.0	0	0.0	0	0.0
Never	17	68.0	8	61.5	9	72.7
<i>Car Passenger</i>						
Always	2	8.0	1	7.7	1	8.3
Usually	2	8.0	2	15.4	0	0.0
Occasionally	1	4.0	1	7.7	0	0.0
Infrequently	0	0.0	0	0.0	0	0.0
Never	20	80.0	9	75.0	11	91.7
<i>Bike</i>						
Always	0	0.0	0	0.0	0	0.0
Usually	1	4.0	0	0.0	1	8.3
Occasionally	2	8.0	0	0.0	2	16.7
Infrequently	0	0.0	0	0.0	0	0.0
Never	23	92.0	13	100.0	9	69.2

Table 18: Percentage Use Frequencies of Transport Modes for Visiting Relatives.

Mode	Entire Sample (n=54)		Monash Manor (n=27)		Anatole Park (n=27)	
	n	%	n	%	n	%
<i>Walk</i>						
Always	0	0.0	0	0.0	0	0.0
Usually	1	1.9	0	0.0	1	3.7
Occasionally	0	0.0	0	0.0	0	0.0
Infrequently	0	0.0	0	0.0	0	0.0
Never	53	98.1	27	100.0	26	96.3
<i>Bus</i>						
Always	3	5.6	2	7.4	1	3.7
Usually	3	5.6	1	3.7	2	7.4
Occasionally	5	9.3	1	3.7	4	14.8
Infrequently	0	0.0	0	0.0	0	0.0
Never	43	79.6	23	85.2	20	74.1
<i>Car Driver</i>						
Always	11	20.4	7	25.9	4	14.8
Usually	3	5.6	1	3.7	2	7.4
Occasionally	1	1.9	0	0.0	1	3.7
Infrequently	0	0.0	0	0.0	0	0.0
Never	39	72.2	19	70.4	20	74.1
<i>Car Passenger</i>						
Always	23	42.6	14	51.9	9	33.3
Usually	9	16.7	3	11.1	6	22.2
Occasionally	5	9.3	1	3.7	4	14.8
Infrequently	0	0.0	0	0.0	0	0.0
Never	17	31.5	9	33.3	8	29.6
<i>Bike</i>						
Always	0	0.0	0	0.0	0	0.0
Usually	0	0.0	0	0.0	0	0.0
Occasionally	2	3.7	0	0.0	2	7.4
Infrequently	0	0.0	0	0.0	0	0.0
Never	52	96.3	27	100.0	25	92.6

The final trip purpose to be reviewed concerns visits to recreational activities, with the relevant findings summarized in Table 19. Of the entire sample, approximately one-third reported walking on at least an "occasional" basis. The other transport modes are less frequently used. The data reveal that about 2/3 of all the respondents at Monash Manor walk to recreational activities on at least an "occasional" basis. On the other hand, no respondents at Anatole Park reported walking to recreational activities at any time.

Furthermore, they were less likely to report using public transit or driving a car for this purpose. These lower percentage use frequencies are due to the lower rate of participation in recreational activities by Anatole Park respondents that was reported earlier. However, 10% of these respondents did report using a bike "usually" or "always" for recreational purposes, while Monash Manor had no respondents reporting use of a bike.

Table 19: Percentage Use Frequencies of Transport Modes for Recreational Activities.

Mode	Entire Sample (n=21)		Monash Manor (n=12)		Anatole Park (n=9)	
	n	%	n	%	n	%
<i>Walk</i>						
Always	6	28.6	6	50.0	0	0.0
Usually	1	4.8	1	8.3	0	0.0
Occasionally	1	4.8	1	8.3	0	0.0
Infrequently	0	0.0	0	0.0	0	0.0
Never	13	61.9	4	33.3	9	100.0
<i>Bus</i>						
Always	1	4.8	1	8.3	0	0.0
Usually	2	9.5	1	8.3	1	11.1
Occasionally	4	19.0	3	25.0	1	11.1
Infrequently	0	0.0	0	0.0	0	0.0
Never	14	66.7	7	58.3	7	77.8
<i>Car Driver</i>						
Always	3	14.3	2	16.7	1	11.1
Usually	3	14.3	2	16.7	1	11.1
Occasionally	1	4.8	1	8.3	0	0.0
Infrequently	0	0.0	0	0.0	0	0.0
Never	14	66.7	7	58.3	7	77.8
<i>Car Passenger</i>						
Always	3	14.3	2	16.7	1	11.1
Usually	1	4.8	1	8.3	0	0.0
Occasionally	4	19.0	3	25.0	1	11.1
Infrequently	0	0.0	0	0.0	0	0.0
Never	13	61.9	6	50.0	7	77.8
<i>Bike</i>						
Always	2	9.5	0	0.0	2	22.2
Usually	1	4.8	0	0.0	1	11.1
Occasionally	0	0.0	0	0.0	0	0.0
Infrequently	0	0.0	0	0.0	0	0.0
Never	19	90.5	12	100.0	6	66.7

The nature and location of recreational activities varied greatly for the two sub-groups. Subjects reported playing cards and bingo on the premises (Monash Manor only), attending dances and socials at several locations in the city, and patronizing various participatory sports facilities. The data concerning transportation modes used to visit recreation sites should be viewed with caution, given the small sample size in question ($n=21$).

4.2 Tests of Hypotheses

This sub-section includes the tests of the hypotheses using objective statistical inferential tests. The tests and results are presented in three parts according to the thesis objectives. They are as follows: i) hypotheses concerning satisfaction with proximity to activity sites; ii) hypotheses concerning life satisfaction; and iii) hypothesis concerning trip frequency to activity sites.

4.2.1 Hypotheses concerning Satisfaction with Proximity to Activity Sites

This section involves the testing of two hypotheses.

Hypothesis I states:

that the elderly's satisfaction with proximity to service activity sites is related to residential location.

The hypothesis is tested with reference to six sets of activity sites: grocery store, pharmacy, physician, shopping centre, recreation sites, and public transit facilities. Satisfaction with proximity to activity sites was measured on a seven-point Likert scale. Respondents were asked to rate public transit not only on the location of a bus stop, but also on the availability of routes, and the scheduling and efficiency of services in meeting need. The poles of the scale were labeled as "7=very satisfied" and "1=very dissatisfied". Therefore, a high score on the scale is indicative of a high level of satisfaction. Six separate satisfaction ratings were thus elicited from each respondent.

Section 4.1.1 indicates that the two sub-groups possess similar socio-demographic characteristics except for gender, with a substantially higher proportion of males at Anatole Park (48%) than at Monash Manor (17%). For this reason, the Student's t-test was used to determine if there were significant differences in mean satisfaction ratings between males and females in the respective sub-groups prior to the testing of Hypothesis 1. The results reveal that there are no significant differences between the mean satisfaction levels of the genders. Therefore, any possible differences occurring between the mean satisfaction ratings of sub-groups will not be gender-related.

Hypothesis I is tested with the Student's t-test of significance of differences between the mean satisfaction ratings of the two sub-groups. The mean satisfaction ratings and results of the t-tests are presented in Table 21. The analysis reveals that the differences between all pairs of satisfaction ratings are significant.

