

**An Analysis of the Individual and Environmental Change Determinants  
of the Personal Outcomes of Recent Movers to  
Government-Subsidized Senior Housing**

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

DOCTOR OF PHILOSOPHY

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**An Analysis of the Individual and Environmental Change Determinants of the Personal  
Outcomes of Recent Movers to Government-Subsidized Senior Housing**

**BY**

**Gina Marie Sylvestre**

**A Thesis/Practicum submitted to the Faculty of Graduate Studies of The University of**

**Manitoba in partial fulfillment of the requirement of the degree**

**Of**

**Doctor of Philosophy**

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## Abstract

The primary objective of the study is to investigate the effect of changes in local environmental settings, individual attributes, and local travel behaviour on the personal outcomes of older movers to government-subsidized senior housing projects. The conceptual framework of the study is based on an amended version of Golant's (1998) model of the outcomes of residential adjustment that explicitly incorporates a temporal dimension. A longitudinal design involving two questionnaire/interview surveys was administered to garner data relating to (a) the previous residence immediately prior to the move (Time 1), (b) the year immediately after the move (Time 2), and (c) the period of 1-2 years after the move (Time 3). A total of 149 recent movers to 25 government-subsidized senior housing projects located in Winnipeg, Manitoba completed both of the questionnaire/interview surveys.

In relation to the changes in the antecedent construct variables that occurred between Time 1 and Time 3, the results of the analysis disclose that there are statistically significant: (a) decreases in distance to key sites in the service and social environments; (b) increases in resident satisfaction with proximity to key service and social sites; and (c) declines in the availability of automobile transportation for travel to service and social destinations. In addition, the changes in personal state outcomes recorded at the housing project during the one-year study period (i.e., between Time 2 and Time 3) are suggestive of a moderate level of positive residential adjustment after the move. The tests of two sets of five regression models (i.e., relating respectively to the entire sample and a sub-sample of respondents with children) disclose that statistically significant predictors of the outcomes include antecedent construct



variables relating to change in physical and functional health, change in subjective assessments of the proximity of services to the place of residence, and change in local travel behaviour. In relation to the sub-field of environmental gerontology, these findings illustrate that a complex set of both personal and environmental factors are involved in the adjustment of older people to a new residential setting.

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Additionally, I would like to express my gratitude to Dr. Stephen M. Golant. As the external member of my doctoral committee, his contribution is particularly important as his model of residential adjustment represents the foundation of the present study.

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## Chapter 1 Introduction

### 1.1 Objectives of the Thesis and Organization of the Chapters

Population aging is regarded as one of the most significant demographic developments of the past century (Treas, 1995). In many countries, older persons represent the fastest growing segment of the population (Rosenberg & Everitt, 2001). In Canada, for example, approximately 13.0 percent of the population was aged 65 or over in 2001 (Statistics Canada, 2002a), a proportion that is projected to reach 21.4 percent by 2026 (Statistics Canada, 2002b).<sup>1</sup> From the perspective of housing provision, these shifts in the demographic composition of society underscore the need to address issues explicitly related to the adjustment of older people who move to more supportive shelter and care settings. Accordingly, the present study focuses on a longitudinal investigation of the personal outcomes of recent movers from the community to government-subsidized senior housing projects in Canada. The study area is the city of Winnipeg, Manitoba.

The sub-market of government-subsidized senior housing projects represents an important category of group housing targeted to older adults in Canada (Kanaroglou & Diegel, 1990). Research on housing geared to low-income seniors has typically addressed issues concerning (i) the reasons for moving, and (ii) the socio-demographic characteristics of tenants. In contrast, relatively little is known about the consequences of relocating to this distinctive type of residential setting that may ultimately necessitate considerable adaptation on the part of the older mover. The

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<sup>1</sup> Persons aged 55 years and over comprised 22.5 percent of the Canadian population in 2001.

primary purpose of this study is to compare the local neighbourhood environments of the previous residence and the senior housing project, and to evaluate the effect of changes in personal, environmental, and behavioural factors on the personal outcomes of older movers. Consideration of the macro-environment of the neighbourhood within a temporal framework is essential to a greater understanding of the relationship between the environment and aging (Golant, 2003; Kendig, 2003)

In light of the above discussion, the general objective of the present study is to conduct a longitudinal survey that investigates the effects of changes in personal resources, the environmental setting, and behaviour circuits upon personal outcomes of recent movers from independent housing in the community to government-subsidized senior housing projects.<sup>2</sup> Using an amended version of Golant's (1998) residential adjustment model as a conceptual framework, research questions are formulated to address the following specific objectives of the study: (i) to investigate the personal and residential characteristics of recent movers to government-subsidized senior housing; (ii) to investigate changes in the personal resources of older movers to senior housing; (iii) to investigate changes in the local neighbourhood environments of recent movers to government-subsidized senior housing in terms of resident-appraised and observer-defined changes in physical qualities, proximity to services, and availability of social supports; (iv) to investigate changes in the individual social and service behaviour circuits of older movers to senior housing;

---

<sup>2</sup> Ethical approval to conduct this research was granted by the University of Manitoba's Faculty of Arts Ethical Review Committee for all components of the study (A copy of the ethical approval form is contained in Appendix A.1). This approval was based on the committee's consideration of both the description of the research and the survey instruments that would collect data for this study (Appendix A.5 & Appendix B.3).

(v) to investigate changes in the personal state outcomes of recent movers to government-subsidized senior housing that occur at the project; and (vi) to determine the effects of changes in personal resources, environmental content, and behaviour circuits upon the personal outcomes of recent movers to government-subsidized senior housing.

The following three sections of Chapter 1 provide background concerning (a) geographical perspectives on senior housing, (b) the development of the social housing market for older adults in Canada, and (c) a description of the study's model of personal outcomes of residential moves and an overview of the research questions formulated for the study. On the basis of this background material, the contribution of the thesis is then explained in Section 1.5. Chapter 2 offers a review of the more pertinent literature that investigates theoretical and empirical aspects of the geography of housing for the senior population. In the same chapter, the relationship of the present study to this body of literature is articulated. The conceptual framework and research questions of the study are presented in Chapter 3, while Chapter 4 offers a discussion of the data sources and survey design. Chapters 5 and 6 both present and explain the data analyses that address the research questions. Finally, Chapter 7 includes a summary of the main findings of the study, which is followed by a discussion of their academic and policy implications. The same chapter concludes by offering suggestions for future research concerning spatial aspects of the adjustment of older persons to a new residential setting.

## 1.2 The Geography of Senior Housing

With the advancement of gerontological research, it became evident that older adults occupy, utilize, and experience environments in ways distinctly linked to aging (Rowles, 1986). As a result, there has been an evolving recognition that the residential circumstances of aging people have locational dimensions. And while social gerontology incorporates a wide range of disciplinary perspectives, only geography "... uses space as a basic organizing principle to evaluate human-environmental interaction" (Rudzitis, 1984: 541). More specifically, since the early 1970s a focus on environmental influences on the life experiences of older people has resulted in recognition of the relevance of geographical investigation in understanding the aging process (Anuchin, 1973; Golant, 1979; Golant, Rowles, & Meyer, 1989; Macey, Smith, & Watkins, 2003).

A well-developed theme of gerontological geography is the investigation of the complex relationship between older adults and their living environments (Golant, 1979; Macey et. al., 2003). Geographers and other social scientists regard the study of housing to be an integral component of addressing the needs of seniors as the manipulation or modification of locations and environments can alleviate age-related stresses (Golant et. al., 1989; Rudzitis, 1984; Shipp & Branch, 1999). Moreover, housing for the elderly has often been the focal point of policy measures as it is considered to be a primary means of promoting the well-being of the aging population (Carp, 1976a; Rudzitis, 1984).

It is notable that Stephen Golant, a geographer, published a formative book regarding the issue of residential relocation and housing options available for seniors.

Golant (1992a) argues that changes in personal circumstances related to the aging process, such as widowhood or declining physical capacity, create alternative housing needs. Given the heterogeneity of the aging population, a singular response to their diverse housing requirements is not sufficient (Golant, 1986a; Haldemann & Wister, 1994; McPherson, 1998). Golant (1992a) portrays a wide range of housing options and programs that have developed in the United States. This diversity of residential options for older adults reflects the concept of a continuum of housing adjustments that promotes a range of residential options with varying levels of support.

According to the ecological perspective of aging, a broad continuum of housing choices provides the opportunity for older adults to select a set of services consistent with their needs. Ideally, this selection will achieve congruence between the older person's capability and his/her living environment (Andersen, Chen, & Hula, 1985; Filion, Wister, & Coblenz, 1992; Folts & Muir, 2002).

As an increasing proportion of the population is aging, a wide diversity of housing alternatives has been developed to compensate for changes in personal competence, thereby avoiding premature institutionalization and encouraging aging-in-place in the community (Haldemann & Wister, 1994; Wister & Gutman, 1997). The study of housing conditions is wide-ranging because the diversity of elderly housing includes independent owner-occupied dwellings, as well as age-integrated and age-segregated specialized residential environments (McPherson, 1998). Additionally, there exists an array of housing-related solutions offered in the private, non-profit, and public sectors (Golant, 1992a). Housing for the older population also varies according to a continuum of support that ranges from the full provision of medical and personal care



to independent living with only limited or no support (Moos & Lemke, 1984; Seplaki, Smith, & Singer, 2004). Researchers have provided typologies of various senior housing alternatives that include leisure-oriented retirement communities, supportive housing, government-subsidized senior housing projects, shared housing, home-renewal programs and support enhancements to encourage aging-in-place, congregate apartment complexes, granny flats, life-care facilities, single-room occupancy hotels, as well as many other forms of housing (Eckert & Murrey, 1984; Folts & Muir, 2002; Gitlan, 2003; Golant, 1986a, 1992a; Pynoos & Golant, 1996; Shipp & Branch, 1999; Macey et. al., 2003).

The diversity of residential settings for older adults has resulted in a broad research agenda. In particular, geographic research has concentrated on various locational and environmental issues related to housing for the older population (Macey et. al., 2003). For example, geographers have documented the migration of young retirees to areas such as the Sunbelt of the United States and the seaside resorts of Britain that provide retirement amenities (Allon-Smith, 1982; Flynn, Longino, Wiseman, & Biggar, 1985; Longino, 1990). Moreover, geographical investigation has focused on the segregated living environments of retirement communities that exist in these amenity areas (Gober, 1985; Marans, Hunt, & Vakalo, 1984). More recently, Lucas (2004) has found that the images used to promote the lifestyle of retirement communities do not refer to issues related to physical decline and the need for more supportive environments, but rather endorse the idea of successful aging.

Geographers have also considered the inequitable spatial variation of housing opportunities for older adults (Warnes, 1981). For example, Mercer (1979) found

that the location of senior housing projects in Vancouver was influenced by the availability of cheap land rather than the spatial distribution of the aging population. Furthermore, Golant and La Greca (1994) used the U.S. 1987 Annual Housing Survey to reveal spatial variation in the quality of housing occupied by seniors in terms of inner city-suburban, urban-rural, and regional comparisons. Golant (2002) also demonstrated that most low-income older adults in Florida are underserved by the supply of government-subsidized senior housing because the allocation of this housing type is concentrated in a small number of counties.

Other geographic research has focused on the characteristics of the local neighbourhood environments of various types of senior housing (Macey et. al., 2003). For example, the results of Smith, Sylvestre, and Ramsay's (2002) study revealed that government-subsidized senior housing projects located in the inner city of Winnipeg are more proximate to local services than projects in the suburbs. Other research has evaluated the proximity of senior housing projects to services and the extent to which these service environments promote or inhibit the activities of older people (Smith, 1984; Smith & Gauthier, 1995). In addition, Rollinson (1990, 1991) investigated the local neighbourhood environments of single-room occupancy hotels that provide accommodation for destitute older adults.

Finally, Holdsworth and Laws (1994) suggest that the range of specialized housing sub-markets available for seniors creates distinctive spatial forms. These sub-markets are viewed as landscape expressions that provide a basis for investigating the varying social and built geographies of housing for the aging population. The present study focuses specifically on the landscape expressions comprised of government-

subsidized senior housing projects. This housing type is of particular interest because shelter options available to older persons are often primarily determined by their income status (Haldemann & Wister, 1994; Harper & Laws, 1995; Pynoos & Golant, 1996). As accommodation expenditures remain constant after retirement while incomes steadily decline, low-income seniors must allocate a significant proportion of their limited budget to housing (Clark & White, 1990; Mercer, 1979). Residential alternatives for this elderly segment may be largely limited to government-subsidized programs established to provide affordable housing (Golant, 1992a). The focus of the present study is on government-subsidized housing in Winnipeg, Manitoba, that was created by Canadian federal and provincial policies in response to the needs of low-income seniors.

### **1.3 Development of the Social Housing Market for Seniors in Canada**

According to Filion, Wister, and Coblenz (1992), the traditional public sector approach to the housing needs of the elderly offered only two options: remaining in the home, or moving to an institutional setting when greater supports were required. This approach was criticized for contributing to premature institutionalization and the unnecessary loss of independence. As a result, alternative residential solutions were required for older persons with housing problems related to decreasing competence, isolation, and financial difficulties (Golant, 1992a; Haldemann & Wister, 1994).

In the United States, both planned public housing and private non-profit housing were first developed in the 1960s primarily for healthy seniors who were unable to obtain affordable and adequate housing in the private market (Lawton, 1990). This

type of residential environment was categorized as “independent housing” because it was originally planned and constructed without supportive services and intended to house fully independent older people (Parmelee & Lawton, 1990). It offered affordable shelter, common social space, and usually a minimal activities program.

In Canada, the construction of government-subsidized housing for older adults originated after World War II as part of a wider federal government policy that placed particular emphasis on the construction of social (i.e., government-subsidized) housing expressly targeted to low-income households (Bacher, 1993). The first formal expression of this policy, the National Housing Act Amendments of 1948, established social housing on a permanent basis. Specifically, the Act provided limited-dividend housing amendments permitting municipalities to establish their own housing companies. These companies subsequently commenced developing social housing projects including those targeted specifically to seniors. However, in the absence of a program of tenant-subsidization, many residents lived in poverty, paying over half of their income in rent (Bacher, 1993).

The 1964 National Housing Act amendments finally established a new policy involving the construction of rent-g geared-to-income-housing expressly for seniors. Terms for cost sharing in relation to public-sector senior project construction, maintenance, and rent subsidies were set between federal and provincial governments (Fallis, 1995; McLain, 1993). Specifically, the public housing was to be owned by the provinces, municipalities or their agencies, with rent provision geared towards the income of needy tenants. While the Central Housing and Mortgage Corporation (CMHC) covered 90 percent of the construction costs, the gap between tenant-rents

and the costs of operating and maintaining the units was shared equally between the provinces and CMHC.

In the 1960s and 1970s, public-sector housing targeted to seniors expanded rapidly and became an important source of accommodation for low-income seniors throughout Canada (Anderson, 1992). In Manitoba, the Manitoba Housing Authority (MHA) was established to implement the cost sharing programs (Fallis, 1995), and by the early 1970s, an Elderly Persons' Housing (EPH) portfolio was developed (Kirby, 1999). In Manitoba, two important categories of senior housing were established: (i) public senior housing which is both owned and operated by the Manitoba Housing Authority (e.g. MHA, 444 Kennedy St.); and (ii) public senior housing which is owned by the Manitoba Housing Authority and operated by a non-profit organization (e.g. Arlingtonhaus, 880 Arlington St.). The sites of many MHA projects were specifically targeted to downtown and inner city areas on the grounds that they were characterized by relatively high concentrations of older adults. However, the specific site locations were largely dictated by the availability and cost of land (Kirby, 1999).

Since the early 1970s, the range of housing provided for seniors has been broadened by the introduction of new forms of tenure and living arrangements, together with special income supplement and shelter allowance programs (McLain, 1993). The New Non-Profit Program contained in the 1973 National Housing Act amendments extended the terms available to public housing to non-profit and cooperative programs that relied on third sector organizations such as church groups, service clubs, and advocacy groups to sponsor housing developments using federal and provincial funding (Carter, 1997; Skelton, 2000). These projects were

specifically targeted to an income mix of seniors (including those on low incomes) deemed unable to obtain adequate, affordable, and suitable housing in the private market. This approach became the primary vehicle for the continuing development of affordable housing. As a result, the majority of new unit allocations after 1978 were for non-profit and cooperative housing for seniors (Fallis, 1995).