Table 21: Mean Satisfaction Ratings of Service-Activity Sites and Results of Student's t-test for Differences Between Housing Site Sub-groups

Most Proximate Activity Site	Monash Manor		Anatole Park		t-test results
	\bar{x}	S.D.	\bar{x}	S.D.	
Shopping centre	5.87	(0.342)	3.61	(1.771)	7.95*
Grocery store	5.72	(0.456)	3.61	(1.783)	6.15*
Physician	5.20	(1.190)	3.59	(1.018)	5.19*
Public transit	5.79	(0.596)	2.87	(1.943)	4.55*
Pharmacy	5.37	(1.428)	3.55	(1.805)	4.31*
Recreation sites	5.79	(0.415)	5.00	(0.943)	3.48*

* Significant at the 0.05 level

The results reveal that the Monash Manor (service-rich) sub-group consistently report significantly greater satisfaction with each of activity sites than Anatole Park (service-poor) sub-group. In addition, the results of the t-tests are significant for the following services: grocery store, pharmacy, physician, shopping centre, recreation sites, and public transit. The greatest differences regarding specific services are those related to proximity to a grocery store and a shopping centre. These two services have been shown to be of particular importance to elderly people (Howell, 1976; Kahana et al., 1976; Graham et al, 1991; Smith, 1991). The location of a grocery store is important given that purchasing food is essential to daily living and is thus a frequently undertaken activity. In addition, shopping centres are often used by the elderly as places for social exchange and therefore may play a large role in their activity patterns.

These results support the findings of previous work which has concluded that a desirable site for senior citizen housing is one that offers proximity to a grocery store, pharmacy, bank, and recreational activities (Howell, 1976; Warnes, 1987). Furthermore,

transportation is the linkage necessary to make these activity sites accessible (Carp, 1979). Given that Monash Manor residents are more proximate to services and facilities, and have good access to an extensive public transit service, it is understandable that they report greater satisfaction with their location in relation to activity sites. On the other hand, Anatole Park residents are located further from services, have access to a limited transit service, and report lower levels of satisfaction. Residents are obviously aware of the quality of their local service environment. Therefore, Hypothesis I is supported.

Hypothesis II states:

that the elderly's satisfaction with proximity to social activity sites is not related to residential location.

This hypothesis is tested with reference to two sets of activity sites: homes of friends and homes of relatives. Satisfaction with proximity to these sites was measured on the seven-point Likert scale used for the service activity sites. Hypothesis II is tested with the Student's t-test. The mean satisfaction ratings and results of the t-tests are presented in Table 22.

The analysis reveals that the difference between satisfaction ratings for homes of friends is not significant. The locations of homes of friends are unrelated to the service environment. Thus, there is no reason why the proximity of friends should differ between the sub-groups. However, it is surprising that a significant difference occurs in satisfaction with location relative to the

homes of family since the latter are also unrelated to the service environment. In the present study, satisfaction with proximity to homes of family appears to be related to residential location. Due to these inconsistent results, Hypothesis II is not well supported.

Table 22: Mean Satisfaction Ratings of Social Activity Sites and Results of Student's t-test for Differences Between Housing Site Sub-groups

Most Proximate Activity Site	Monash Manor		Anatole Park		t-test scores
	\bar{x}	S.D.	\bar{x}	S.D.	
Homes of friends	5.62	(0.493)	5.27	(0.632)	1.87
Homes of family	5.16	(1.111)	4.04	(1.653)	3.17*

*Significant at the 0.05 level

In addition to satisfaction to the eight activity sites, a global rating of residential location in relation to all eight activity sites was separately elicited. The ratings of the two sub-groups was subjected to the Student's t-test for analysis; the results of which are in Table 23. The global mean rating registered by Monash Manor respondents reveals a much greater degree of overall satisfaction with proximity to activity sites than that experienced by Anatole Park residents. This result was expected since Monash Manor residents expressed significantly greater satisfaction than Anatole Park residents to each of the service activity sites and to one of the two social activity sites. Therefore it is reasonable to assume that an overall satisfaction with proximity to services is related to a person's residential location.

Table 23: Mean Global Satisfaction Rating and Results of Student's t-test for Differences Between Housing Site Sub-groups

	Monash Manor		Anatole Park		t-test scores
	\bar{x}	S.D.	\bar{x}	S.D.	
Global rating of satisfaction	5.56	(0.415)	3.94	(1.169)	7.07 *

*Significant at the 0.05 level

4.2.2 Hypotheses Concerning Life Satisfaction

This section presents the tests and results of Hypotheses III and IV.

Hypothesis III states:

that the level of life satisfaction of elderly persons is positively related to their satisfaction with proximity to services.

The Pearson product-moment coefficient of correlation is used to determine the strength of the association between life satisfaction (x_0) and each of the satisfaction with proximity to activity site variables (x_1, \dots, x_9). The variables are defined as follows.

x_0 = LSIB score

x_1 = Satisfaction with Proximity to Grocery Stores.

x_2 = Satisfaction with Proximity to Shopping Centres.

x_3 = Satisfaction with Access to Public Transit.

x_4 = Satisfaction with Proximity to Physicians.

x_5 = Satisfaction with Proximity to Pharmacies.

x_6 = Satisfaction with Proximity to Recreation Sites.

x_7 = Satisfaction with Proximity to Homes of Family.

x_8 = Satisfaction with Proximity to Homes of Friends.

x_9 = Global Rating of Satisfaction.

The Life Satisfaction Index B (LSIB) data was negatively skewed and the only data distribution that significantly differed from normality, thus resulting in the need for data transformation. Arithmetic probability paper was used to check the normality of the LSIB scores (Taylor, 1977). The data was normalized using a power transformation.

A series of t-tests were conducted to determine any significant differences between mean satisfaction ratings based on sub-groups differing in specific socio-demographic characteristics (Appendix 2). The results reveal that mean satisfaction ratings do not differ significantly between the sub-groups except in two instances: the satisfaction of homes of family between those respondents having immediate family in Winnipeg and those who do not, and the satisfaction of the location of recreational activities between males and females. The remainder of the t-tests disclose non-significant results.

The results of the analysis are presented in Table 24. The number of respondents represents only those who reported visiting each activity site, thus the variation in "n" for each activity site.

The results reveal that there is a significant positive association between life satisfaction (x_0) and satisfaction with one's proximity to a grocery store (x_1), pharmacy (x_5), physician (x_4), shopping centre (x_2), and public transit (x_3). That is, the greater one's satisfaction with proximity to these services, the higher the level

of life satisfaction. Furthermore, there is also a significant association between life satisfaction (x_0) and the global rating of satisfaction (x_9). These results are consistent with the findings of previous studies (Howell, 1976; Ward et al., 1988) which conclude that resources available in a local area are important dimensions of well-being.

Table 24: Pearson product-moment coefficients of correlation between life satisfaction and satisfaction ratings.

Most Proximate Activity Site	n	r
Grocery store	60	0.3734*
Shopping centre	61	0.3609*
Public transit	54	0.3587*
Physician	59	0.3061*
Recreation site	21	0.2841
Pharmacy	61	0.2668*
Homes of family	54	0.2577
Homes of friends	25	0.1005
Global rating	61	0.4288*

n= total number of respondents

r= value of Pearson product-moment coefficient

*Significant at the 0.01 level

Non-significant relationships are disclosed between life satisfaction (x_0) and satisfaction with proximity to homes of friends (x_8), homes of family (x_7), and recreation sites (x_6). This may be due to the fact that most respondents do not experience difficulties gaining access to these locations i.e. a ride is very often provided for visits to family members. Therefore, the location of these activity sites may not be as important as the location of the previously stated services. The importance of friends in the housing projects may reduce the dependency of off-site friends and

relatives. However, it should be noted that the number of subjects who reported trips to homes of friends and recreation sites were relatively small (see Table 24).

Lawton et al. (1980) found that elderly people fare best in neighbourhoods that provide them with the people and services that they need. They concluded that there is a relationship between actual neighbourhood characteristics and morale, although the effect of the neighbourhood is mediated by factors such as lifelong personality and attitude structure, and current social adjustment. In the present study, the results are supportive of the basic relationship proposed by Lawton et al (1980). Specifically, those respondents reporting greater satisfaction with proximity to service activity sites also report higher life satisfaction scores. Hypothesis III is therefore accepted.

Hypothesis IV states:

that elderly persons living in a service-rich environment will have higher levels of life satisfaction than elderly persons living in a service-poor environment.

Life satisfaction is measured using the Life Satisfaction Index B (Neugarten et al., 1961). Scores theoretically range from 0 to 21, with higher scores indicating greater life satisfaction. In the present study scores range from 9 to 21 for Anatole Park respondents and 12 to 21 for Monash Manor respondents (Table 25). The mean life satisfaction is 18.6 for Monash Manor (service-rich) respondents and 15.3 for Anatole Park (service-poor) respondents.

Additionally, nearly 93% of Monash Manor residents reported an LSIB score of at least 16, compared to only 52% of Anatole Park residents.

Prior to the testing of this hypothesis, the Student's t-test was used to test for significance between LSIB scores for the males and females at each study site. This procedure was carried out due to the previously mentioned difference in proportions of each gender in each sub-group. The results reveal that there is no significant difference in LSIB scores between the males and females at Monash Manor ($t=0.614$, n.s.). Likewise, gender-related differences in mean LSIB scores are non-significant for Anatole Park residents ($t=0.604$, n.s.).

Furthermore, t-tests were used to test for any differences in LSIB scores between sub-groups distinguished by certain socio-demographic characteristics (Appendix 3). The results reveal that there is no significant difference in mean LSIB scores between those respondents owning an automobile and those who do not, between those having immediate family in Winnipeg and those who do not, or between males and females. However, there is a significant difference in mean LSIB scores between those respondents who rated their health as good or excellent and those who rated their health as fair, poor, or bad. Also, there is a significant difference in LSIB scores between respondents aged 56-74 years and those who are 75 and older.

The Student's t-test is employed to test for the difference between the mean life satisfaction scores of the two sub-groups. The results of the test reveal that the difference in mean life

satisfaction scores between the two groups is highly significant ($t=3.789$, $p<0.01$).

Kahana et al.(1976) have stated that services such as transportation and shopping, which are essential to daily living, promote social interaction of older people and subsequently add to their feelings of satisfaction and well-being. Amenities such as recreational services also contribute to interaction and ensuing feelings of well-being. While personal and social characteristics such as health and involvement in activities are important, location has also been shown to influence life satisfaction of older people (Bohland and Herbert, 1983; Reitzes et al., 1991).

Table 25: Frequency Distribution of LSIB Scores for Housing Site Sub-groups

LSIB Score	Monash Manor n	Anatole Park n
9	0	1
10	0	1
11	0	2
12	1	4
13	0	2
14	1	3
15	0	1
16	2	2
17	6	2
18	3	1
19	5	5
20	3	2
21	9	4

n= number of respondents

Monash Manor residents have reported a significantly higher mean life satisfaction score than Anatole Park residents. The former are more proximate to services (see Chapter 3) and have better access

to an extensive public transit service. The testing of Hypothesis I reveals that residents in the service-rich environment reported greater satisfaction with proximity to activity sites, while the testing of Hypothesis II reveals that for all subjects the level of life satisfaction is positively related to their satisfaction with proximity to services. Based on these results, it is reasonable to assume that life satisfaction levels will differ between the two housing site sub-groups. Since elderly persons living in a service-rich environment (Monash Manor) report higher levels of life satisfaction than elderly persons living in a service-poor environment (Anatole Park), Hypothesis IV is supported.

4.2.4 Hypothesis Concerning Trip Frequency

Hypothesis V states:

that trip frequency to activity sites is greater for those elderly people living in a service-rich environment than for those living in a service-poor environment.

It is proposed that elderly people living in a service-rich environment (Monash Manor residents) will report higher trip frequencies to activity sites than elderly people living in a service-poor environment (Anatole Park residents).

Level of trip frequency is evaluated separately for trips to different activity sites, i.e. grocery store, shopping centre, public transit, physician, recreation sites, pharmacy, homes of family, and

homes of friends. Analysis of socio-demographic sub-groups was carried out to determine if there were any significant differences in the proportion of respondents embarking on trips according to specific trip frequencies (Appendix 4). The z-test was employed for this purpose with the results revealing mainly non-significant differences in proportions. However, significant differences in proportions were exhibited between those respondents with or without immediate family in Winnipeg regarding trip frequencies to a physician, a financial institution, and homes of family members. Significant differences also occurred between respondents owning an automobile and those who do not with regard to visiting family members and a financial institution, as well as between respondents reporting good or excellent health and those reporting fair, poor, or bad health regarding visits to a physician and a financial institution.

An analysis of the sub-group data, using the two-sample z-test for differences between specified proportions, revealed no significant differences between the genders regarding trip frequency to activity sites¹. The hypothesis was tested with the z-test to determine if there were any significant differences in proportions of respondents at the two study sites reporting trip frequencies.

¹ Grocery stores: Monash Manor $z=1.640$, Anatole Park $z=1.892$; Homes of friends: Monash Manor $z=1.179$, Anatole Park $z=-0.206$; Homes of family: Monash Manor $z=0.322$, Anatole Park $z=1.182$; Recreation sites: Monash Manor $z=0$, Anatole Park $z=0$; Financial Institution: Monash Manor $z=1.099$, Anatole Park $z=1.106$; Physician: Monash Manor $z=1.447$, Anatole Park $z=-0.610$; Pharmacy: Monash Manor $z=1.640$, Anatole Park $z=0.972$.

Grocery shopping, visiting friends, visiting family, and visiting recreation sites are activities that are reported to occur quite frequently. Therefore, analyses were conducted to determine the proportion of respondents who embarked on each of these trips at least once per week, or less than once per week. Different frequency levels were used for less frequently made trips; these frequency levels are specified later in the chapter.

The values for grocery shopping for Monash Manor and Anatole Park differ slightly ($z=1.41$, n.s.), with a higher percentage of respondents at the former site making grocery shopping trips at least once per week (Table 26).