In 1986, Conservative federal government policy stipulated that the allocation of housing dollars would subsequently be explicitly targeted to non-profit organizations providing accommodation for the low-income elderly only (Fallis, 1995). In part, this shift in the New Non-Profit program was ideological and part of a broader trend towards reduced government spending. However, it was also a response to increasingly negative public reaction to the perceived segregation of low-income social groups in dense housing projects (Brink, 1995). Consequently, a formal set of site-selection criteria was used during the post-1986 era to help determine the location of proposed non-profit housing projects for seniors. These criteria included: (a) the matching of the spatial distribution of projects to need at the macro-regional level; (b) the requirement that the non-profit group collect data to demonstrate the need for housing in the market area (at the micro-level); (c) general proximity to services, supports, and public transportation; and (d) the quality of the site (Manitoba Department of Family Services and Housing, 2002). Together with a variety of other factors, (e.g., capability of non-profit group, cost-effectiveness, etc.), these criteria were used as a basis for a point rating system to determine the selection of non-profit proposals. The implementation of these criteria resulted not only in the location of

non-profit housing projects for older adults in the inner city, but also in suburban areas (Smith, Sylvestre, & Ramsay, 2002).

While non-profit housing construction for the low-income elderly proceeded for several years, the federal government precluded further development of social housing in 1993 by withdrawing their commitment to any future subsidy arrangements as part of a policy of continuing fiscal restraint (Skelton, 2000). Government policy shifted from an emphasis on the affordability and adequacy of housing to the promotion of housing alternatives by the private sector (Haldemann & Wister, 1994). In particular, the federal government replaced the non-profit low-income target program with a program providing life-lease housing for the mixed-income elderly (CMHC, 2003). This "Seniors Rental Start" program is considered to be an innovative way to finance senior housing and is currently an important source of housing development for older adults with higher incomes. However, the new emphasis on the operation of the marketplace suggests that low-income seniors have fewer affordable housing options. Moreover, there is no indication that the federal government will initiate any future funding support for social housing development targeted to low-income seniors.

Despite the demise of social housing construction in Canada, the inventory of both public and non-profit senior housing projects has remained remarkably stable in recent years. In 1993, when construction of subsidized housing was halted, social housing units comprised 16.3 percent of the total rental stock in Canada (Fallis, 1995). Presently in Winnipeg, social housing accounts for approximately two-thirds of the residential units in the city's entire senior housing market excluding

institutional care (Age & Opportunity, 2004). This largely reflects the continuing need to accommodate older adults who are unable or unwilling to remain in their own homes, and do not possess sufficient financial resources in order to move to the life-lease housing sector. Given the current importance of government-subsidized senior housing as a source of accommodation, it is imperative to consider further this type of residential environment and the well-being of its tenants.

It is important to note that while younger seniors (<75 years of age) were the original occupants of low-income public housing, many of these individuals chose to remain in the projects and age-in-place (Golant, 1991). Consequently, one of the main problems of providing planned independent housing for older adults became apparent as originally healthy residents demonstrated signs of increasing frailty (Lawton, 1990). The shortcomings of this type of housing policy was related to the lack of integration of the projects with a community network of supportive services and neighbourhood amenities recognized as vital to the maintenance of independence for older adults (Gelwicks & Newcomer, 1974). Although a limited number of on-site services are now available at most senior housing projects, tenants must often rely on the local neighbourhood environment of the project in order to access needed services and social supports.

The present study proposes that the local neighbourhood environment is of particular significance to recent movers to low-income senior housing, since they are more likely to experience mobility restrictions than older people who remain housed in the community. In fact, several factors may precipitate a move to this type of housing including the death of a spouse (widowhood), income reductions, the cost of



maintaining a single-family dwelling, the high rents of private apartments, health deterioration, and functional constraints (Beland, 1984; Everitt & Gfellner, 1996; Gutman, 1980; Leung, 1992; Mercer, 1979; Wiseman, 1980). Overall, residents of government-subsidized senior housing projects are composed of relatively high proportions of single persons, females, lower income tenants, former renters, and users of public transportation (Beland, 1984; Gutman, 1980; Kanaroglou & Diegel, 1990; Leung, 1992; Mercer, 1979; Smith & Gautier, 1995; Smith & Sylvestre, 2001; Varady, 1984).

Although tenants of public and non-profit senior housing are usually ambulatory and required to live “independently” (Smith, 1984), they are vulnerable to various mobility constraints due to decrements in personal competence, declining financial resources, and limited access to personal transportation (Cutler & Coward, 1992; Golant, 1984a; Golant, 1998; Lawton, Nahemow, & Tsong, 1980; Ward, La Gory, & Sherman, 1986). More specifically, the spatially constrained elderly may become highly dependent upon services, amenities, and social ties within the local neighbourhood. Past work has revealed neighbourhood satisfaction to be a component of the overall residential satisfaction of the urban elderly (Burby & Rohe, 1990; Lawton, 1980a; Lawton et. al., 1980; Ward et. al., 1988). Therefore, this study evaluates the effect of a changed neighbourhood environment on the personal outcomes of recent movers to government-subsidized senior housing.

#### 1.4 A Model of Personal Outcomes of Residential Moves

The present research study is placed within the sub-field of environmental gerontology that explicitly addresses “the description, explanation, and modification or optimization of the relation between the elderly person and his or her environment” (Wahl & Weisman, 2003: 616). The parameters of the environmental perspective are particularly relevant as the declines, limitations, and losses experienced by older adults may necessitate the modification of, and greater dependency on, the physical, service, and social environments (Haldemann & Wister, 1994; Pollack & Newcomer, 1986). Moreover, the older person is particularly sensitive to environmental variation as declining competence creates greater susceptibility to changes in the environment (Lawton, 1970). While Parmelee and Lawton (1990) identified a lull in empirical research on environment and aging, more recently new conceptual and methodological directions have been identified. Specifically, the present study’s incorporation of both a temporal dimension and a focus on the local neighbourhood environment will advance the understanding of the relationship between older persons and their environment (Golant, 2003; Kendig, 2003).

While environmental gerontology is distinguished by pluralism in terms of theoretical approaches, empirical research, and the application of findings, there has been increasing interest directed towards treating “place” as an integrative construct for contextualizing person-environment interactions (Rowles & Watkins, 2003; Weisman, Chaudhury, & Moore, 2000;). Wahl and Wiseman further suggest that “more emphasis be placed on the role of “place” in future work concerned with outcomes of behaviour in, and adjustment to, environmental settings defined at

difference scales” (Wahl & Weisman, 2003: 625). However, Kendig notes that past work in environmental gerontology has tended to focus on either home or institutional environments rather than “the macro-scale environments of neighbourhoods, regions, and urban-rural divides that are so significant in structuring experiences of aging” (Kendig, 2003: 612). In light of the explicit attention directed to the contextualizing of the personal outcomes of elderly residential relocations in terms of local neighbourhood environments, the present study will clearly afford a contribution to macro-scale research in environmental gerontology.

Although the concept of adaptation has been a focal point within the realm of environmental gerontology, the temporal dimension is largely underdeveloped as a construct in theoretical models of environment and aging relationships (Golant, 2003). Golant stresses that while these models have underscored the importance of the person-environment relationship in terms of optimal living arrangements, “they have only incompletely or vaguely conceptualized either the characteristics of the individual or environment in temporal terms” (Golant, 1998: 35). A formal proposition is required concerning the linkage between time and the adaptational responses of older persons in new or changed environments (Golant, 2003). In the present study, the inclusion of a temporal context and the use of a longitudinal research design will contribute to a greater understanding of the evolving dynamics of older persons and their residential care and shelter settings (Alwin & Campbell, 2001; Parmelee & Lawton, 1990; Parmelee, 1998;).

Recently, a model of residential adjustment was proposed by Stephen Golant (1998) that explicitly focuses on the concept of change and the effect of a new

environment on the adjustment of older persons. A central component of the conceptualization of change in Golant's (1998) model is the definition of a spatio-temporal analytical unit that distinguishes between a previous and current residential setting with an explicit focus being on the present residence. The model identifies antecedent constructs including both individual qualities and environmental aspects that are conceptualized as the causal influences producing differential personal state and environmental outcomes experienced by older adults in a changed residential setting.

By incorporating a temporal dimension, the model portrays a complex set of personal and environmental attributes that influence residential adjustment outcomes. The model's emphasis on time and the effects of changes in both personal resources and functional environment on the adjustment of older movers to a new shelter and care setting represents an important advance on earlier conceptual frameworks within the field of environmental gerontology. Golant (1998) proposes that the temporal perspective provides a more complete representation of an older person's environmental experiences and thereby contributes to an understanding of why older movers dissimilarly experience adjustment outcomes in a new residential setting.

Golant's (1998) model of residential adjustment represents a complex framework of the relationship between environment and aging. It presents new opportunities to conceptualize and evaluate the effect of change on the aging process. The model provides a broad conceptual foundation for incorporating change perspectives in the evaluation of outcomes of moves to senior housing accommodation. In order to render it more amenable to empirical testing, the present study applies an amended

version of Golant's (1998) model that is modified specifically to investigate the effect of a changed neighbourhood environment on the personal outcomes of older movers to government-subsidized senior housing projects.

The conceptual model for the present study proposes that personal state outcomes experienced by recent movers to a senior housing project, are influenced by a set of antecedent constructs that include personal resource transitions, stable individual attributes, and both observer-defined and resident-appraised change in the content and behaviour circuits of the functionally relevant environment. According to the study model, self-reported health, control, self-esteem, morale, and depression are specified as the personal state outcomes experienced by older movers after a period of adjustment to a new residential and care setting. Four mediating factors are proposed to explain the personal outcomes of older movers to government-subsidized senior housing: (i) changes in the content of the residential environment including qualities of the neighbourhood such as fear of crime, as well as proximity to services and the availability of social supports; (ii) changes in individual behaviour circuits in both the social and service environments; (iii) changes in the functional and health status of the individual; as well as (iv) socio-demographic characteristics.

The primary focus of the amended model is on the differences between the local neighbourhoods of the previous residence and senior housing project in relation to changes in the content and behaviour circuits of the environment. Additionally, older adults who move to a new residential setting may experience changes in their personal resources. To investigate these changes the research questions for the study are organized into two groups. The first series of questions relate to the descriptive

aspects of change in both the older mover and the local neighbourhood environment. Second, the final research question focuses on the relationship between these changes and the personal outcomes of older movers.

The first set of research questions formulated for the study focus on the characteristics of the movers and changes experienced in terms of their personal state outcomes, personal resources, the physical, service, and social content of the environmental setting, and the individual social and service behaviour circuits:

- 1) What are the personal and residential characteristics of recent movers to government-subsidized senior housing projects?
- 2) What changes in the personal resources of older adults occur after a move to a government-subsidized senior housing project?
- 3) Are there notable modifications in the local physical, social, and service environment after a move to a government-subsidized senior housing project?
- 4) Are there significant changes in individual social and service behaviour circuits of recent movers to a government-subsidized senior housing project?
- 5) What changes occur in the personal state outcomes of recent movers to a government-subsidized senior housing project?

The conceptualization of change provides the basis for the development of the amended model's causal relationships. The conceptual model identifies complex associations among personal characteristics, local neighbourhood features (including physical attributes, out-of-home service provision, and informal social support networks), individual behaviour circuits, and psychological well-being of older people. Specifically, the model proposes that the personal state outcomes of older persons in a new shelter and care setting are ultimately influenced by a set of antecedent constructs that represent changes in the personal resources and local

neighbourhood environment of the older mover. The final research question considers the effect of these changes in terms of personal state outcomes:

- 6) Do changes in personal resources, environmental content, and behavioural circuits influence the personal outcomes of recent movers to a government-subsidized senior housing project?

Relocation may present a developmental opportunity for those seniors who experience improved access to local neighbourhood resources after moving to a government-subsidized senior housing project (Wahl & Weisman, 2003). Overall, Golant's (1998) amended model used for this study proposes that improvements in the personal resources, local neighbourhood content, and behaviour circuits of older movers will be positively associated with psychological well-being (i.e. personal outcomes). Conversely, it is also proposed that more negative outcomes are likely if a recent mover to senior housing experiences deterioration in either personal resources or the local neighbourhood environment.

### **1.5 Research and Policy Contributions of the Study**

This study offers several contributions to research and policy relating to senior housing. First, as a contribution to the field of environmental gerontology, the study identifies environmental factors involved in the adjustment of older people to a new residential setting. The study significantly extends the scope of previous work on Canadian elderly housing by specifically focusing on the adjustment of older movers to government-subsidized senior housing. Relatively few studies have attempted to investigate the complex relationships among personal characteristics, local out-of-

home service provision, proximity to informal supports, activity spaces, and the well-being of older people. The study's inclusion of a temporal dimension and focus on the local neighbourhood environment will provide greater insights into these relationships in the context of government-subsidized senior housing. From a methodological perspective, use of a longitudinal survey design will enable an analysis of the consequences of residential change that cannot easily be conducted within a cross-sectional framework (Seplaki et. al., 2004).

Furthermore, research on environment and aging has mainly focused on housing in terms of shelter and affordability, with only limited consideration of the local neighbourhood environment (Haldemann & Wister, 1994). Relatively little is known concerning the possible impact of the local neighbourhood on the adaptation of older movers to government-subsidized senior housing. Therefore, the present study's focus on the effect of changes in the physical, service, and social environments will provide greater insights into the dynamic relationship of the older individual with place. Overall, the findings of the study will further demonstrate the significance of the environmental context in relation to understanding the aging process (Golant, 1979).

As Canada is undergoing major demographic changes, research-based knowledge and theory in environmental gerontology can inform the development of policies that better respond to the environmental needs of seniors (Kendig, 2003). Recently the Liberal Task Force on Seniors (2004) highlighted the lack of affordable housing for seniors, particularly those who are frail. The focus of the present study on social housing for seniors in Winnipeg will contribute to a greater understanding of the local



environmental factors that influence the outcomes of older persons in this new residential setting. Specifically, the findings will afford a foundation for developing criteria governing the selection of new sites for elderly social housing that take into account the physical, service, and social attributes of the local neighbourhood environment that are particularly important for the psychological well-being of the new tenants. Furthermore, by explicitly focusing on the consequences of moves of the community elderly to public and non-profit senior housing, the study will yield findings that have relevance for providers of housing, community services, and social supports for the elderly. And while attention is explicitly focused on government-subsidized senior housing in Canada, it is anticipated that the results of this research have wider relevance regarding other categories of North American seniors' housing targeted to similar elderly segments (Lawton, 1985a).

Golant (1992a) has argued that because of population aging, the need for alternative housing for older persons will increase dramatically in the twenty-first century. As greater numbers of older individuals continue to live independently in the community, new definitions of affordable residential environments are required that address the need for safe, accessible neighbourhoods (Seplaki et. al., 2004). The present study furthers our understanding of environment and aging, and underscores the potential for environmental gerontology to provide a basis for defining and addressing the key issues concerning housing for the older population (Haldemann & Wister, 1994)

## 1.6 Summary

The process of demographic aging is projected to have a substantial impact on the Canadian population in the next forty years (Cheal, 2002). Housing is a particularly important issue for older adults because when the personal resources of the aging individual are reduced, increasing environmental demands may ultimately necessitate change in the residential setting (Haldemann & Wister, 1994). The objective of the present study is to conduct a longitudinal survey to evaluate spatial aspects of recent movers to government-subsidized senior housing. The research is placed in the sub-field of environmental gerontology that represents a multidisciplinary approach to the investigation of the relation between older persons and their socio-spatial surroundings (Wahl & Weisman, 2003). Specifically, the study develops an amended version of Golant's (1998) model of residential adjustment to examine the effects of changes in personal resources, environmental content, and behaviour circuits on the personal state outcomes of recent movers. The findings of this study will extend our knowledge of the geography of housing for seniors. Moreover, the study will contribute to the key policy area of social housing for seniors, which is an important component of the safety net for older Canadians (Brink, 1995).