Table 26: Frequency of Grocery Shopping Trips of the Housing Site Sub-Groups

Frequency of Trips	Monash Manor		Anatole Park	
	n	%	n	%
at least once/week	25	80	21	68
less than once per week	4	13	9	29
no trips (groceries delivered)	2	7	1	3

n=number of respondents

Frequencies of visiting friends differ only slightly between the sub-groups ($z=1.794$, n.s.). While a higher percentage of respondents at Monash Manor report visiting friends at least once a week (Table 27), the difference is not significant. However, the difference in trip frequency is amplified when visits to friends on the housing site are also included. That is, 77% of Monash Manor respondents reported visiting at least once per week compared to only 55% at Anatole Park, which constitutes a significant difference in trip frequencies ($z=2.272$, $p<0.01$). Several respondents at Monash Manor mentioned having friends on the premises, unlike Anatole

Park, thus accounting for the increased frequency of this type of trip. Furthermore, several respondents at Anatole Park reported that they never socialize with other tenants, or have anything in common with them. This is reflected by the substantial difference between the sub-groups in the number of subjects who do not visit friends.

Table 27: Frequency of Visiting Friends by the Housing Site Sub-Groups

Frequency of Trips	Monash Manor		Anatole Park	
	n	%	n	%
at least once/week	12	40	9	29
less than once/week	1	3	3	10
no trips	17	57	19	61

n=number of respondents

The next most frequent type of trip is visiting relatives. The data reveal a fairly similar pattern of trip frequencies between the two sub-samples (Table 28) ($z=-0.337, n.s.$). This similar pattern of trip frequency may be due to a similar percentage of respondents at each housing site reporting the presence of immediate family in Winnipeg.

Table 28: Frequency of Visiting Family by the Housing Site Sub-Groups

Frequency of Trips	Monash Manor		Anatole Park	
	n	%	n	%
at least once/week	17	57	19	61
less than once/week	10	33	8	26
no trips	3	10	4	13

n=number of respondents

With regard to trip frequency in visiting recreational sites, Monash Manor respondents reported a slightly higher rate than Anatole Park respondents (Table 29). The difference was not significant however ($z=0.887, n.s.$). Furthermore, a higher percentage of respondents at

the former also report participating in recreation at their respective residence. This may partly be explained by the presence of both a library and a recreation room at Monash Manor where organized activities are held for the tenants. Anatole Park, on the other hand, does not offer such amenities. When these on-site trips are included in the proportion of those respondents visiting recreation sites (14 more respondents at Monash Manor, one more respondent at Anatole Park) the differences between the proportions are significant ($z=4.320$, $p<0.01$).

Table 29: Frequency of Visiting Recreation Sites by the Housing Site Sub-Groups

Frequency of Trips	Monash Manor		Anatole Park	
	n	%	n	%
at least once/week	11	37	9	29
less than once/week	1	3	0	0
no trips	4	13	21	68

n=number of respondents

Trips that are made less frequently include those to a financial institution, a physician, and a pharmacy. Different frequency levels were subsequently used in calculating the proportion of respondents embarking on these trips (Tables 30-32). Frequencies used for visits to a financial institution are once/month, twice/month, and >twice/month. Frequencies used for visits to a physician are once or twice/month, 6-8/year, 4/year, and 2/year. Finally, the frequencies used for visits to a pharmacy are at least once/week, 1-3/month, less than 12/year, and no trips.

The patterns of responses of the sub-groups regarding visits to a financial institution are virtually identical (Table 30) thus resulting a non-significant difference in trip frequency ($z=0.396$, n.s.). More

than half of the subjects in each housing sub-group report visiting a financial institution only once or twice per month. The majority of respondents commented that they only went to cash their monthly pension cheques.

Table 30: Frequency of Visits to a Financial Institution by the Housing Site Sub-Groups

Frequency of Trips	Monash Manor		Anatole Park	
	n	%	n	%
once/month	17	57	16	52
twice/month	9	30	11	35
> twice/month	4	13	4	13

n=number of respondents

The response patterns for the two sub-groups regarding frequency of visits to a physician are fairly similar (Table 31) with no significant difference noted in trip frequency ($z=0.693, n.s.$). Approximately one-quarter of respondents in each sub-group report visiting a physician on a monthly or bi-weekly basis. The remainder of the respondents in each sub-group report frequencies of 8 visits or less per year.

Table 31: Frequency of Visits to a Physician by the Sub-Groups

Frequency of Trips	Monash Manor		Anatole Park	
	n	%	n	%
once or twice/month	8	27	7	23
6-8 per year	2	6	4	13
4 per year	13	43	10	32
2 per year	7	24	10	32

n=number of respondents

The final trip purpose is pharmacy patronage. More respondents at Monash Manor report weekly patronage at a pharmacy than those at Anatole Park (Table 32). On the other hand, 68% of Anatole Park respondents report between 1 and 3 visits to a pharmacy per month

compared to 57% of Monash Manor respondents. A similar number of subjects in each sub-group reported no visits to a pharmacy. The results of the z-test reveal no significant difference in proportion of respondents visiting a pharmacy at least once per month ($z=0.536, n.s.$).

Table 32: Frequency of Visits to a Pharmacy by the Housing Site Sub-Groups

Frequency of Trips	Monash Manor		Anatole Park	
	n	%	n	%
at least once per week	7	23	2	6
1-3 per month	17	56	21	68
less than 12 per year	4	14	5	16
no trips	2	7	3	10

n=number of respondents

None of the differences between the paired trip frequency proportions are significant. Therefore, Hypothesis V cannot be accepted. However, the direction of the paired differences for the following types of trips are consistent with Hypothesis IV: grocery shopping, visiting friends, visiting recreation sites, and patronizing a pharmacy (see Tables 26, 27, 29, 32).

The results of some previous work lend support to the absence of a relationship between trip frequency and accessibility of opportunities (Hanson, 1982; Wermuth, 1982; Hanson and Schwab, 1987). Hanson (1982:197) states that "socio-demographic factors are more important than locational factors in explaining travel behaviour". Travel behaviour includes trip frequency. However, she also concedes that spatial factors cannot be overlooked in explaining patterns of trip distribution.

4.3 Summary

The chapter first presents a descriptive analysis of socio-demographic characteristics of the entire sample and housing site sub-groups. This is followed by a description of the life satisfaction (LSIB) scores and trip frequencies of the entire sample. Next, transport modes used by the entire sample and sub-groups is presented. The five hypotheses are next tested using statistical inferential tests.

The findings indicate that elderly persons living in a service-rich environment report greater satisfaction with their proximity to service activity sites, and higher life satisfaction scores, compared to elderly persons living in a service-poor environment. There was no difference in satisfaction with the location of one of the social activity sites (homes of friends) which was anticipated. However, one unanticipated result is the significant difference in satisfaction regarding homes of family between the sub-groups. Furthermore, higher life satisfaction is found to be significantly associated with greater satisfaction with proximity to a grocery store, a pharmacy, a physician, a shopping centre, and public transit. Finally, the data suggests that proximity to services is not a main determinant in explaining trip frequency.