## Chapter 2 Literature Review

This chapter presents a review of literature relevant to the investigation of the spatial and environmental aspects that are associated with the residential adjustment of older movers to government-subsidized senior housing. A review encompassing literature on both theoretical and empirical research, as well as policy development, is organized into the following four sections: (i) the theoretical foundations of the development of specialized housing for older adults; (ii) residential relocation and the adaptation of older movers; (iii) the neighbourhood environment and the well-being of seniors; and (iv) the contribution of the research study to literature related to residential relocation and housing for the older population.

Macey, Smith, and Watkins (2003) identify well-developed themes in geographic literature on aging that include residential location, migration, activity patterns, and environmental relationships. Research related to these themes encompasses a broad range of scales from the macro-level (national or regional) to the micro-level (daily living space). In the sections that follow, an overview of these geographic themes will be included to demonstrate that further exploration is required to examine the effect of changes in the local neighbourhood environment on the outcomes of older movers to government-subsidized senior housing.

### **2.1 The Theoretical Foundations of Housing for Older Adults**

The conceptual foundations of this study are based on the framework of environmental gerontology, which is a multidisciplinary approach that focuses on the relationship between older adults and their socio-spatial surroundings (Wahl &

Weisman, 2003). The most comprehensive model relating the individual, the environment, and aging has been proposed by M.P. Lawton and his associates (Lawton & Simon, 1968; Lawton & Nahemow, 1973; Lawton, 1979; Parmelee & Lawton, 1990).<sup>3</sup> Specifically, the development of Lawton's ecological model of aging has demonstrated the importance of including components of the environment in research with older adults. Lawton is considered to be the central figure in the development of environmental gerontology (Wahl & Weisman, 2003).

The significance of Lawton's ecological model of aging has been its impact on research and policy issues related to housing for older persons (Wister, 1989). The development of the ecological model of aging was in response to the increasing concern of the inadequacy of housing for seniors. The formulation of the model represented Lawton's long-term research on a variety of housing issues for older persons. The recognition during the 1970's that it was essential to maintain the independence of older persons resulted in housing policies that utilized Lawton's person-environment interaction theory to identify how maladaptive behaviour could be prevented through environmental adjustments (Haldemann & Wister, 1994; Lawton & Nahemow, 1973).

The emphasis of the ecological model of aging on the environment as a determinant of older people's behaviour and well-being has fostered the growth of applied techniques for improving the environment (Lawton, 1985b). According to Lawton (1989a), planners, architects, and other designers have used the model widely as the theoretical rationale for developing special environmental design features for

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<sup>3</sup> A more detailed discussion of Lawton's ecological model of aging is found in Chapter 3.

older persons with lowered competence. As a result, it has assisted the development of housing policy that identifies possible environmental interventions or supportive strategies that are congruent with the competence of the older user, under the hypothesis that congruence will result in a favourable outcome in terms of psychological well-being (Lawton, 1989a; Pollack & Newcomer, 1986).

The documentation of the vulnerability of older persons led to the movement to assist the aged to seek protective environments (Kahana & Kahana, 1983). During the 1970's, societal concern for the problems of housing older adults and improving the quality of institutional environments resulted in large-scale research funding for specific design and evaluation projects. This funding "played a major role not only in encouraging basic research but also in providing impetus to the translation of findings into design alternatives and policy strategies" (Rowles & Ohta, 1983: 232).

The goal of housing policy for seniors is to match the level of support offered by the residential environment to the level of competence of the individual by providing a change in residence and/or by providing support services (Filion et. al., 1992; Lawton, Greenbaum, & Liebowitz, 1980). The recognition of the negative consequences of institutionalization led to the restriction of access to nursing homes to people with serious health problems. Therefore, planned independent housing "was conceived for competent older people with a housing problem" (Lawton, 1981: 107). It was assumed that tenants would move to another setting when they required health-related assistance (Suggs, Stephens, & Kivett, 1986). However, the inadequacy of independent senior housing that was not integrated with community supports and services became evident when older tenants began to show signs of

frailty. This issue was central to the transactional view of person and environment (Lawton, 1985b). Housing which was built without provision for supportive services could not maintain the initial congruence and eventually, as a result of the declining capabilities of the elderly individual, a more supportive environment was required (Parmelee & Lawton, 1990). Accordingly, a residential concept was needed to support a continuum of housing environments that would address the changing competency of older persons (Lawton, 1990).

The concept of a continuum of housing environments began to be elaborated in the late 1970's as it was recognized that people at different times in their life require different types of shelter (Haldemann & Wister, 1994). According to this policy approach, housing alternatives that were restricted to either independent living or institutional care were inadequate for a large proportion of the elderly population (Anderson et. al, 1985). The heterogeneity of aging people required the provision of a greater variety of housing and a more flexible system to achieve adequate environments (Haldemann & Wister, 1994). A continuum of housing environments would increase the number of housing options to include a range from mainstream planned independent housing with no services at the "least supportive end of the continuum, full institutional care at the opposite end, and the many forms of alternative housing and community-based services somewhere in between" (Lawton, 1990: 638).

The foundation for the continuum of housing environments is the premise of the ecological model of aging that environmental interventions can compensate for changes in personal competence, and thereby influence the behavioural outcomes of

aging people (Haldemann & Wister, 1994). The continuum approach reflects the life cycle perspective that housing requirements change as an individual progresses through life stages. Therefore, as the competence of an elderly individual becomes more limited, a succession of housing adjustments is required to reduce tensions between individual abilities and the demands of the environment (Filion et. al., 1992). A continuum of housing environments necessitates knowledge of changes to both the older person and the living environment in order to optimize person-environment congruence (Lawton et. al., 1980).

The apparent straightforwardness of policy development for a continuum of housing environments, however, conceals the complexities of achieving residential environments that provide the correct level of support and challenge consistent with the declining capacities of the elderly occupant (Golant, 1991). Strategies to maintain the independence of the elderly in one type of housing environment may be overly supportive thereby depriving the individual of initiative and of the opportunity to exercise his adaptive ability (Carp, 1976a). On the other hand, the very impaired elderly may experience negative effects of a too-demanding environment (Golant, 1991). The question of optimal levels of support and challenge are greatly complicated by the diversity of the aging population (Carp, 1976a). These issues suggest that further research is imperative to determine what outcomes are associated with the matching of the needs and capabilities of the individual with different environmental resources (Newman, 1989).

As publicly-funded housing for older adults continues to play a central role in the provision of shelter for the aging population, it is particularly important to consider

the relationship between this type of residential environment and the quality of life of lower-income seniors (Lawton, 1991; Moore, 1992). Specifically, it is essential to consider issues related to the congruence of an older adult's social and service needs with the level of support provided by government-subsidized housing environments (Nenno, 1994). It is notable that most investigations regarding the residential setting of public housing have evaluated the strength of social contacts and service provision within the building project (Carp, 1976b; Devlin, 1980; Nasar & Farokhpay, 1985). Many researchers have emphasized positive outcomes in age-segregated housing because it provides increased opportunities for social interaction and the development of mutual assistance and mutual support networks (Adams, 1985; Davidson, Brooke, & Kendig, 2001; Deimling, Harel, & Noelker, 1983; Harel & Harel, 1978; Sheehan, 1986). Some studies have found increased sociability in public housing and an association between activity participation and housing satisfaction (Heller, Byerts, & Drehmer, 1984; Teaff, Lawton, Nahemow, & Carlson, 1978;).

It has been proposed that age-peer social relationships found within the residential setting of public housing can supplement the relationships that older residents have with their children, family members, and friends (Deimling et. al., 1983). However, other researchers have argued that relationships in a project setting are less significant than the residents' social networks in the surrounding neighbourhood environment (Hinrichsen, 1985; Sheehan, 1986). In fact, the relationship between the residential environment and the well-being of residents of government-subsidized senior housing is far more complex. An interplay exists involving, not only the in-building environment, but also the personal characteristics and physical abilities of the older



individual, family relationships and care-giving assistance, along with the accessibility of transportation and community-based services (Macey et. al., 2003; Moore, 1992).

Golant (1992a) suggests that in order to expand our understanding of the housing needs of seniors, a much broader perspective of the “place of residence” must be adopted. The environment of older persons begins in the dwelling, but also extends to the neighbourhood where both opportunities and constraints are presented in the form of physical qualities and community and social resources (Kendig, 2003; Wahl & Wesiman, 2003). According to Scheidt and Norris-Baker (2003), the theoretical and empirical work of Lawton has contributed to a greater understanding of communities as contexts for successful aging. Nevertheless, Kendig (2003) points to the paucity of gerontological research concerning the macro-environments of neighbourhoods.

Further research is required to more completely understand the role of neighbourhoods in contributing to the congruence between older adults and their residential setting (Kendig, 2003). The neighbourhood environment may be of particular significance for elderly residents of public housing who typically have greater decrements in social, financial, and physical resources compared to community-based seniors. Specifically, “as a result of age-related mobility constraints, the neighbourhood represents a critical resource base for many older people” (Smith et. al, 2002: 39). When older individuals move to low-income senior housing they experience changes in terms of the opportunities and constraints offered by the neighbourhood environment. In the following section, an overview of

literature related to relocation will demonstrate that an examination of residential adjustment must incorporate an integrative approach to evaluate the personal and environmental factors related to the adjustment of older movers to government-subsidized senior housing.

## **2.2 Residential Relocation of the Aging Population**

Mobility among the aged has become an increasingly important demographic process in the determination of spatial distributions and spatial variations of older persons (Rowles, 1986; Golant, 1989). Research has documented that the influence of elderly migration on population change increases at progressively finer spatial scales (Macey et. al., 2003). Furthermore, residential mobility reveals dynamic changes in the relationship between older people and their environments (Meyer & Cromley, 1989).

The nature of elderly migration and residential mobility is a central component in understanding the changing distributions of the older population (Clark & White, 1990). The impetus for elderly mobility is different from that of the general population as employment motives are generally no longer relevant (Warnes, 1986). Litwak and Longino (1987) have placed the migration of the elderly in a developmental perspective. They propose three stages of migration: amenity moves, assistance moves and, finally, institutionalization.

Litwak and Longino (1987) suggest that the first stage of mobility occurs after retirement when older persons move in search of a better quality of life or increased amenities. These movers are generally young, relatively healthy, married, and

affluent (Serow, 1987; Zimmerman, Jackson, Longino, & Bradsher, 1993). In addition, the amenity move usually involves long-distance migration (Litwak & Longino, 1987; Speare & Meyer, 1988). These long-distance moves have been the focus of geographical research. For example, many studies have examined the migratory spatial patterns of older adults (Golant, 1990a; Rogers, Watkins, & Woodward, 1990; Warnes, 1990; Watkins, 1989; Williams, King, & Warnes, 1997). Other researchers have investigated the decision-making process to select a migration destination (Bergob, 1995; Carlson, Junk, Fox, Rudzitis, & Cann, 1998; Cuba, 1991; Cuba & Longino, 1991; Duncombe, Robbins, & Wolf, 2003). In addition, some studies focus on the return migration of older adults from amenity areas (Newbold, 1996; Stoller & Longino, 2001).

The second type of move identified by Litwak and Longino (1987) is associated with assistance mobility. This type of move is determined by factors that are characteristically related to decrements caused by the aging process (Choi, 1996). With this type of mobility, the elderly person generally moves short distances in order to seek assistance. As research on the relocation of the older population has focused on long-distance migration, there is only limited knowledge concerning the local moves of seniors (Carter, 1988; Choi, 1996; Golant, 1980; Stapleton Concord, 1984;).

Research that has considered local moves emphasizes the patterns and determinants of this type of mobility. Several factors may precipitate relocation by older persons within an urban area. Wiseman (1980) developed a model that conceived the determinants of relocation as both personal and environmental characteristics. The constantly changing relationship between the person and

environment may require a change in residence as a person ages (Longino, Jackson, Zimmerman, & Bradsher, 1991). It is significant that most research has focused on personal characteristics that may cause an older adult to change residence.

Litwak and Longino (1987) specify that the health status of an older individual is a major determinant of local moves. An older person may move in order to seek assistance when his or her health and functioning become impaired (Boyce, Wethington, & Moen, 2003; Bradsher, Longino, Jackson, & Zimmerman, 1992; Choi, 1996; Gutman, 1978; Lawton, 1986; Leung, 1992; Meyer & Cromley, 1989; Williams, 1990). For example, Larson, Bell, and Young (2004) found residential mobility to be strongly associated with poor health. In particular, research has found that older adults experiencing increases in limitations related to Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL) move to a more supportive residential setting in order to compensate for reduced ability to care for oneself and carry out household tasks (Chen & Wilmoth, 2004; Jackson, Longino, Zimmerman, & Bradsher, 1991; Longino et al., 1991; Longino, 2001; Speare, Avery, & Lawton, 1991).

Moreover, the motives for local moves are often the result of more than one personal factor related to the aging process. Specifically, the probability of moving as a result of declines in health and functioning is compounded by widowhood (Bradsher et al., 1992; Longino, 2001). Widowhood is considered to be a life course event that is highly correlated with voluntary relocation (Koenig & Cunningham, 2001; Moore & Rosenberg, 1994; Serow, 1987). According to O'Bryant and Murray (1987), the onset of widowhood alters the relationship between personal competency

and the characteristics of the environment. If an older individual in poor health also experiences changes in living arrangements, a move to a more supportive environment may be required (Koenig & Cunningham, 2001; Speare & Meyer, 1988; Speare et. al., 1991).

A further compounding determinant of residential relocation is related to socio-economic factors (Choi, 1996; Haque, 1995; Holden, Burkhauser, & Myers, 1986). The life events of retirement and widowhood often bring a substantial reduction in income that may create difficulty in maintaining a family home (Heywood, Oldsman, & Means, 2002; O'Bryant & Murray, 1987). Additionally, older renters are often faced with paying more than 30 percent of their income on adequate and safe housing (Moore & Rosenberg, 1994). Therefore, poverty is identified to be an important determinant of residential relocation as income reductions, costs of maintaining a single-family dwelling, and high rents of private apartments may cause older persons to move to more affordable housing (Biggar, 1980; Beland, 1984; Boyd, Folts, Yeatts, & Longino, 1994; Clark & White, 1990; Golant, 1992b; Haque, 1995; Mercer, 1979; Newman, 1986; Rowles, 1986; Wiseman, 1980).

The personal factors that influence local moves reflect decreasing competency that is often related to the aging process. Accordingly, local moves are consistently associated with certain socio-demographic characteristics. Specifically, a move to low-income senior housing is usually related to the inability of an older individual to remain in the present residential setting as a result of declining functional ability, decreases in financial resources, and the limited availability of informal care-giving networks (Beland, 1984; Everitt & Gfellner, 1996; Golant, 1977-78; Gutman, 1980;

Leung, 1992; Mercer, 1979; Wiseman, 1980). A relatively high proportion of single females who are advancing in age participate in local moves. In addition, these elderly movers are more likely to have lower incomes, to use public transportation, and to have been former renters (Beland, 1984; Carter, 1988; Kanaroglou & Diegel, 1990; Meyer & Speare, 1985; Speare & Meyer, 1988; Varady, 1984; Winiecke, 1973). As a result of these age-related transitions, the highest proportion of older residents in government-subsidized housing are older, single females who generally have lower incomes, report more health problems, and have diminished subjective well-being (Beland, 1984; Boyce, Wethington, & Moen, 2003; Kanaroglou & Diegel, 1990; Krout & Pillemer, 2003; Lawton, 1986; Meyer & Speare, 1985; Smith, 1998a; Varady, 1984). These characteristics suggest that local movers may be vulnerable elders who are confronting limited economic, physical, and social resources (Gonyea, Hudson, & Seltzer, 1990; Young, 1998). According to Weinberger and his colleagues (1988), compared to community residents, public housing tenants possess demographic characteristics that increase their exposure to stressors. In response to these stressors, older persons move in order to seek more supportive environments (Golant, 1984a).

The need to access affordable and supportive housing demonstrates the importance of considering the role of the environment as a determining factor of the outcomes of local moves (Warnes, 1986). Macey, Smith, and Watkins (2003) have suggested that it is essential to consider the places associated with migration. A variety of occurrences can make a dwelling or neighbourhood inappropriate for the physical and social needs of the elderly resident (Golant, 1992b). If the residential environment

does not provide a sufficient level of support to compensate for declining competencies, an older person may move to housing that provides greater accessibility to services and social networks.

It is significant that while research has emphasized personal factors precipitating a need for greater assistance, there has been limited research to increase understanding of the influence of community environments on the local residential moves of older adults (Golant, 1980). For example, Fokkema and Wissen (1997) identify housing and neighbourhood dissatisfaction to be determinants of relocation. In addition, several environmental push factors have been documented that may influence an older person's decision to move. These factors include a deteriorating neighbourhood, local crime, poor transportation, as well as inaccessibility to supports and services (Heywood et. al., 2002; Lawton, 1986; O'Bryant & Murray, 1987). Concomitantly, when a decision is made to move, the neighbourhood environment of the new residence is considered in terms of the pull factors that it offers. According to Golant (1992a), older movers must consider various neighbourhood characteristics when choosing a new residential setting.

For many older adults, proximity to neighbourhood services and social supports is an important determinant of where they decide to relocate. In particular, researchers have underscored "the significance of informal social support networks as a factor underlying local community moves" (Golant, 1980: 274). As it is much more likely that care and support will be provided by informal sources, older movers move to be close to family and friends (Clark & Wolf, 1992; Moore & Rosenberg, 1994; Silverstein & Angelelli, 1998). Some research has considered the desire to be closer

to friends and family when greater assistance is required (Choi, 1996; Litwak & Longino, 1987). Several studies have found that the local moves of older adults are positively related to greater proximity to family caregivers (De Jong, Wilmoth, Angel, & Cornwell, 1995; Koenig & Cunningham, 2001; Macey et. al., 2003; O'Bryant & Murray, 1987; Zimmerman et al., 1993). Other studies have found that older persons move to gain access to care-giving environments and support networks to supplement relationships with friends and family in the community (Choi, 1996; Haque, 1995; Meyer & Cromley, 1989; Williams, 1990).

There has been less research emphasis, however, on the significance of other neighbourhood characteristics as factors influencing the decision to relocate to a new residential setting (Golant, 1980). For example, only a limited number of references were found that examine the issue of relocation and the proximity of services and retail outlets. While the need for improved service accessibility has not usually been recognized as a major reason for this type of relocation, the findings of a study conducted in Kingston, Ontario, disclose that it nonetheless assumes importance for some mobility-impaired movers to non-profit and social housing projects (Leung, 1992). According to Brink (1995), local moves are made to improve the accessibility of services. Gilderbloom (1987) found that accessibility to medical and retail services and public transportation is a major concern for seniors considering a residential move. Moreover, both Leung (1992) and Moore and Rosenberg (1994) have found that, for older adults experiencing health and functional declines, improved access to services is an important reason to relocate.



In addition to service proximity, access to appropriate transportation is also a factor when considering the motives for residential relocation. Mobility and the accessibility of transportation are considered to be basic determinants of the quality of life of older persons (Wachs, 1988). O'Bryant and Murray (1987) point out that if older persons experience declining competency, they may seek a more supportive housing environment with more appropriate transportation options found in the local neighbourhood. These findings suggest that "the way elderly people perceive and interpret their residential environment and its impact on their lives is an important factor influencing their well-being and generating their propensities to relocate" (Golledge & Stimson, 1997: 554).

The limited amount of research that addresses the relationship between the environment and local moves emphasizes the need to determine environmental effects on an older person's mobility (Golant, 1980). In addition, the need to access more supportive housing suggests that the service and social environment of the new residential setting is an important determinant of the outcomes of older movers. However, there has been limited research that addresses the consequences of local moves to public housing.

Most research on the local moves of seniors has been devoted to the third stage of migration identified by Litwak and Longino (1987): relocation to an institutional setting. Specifically, research has focused on the adaptation of nursing home residents and the effects of involuntary relocation (Lawton, 1985a; McPherson, 1998). Many studies have investigated the relocation to an institutional residence and its association with declines in physical, functional, and cognitive status (Black,

Rabins, & German, 1999; Miller, Longino, Anderson, James, & Worley, 1999; Mirotznik, 2002; Patrick, 1980; Tomiak, Berthelot, Guimond, & Mustratd, 2000; Wolinsky, Callahan, Fitzgerald, & Johnson, 1993). Moreover, research on the outcomes of moves to nursing homes has exclusively evaluated residential adjustment in terms of health changes and morbidity levels (Aldrich & Mendkoff, 1963; Borup, Gallego, & Heffernan, 1979; Castle, 2001; Choi, 1996; Coffman, 1981; Danermark & Ekstrom, 1990; Dimond, McCance, & King, 1987; Eckert & Haug, 1987; Ferraro, 1982; King, Dimond, & McCance, 1987; Thorson & Davis, 2000; Wittels & Botwinick, 1974).

It is notable that a limited number of research studies have considered adaptation to a nursing home setting in terms of the environmental context. Rowles (1979), for example, refers to the institutionalization of older adults in terms of spatial relocation and environmental reorientation. Similarly, Reed, Payton, and Bond (1998) emphasize the importance of location and place as factors that maintain the identification of new residents of care homes. Other research has considered differences in urban and rural settings in terms of nursing homes admissions (Coward, Netzer, & Mullens, 1996; Peek, Coward, Lee, & Zsembik, 1997).

In relation to the local moves of older adults to publicly funded housing, research has mainly been concerned with issues associated with the decision to move. For example, several studies have found that residential adjustment is related to the perceived predictability and controllability of the moving event (Armer, 1993; Beaver, 1979; Schulz & Brenner, 1977; Timko & Moos, 1989; Young, 1998). In addition, Golant (1991) specifies that negative adjustment outcomes are more likely if

the move is involuntary or unplanned and is the result of financial or health restrictions. The findings of other research demonstrate that relocation to low-income senior housing results in positive outcomes related to the psychological and physical well-being of older movers (Chen & Wilmoth, 2004; Ferraro, 1982; Lawton & Cohen, 1974; Schlater, 1978; Wittels & Botwinick, 1974).

Research on public housing for older adults does demonstrate that relocation to this type of housing may provide not only a traumatic experience, but also developmental opportunities (Wahl & Weisman, 2003). Nonetheless, it does not explore those personal and environmental factors that are central to an investigation of the outcomes of residential moves. As the environment is an important determinant of mobility, it is essential to evaluate its effect on the experiences of older movers. If an older person moves as a result of the inappropriateness of a residential environment, then the question to be posed is whether the support of the new environment enables the person to remain independent. Although the need for a greater understanding of the impact of environmental change on older adults has been proposed (Moos & Lemke, 1984; Schooler, 1976), the neighbourhood environment has not been investigated in terms of various domains of the local setting that are important for the well-being of older adults. In the following section, the need for an environmental perspective regarding local moves to government-subsidized senior housing is discussed.

### 2.3 The Neighbourhood Environment

In comparison to other age groups, the neighbourhood may be especially relevant to older adults because of their greater vulnerability to stresses in the residential environment. While younger adults may be exposed to a range of work, community, and recreation contexts, the daily lives of seniors are more likely to be spent in the residential neighbourhood (Diez Roux, 2002). Moreover, age-related decrements in physical and cognitive capacity that reduce competency create increased barriers to interaction within the neighbourhood. As a result, an older person's patterns of spatial use may be diminished and the social and service resources of the immediate neighbourhood become increasingly important (Glass and Balfour, 2003).

Most research on neighbourhoods has adopted an epidemiological approach to investigate the relationship between contextual factors and well-being. Oakes (2004), for example, proposes a causal model that specifies multilevel neighbourhood effects and their influence on health outcomes. Defining "neighbourhoods" is a complex issue and most research has relied upon census tracts as proxies for the specific neighbourhood characteristics that may be relevant (Diez Roux, 2002). Moreover, much of the research has focused on the contextual effects of group level socio-economic status on individual health (Robert & Li, 2001; Wen, Browning, & Cagney, 2003). In gerontological research, neighbourhood deterioration has been identified as a factor in lower self-ratings of health (Krause, 1996) and reduced anticipation of social support (Thompson & Krause, 1998).

According to Diez Roux (2002), Balfour and Kaplan's (2002) investigation of the effect of specific attributes of the neighbourhood on functional decline in older adults

is an important advancement of existing research that has relied largely on area socio-economic indicators. Moreover, rather than gross measurements of the neighbourhood, both Diez Roux (2002) and Glass and Balfour (2003) promote the inclusion of measures relating to individual activity levels and access to resources. According to McPherson (1998), spatial aspects of the housing environment are particularly important for the well-being of older adults as location influences patterns of social interaction and determines service availability within the neighbourhood. The present study proposes that the content of, and activity patterns (i.e., behaviour circuits) within, the neighbourhood environment are particularly relevant to the investigation of the outcomes resulting from residential moves. Therefore, this section examines (a) the neighbourhood setting in terms of proximity and accessibility to the social and service environments, and (b) the activity patterns of older adults that reflect their interaction with the local neighbourhood environment.

### **2.3.1 Neighbourhood Content: The Social and Service Environments**

It was established in the preceding discussion that the environment is an important determinant of the motives for local moves made by the elderly population. With increasing physical and social decrements, an older person may relocate to senior housing in order to access a substantial infrastructure of both on-site and off-site services and social supports (Hodge, 1990). Both the characteristics and the locational aspects of the service and social environments are important factors in determining the well-being of seniors who relocate to congregate housing (Carp & Carp, 1982; Golant, 1992b).

Government-subsidized senior housing represents the main option for low-income seniors who must relocate when their present environment no longer provides adequate support. However, opportunity for this type of housing varies spatially within an urban area and is not equally accessible to low-income seniors. Harper and Laws (1995) thus suggest that housing options open to older persons are spatially constrained. The availability of residential options is, therefore, directly related to the degree of spatial equitability of the distribution of housing among the aging population.

According to Golant (1990a), the motivation for research on the spatial distribution of the elderly has been the need to plan and implement services, including housing, in areas with identified concentrations of older persons. The locational patterns of older people are highly dynamic and geographers have conducted analyses of these patterns at the national, regional, and metropolitan levels in Canada and the United States (Moore, Rosenberg, & McGuinness, 1997; Rogerson, 1996; Rogers, & Raymer, 1999; Smith, 1998a). A trend in both Canada and the United States has been the increasing metropolitanization of older persons with over half the elderly in both national populations living in metropolitan areas (Frey, 1992; Golant, 1990b, 1992b; Smith, 1998a). Within urban areas, geographic research has considered the spatial segregation of older persons in the inner cities compared to suburban locations. Early studies confirmed the existence of elderly concentrations in the inner city. This distribution was the result of the differential rate of urban spatial growth whereby younger cohorts were migrating to new suburbs while the elderly remained in older

parts of the metropolitan centre (Golant, 1972; Graff & Wiseman, 1978; Massey, 1980; Wiseman, 1978).

More recently, geographic research has highlighted the decreasing residential segregation of older persons and their increasing concentration in suburban areas. Golant (1990b) found that older people in suburban locations now outnumber those in central areas of U.S. metropolitan cities. Similarly, Broadway's (1995) research documented the suburbanization of the urban elderly in Canada. A number of other studies have confirmed this trend (Golant, 1992a; Logan & Spitze, 1988; Moore et al., 1997; Smith, 1998a; Warnes, 1994). The decreasing segregation of elderly persons in central cities is the outcome of previous migration to the suburbs by younger cohorts and the consequent process of aging-in-place (Golant, 1990b).

The changing concentration of elderly persons in an urban area has important implications for the accessibility of housing. Ideally government-subsidized housing for older persons should be located in areas with concentrations of older adults and a substantial infrastructure of social, health, and retail services. However, the complex decision-making process involved in senior housing development may preclude the siting of projects proximate to service resources and intergenerational caregivers. As a result of Canadian social housing policy, there are distinct geographies of publicly funded senior housing in Canadian cities (Mercer, 1979).

In Winnipeg, the location of Manitoba Housing Authority projects developed in the 1970s was largely determined by the availability of cheap land. Many of these projects were constructed in economically-depressed inner city locations that may provide inadequate local environments for elderly tenants (Clark & Davies, 1990).

Since 1986, a greater awareness of the importance of the local environment has resulted in the development of a formal set of site-selection criteria to determine the location of non-profit senior housing projects. The proportion of older persons is increasing in suburban areas of Winnipeg (Smith, 1998a). In response, both public and non-profit housing for seniors has been built in these areas since the 1980s. However, the original concentration of MHA housing in the inner city suggests that the provision of government-subsidized housing may not be equitable in terms of the spatial distribution of the low-income elderly. This is confirmed by the findings of Smith, Sylvestre, and Ramsay (2002) that public and non-profit senior housing in Winnipeg is over-represented in the inner city relative to the spatial distribution of the low-income elderly.

Research has demonstrated that seniors seeking low-income accommodation typically express a preference to remain in their home neighbourhood (Groves & Wilson, 1992; Mercer, 1979). Overall, the discussion underscores the need to site senior housing in areas with (a) sizeable numbers of older adults, and (b) a substantial infrastructure of off-site service resources and social supports in order to satisfy the locational attachments and preferences of older people obliged to move into the projects (Hodge, 1990). Although there is evidence that public-sector senior housing has typically concentrated in resource-rich inner city areas (Smith et. al., 2002), the content of local neighbourhood environments of the projects nonetheless appear to exhibit considerable variation. For instance, the findings of past work in the context of small towns (Hodge, 1987), and a major metropolitan area (Geller & Associates, 1989; Mercer, 1979), indicate that various economic factors in conjunction with



restrictive land-use regulations, occasionally resulted in the siting of public sector senior housing projects in low-density peripheral locations devoid of an appropriate infrastructure of social supports and service resources.

Initially research on housing for seniors was viewed from a "mortar and bricks" perspective whereby analysis was focused only on the dwelling unit (Struyk & Soldo, 1980). This perspective has been augmented by a broader definition of housing that includes the local environment of the housing project (Sheehan, 1992). Several studies have concluded that the local environment may be as important to well-being as the housing itself (Carp, 1975a; Carp & Carp, 1982; Howell, 1976; Lawton, 1975; Lawton, Nahemow, & Teaff, 1975; Lawton et. al., 1980; McAuley & Offerle, 1983; Reitzes, Mutran, & Hallowell, 1991; Ward, La Gory, & Sherman, 1988). In general terms, the local environment consists of the physical and social components that provide life-supporting and life-enriching services and supports to elderly individuals (Eckert & Murrey, 1984). According to Marans, Hunt, and Vakalo (1984), the service and support environment operates at two levels: the housing project's internal environment and the wider community in which the project is located.

Golant (1992a) suggests that evaluations of senior housing must go beyond the attributes of the physical structure to consider issues such as social support networks, the quality of services, and individual coping styles. A general conclusion of several studies in the United States and the United Kingdom is that neighbourhood satisfaction contributes to feelings of well-being among older people domiciled in either government-assisted housing (Howell, 1976; Lawton, Brody, & Turner-Massey, 1978; Lawton et. al., 1980; McCauley & Offerle, 1983), or community

housing (Bohland & Herbert, 1983; Reitzes et. al., 1991; Ward et. al., 1988). Several characteristics of neighbourhoods may contribute to satisfaction including age concentration, social networks, physical security, noise, physical maintenance, and traffic conditions. More specifically, the spatially constrained elderly may become highly dependent upon the services, amenities, and social ties within the local neighbourhood. Past work has revealed neighbourhood satisfaction to be a component of the overall residential satisfaction of the urban elderly (Burby & Rohe, 1990; Lawton, 1980a; Lawton et. al., 1980; Ward et. al., 1988), and samples of city dwellers across the entire life span (Michelson, 1977; Varady & Preiser, 1998).

The neighbourhood environment represents an important component of the “functionally relevant environment” for older adults. Golant (1998:42) has defined the functionally relevant environment as “those objects and activities in a setting that have the potential of evoking, reinforcing, or modifying an individual’s or a population’s behaviours and experiences and that present both opportunities and constraints to residents seeking to satisfy their needs, goals, and preferences”. Ward, La Gory, and Sherman (1988) have distinguished two major, functionally relevant, environmental components of neighbourhoods that may either be objectively or subjectively defined: the “service environment” and the “social environment”.