CHAPTER FIVE

SUMMARY AND CONCLUSIONS

The main objective of this thesis is to examine the life satisfaction and routine out-of-home travel behaviour of elderly people residing in senior citizen apartment (SCA) buildings in two contrasting service environments in Winnipeg, Manitoba. Specifically, the thesis attempts to:

1. compare evaluations of proximity to activity sites by elderly persons living in two contrasting service environments;
2. compare levels of life satisfaction of elderly persons living in two contrasting service environments;
3. compare trip frequencies to out-of-home activity sites by elderly persons living in two contrasting service environments.

The objectives and related hypotheses are outlined in Chapter 1. This is followed by a discussion of the field of gerontological geography. The first chapter concludes with a presentation of the conceptual framework of the study (Lawton's ecological model of aging) and the contribution of the study to gerontological geography. Chapter 2 presents a review of the relevant literature and also places the present study within the discipline of geography. The

derivation of the hypotheses is presented in Chapter 3, following a discussion of Neugarten et. al.'s (1961) Life Satisfaction Indices. The chapter concludes with an outline of the study area and data sources, with the derivation of the latter from a survey/questionnaire explained. Chapter 4 offers (i) a descriptive analysis of the data, and (ii) the tests of the research hypotheses. The purpose of the present chapter is to summarize the findings of the study, offer suggestions for future research, and propose recommendations concerning service provision and the siting of senior citizen housing.

5.1 The Research Design

The primary research tool used in this study was a questionnaire developed to gather data on travel activities of the elderly, their satisfaction with both their proximity to activity sites and with life in general. The questionnaire also gathered relevant socio-demographic data. The present study is formulated within the conceptual framework provided by the ecological model of aging (Lawton and Nahemow, 1973). Residential location and the activity sites are conceptualized as forms of environmental press, health status as level of competence, trip frequency to activity sites as adaptive behaviour, and life satisfaction as affect and adaptation level.

The questionnaire is divided into two main parts: (1) a series of structured and open-ended questions formulated specifically for the present study, and (2) the Life Satisfaction Index B (Neugarten et al.,

1961). The LSIB is a self-report instrument that is easy to administer, and which has proven to be consistent and reliable (Lohmann, 1977; Bauer and Okun, 1983).

Questions regarding socio-demographic characteristics reveal that 67% of the entire sample consists of women. However, women account for 83% of respondents at Monash Manor and only 52% of respondents at Anatole Park. The majority (75%) of the entire sample are between the ages of 65 and 74, with similar proportions at both Monash Manor (70%) and Anatole Park (74%). Approximately one-third of the entire sample report vehicle ownership; this level is consistent for both sub-groups. While a similar proportion of respondents in both sub-groups report a length of residence at their present address of 5-9 years, a greater proportion at Monash Manor (33%) report a length of residence of 10 years or more, than at Anatole Park (20%). Of the entire sample, 74% report the presence of immediate family members in Winnipeg, a proportion that is found in both sub-groups. Finally, while the majority of respondents in the entire sample (62%) rated their health as "good" or "excellent", only 13% of respondents rated their health as excellent compared to 32% of Anatole Park residents.

Five hypotheses are formulated and presented in accordance with the specific objectives of the thesis. The hypotheses are tested using objective inferential statistical tests.

5.2 Implications of the Findings

The findings of the study should be treated with caution given the small sizes of the sub-groups ($n=30$ and $n=31$). However, the findings are nonetheless useful in offering suggestions for future research, which are discussed later in this chapter. The findings are presented in accordance with the three research objectives initially stated in Chapter 1, and reiterated at the beginning of this chapter.

5.2.1 Hypotheses Concerning Proximity to Activity Sites

Hypothesis 1 states:

that the elderly's satisfaction with proximity to service activity sites is related to residential location.

The Student's t-test was used to determine statistical significance of the proposed relationships. A major finding of this thesis is that there are significant differences between the evaluations of residential location in relation to service activity sites reported by the residents of the two senior citizen apartment buildings. Residents at Monash Manor are located closer to a supermarket, a pharmacy, a shopping centre and a hospital, and have access to more extensive public transit routes and scheduling, than residents at Anatole Park. The findings disclose that the former report significantly greater satisfaction with their residential location in relation to these services.

These results imply that elderly people who enjoy greater proximity and accessibility to services have a greater satisfaction with their residential location in relation to the service environment. The results also suggest that Monash Manor (service-rich) residents are aware of their locational advantages and that they are important. Likewise, Anatole Park (service-poor) residents are apparently aware of their locational disadvantages. In terms of Lawton's ecological model of aging the results reveal that a greater degree of environmental press (such as that experienced by Monash Manor residents) results in a negative affective response i.e. lower satisfaction levels.

Hypothesis II states:

that the elderly's satisfaction with proximity to social activity sites is not related residential location.

The Student's t-test was used in for the testing of this hypothesis. There is no significant difference in the satisfaction rating regarding homes of friends. The locations of homes of friends are unrelated to the service environment, thus there is no reason why the proximity of friends should differ between the sub-groups. However, an unexpected result reveals a significant difference in satisfaction with the location of homes of family, an activity site also unrelated to the service environment.

A higher mean global satisfaction rating was reported by Monash Manor respondents, revealing a much greater degree of overall

satisfaction with proximity to activity sites than Anatole Park respondents.

5.2.2 Hypotheses Concerning the Life Satisfaction of the Elderly

Hypothesis III states:

that the level of life satisfaction of elderly persons is positively related to their satisfaction with proximity to activity sites.

The testing of this hypothesis involves the use of the Pearson product-moment coefficient of correlation. The present study found that there are significant associations between life satisfaction and satisfaction with one's proximity to a grocery store, pharmacy, physician, shopping centre, and public transit. Specifically, satisfaction with proximity to these services is found to be positively and significantly related to higher levels of life satisfaction. This implies that satisfaction with one's location in the service environment contributes significantly to life satisfaction and general feelings of well-being. These results are broadly consistent with findings of Ward et al. (1988) who discovered that when health, education, and occupational prestige are controlled, overall morale is correlated with general neighbourhood satisfaction and the convenience of the neighbourhood for shopping. The global rating of satisfaction is also found to be significantly associated with life satisfaction. The results are

consistent with Lawton's ecological model of aging which proposes that positive affect (i.e. satisfaction with proximity to activity sites) occurs near adaptation level (i.e. positive life satisfaction).

However, no significant evidence was found to support the proposed associations between life satisfaction and one's satisfaction with proximity to homes of friends and family. These non-significant associations may be due to less difficulty experienced by respondents in gaining access to these locations i.e. the presence of friends on the same premises as the residence was reported frequently and several respondents report receiving a ride for the purpose of visiting family.

Hypothesis IV states:

that elderly persons living in a service-rich environment will have higher levels of life satisfaction than elderly persons living in a service-poor environment.

This hypothesis was tested using the Student's t-test.

The results reveal that mean life satisfaction is much higher among elderly people living in a service-rich environment than those living in a service-poor environment. Monash Manor respondents, who possess greater proximity and accessibility (by way of public transit) to services than Anatole Park respondents reported significantly higher life satisfaction scores.