The “service environment” of a neighbourhood comprises a local infrastructure of social, health, public transportation, personal business, and retail services (Carp & Carp, 1982; Ward et. al., 1988). The issue of accessibility is a key factor in the evaluation of the local environment. Spatial proximity to services assumes particular importance for the mobility-constrained elderly who are the overwhelming majority

of government-subsidized senior housing residents (Smith, 1991). Ideally the residential environment should provide proximate services because of the limited mobility resources available to low-income seniors (Carp & Carp, 1982; Lawton, 1977; Struyk & Soldo, 1980). Research has identified that the use of services by older people is determined by proximity (Carp & Carp, 1982; Lawton, 1980a; Wacker, Roberto, & Piper, 1998). Furthermore, several studies have found that proximity to service resources is positively related to the well-being of older people (Bohland & Herbert, 1983; Cutler, 1972; Kahana, Felton, & Fairchild, 1976; Lawton et. al., 1980; Reitzes et. al., 1991; Rutman & Freedman, 1988). These findings suggest that research must focus on the spatial variation of resources provided by the local environment and its effect on the quality of life of older adults.

In many North American urban areas, there is a tendency for neighbourhoods with geographically concentrated service resources to be located in the inner city, while suburban areas are typically characterized by spatially dispersed patterns of resources (Michelson, 1977; Ward et. al., 1988). In relation to the urban elderly, some findings suggest that the perceived benefits of the older person's proximity to a "service-rich" central-city may be weakened by negative aspects of neighbourhood quality (La Gory, Ward, & Sherman, 1985; Lawton, 1980a; Lawton et. al., 1980). In particular, several studies have examined the fears and perceptions of older tenants concerning crime in the neighbourhood surrounding public housing for older adults (Bastlin-Normoyle & Foley, 1988; Fashimpar & Phemister, 1984; Lawton & Yaffe, 1980; Ward et. al., 1986). Nevertheless, there is evidence that characteristics of local service environments are an important source of psychological well-being for older

people living in a variety of residential settings in North America (Burby & Rohe, 1990; Smith & Gauthier, 1995; Ward et. al., 1988).

Of relevance to the present study is an exploratory analysis comparing the availability of services to government-subsidized senior housing projects in Winnipeg with contrasting local neighbourhood environments (Smith et. al., 2002). Specifically, six sample housing projects were selected in each of the inner city and the suburban areas of the city. It was found that, except for major-chain grocery stores, the mean distance to the most proximate opportunity in each service category (bank, bank machine, bus stop, clinic, "other" grocery store, pharmacy, place of entertainment/recreation) for projects in the suburbs consistently exceeded corresponding values recorded by the inner city projects. Moreover, it was found that the nearest opportunity in six of the eight service categories was located within an "easy walking distance" or 0.4 km (approximately four blocks)<sup>4</sup> of inner city senior housing projects. In contrast, only one service category (bus stop) registered a mean value of less than 0.4 km from suburban projects. Thus, these findings suggest that service resources available in the local neighbourhood environment of government-subsidized senior housing projects in Winnipeg will vary according to location.

The local environment offers a diversity of services that contribute resources essential for the independence of older persons. Social housing for seniors was originally developed without the provision of services because tenants are ambulatory and required to live independently (Smith, 1998b). However, the declining physical, financial, and social capabilities of older persons that precipitate moves to this type of

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<sup>4</sup>Approximately 400 metres have been cited as an appropriate "maximum easy walking distance" for physically competent older persons living in urban areas (Wilson, 1982).

housing suggest that a support system is necessary. As a result of the vulnerability of tenants, a variety of services are now provided on-site including meals, housekeeping, and nursing services (Wister & Gutman, 1997). However, older persons require additional services that must be accessed in the broader neighbourhood environment. These services include grocery stores, pharmacies, shopping malls, banks, medical care, and recreational facilities (Golant, Gutmann, Neugarten, & Tobin, 1988). The importance of the local service environment for older persons living in age-segregated housing is demonstrated by research findings that community-dwelling elderly generally do not require the same level of services (Pfeiffer, McClelland, & Lawson, 1989; Phillips & Vincent, 1988).

It is notable that past work (Graham, Graham, & MacLean, 1991; Smith, 1991, 1992) indicates that older people typically desire convenient access particularly to two components of the service environment: a major-chain grocery supermarket and a major shopping centre. Grocery shopping is a particularly important recurrent activity in the lives of older persons, with food expenditures often accounting for high percentages of senior household budgets. In light of their relatively extensive selection of goods and competitive prices, major-chain supermarkets typically afford attractive food shopping opportunities for many older people. Major shopping centres also assume importance for older adults due to their wide selection of stores and services (including pharmacies, banks etc.), comfort and convenience, and opportunities for social interaction.

Research within the geography of aging has increasingly directed attention towards the impact of the local environment on the quality of life of older persons

(Warnes, 1990). Nevertheless, research on the geographical aspects of service implementation has been fragmented and lacks clear objectives (Golant et. al., 1989; Macey et. al., 2003; Meyer, 1990). Most research has evaluated the characteristics of local environments of various housing types including low-income senior housing (Smith, 1984), rural senior housing projects (Everitt & Gfellner, 1996; Hodge, 1987) and single-room occupancy hotels (Rollinson, 1990, 1991).

Relatively little attention has been given to the relationship between the location of older people and the spatial variation of service availability (Carp & Carp, 1982). One exception is the study conducted by Smith and Gauthier (1995) that evaluated the utilization of the local service environments of two government-subsidized senior housing projects. They investigated whether contrasting local environments were related to varying patterns of service use and psychological well-being of the older tenants. The findings of the study “suggest that local service environments provide a situational context wherein the well-being of older people is enhanced or reduced” (Smith & Gauthier, 1995: 318). This demonstrates that further research is necessary to ascertain the influence of service proximity on the quality of life of the elderly in senior housing accommodation.

The “social environment” of a neighbourhood is distinguished by a variety of features including the socio-economic composition of the population, proximity to friends and relatives, personal relationships, and levels of crime. The home neighbourhood often contains the older individual’s main social ties and supports which may include friends, relatives, local clubs, and places of worship (Hodge, 1990). As a result of this social network, the overwhelming majority of older adults

remain in the same residential setting (i.e., age-in-place) over considerable periods of time (Lawton, 1985a). It is noteworthy that O'Bryant (1982) found several "attachment to home" components (e.g., competence in a familiar environment) to be significant indicators of overall housing satisfaction. The importance of such psychological attachments is underscored by the results of other work disclosing that older people typically prefer to remain in the home neighbourhood when obliged to move (Gonyea et. al., 1990; Groves & Wilson, 1992).

It has been proposed that older people may be attracted to government-subsidized senior housing projects by the potential benefits of participating in age-specific mutual assistance and support networks that supplement their relationships with adult children and other family members in the community (Harel, Jackson, Deimling, & Noelker, 1983; Mercer, 1979). In fact, a move to this type of housing may be prompted by a desire not to be a burden on younger relatives (Connidis, 1983). Nonetheless, there is evidence that children and other relatives of residents are not only providers of instrumental supports such as transportation, assistance with shopping activities, assistance with meal preparation, and access to entertainment resources, but also emotional support through face-to-face conversations (Everitt & Gfellner, 1996; Gutman, 1978; Smith, 1991; Stephens & Bernstein, 1984). Research has demonstrated that older adults turn to this informal network for assistance before they seek formalized services (Wacker et. al., 1998). The importance of this informal network is demonstrated by the findings of Stephens and Bernstein (1984) that among tenants of senior housing, social isolation was higher for those who were childless compared to residents with children. Moreover, informal social support networks are

critical in preventing nursing home placements (Bothell, Fischer, & Hayashida, 1999). As a result, the social support component of the local environment has been an important focus of research (Ward et. al., 1988).

Geographical research has been conducted to determine the effect of spatial proximity on the level of informal support received by an elderly person. Past work focusing on the community elderly has found geographic distance to be a key determinant of both the frequency and type of supportive exchange between adult children and their aging parents (Crimmins & Igegeneri, 1990; Greenwell & Bengston, 1997; Joseph & Hallman, 1996; Litwak, 1985). Several researchers have found that the level of support provided by adult children is negatively associated with the increasing degree of spatial separation (Crimmins & Ingeneri, 1990; Dewit, Wister, & Burch, 1988; Greenwell & Bengston, 1997; Smith, 1998c). More specifically, relatively small increments of distance (i.e., one or two kilometres) have been found to have a considerable restraining effect on the frequency of contact between parents and their children (Warnes, 1986). Therefore, just as proximity is an important determinant of service accessibility, spatial separation also influences the degree of intergenerational support received by older persons (Krout, 1988; Rogerson, Weng, & Lin, 1993). Thus, residential proximity may be viewed as an important prerequisite for the provision of various kinds of intergenerational care-giving and support (Krout, 1988; Rogerson et. al., 1993). However, there is limited knowledge concerning the geographic basis of the intergenerational ties between residents and their family support network.



The above discussion demonstrates that issues of proximity and accessibility to both the service and social environments are important determinants of residential satisfaction. In addition to the content of the environment, the following sub-section illustrates the importance of the behaviour circuits of older adults in the neighbourhood surrounding the residence.

### **2.3.2 Individual Behaviour Circuits: Activity Patterns of Seniors**

The discussion in the previous sub-section has demonstrated that an evaluation of the outcomes of older adults who move to a new residential setting must incorporate a broad perspective that includes the processes of locational and environmental components of government-subsidized senior housing. In addition to the content of the residential environment, it is also important to consider the behaviour circuits of older adults in the local neighbourhood setting. Accordingly, this sub-section presents the context of research on the activity patterns of elderly persons.

The investigation of the activity patterns of older adults is consistent with the behavioural approach in geography. The inception of behavioural geography in the 1960s was a response to the emphasis in geography to formulate models based on rational economic behaviour. These models overlooked the different attributes and motivations of individuals that create varying responses to environmental characteristics (Walmsley & Lewis, 1993). Geographers began to realize that interactions between the individual and environment were influenced by a wide array of social, economic, cultural, political, and physical constraints (Golledge & Stimson, 1997). Consequently, behavioural geography was conceived to replace the simple

mechanistic conceptions of economic behaviour analysis with a more complex conception of person-environment interaction (Walmsley & Lewis, 1993).

Among the various themes of behavioural geography, the geography of aging has adopted a focus on the ecological dimensions of person-environment relations (Aitken, 1991). The basic premise of the concept of person-environment congruence is "that people vary in the types and relative strengths of their needs, while environments vary in their capacity to satisfy those needs" (Golledge & Stimson, 1997: 554). The older individual is regarded to have a set of abilities and resources that determines his or her level of competency when interacting with the environment. Concomitantly, physical and social resources represent the characteristics of the environment that enhance or impinge on the interaction of the individual with the environment (Golledge & Stimson, 1997). This concept has been applied to the investigation of the use of the service and social environment as expressed in the activity patterns of elderly persons.

Behavioural modeling of an older person's activity patterns represents a dimension of gerontological geography that goes beyond descriptive analysis of the spatial and environmental context of aging. Activity patterns have been conceptualized as a major mechanism for older adults to satisfy needs and goals (Golant et. al., 1989). This research area focuses on how the elderly occupy, utilize and experience environments that are distinct to the aging process. Research on the activity patterns of older persons may employ a person-environment framework in order to gain a better understanding of the complex relationships between people and the environment (Hanson & Hanson, 1993).

The older adult's utilization of services and social support has been considered by a number of studies that have evaluated the daily travel-activity patterns of seniors. Behavioural modeling has been used to investigate the older person's use of various service and social resources including grocery stores (Smith, 1991), shopping centres (Smith, 1989, 1992) health and social services (Joseph & Cloutier, 1991), recreational facilities (Graham, Graham, & MacLean, 1991) and social contacts (Herbert & Peace, 1980). The investigation of activity patterns incorporates both the spatial context of service sites, social supports, and residential location, as well as how an older person interacts with this environment. In addition, behavioural modeling examines personal factors of the individual that affect interaction with the environment. This research utilizes a person-environment framework to determine the dimensions of this interaction which affect an older adult's activity behaviour.

An important component of research on activity patterns is the diminishing life space of elderly persons (Golant et. al., 1989). Peace (1982) has proposed the concept of "repressed preference". It expresses the degree to which the preferred activity spaces of older persons are limited by their socio-economic status and physical limitations, as well as environmental barriers and constraints. For example, although Hanson (1977) found that the frequency of non-work trips of elderly persons was equal to that of younger persons, several studies have provided evidence of the reduction of frequency, number of purposes, and spatial extent of trips of seniors (Basu, 1979; Peace, 1982; Smith, 1984). A decreasing life space is the result of diminishing activity patterns that reflects interaction between the declining

competency of the older person and environmental constraints (Carp, 1988; Golant et al., 1989).

In relation to the person-environment framework, research on activity patterns considers personal factors that affect an older person's ability to interact with the environment. The degree to which elderly persons utilize their local environment is associated with a number of personal variables related to an older person's health, social, and financial resources. Researchers have identified a range of factors associated with service use. Characteristics such as age, gender, economic status, marital status, and living arrangements have all been found to be associated with the use of community services and social supports (Hanson & Hanson, 1993; Wacker et al., 1998). The magnitude of activity patterns are generally lower for single women of increasing age who are experiencing health and financial decrements (Golant, 1984b; Hanson, 1982; Moss & Lawton, 1982; Stahl, 1987). These age-related decrements create mobility difficulties for older persons. It is significant that decreased personal competency resulting from the aging process is also related to factors that precipitate moves to government-subsidized senior housing. This suggests that tenants of this type of housing may continue to encounter difficulties in obtaining the services and social supports that they require.

If an older adult is experiencing age-related decrements, his or her ability to interact with the environment will be increasingly dependent on the opportunities and constraints presented by the environment. Research on the activity patterns of the aging population defines environmental opportunities and constraints in terms of the locational aspects of the housing environment (Garling & Golledge, 1993). In

particular, the spatial proximity of services and social supports in the local environment affects the ability of elderly persons to make trips (Hanson & Hanson, 1993). Research has demonstrated that an unequal spatial distribution of services and social supports contributes to the diminishing life space of the elderly (Rowles, 1986). Problems of access to the service environment are highlighted by research that suggests that the activity spaces of older persons are restricted in comparison to those of other age groups (Golant, 1984b; Herbert & Peace, 1980; Peace, 1982; Smith, 1984). This decreased life space may affect the interaction between an inaccessible local environment and the declining personal competency of older persons.

The above discussion illustrates that the spatial proximity of the local environment affects an older person's mobility in the neighbourhood. It is also important to note that inadequate transportation is another environmental constraint that may account for reduced activity patterns among the elderly (Rowles, 1986). A basic determinant of the quality of life of older persons is unrestricted mobility that allows access to needed services and social and recreational outings (Wachs, 1988). The vast majority of trips made by older adults are made in a private automobile (Rosenbloom, 1993). However, changes in visual capacity, loss of cognitive ability, or other major changes in health can alter the ability of an individual to drive a car (Fozard, 2000). Moreover, in order to access supports and services in the community, many seniors rely on automobile transportation provided by family members (Lawton, 1980a; Cvitkovich & Wister, 2001). A decrease in social supports and financial resources can affect an older person's access to the unrestricted mobility offered by the automobile.

In addition, an older person's difficulty in remaining active may be directly related to the inaccessibility of public transportation and shortcomings of the traffic system itself (Stahl, 1987). Furthermore, studies of transportation provision have found that the use of transportation services by seniors varies according to age, gender, health status, and living arrangements (Cutler & Coward, 1992; Iutovich & Iutovich, 1988; Smith & Hiltner, 1988). Therefore, in addition to the spatial characteristics of the local environment, transportation services interact with personal factors to determine the level of activity of older persons.

The analysis of activity patterns demonstrates the existence of a complex relationship between the residential environment and the competency of the older individual. The objective of the present study is to adopt a conceptual model that incorporates components related to both the content and behaviour circuits of the local neighbourhood setting. Such a framework will contribute to a greater understanding of how the changing characteristics of the service and social environment interact with personal factors to determine the personal outcomes of older movers to government-subsidized senior housing. In the final section, the contribution of the present study to literature on the sub-discipline of environmental gerontology is discussed in relation to the advancement of a comprehensive approach that addresses the complex and dynamic relationship between older people and the environment.