This suggests that the proximity of service opportunities may influence the well-being and life satisfaction of elderly people. Residential location in relation to service opportunities is particularly important for the elderly as they often experience

declines in physical and/or mental capabilities thus reducing their activity spaces (Peace, 1982; Wachs, 1988). Overall, the results based on the tests of Hypotheses I-IV strongly suggest that level of proximity to routinely patronized service activity sites may be viewed as an important component of environmental press in the context of the elderly individual.

5.2.3 Trip Frequency

Hypothesis V states:

that trip frequency to activity sites is greater for those elderly people living in a service-rich environment than for those living in a service-poor environment.

The testing of this hypothesis involves the use of the z-test for differences between two proportions. A basic assumption of this research is that trip frequency of elderly people would be positively related to their proximity to activity sites. In terms of Lawton's ecological model of aging, trip frequency is conceptualized as "adaptive behaviour", and is proposed to be the outcome of "environmental press" or proximity to activity sites. However, the results reveal that trip frequencies are similar for the two sub-groups in relation to each category of activity site. Only when on-site trips for visiting friends and recreation sites are included in total trip frequencies for each of these purposes are there significant differences between the two sub-groups. Specifically,

Monash Manor residents report significantly greater frequencies for both trip purposes than Anatole Park residents. The former also report greater opportunities at their housing site for these social activities, thus explaining the difference. Otherwise, the results imply that distance to activity sites is not a main determinant of trip frequency. These results are contrary to similar studies involving North American cities (Sheppard, 1980; Ghosh and McLafferty, 1984) which did not focus specifically on the elderly. On the other hand, other studies did fail to find a significant association between proximity and trip frequency (Hanson, 1982; Hanson and Schwab, 1987). In the present study, it should be noted that while there was no significant difference in trip frequencies, the direction of paired differences for several types of trips are consistent with the proposed association between distance to activity sites and trip frequency, i.e. grocery shopping, visiting recreation sites, and patronizing pharmacies. Moreover, similar trip frequencies may not imply similar degrees of adaptive behaviours between the housing site sub-groups since Anatole Park residents are more likely to encounter difficulties in reaching their desired service destinations as a result of the greater distances that they must usually travel.

5.4 Suggestions for Future Research

This thesis has examined a number of specific aspects regarding life satisfaction of the elderly, their satisfaction with proximity to services and social contacts, and their level of trip frequency to

activity sites. Therefore, suggestions for future research are offered below.

Firstly, there is a need to replicate and further this study by including a sample of community residents. The present study focused only on those elderly residing in senior citizen apartment buildings. Further research is needed to determine what differences exist between these two groups of elderly people with regard to travel activity patterns and any difficulties that occur in obtaining or accessing services.

Secondly, future research could clarify the extent to which elderly persons in different urban locations experience barriers to services. For instance, the present study was conducted in an outer suburb with a low density of residences and services. Similar research should therefore be conducted in a high density area, such as the downtown, where there may be a wider variety of proximate services, but also barriers to mobility (e.g., busy streets, congested sidewalks).

Thirdly, there is a need for further investigation of the impact of support from family and friends on the lives of the elderly. For instance, the level of support and contact with friends and family members has been shown to influence life satisfaction of the elderly (Gibson, 1986), an area noted in the present study. However, friends and family members may play a role in determining levels of trip frequency of elderly people by providing transportation and thus making services more accessible for them. On the other hand, if the elderly are solely dependent on another person for transportation then their ability to travel frequently may decline. The fourth

suggestion concerns satisfaction with residential location. Additional research should be aimed at a more comprehensive appraisal of the neighbourhood. The present study investigated locational satisfaction in relation to only one set of indicators - activity sites. Clearly, satisfaction with residential location may be evaluated on the basis of other criteria. Specifically, future research should focus on appraisals of the aesthetics of the neighbourhood (i.e. the amount of "greenery"), level of crime, age structure of the neighbourhood (i.e. is it age-segregated or age-integrated), and level of noise.

The fifth suggestion for future research concerns the level of trip frequency of elderly people. The present study assumed that proximity to services was the main determinant in level of trip frequency. To understand why this assumption was not supported by the findings of this study, it may be profitable to examine various profile attributes of the elderly. Cutler and Coward (1992:81) state that variables such as income, marital status, and physical impairment must be considered "in order to develop a more complete understanding of the variability in access to private transportation that exists among the elderly". Consideration of these attributes may also be necessary in order to achieve a fuller understanding of the variability in trip frequency among the elderly.

The final suggestion for future research concerns "the relationship between the spatial distribution of opportunities in the objectively defined choice set and the set of opportunities that the individual perceives as viable options" (Hanson, 1982:198). Some work has been conducted regarding elderly cognition of the physical

environment by Ward et al. (1988) and Smith (1989). However, the former did not deal with specific services, while the latter focused only on one particular service i.e. urban shopping centres. Additional research should take into account other services and determine how the perceived service environment contributes to satisfaction or dissatisfaction. For instance, elderly individuals living near the same service environment may possess different knowledge levels of that environment. Variations in knowledge levels may, in turn, influence the evaluation of local service opportunities.

5.5 Policy Recommendations

The findings of this thesis suggest that elderly people who enjoy greater proximity and accessibility to services report greater satisfaction with their location in the service environment. Additionally, a significant association exists between life satisfaction and satisfaction with proximity to certain services, with residents in a service-rich environment reporting higher levels of overall life satisfaction than residents of a service-poor environment. On the basis of these results, the following recommendations can be made which could improve senior citizen's satisfaction with their residential location, as well as enhance their general sense of life satisfaction and well-being.

The first recommendation is the formulation and implementation of policies that will increase elderly people's accessibility to services and activities. This recommendation essentially relates to two issues, with the first concerning the location of housing sites. This

involves coordinating the housing-site selection process with service delivery planning for elderly residents. Planning policies should have the objectives of ensuring the provision of localized services, or siting senior citizen apartments in locations where the residents can easily reach more distant services. These services should include a bus stop, grocery store, pharmacy, shopping centre, and physician's office. The second issue relating to this recommendation concerns various ways of facilitating the mobility of senior citizen apartment dwellers. These may include provision of a better pedestrian environment, improved bus services, assistance for maintaining a car, and subsidies for bus or taxi travel. Transportation planning for the elderly should be a priority for policy makers since transport deprivation may affect access to virtually all services. Environmentally-based interventions, such as those listed above regarding housing site selection and transportation planning, "may significantly enhance well-being, and in many instances have more widespread effectiveness than time-consuming attempts to change the individual" (Lawton et al, 1980:225).

The second main recommendation is that policy makers should consider the attitudes and opinions of older people prior to any locational decision making. Consultation with the elderly is an essential pre-requisite for satisfactorily locating senior citizen apartment buildings because "inappropriate siting can result in social and personal pathologies" (Howell, 1976:188). Conversely, appropriate siting could contribute to an overall sense of satisfaction and well-being. The site-selection criteria for

services and elderly housing should be flexible and thus potentially modifiable according to the particular needs and values as expressed by the user population.