## 2.4 Contribution of Study to the Literature

The overview of geographical research on aging has provided a foundation for the proposed investigation. It has established the parameters that must be included in an evaluation of the personal outcomes of older movers to government-subsidized senior housing. These parameters represent a comprehensive formulation of the conception of Paul Vidal, a founder of French geography, that humankind's geographical aspect resides in the relations and adjustments existing between human societies and their habitats (Hewitt & Hare, 1973). An older person's adjustment to a new residential setting is affected by both the personal competency of the individual and the opportunities and constraints of the environment. The present study proposes that a conceptual framework is required to investigate outcomes of residential moves that integrates the complex interplay of individual characteristics, personal resources, informal networks of social support and care-giving assistance, in addition to mobility and service resources available in the neighbourhood environment.

The purpose of the present study is to contribute to a greater understanding of the consequences of local moves made by older adults. Specifically, the study focuses on moves to social housing as the low-income elderly have limited housing options. Most research on housing for the aging population has investigated morbidity and mortality effects resulting from a move to a personal care home. As this study considers the implications of moving to age-segregated housing in the community, it contributes to literature on issues specific to public sector housing for older adults and provides insights into environment and aging.

The local mobility of older adults is often the result of the inter-related effects of the declining resources of the individual and the lack of support provided by the housing environment. A further contribution of the study is the specific focus on the neighbourhood and the examination of environmental content and behaviour circuits as indicators of the personal outcomes of residential moves. The literature review has demonstrated that the proximity of components of the social and service environments, and the older person's interactions in those environments are essential elements to further knowledge concerning the process of adjustment to a new residential setting. More generally, the inclusion of the neighbourhood environment expands the scope of environmental gerontology.

The fundamental issue of the present investigation is the changing relationship between the person and environment and its effects on the personal outcomes of older adults to a new residential setting. The process of residential mobility illustrates the dynamic relationship between older persons and their environment. Interaction between the person and environment is altered as the competency of the older adult is reduced due to such issues as declining functional ability, decreases in financial resources, and the limited availability of informal care-giving networks. The declining competency of the older individual, along with the increasingly inaccessible local environment, creates need for a more supportive housing situation. When an elderly person moves to a new residence, the relationship between the person and environment once again changes as a result of modifications in the content and behaviour circuits of the neighbourhood surrounding the housing project. A primary



contribution of the study is the incorporation of change in the investigation of the consequences of relocation.

The employment of a longitudinal design allows for the analysis of change in both the person and environment, and the effect of this change on the personal outcomes of older movers to low-income senior housing. The work of Carp (1966, 1974, 1975c, 1985) is related to a longitudinal investigation of relocation to the publicly funded senior housing project, Victoria Plaza, in San Antonio, Texas. However, this pioneering work has not been followed by further development of longitudinal research to investigate the long-term implications of relocation to congregate housing for seniors. Therefore, this study will illustrate the value of a longitudinal framework to enhance understanding of the processes of residential change and aging (Ferraro & Kelley-Moore, 2003). Overall, the present study will contribute to a greater understanding of local moves to public housing and the implications of a changed neighbourhood environment on the personal outcomes of older movers.

In the following chapter, the development of the conceptual model for the present study is described. More specifically, the theoretical foundations of environmental gerontology are reviewed in order to define the dynamic relationship between the elderly and environment in a framework of causal relationships and outcomes. In addition, Golant's (1998) model of residential adjustment is outlined as it is the basis for the development of the study's conceptual model to investigate the implications of change in personal resources, environmental content, and behavioural circuits on the differential personal outcomes of older movers to government-subsidized senior housing. It is only through further development of environmental theory and research

that policy-makers will have a better understanding of housing options that provide the most effective and supportive residential environments for the aging population.

### Chapter 3 The Conceptual Model

In this chapter, the conceptual model employed in the study is presented. As the objective of this study is to evaluate the influence of changing personal and environmental characteristics on the personal outcomes of older movers, a theoretical perspective is required to evaluate the effect of a new living environment on the well-being of older persons. The foundations of the model are associated with the field of environmental gerontology, also known as the ecology of aging, which represents a multidisciplinary approach to the study of the interaction of the person and environment. The broad scope of this field is discussed in the first section of this chapter. It is proposed that the functional limitations that can occur as a result of the aging process necessitate the modification of the physical and social environments by the older person (Haldemann & Wister, 1994; Pollack & Newcomer, 1986).

Various models developed within the parameters of the ecology of aging, have had important implications for the conduct of research on senior housing. Of particular importance in relation to the present study is Golant's (1998) model that incorporates a temporal dimension in order to evaluate the adjustment of older persons to a new environmental setting. His model provides a potential foundation for the development of theoretical frameworks that can incorporate the complex and changing relationships between older persons and their environments through time that will ultimately lead to more effective empirical research. Golant's (1998) model of residential adjustment is presented in the second section of this chapter.

The present study will employ an amended version of Golant's (1998) model of residential adjustment outcomes as a broad framework to incorporate the perspective of change. The amended model was developed for the present study to investigate the effects of changes in personal resources, the local neighbourhood environment, and individual behaviour circuits upon personal outcomes of recent movers to government-subsidized senior housing. The conceptual model of the study is described in terms of the selection of attributes representing personal resources, the behavioural setting, as well as the personal state outcomes resulting from a move to a new residential setting. The study's amended model is discussed in the third section of this chapter. The same section will conclude with the development of the research questions to address the objectives of the study.

### **3.1 Environment and Aging: Conceptual Approaches**

In this section, an overview of the foundations of environmental gerontology is presented. First, the development of broader aspects of the ecological approach is briefly described in terms of its focus on the interface of environment and aging, and is followed by an outline of Lawton's ecological model of aging. The section concludes with the role of a temporal dimension in theoretical frameworks that evaluate the older person-environment relationship.

#### **3.1.1 The Interface of Environment and Aging**

The interface of environment and aging represents the focus of the present study's conceptual model. The investigation of the relationship between the older person and

environment has been dominated by an ecological approach (Haldemann & Wister, 1994). According to Lawton and Nahemow (1973), ecology refers to the study of natural systems with an emphasis on the interdependence of all elements of the system. Ecological models are based on Darwin's revolutionary theory of natural selection which states that, in the struggle for existence, every species must adapt to both the demands of the physical environment and every other species (Lawton, 1980a). Therefore, according to ecologists, any element of nature cannot be understood without considering its surroundings (Lawton & Nahemow, 1973).

The holistic ecological approach has provided a framework for the recognition of the essential interrelatedness of the person and environment (Lawton, 1979). Theoretical development of the interface was the result of attempts by psychologists, geographers, and architects to specify some of the links between people and their environments (Parmelee & Lawton, 1990). Kurt Lewin, a psychologist, was the first to conceptualize this relationship by formulating the ecological equation  $B = f(P, E)$  signifying that behaviour is the function of both the person and the environment (Lawton, 1980a). This dictum was revolutionary at a time when psychologists considered the organism itself to be the primary cause of behaviour (Parmelee, 1998).

Environmental parameters are relevant to many older persons as they are particularly sensitive to environmental variation as a result of declining competence (Lawton, 1970). Aging as a biological, psychological, and social process influences the way in which individuals experience their environment. The dominant hypothesis is that as a result of the decline, restriction, and losses occurring in old age, aging

individuals and their psychological well-being become more dependent on their environment than younger people (Haldemann & Wister, 1994).

Adaptation is considered to be the most dynamic concept for both ecology and the aging process (Lawton & Nahemow, 1973). Researchers view adaptation as the "raison d'être" for the study of the ecology of aging (Scheidt & Windley, 1985). The basic constructs of the ecological perspective include an older person's adjustment to changing personal and environmental circumstances and an adaptive person-environment relationship. As a result, focus has been primarily on ways that older adults adapt to the environment in the face of environmental and age-related changes (Haldemann & Wister, 1994).

Several models have been developed to describe possible forms of the relationship between person-environment congruence and the outcome variable. All of these models assume that behaviour represents some aspects of the individual interacting with the environment (Pollack & Newcomer, 1986). While the emphasis placed on the environmental and personal factors differs, a central theme of all these models is the adaptive nature of the changing relationship between the person and environment (Letts, Law, Rigby, Cooper, Stewart, & Strong, 1994). The most comprehensive model relating the individual, the environment, and aging has been proposed by M.P. Lawton and his associates (Lawton & Simon, 1968; Lawton & Nahemow, 1973; Lawton, 1979; Parmelee & Lawton, 1990).

### 3.1.2 Lawton's Ecological Model of Aging

Lawton's model is considered to be the foundation of ecological studies within environmental gerontology (Bernardin-Haldemann, 1989; Kendig, 2003; McPherson, 1990; Wister, 1989). The formulation of the ecological model of aging resulted from Lawton's examination of how the behaviour of older persons is affected by environmental dimensions, in addition to the biological, social, and personal deficits associated with the aging process (Lawton, 1982). Lawton and Nahemow (1973) considered that the adaptation of a person to the environment, and the consequent alteration of the environment, is part of a broader process of human adaptation. More specifically, the aging process is identified as one element of this continual adaptation. That is, adaptation both to the external environment and to changes in individual capabilities and functioning that take place during the life cycle (Lawton & Nahemow, 1973).

The development of the ecological model of aging by Lawton and Nahemow (1973) resulted from the basic premise that individual behaviour and well-being are contingent upon the dynamic balance between the demands imposed by the environment and the individual's ability to cope with those demands (Pollack & Newcomer, 1986; Wister, 1989). Lawton (1980b) identifies three types of changes in this person-environment relationship: (i) change in the individual due to discontinuities posed by retirement, widowhood, impaired health, and the loss of social roles; (ii) environmental change occurring at the current place of residence; and (iii) environmental change resulting from relocation. Adaptation refers to the processes that guide the aging individual to respond to these changes that occur over

time. These adaptive strategies are considered to be the major determinants of well-being for seniors and critical in the development of the ecological model (Kahana, 1974).

Lawton and Nahemow's (1973) ecological model of aging is based upon the "environmental docility hypothesis" that was first proposed by Lawton and Simon (1968). The model describes the inter-relationship between individual capability (the degree of competence) and the demands of the environment (environmental press). Lawton and Nahemow (1973) defined behaviour and affect as outcomes of a person of a given level of competence interacting with an environmental situation affording a given level of press (Lawton, 1989b).

The attributes of the older person are conceptualized by competence in turn defined by the behaviours or performance of an individual that demonstrate his or her level of capability. The processes that most clearly represent competence are identified to be biological health, sensory-perceptual capacity, motor skills, cognitive capacity, and ego strength (Lawton, 1982). Therefore, competence can be operationally defined in terms of both biological health (the absence of disease states) and functional health (ability to perform tasks in the areas of physical self-maintenance and instrumental self-maintenance) (Lawton, 1989b). In later life, individual competence may decline as a result of losses in general health and functioning (McPherson, 1990). In addition to these physical losses, external processes such as social isolation, income reduction, and widowhood produce declines in competence for the individual (Lawton, 1980a; Lawton, 1983). Therefore, Lawton and Nahemow's (1973) model also identifies socio-demographic



characteristics such as age, marital status, and income to be important attributes of the individual that influence adaptation to a changed environment.

The definition of the environment in the ecological model of aging is based on a classification developed by Lawton (1970). He conceived of the ecosystem as comprised of five components: (i) the individual; (ii) the physical environment consisting of both the dwelling, and the larger community; (iii) the personal environment including most face-to-face relationships; (iv) the supra-personal environment made up of groups of spatially-clustered individuals; and (v) the social environment consisting of social structures. In their model, Lawton and Nahemow (1973) consider these environmental components in terms of the demand-quality they produce based on resources, incentives, challenges, or demands that activate a particular behavioural response (Parr, 1980; Scheidt & Windley, 1985). According to Lawton (1982), environmental press comprises environmental characteristics with some demand quality for the individual, whether the demand is objective or construed by the individual.

The environmental docility hypothesis posits that the outcome of the person-environment interaction leads to varying degrees of adaptive behaviour (Lawton & Simon, 1968). In Lawton and Nahemow's model, the level of individual competence ranges from low to high, while the degree of environmental press varies from weak to strong. Behaviour is characterized as ranging from adaptive to non-adaptive, while the affective response is evaluated as positive or negative from the point of view of the individual (Lawton, 1982). The outcome "may be either outwardly observable motoric behaviour or an inner affective response"(Lawton, 1982: 43). Sustained

levels of affective response have been indexed as morale or life satisfaction. Adaptive behaviour is the behavioural outcome of primary interest (Scheidt & Windley, 1985).

According to Lawton and Nahemow's ecological model of aging, a state of congruence occurs when competence and environmental press are in balance. The resulting behaviour is characterized as adaptive and the individual experiences satisfaction (Pollack & Newcomer, 1986). Concomitantly, the more competent the individual, the less will be the proportion of variance in behaviour attributable to environmental press (Carp, 1976a). As the competence of the individual decreases, however, the proportion of his or her behaviour controlled by environmental forces increases, and maladaptive behaviour and dissatisfaction occur (Lawton & Nahemow, 1973). The environmental docility hypothesis proposes, for example, that the behaviours of older people who are least competent will be most limited by geographical distance (Lawton, 1970). Therefore, the ecological model asserts that as the competence of older persons declines, a greater proportion of their behavioural outcome will be explained by attributes of their environments (Golant, 1991).

Lawton has proposed various revisions to the model in order to portray the complexities of person-environment relationships not captured in the environmental docility hypothesis (Lawton, 1985a, 1989b). The environmental proactivity hypothesis states that the greater the competence of the person, the greater number of environmental resources that may be used to address the person's needs and preferences (Lawton, 1989b). It is hypothesized that proactive behaviour will occur when the individual utilizes environmental resources to facilitate adaptation. In

contrast, there is a relatively narrow range of environmental resources available to the person with lower competency. Therefore, this revised version of the ecological model of aging implies that as competence diminishes, proactivity should give way to reactivity (Lawton, 1985a).

More recently, Parmelee and Lawton (1990) have reformulated Lawton and Nahemow's (1973) ecological model of aging. Their framework specifies that the interaction between the aging person and the environment creates a dialectic between autonomy and security. Autonomy refers to the capability of a person to pursue goals by using his or her own resources. Security is defined as the state in which the pursuit of these goals is dependent on the physical, social, and interpersonal resources of the environment. In old age, person-environment relations are conceptualized as an ongoing dynamic in which the older individual seeks both independence (autonomy) and support (security). According to Lawton (1985b), the autonomy-security balance is affected when change occurs in either the person, in terms of such components as health status or living arrangements, or in the environmental setting. Parmelee and Lawton (1990) proposed that autonomy and security form a single continuum whereby "for every person-environment transaction, the tension between security and autonomy operates continuously so that any period of apparent equilibrium is short lived" (p. 469). The concept of a continuum reflects the fundamental premise of the ecological model of aging, that is, the constant adaptation of the relationship between the older person and environment. However, while Parmelee and Lawton's reformulated version of the model portrays its components to be in flux and constantly changing, a temporal dimension is not incorporated into the framework.

### 3.1.3 Change in the Person-Environment System: Housing Adjustment

Lawton's ecological model of aging has had important implications for the development of research and policy issues related to housing for the aging population. One such evolving policy is based on the concept of a continuum of housing environments that reflect the heterogeneity of the older population who require a range of residential options to address their changing needs due to the aging process. As the competence of an older individual is reduced, a succession of housing adjustments is required to reduce tensions between individual abilities and the demands of the environment (Filion et. al., 1992).

A continuum of appropriate housing environments necessitates knowledge of changes to both the older person and the living environment in order to optimize person-environment congruence (Lawton et. al., 1980). As this policy requires effective evaluation of the impact of new housing environments, significant research was directed towards housing issues from the onset of the study of environment and aging. This research has been focused in particular on how different residential environments vary in their ability to accommodate elderly people of different levels of competency (Lawton, Moss, & Grimes, 1985; Sherwood, Ruchlin, & Sherwood, 1989; Struyk, 1987).

In the early development of the ecological approach, one of the primary areas of housing research concerned the relocation of older adults to new environmental settings because the potential impact of the move on the individual was considered to be substantial (Lawton, 1986). Based on the parameters of the ecology of aging, early investigations examined adaptation to institutionalization at a single point in time,

with geographic location held constant (Parmelee, 1998). These cross-sectional investigations did not take into account the process of mobility and how the present and previous residences compare in terms of changes in the competency of the person or the press of the environment (Parmelee & Lawton, 1990).

According to Parmelee (1998), it was appropriate that the early studies of aging and environment were cross-sectional. Thus, such research has utilized frameworks that operationalize discrete aspects of the person and environment that assume a momentary situation (Parmelee & Lawton, 1990). Although the emphasis of housing research has been on change in the residential environment, there have been few studies that have evaluated adaptation using temporal constructs. Parmelee (1998) refers to the pioneering studies of Carp (1975b) and Sherman (1975) who conducted early longitudinal studies of adjustment to special housing for the elderly. By using a longitudinal research design, these investigations were able to examine the dynamics of individual and contextual factors that shape adjustment to environmental change (Parmelee, 1998). However, these studies were conducted decades ago and subsequent research has typically failed to focus longitudinally on the adjustment of older persons to new residential environments.

The concept of adaptation has been the focal point for models of aging developed from an ecological perspective (Carp, 1987; Kahana, 1982; Schooler, 1976). However, Golant (1998) stresses that although these models have underscored the importance of the person-environment relationship in terms of optimal living arrangements for older adults, "they have only incompletely or vaguely conceptualized either the characteristics of the individual or environment in temporal

terms" (p. 35). For example, the constructs of Lawton's model are identified to have changing qualities: competence ranges from low to high; environmental press is weak to strong; behaviour outcomes extend from adaptive to non-adaptive. Despite the emphasis on the dynamic qualities of these constructs, however, Lawton's model has incompletely conceptualized the *changing relationship* between the elderly person and environment.

Lawton has recognized the importance of extending the ecological model of aging to include the concept of change. He suggests that an explicit focus be placed on the temporal process which influences the person-environment relationship (Lawton, 1985a). The balance of this relationship can be disturbed by changes of either the person or environment thereby requiring adaptation on the part of the older person. It is significant that Lawton (1980b) emphasizes that the effects of change on the aging process range on a continuum of quality from negative through neutral to positive. The key question relates to the identification of factors causing seniors to respond differently to environmental changes. By understanding the adjustment process of older adults to environmental change more completely, policy development will provide for the creation of more effective shelter and care settings for the aging population.

In a review of research on the design of special residential environments for older people, Parmelee and Lawton (1990) indicate that in the 1980s there was a lull in empirical research on environment and aging with the field conceptually and methodologically at a crossroad. They proposed that the environmental perspective of aging must move beyond interactional analysis and that the transactional

perspective is a more appropriate representation of person-environment processes. The significance of the transactional perspective is its emphasis on the dynamic, changing quality of person-environment relationships rather than static characteristics of individuals and their physical worlds. According to Parmelee and Lawton (1990), "the underlying assumption is that as the individual reacts to (or-acts on) his or her environment, not only the person and/or the environment but the relation between the two is changed" (p. 477). Therefore, this focus on change highlights time as a crucial component in the person-environment system.

More recently, Parmelee (1998) has also emphasized the need to work towards a transactional view of aging and environment. She asserts that the study of environment and aging must incorporate a holistic focus on the roles of the past, present, and future in shaping the life space. Of particular significance, Parmelee (1998) advocates the direct incorporation of time into person-environment models of aging. Specifically, a longitudinal framework is required to understand the changing older person-environment relationship because change is an intrinsic part of the system.

The call to incorporate a temporal dimension in the ecology of aging provides a new impetus for the development of theoretical frameworks that will give direction to further research on aging and environment. By enhancing the role of time and change in the person-environment system, greater insights will be gained into the relationship between older adults and their environments (Kahana & Kahana, 1983). The present study will utilize and adapt Golant's (1998) model of residential adjustment as a broad conceptual framework explicitly incorporating change as a basis for

determining the personal outcomes of older movers to government-subsidized senior housing.

### **3.2 Golant's Model of Residential Adjustment**

The significance of Golant's (1998) model of residential adjustment is that it suggests new theoretical and empirical directions for the ecology of aging. The model's emphasis on time and the effect of change on the adjustment of an older adult is an important advance on earlier ecological frameworks of aging. This section first provides a discussion of the foundations of the model, which is then followed by a description of the model's constructs and causal relationships.

#### **3.2.1 The Development of Golant's Model**

The development of Golant's (1998) model of residential adjustment outcomes originated from observations based on his research on housing for seniors. An ecological approach has been used in many studies to determine whether the residential setting is congruent with the needs and demands of the older adult. However, Golant (1998) found that most research investigating the adjustment of older adults to new living environments did not consider how these movers differentially experience adjustment outcomes, but rather focused on the negative effects of relocation. Golant (1986b) was interested in determining how an older person's assessment of his/her residential setting could inform these objectively defined evaluations of senior housing. Consequently, the purpose of Golant's (1998) model of residential adjustment is to provide a framework in which investigations



may be conducted to determine why older movers dissimilarly evaluate the outcomes of moving to a new residential environment. He proposes that the model will provide a more effective basis for evaluating the ability of new residential environments to produce successful adjustment outcomes among older persons.

The review of research literature demonstrates that the majority of investigations on the adjustment of seniors to new residential settings have focused on the negative outcomes resulting from these moves (Choi, 1996; Dimond, McCance, & King, 1987; Thorson & Davis, 2000; Wittels & Botwinick, 1974). According to both Lawton (1980b) and Golant (1998), a disproportionate number of gerontological studies have linked the consequences of a changed environment to negative outcomes such as higher mortality rates, poorer physical health, greater housing dissatisfaction, and declines in life satisfaction. These research findings support the generally accepted view in gerontology that older persons with diminished adaptive capacities lack future orientation, seek to maintain continuity with the past, and are resistant to change. Environmental change and relocation are usually considered a threat to an older person's stability and are typically regarded as resulting in negative physical and psychological consequences (Kahana & Kahana, 1983).

Golant (1998) suggests that a greater understanding of the adjustment process would be achieved by considering the outcome of a changed living environment from the perspective of older persons themselves. Both theoretical constructs and research findings have demonstrated that older persons react differently to the attributes of a housing environment (Armer, 1993; Carp, 1976a; Golledge & Stimson, 1997; Newman, 1989). Objective appraisals of housing qualities often diverge from the

subjective assessments of the elderly persons who live in the residence (Golant, 1991). The older occupant often does not express the level of residential dissatisfaction that would be expected based on housing deficiencies categorized by professionals (Golant, 1986b). According to Golant (1998), this is the outcome of “the complex array of perceptual, cognitive, and behavioural factors that influence how occupants of a setting interpret, evaluate, use, and respond to its objective properties” (p. 38). As a result, elderly persons have varying interpretations of the quality of their living environment and its impact on their well-being (Golant, 1984a, 1986b).

Golant (1986b) emphasizes that an older person’s appraisal of his/her residential setting provides important insights that must be included along with objective assessments when evaluating the housing conditions of seniors. He proposes that an understanding of why the residential adjustments of older persons differ could be achieved by adopting a temporal dimension. He recognizes that a dynamic conceptualization of person-environment interaction is required in order to extend the ecology of aging and effectively evaluate the determinants of residential adjustment outcomes. The model’s temporal emphasis distinguishes it from person-environment congruence models that have focused on singular individual attributes and a cross-section of environmental time. Furthermore, Golant (1998) asserts that the model’s temporal perspective contributes to the gerontological research goal of understanding the aging process and, concomitantly, how older persons respond to change and the resulting outcomes.

Golant (1998) proposes that the temporal perspective provides recognition that older persons have experienced different consequences of individual and environmental change. By defining the element of time, an older person's "past experienced outcomes thus serve as individually defined subjective reference points by which to judge the impact of their currently occupied setting" (Golant, 1998: 36). Golant (1998) suggests, therefore, that the outcomes experienced by an older person in a new residential setting will be the result of both subjective perceptions and objective conditions in both the previous and present residence. Therefore, the adequacy of the present residential setting must be assessed in terms of the older person's previous residential experiences. Golant suggests that previous settings may not have been appropriate, and perhaps that an older adult has never achieved person-environment congruence in any of the residential settings which he or she has occupied. Therefore, a cross-sectional analysis cannot explain "the poor individual-environment fits of persons in a new setting who have for a long time assessed aspects of their previous housing arrangements as inappropriate and who have always had imperfect or ineffectual coping skills" (Golant, 1998: 37). Accordingly, Golant emphasizes that the conceptualization of a temporal dimension recognizes that the past experiences of older individuals influence their assessment of the present residence. Because it is likely that older persons have experienced environmental incongruence in the past, explanatory models are required to predict how changed environments have improved or worsened the older person's quality of life. The incorporation of temporal and subjective dimensions allowed Golant to develop a

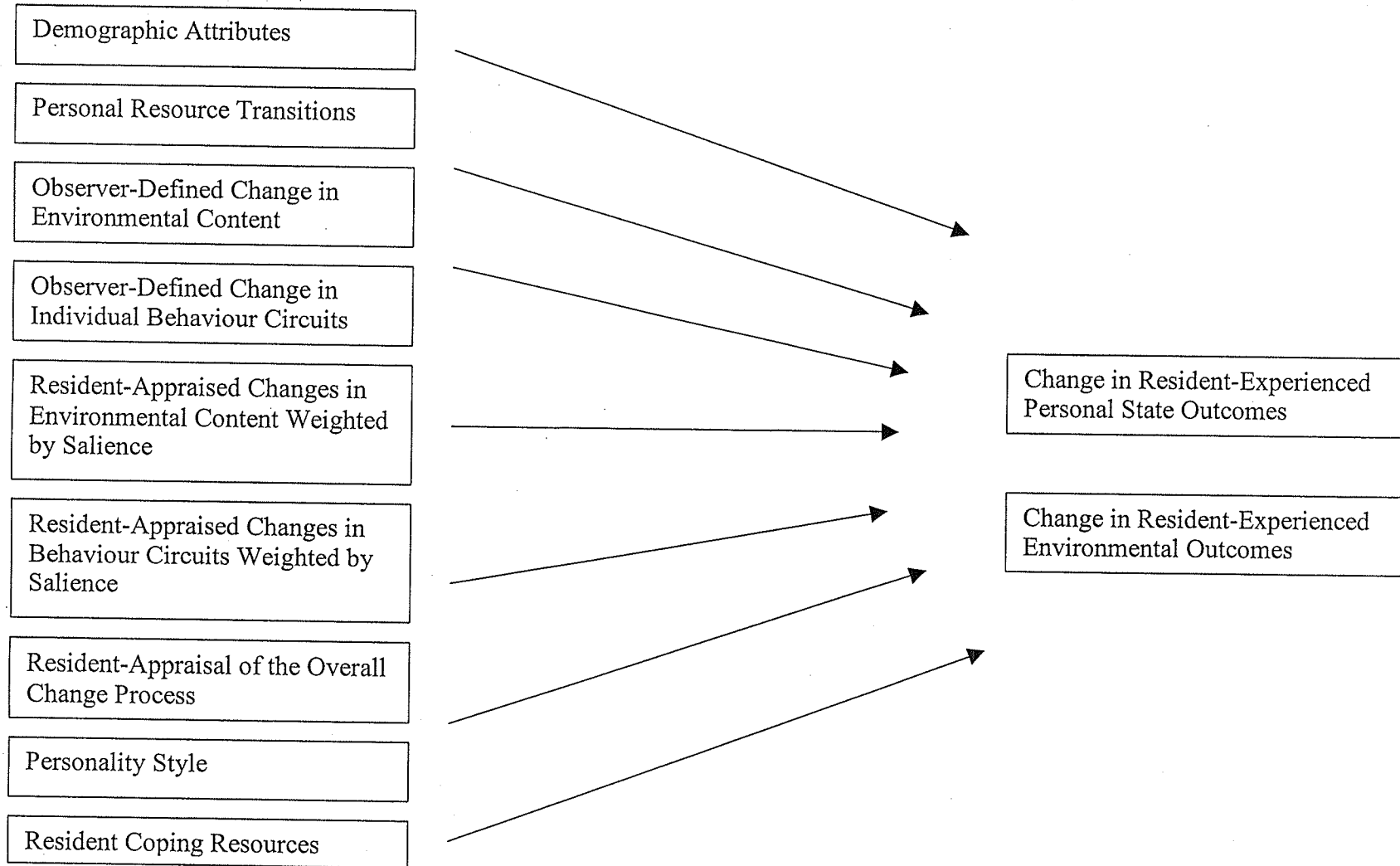
model that portrays a complex set of individual qualities and environmental attributes to explain differential residential adjustment outcomes experienced by older adults.

### 3.2.2 Constructs of Golant's Model of Residential Adjustment

The goal of Golant's (1998) model of residential adjustment is to explain "why older persons differently experience changes in their personal and environmental outcomes as a result of their residential adjustments" (p. 36). Figure 3.1 presents a simplified version of the model that identifies a multifaceted set of determinants including personal qualities and behaviours, subjectively and objectively interpreted environmental attributes, and psychological processes to account for the differential outcomes experienced by older adults in a changed environmental setting.

Golant's (1998) model of residential adjustment adopts an "interactional worldview" and is intended to have both heuristic and practical applications. It places particular emphasis on *differences* in how older people evaluate changed shelter and care settings. Changed residential settings are conceptualized as ranging from adjustments in the currently occupied shelter to relocation to a new residence that may be a conventional dwelling in the community or any type of group residence designed for older persons (e.g., congregate housing, assisted living, nursing homes, etc.). A further distinctive feature of Golant's model is that attention is explicitly focused on conceptualizing the *temporal context* of the residential adjustments of older adults. Specifically, a currently occupied (time 2) shelter and care setting is distinguished from a previously occupied (time 1) setting. Attention is focused on the currently occupied residential setting and the extent to which the older person's

Figure 3.1. Golant's Model of Residential Adjustment



quality of life has improved or deteriorated as a result of the environmental change associated with the departure from the previous setting. Golant's model thus represents an advance over past theoretical work that has "largely failed to conceptualize individual or environmental change as constructs" (Golant, 1998: 36).

Of particular significance, Golant (1998) presents the concept of a *functionally relevant environment* that is the focus of the investigation of residential adjustment outcomes of older adults who experience a changed residential setting. Based on prior environmental taxonomies, the *functionally relevant environment* is divided into the physical, social, and organizational environments. The *social environment* includes both the social climate of the setting, as well as the personal situation of older persons that focuses on the social and psychological significance of their personal relationships. The *physical environment* consists of four sub-categories that include the natural, built, personal belonging, and urbanized environments. Finally, the *organizational environment* category represents the policy and program features of the residential setting.

Golant (1998) maintains that the exact taxonomy of each environmental component is dependent on the specific goals of research which investigates the adjustment outcomes of older persons in a changed residence. Of primary importance to the model of residential adjustment is the conceptualization of change in the *functionally relevant environment*. It must be possible to define the dimension of change of the components and attributes of the environment that denotes "their increased or decreased availability, incidence, strength, intensity, distance, or other appropriate metric denoting the change of their presence" (Golant, 1998: 44).

The goal of Golant's (1998) model is to explain why elderly persons differentially experience changes in personal state outcomes and environmental outcomes as a result of a new residential setting. Golant's (1998) model of residential adjustment distinguishes between two broad categories of resident-experienced outcome changes: *personal state outcomes* and *environmental outcomes* (Figure 3.1). A fundamental concept of the model is that older persons experience changes in these outcomes differentially in a new residential setting. Personal state outcomes relate to attitudes of individuals toward their self or life's circumstances and experiences. Indicators of changes in personal state outcomes may include declines or increases in intra-psychic well-being (e.g., life satisfaction and self-esteem), physical or psychophysical symptoms (i.e., general health or fatigue), and control or dominance over life and environment. Environmental outcomes relate to the attitudes of individuals toward their objective environment. Changes in environmental outcomes include increases or decreases in perceived autonomy, security, belonging, stimulation, accessibility, and loneliness in the new residential setting. These changes may relate to feelings about both general and specific aspects of the environment (e.g., social ties) and associated activities (e.g., talking over problems with compatible persons). Both personal state outcomes and environmental outcomes may be closely related to the personal traits of an individual, and may be operationalized by either resident assessments (e.g., health self-reports) or observer-based appraisals (e.g., clinical assessments or observations). Golant ultimately proposes a potential causal relationship between the two categories of outcomes, with changed environmental outcomes as likely influences upon personal state changes.

Golant's (1998) model of residential adjustment presents an extensive set of both dynamic and stable component parts and relationships to explain the residential adjustment outcomes (Figure 3.1). Of foremost importance, the *functionally relevant environment* is represented by both objective (*observer-defined*) and subjective (*resident-appraised*) measures of change in the *environmental content* and *behaviour circuits* of the residential setting. The distinction between objective and subjective assessments is included to address the frequently noted differences in evaluations of the qualities of residential settings registered by professionals compared to older occupants themselves (Golant, 1986b, 1998; Lawton, 1983).