This thesis has attempted to contribute to the body of knowledge concerning life satisfaction of the elderly. In this endeavour, it has placed emphasis upon service evaluation and utilization by senior citizen apartment dwellers and the role of proximity to social contacts. Although the research is largely exploratory and descriptive, it does address issues that have thus far received limited attention in gerontological geographic research. However, the thesis has also demonstrated that much work remains to be done in this important research area.

APPENDIX 1

The Questionnaire

UNIVERSITY OF MANITOBA/DEPARTMENT OF GEOGRAPHY

Service Accessibility and Satisfaction Study

Monash Manor _____
 Anatole Park _____

Address _____

	Date	Time	Interviewed	Reason for non-contact
1st call				
2nd call				
3rd call				
4th call				

RESULT OF INTERVIEW

A. INTERVIEWED OBTAINED

1. Complete
2. Incomplete

B. INTERVIEWED NOT OBTAINED

3. Refusal
4. No reply (after 4 calls)
5. Not available for health reasons
6. Not available for other reasons (SPECIFY)
7. Ineligible (SPECIFY)

7. What is the location most frequented for the following trip purposes?

	Name of outlet	Street location	Shopping centre
grocery shopping			
pharmacy			
bank			
physician			
recreational activity			

	Street location
visiting friends	
visiting relatives (specify relationship)	
a)	
b)	
c)	

8. For each trip purpose, how frequently do you use each of the following travel modes?

a) grocery shopping

	Always	Usually	Occasionally	Infrequently	Never
Car (driver)					
Car (passenger)					
Bus					
Walk					
Bike					

b) pharmacy

	Always	Usually	Occasionally	Infrequently	Never
Car (driver)					
Car (passenger)					
Bus					
Walk					
Bike					

c) physician/hospital visit

	Always	Usually	Occasionally	Infrequently	Never
Car (driver)					
Car (passenger)					
Bus					
Walk					
Bike					

d) bank

	Always	Usually	Occasionally	Infrequently	Never
Car (driver)					
Car (passenger)					
Bus					
Walk					
Bike					

e) visiting friends

	Always	Usually	Occasionally	Infrequently	Never
Car (driver)					
Car (passenger)					
Bus					
Walk					
Bike					

f) visiting relatives

	Always	Usually	Occasionally	Infrequently	Never
Car (driver)					
Car (passenger)					
Bus					
Walk					
Bike					

g) recreational activities

	Always	Usually	Occasionally	Infrequently	Never
Car (driver)					
Car (passenger)					
Bus					
Walk					
Bike					

9. For which of the following trip purposes do you usually (a) travel with one or more companions and (b) receive assistance?

	With companion	Assistance provided	Type of assistance
grocery shopping			
pharmacy			
physician/hospital visit			
bank			
visiting friends			
visiting relatives			
recreational activities			

10. On a scale of 1 (not at all satisfied) to 7 (very satisfied), how satisfied are you with your proximity or nearness to :

a) grocery stores

not at all satisfied	1	2	3	4	5	6	7	very satisfied
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b) pharmacies

not at all satisfied	1	2	3	4	5	6	7	very satisfied
-------------------------	---	---	---	---	---	---	---	-------------------

c) doctor's office or hospital

not at all satisfied	1	2	3	4	5	6	7	very satisfied
-------------------------	---	---	---	---	---	---	---	-------------------

d) a major shopping centre

not at all satisfied	1	2	3	4	5	6	7	very satisfied
-------------------------	---	---	---	---	---	---	---	-------------------

e) public transit service

not at all satisfied	1	2	3	4	5	6	7	very satisfied
-------------------------	---	---	---	---	---	---	---	-------------------

f) homes of friends

not at all satisfied	1	2	3	4	5	6	7	very satisfied
-------------------------	---	---	---	---	---	---	---	-------------------

g) homes of relatives

not at all satisfied 1 2 3 4 5 6 7 very satisfied

h) recreational activities

not at all satisfied 1 2 3 4 5 6 7 very satisfied

11. On a scale of 1 (not at all satisfied) to 7 (very satisfied) how satisfied are you in general with the location of your residence with regard to your proximity to services and social activities?

not at all satisfied 1 2 3 4 5 6 7 very satisfied

Now I would like to ask you some questions regarding your health and how you are feeling at the present time.

12. For your age would you say, in general, your health is:

- a) Excellent (never prevents activities) _____
- b) Good (rarely prevents activities) _____
- c) Fair (occasionally prevents activities) _____
- d) Poor (very often prevents activities) _____
- e) Bad (prevents most activities or requires confinement to bed) _____

13. What are the best things about being the age you are now?

- 1___ a positive answer
- 0___ nothing good about it

14. What do you think you will be doing five years from now? How do you expect things will be different from the way they are now in your life?

- 2___ better, or no change
- 1___ contingent, "it depends"
- 0___ worse

15. What is the most important thing in your life right now?

- 2___ anything outside of self, or pleasant interpretation of future
- 1___ "hanging on"; keeping health or job
- 0___ earlier periods were better

16. How happy would you say you are right now, compared with earlier periods in your life?

- 2___ this is the happiest time; all have been happy; hard to make a choice
- 1___ some decrease in recent years
- 0___ earlier periods were better

17. Do you ever worry about your ability to do what people expect of you - to meet demands that people make on you?

- 2___ no
- 1___ qualified yes or no
- 0___ yes

18. If you could do anything you pleased, in what part of Winnipeg would you most like to live?

- 2___ present location
- 0___ any other location

19. How often do you feel there is no point in living?

- 2___ never; hardly ever
- 1___ sometimes
- 0___ fairly often; very often

20. Do you wish you could see more of your close friends than you do, or would you like more time for yourself?

- 2___ O.K. as is
- 0___ wish could see more of friends
- 0___ wish more time to self

21. How much unhappiness would you say you find in your life today?

- 2___ almost none
- 1___ some
- 0___ a great deal

22. As you get older, would you say things seem to be better or worse than you thought they would be?

- 2___ better
- 1___ about as expected
- 0___ worse

23. How satisfied would you say you are with your way of life?

- 2___ very satisfied
- 1___ fairly satisfied
- 0___ not very satisfied

24. Finally, how satisfied are you with the location of your residence with regard to shopping, services, and the homes of family and friends? Also, do you feel that the transit service is efficient in meeting your needs?

APPENDIX 2

Results of t-tests for Differences Between the Mean Satisfaction Ratings of Proximity to Activity Sites Between Socio-Demographic Sub-Groups.

(a)

ACTIVITY SITE	SUB-GROUPS	MEAN	SUB-GROUP	MEAN
grocery store	good/excellent health	5.676	fair/poor/bad health	5.522
	age 56-74	5.608	age 75+	5.778
	own an automobile	5.474	no automobile	5.707
	male	5.580	female	5.659
	immediate family in Wpg.	5.512	no immediate family in Wpg.	5.941
pharmacy	good/excellent health	5.368	fair/poor/bad health	5.522
	age 56-74	5.365	age 75+	5.778
	own an automobile	5.300	no automobile	5.512
	male	5.316	female	5.476
	immediate family in Wpg.	5.395	no immediate family in Wpg.	5.556
physician	good/excellent health	5.216	fair/poor/bad health	5.682
	age 56-74	5.500	age 75+	4.889
	own an automobile	5.300	no automobile	5.462
	male	5.412	female	5.381
	immediate family in Wpg.	5.195	no immediate family in Wpg.	5.826
shopping centre	good/excellent health	5.789	fair/poor/bad health	5.783
	age 56-74	5.706	age 75+	6.556
	own an automobile	5.900	no automobile	5.821
	male	5.789	female	5.810
	immediate family in Wpg.	5.806	no immediate family in Wpg.	5.944
public transit	good/excellent health	5.143	fair/poor/bad health	5.176
	age 56-74	5.143	age 75+	5.400
	own an automobile	5.630	no automobile	5.222
	male	5.118	female	5.189
	immediate family in Wpg.	5.080	no immediate family in Wpg.	5.375
homes of friends	good/excellent health	6.419	fair/poor/bad health	6.500
	age 56-74	6.429	age 75+	6.667
	own an automobile	6.188	no automobile	6.606
	male	6.200	female	6.576
	immediate family in Wpg.	6.412	no immediate family in Wpg.	6.571
homes of family	good/excellent health	5.412	fair/poor/bad health	5.333
	age 56-74	5.404	age 75+	5.625
	own an automobile	5.632	no automobile	5.343
	male	5.294	female	5.526
	immediate family in Wpg.	5.698	no immediate family in Wpg.	4.667
recrea- tional activities	good/excellent health	6.500	fair/poor/bad health	6.700
	age 56-74	6.533	age 75+	6.750
	own an automobile	5.632	no automobile	6.500
	male	5.294	female	6.731
	immediate family in Wpg.	5.698	no immediate family in Wpg.	6.600

(b)

ACTIVITY SITE	SUB-GROUP CATEGORY	p-value
grocery store	Health	0.6954
	Age	0.5511
	Automobile Ownership	0.5484
	Gender	0.8542
	Family in Winnipeg	0.2265
pharmacy	Health	0.7276
	Age	0.1747
	Automobile Ownership	0.6241
	Gender	0.7240
	Family in Winnipeg	0.6788
physician	Health	0.2039
	Age	0.0686
	Automobile Ownership	0.6680
	Gender	0.9392
	Family in Winnipeg	0.0713
shopping centre	Health	0.9854
	Age	0.1928
	Automobile Ownership	0.8689
	Gender	0.9617
	Family in Winnipeg	0.5782
public transit	Health	0.9452
	Age	0.4623
	Automobile Ownership	0.1679
	Gender	0.8946
	Family in Winnipeg	0.4769
homes of friends	Health	0.5770
	Age	0.3822
	Automobile Ownership	0.4533
	Gender	0.1291
	Family in Winnipeg	0.2625
homes of family	Health	0.8323
	Age	0.3501
	Automobile Ownership	0.4502
	Gender	0.5211
	Family in Winnipeg	0.0056
recreational activities	Health	0.1707
	Age	0.0859
	Automobile Ownership	0.1707
	Gender	0.0169
	Family in Winnipeg	0.8106

p=significance level of t-test score.

APPENDIX 3

Results of t-tests for Differences Between the Means of Life Satisfaction Index B (LSIB) Scores.

SUB-GROUP	MEAN	SUB-GROUP	MEAN	p - value
own an automobile	17.6	do not own an automobile	16.4	0.5019
immediate family in Winnipeg	17.2	no immediate family in Winnipeg	16.9	0.1996
good/excellent health	18.6	fair/poor/bad health	13.3	0.0000
male	17.8	female	16.2	0.6487
age 56-74	18.3	age 75+	13.8	0.0000

p=significance level of t-test score.

APPENDIX 4

Results of z-tests for Differences in Proportions of Respondents Making Trips According to a Specified Frequency.

(a)

ACTIVITY SITE AND TRIP FREQUENCY	SUB-GROUP	P*	SUB-GROUP	P*
grocery store (> 1/week)	male	.833	female	.789
	own an automobile	.842	no automobile	.810
	good/excellent health	.868	fair/poor/bad health	.739
	family in Winnipeg	.822	no family in Winnipeg	.813
	age 56-74	.846	age 75+	.667
pharmacy (> 1/month)	male	.632	female	.833
	own an automobile	.842	no automobile	.738
	good/excellent health	.763	fair/poor/bad health	.783
	family in Winnipeg	.778	no family in Winnipeg	.750
	age 56-74	.788	age 75+	.667
physician (> 4x/year)	male	.580	female	.690
	own an automobile	.684	no automobile	.667
	good/excellent health	.553	fair/poor/bad health	.870
	family in Winnipeg	.75A6	no family in Winnipeg	.438
	age 56-74	.615	age 75+	1.000
financial institution (> 1/month)	male	.474	female	.357
	own an automobile	.579	no automobile	.310
	good/excellent health	.526	fair/poor/bad health	.217
	family in Winnipeg	.489	no family in Winnipeg	.188
	age 56-74	.442	age 75+	.222
homes of friends (> 1/week)	male	.580	female	.643
	own an automobile	.632	no automobile	.619
	good/excellent health	.632	fair/poor/bad health	.609
	family in Winnipeg	.600	no family in Winnipeg	.688
	age 56-74	.654	age 75+	.444
homes of family (> 1/week)	male	.580	female	.595
	own an automobile	.789	no automobile	.500
	good/excellent health	.605	fair/poor/bad health	.565
	family in Winnipeg	.711	no family in Winnipeg	.250
	age 56-74	.596	age 75+	.556
recreational activities (> 1/week)	male	.368	female	.619
	own an automobile	.474	no automobile	.571
	good/excellent health	.605	fair/poor/bad health	.435
	family in Winnipeg	.556	no family in Winnipeg	.500
	age 56-74	.558	age 75+	.444

* P= proportion of respondents in each sub-group making trips at the specified frequency levels.

(b)

ACTIVITY SITE	SUB-GROUP CATEGORY	z-score
grocery store	Health	0.4126
	Age	-0.3065
	Automobile Ownership	1.2731
	Gender	0.0867
	Family in Winnipeg	1.2933
pharmacy	Health	-1.7353
	Age	0.8946
	Automobile Ownership	-0.1755
	Gender	0.2271
	Family in Winnipeg	0.8023
physician	Health	-0.8488
	Age	0.1351
	Automobile Ownership	-2.5551*
	Gender	2.3280*
	Family in Winnipeg	-2.2693*
financial institution	Health	0.8626
	Age	1.9946*
	Automobile Ownership	2.3774*
	Gender	2.1055*
	Family in Winnipeg	1.2400
homes of friends	Health	-0.4769
	Age	0.0935
	Automobile Ownership	0.1789
	Gender	-0.6203
	Family in Winnipeg	1.1968
homes of family	Health	-0.1199
	Age	2.1290*
	Automobile Ownership	0.3079
	Gender	3.2212*
	Family in Winnipeg	0.2287
recreational activities	Health	-1.8190
	Age	-0.7748
	Automobile Ownership	1.2951
	Gender	0.3833
	Family in Winnipeg	0.6292

* = significant at 0.01 level

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