Additionally, the model focuses on *personal resource transitions* as changes in the functional ability and physical health of older persons may affect the way they are able to utilize and assess the environment hence influencing residential adjustment outcomes. Golant's (1998) model also specifies that personal qualities, including stable *demographic attributes*, influence the residential adjustment of older adults. Similarly, *personality styles* and *resident coping resources* (ego resources and situational resources) are proposed to influence how the older person experiences changed outcomes in a new setting. Finally, *resident appraisal of the overall change process* is a construct that subsumes broader aspects of the psychological adjustments made by older people in response to their changed residential environment.

Various theoretical interpretations of the relocation experience suggest that the adjustment process can be very difficult for older people. The older person may feel a loss of control over his/her life or the environment as a result of residential change. In an unfamiliar setting, the older person is faced with learning about the



opportunities and risks of the new environment. In addition, the older person must leave a familiar setting thereby losing attachment to possessions, people, and activities. Older adults may also be faced with re-establishing their personal identity to gain acceptance in the new setting. Conversely, the older person may view residential change as an opportunity to improve his/her living situation.

Using the antecedent constructs of his model as interdependent variables, Golant proposes a series of general relationships or hypotheses that predict outcome changes resulting from residential adjustments of older people as positive or negative. Although they are not specified in the model, Golant acknowledged that there are complex interrelationships among the antecedent constructs. While the model is designed to be operationalized, Golant conceded that “the researcher seeking to measure its constructs and establish causal relationships for its antecedents faces some formidable challenges” (Golant, 1998, p.56). Golant (1998) thus recognizes that the operationalization of the model’s constructs and causal relationships presents difficulties for the researcher. Therefore, the following section will outline an amended version of Golant’s (1998) model, which is used as a basis for the conceptual model of the present investigation of the personal outcomes of older movers to government-subsidized senior housing.

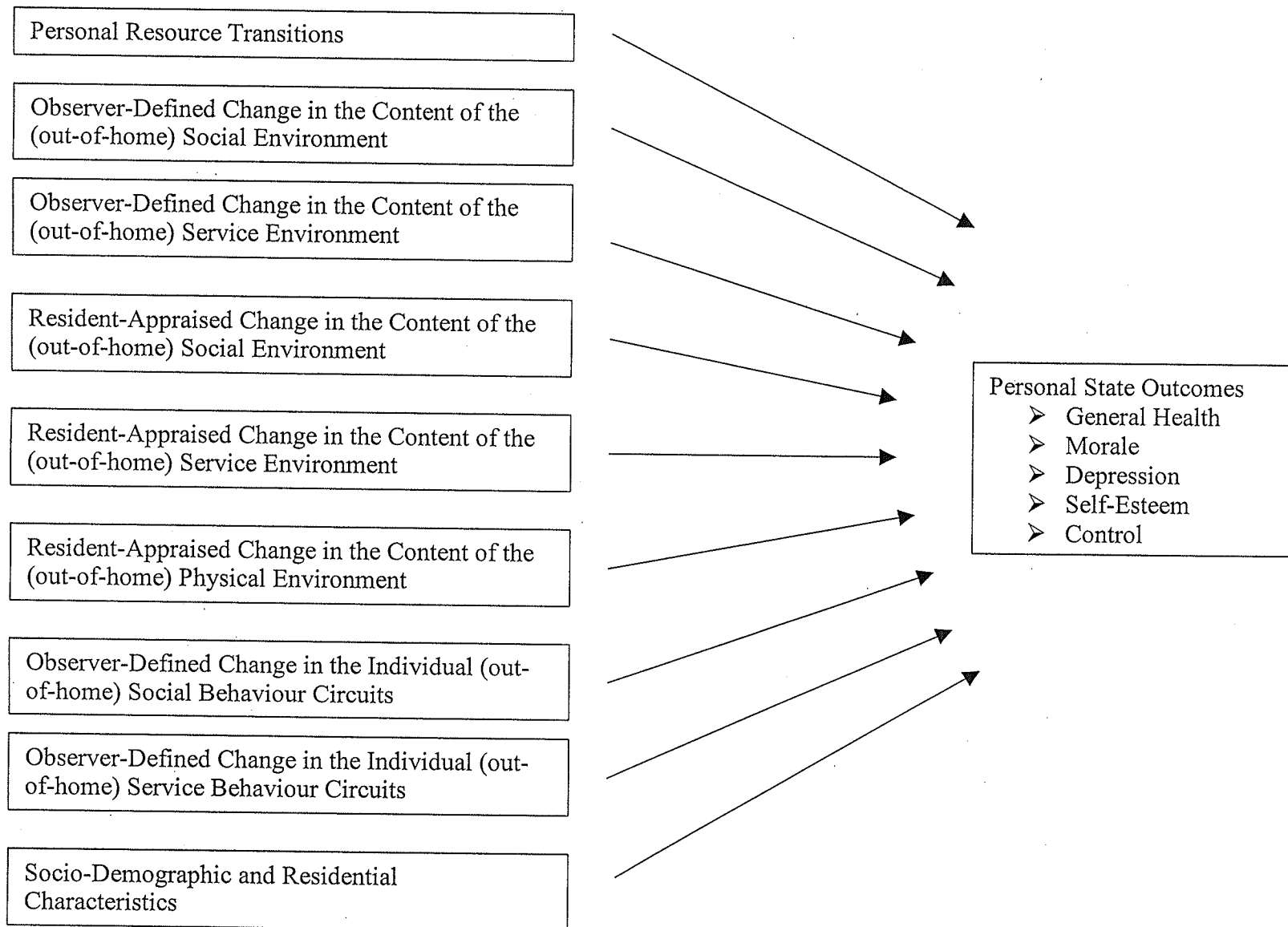
### **3.3 Conceptual Model and Research Questions of the Study**

The development of the conceptual model of this study is guided by the theoretical work on aging and environment that was presented in the previous sections of this chapter. The basis of the model is the premise that changes in personal and

environmental attributes, both independently and in interaction with each other, represent the determinants of the personal outcomes of older persons who relocate to age-segregated housing. Of particular importance as a guiding conceptual framework is Golant's model of the residential adjustment outcomes of older adults (Golant, 1998). As Golant (1998) acknowledges the complexities in operationalizing his model, the present study developed a refined, more focused version in order to establish a framework amenable to empirical testing. While some constructs have been excluded, the conceptual model retains those that are considered to be important when investigating the effect of changes in the neighbourhood environment on the outcomes of older movers to government-subsidized senior housing.

The constructs and relationships of the conceptual model used in the present study are outlined in Figure 3.2. Of primary importance, a longitudinal design is used to operationalize the conceptual model and evaluate change in the person-environment framework. The study's model specifies relationships between the defined personal state outcomes and changes in the personal, behavioural, and environmental antecedent constructs. Several authors have noted that the advancement of the ecology of aging requires the conceptualization of the changing relationship between the older person and the environment (Parmelee & Lawton, 1990; Parmelee, 1998). Therefore, in common with the Golant (1998) model, the study's model focuses on change in antecedent constructs associated with a move from the previously occupied residential setting to the currently occupied setting.

**Figure 3.2. A Conceptual Model: The Personal State Outcomes of Older Movers to Government-Subsidized Senior Housing**



In the conceptual model, attention is directed to that part of the *functionally relevant environment* comprised of components of the out-of-home behaviour setting of the resident focused primarily on the local neighbourhood milieu. The conceptual model distinguishes between the environmental content and individual behaviour circuits of neighbourhoods. According to Golant (1998), “residents living in the same environment will not similarly occupy or utilize its contents and will engage in transactions having different potential consequences” (p. 45). The content of the neighbourhood environment is defined in terms of contextual qualities such as fear of crime, informal social networks that provide support and care-giving assistance, as well as the accessibility of community and retail services. Behaviour circuits are defined as the behaviours people engage in to satisfy needs and accomplish goals and include activities to sustain the physical requirements of the individual, as well as behaviours that allow them to satisfy their needs of social interaction (Golant, 1998). Attention is specifically directed to change in everyday behaviours that “are likely to have strong instrumental, affective, or symbolic significance to the residents” (Golant, 1998: p.45).

The conceptual model for the study focuses exclusively on outcomes related to the personal state, or well-being, of older movers to government-subsidized senior housing after the relocation has taken place. As the study design did not permit the measurement of psychological scales of well-being for older adults prior to moving, it is necessary to amend the related personal state outcome changes and environmental outcome changes that are highlighted in Golant’s (1998) model. Instead, the study’s model proposes that personal state outcomes experienced after the move (defined as

the measures of self-rated health, morale, depression, self-esteem, and desired control) are related to positive and negative change in the antecedent attributes that have occurred since the move from the previously occupied residential setting.

Moreover, the model proposes that the antecedent constructs influencing resident-experienced outcomes relate to change in (a) the external objective environment of the shelter setting, and (b) the life situation and behaviour of the older person. In general terms, the model proposes that personal state outcomes are ultimately influenced by changes in the *environmental content* and *behaviour circuits* experienced by older persons currently occupying a new shelter and care setting. According to the model, these constructs are defined in terms of both *observer-defined* and *resident-appraised* assessments of change. This distinction is justified on the grounds that “the outcomes experienced by older persons in their new settings are as much a product of their perceived life situation as they are of their setting’s objective conditions” (Golant, 1998: 38).

According to the conceptual model, the changed *environmental content* of the behaviour setting resulting from a move to low-income senior housing impacts upon personal outcomes of an older individual. The first observer-based component of the model is *observer-defined change* in the environmental content of the behaviour setting. More specifically, the environmental content relates to the attributes of the neighbourhood including proximity to both the social and service resources available in the local environment. The model proposes that personal outcomes are influenced by the constructs of *observer-defined change in the content of the social and service*

*environments* that occur after a move to a government-subsidized senior housing project.

The new residential setting cannot be understood simply by determining the function of a changed environmental context. It is also essential to investigate the nature and significance of an older person's transactions with components of the environment. Therefore, the second dynamic observer-based component of the model concerning personal outcomes of residential moves is *observer-defined change in the individual social and service behaviour circuits*. The activities of older persons in the local neighbourhood environment will inevitably change when they move to a new residential setting. Therefore, the study's model stipulates that changes in behaviour circuits in the previous and present residences will ultimately influence the personal state outcomes of older movers to senior housing accommodation.

The conceptual model also proposes that personal state outcomes are influenced by changes in resident-appraisals of the behavioural setting. The third component of the model entitled *resident-appraised change in the content of the physical, social, and service environments* underscores that older residents' judgments of various attributes of their current and previous shelter and care settings will vary.

The conceptual model also includes the construct of *personal resource transitions* that defines change associated with various indicators of the personal capability of the resident including behavioural competence (e.g., ability to perform activities of daily living), cognitive competence (e.g., problem solving abilities), and physical health conditions (e.g., arthritis, osteoporosis, etc.). According to Golant (1998), residential adjustment is influenced by changes in personal resources as these transitions affect

an older person's interaction with the environment, as well as with assessments of both the residential setting and personal well-being. Therefore, the conceptual model proposes that transitions in the personal resources of older movers influence their personal outcomes in a new environmental setting.

It is further proposed that the personal state outcomes resulting from a move to a low-income senior housing project are associated with a set of relatively stable individual attributes: *socio-demographic and residential characteristics*. The stable observer-defined components are proposed as control variables and include age, gender, education, and economic status, as well as residential characteristics of the individual. The model specifies that the demographic diversity of elderly persons must be controlled for in order to avoid erroneous conceptual interpretations.

In summary, the conceptual model of the study identifies causal relationships between the personal outcomes and eight antecedent constructs that include environmental, personal, and behavioural attributes. More specifically, it is proposed that personal state outcomes of the mover to the new residential setting are influenced by the following associated antecedent constructs: (a) *observer-defined change in the content of the social and service environments*; (b) *resident-appraised change in the content of the physical, social, and service environments*; (c) *observer-defined change in individual social and service behaviour circuits*; and (d) *personal resource transitions*. The personal and environmental attributes specified by the conceptual model, along with the prescribed relationship between personal outcomes and these attributes, provide the foundation for the development of the research questions for this study.

Two groups of research questions are formulated to address the objectives of the study and investigate the experiences of older movers to senior housing. In addition to stable characteristics of the individual, the first group of research questions focus specifically on changes experienced by the individual in relation to personal, environmental, and behavioural factors, as well as personal state outcomes. These questions address the first five objectives of the study: (i) to investigate the personal and residential characteristics of recent movers to government-subsidized senior housing; (ii) to investigate changes in the personal resources of older movers to senior housing; (iii) to investigate changes in the local neighbourhood environments of recent movers to government-subsidized senior housing in terms of resident-appraised and observer-defined changes in physical qualities, access to services, and availability of social supports; (iv) to investigate changes in the individual social and service behaviour circuits of older movers to senior housing; and (v) to investigate changes in the personal state outcomes of recent movers to government-subsidized senior housing that occur at the project.

First, the conceptual model proposes that a set of individual characteristics contributes to the personal outcomes of older persons relocating to government-subsidized senior housing. Research has demonstrated that the local moves made by older persons are often the result of the compounding effect of several factors related to the aging process including changes in living arrangements and reductions in income (Boyd et al., 1994; Bradsher et al., 1992; Golant, 1984a). As a result, certain socio-demographic characteristics are associated with those who relocate to government-subsidized housing. In general, these local movers tend to be single



females who are advancing in age and receive limited income (Beland, 1984; Kanaroglou & Diegel, 1990; Speare & Meyer, 1988). These characteristics suggest that local movers may be confronting reductions in capability as their economic, physical, and social resources become more limited (Gonyea et. al., 1990; Lawton, 1983). Therefore, it is important to determine the *personal and residential characteristics* of those residents who have recently moved into subsidized housing:

➤ *Research Question 1*

What are the personal and residential characteristics of recent movers to government-subsidized senior housing?

The model also proposes that the health and physical functioning of older movers will influence their personal outcomes when changing their residential setting. Physical status is identified to be an important determinant of the personal state outcomes because decreases in health and functioning are often the impetus for older persons to move to a more supportive environment (Choi, 1996; Gutman, 1998; Litwak & Longino, 1987). The conceptualization of health and physical functioning is a major component of the ecological model of aging that defines the individual based on the concept of the competence of the older person. Competence is defined in terms of both biological health (the absence of disease states) and functional health (ability to perform tasks in the areas of physical self-maintenance and instrumental self-maintenance) (Lawton & Nahemow, 1973). Similarly, the definition of personal resources applied by the study's model of outcomes of residential moves includes biological health and motor behaviour. The second research question therefore

focuses on changes in the *personal resources* of older adults who relocate to low-income senior housing:

➤ *Research Question 2*

What changes in the personal resources of older adults occur after a move to a government-subsidized senior housing project?

Additionally, the present study proposes that changes in the behaviour setting of the older mover will affect the personal outcomes that result from relocation to a senior housing project. The behaviour setting represents the circumscribed areas where an individual travels to in order to access services for life-maintenance, and social contacts, as well as travel behaviour patterns (Golant, 1984b; Lawton, 1979). Therefore, the model focuses on both *observer-defined* and *resident-appraised* measures of *change in the content of the physical, social, and service environments* and *change in the individual social and service behaviour circuits*. The behaviour setting contains the locational context of the physical travel distance to service and personal environments. Transactions conducted in the behaviour setting are conceptualized as the activity patterns carried out in the service and personal environments by older persons in order to fulfill life sustaining and social needs (Golant, 1984b). Transportation resources are also identified to be an important attribute as the provision of transport enables the older person greater ease in interacting with the behaviour setting (Fox & Gooding, 1998). Therefore, Research Questions 3 and 4 examine the changes that occur in relation to the environmental content and behaviour circuits of the residential setting:

➤ *Research Question 3*

Are there notable modifications in the local physical, social, and service environment after a move to a government-subsidized senior housing project?

➤ *Research Question 4*

Are there significant changes in individual social and service behaviour circuits of recent movers to a government-subsidized senior housing project?

The model proposes that the antecedent constructs described above ultimately influence personal outcomes. The *personal state outcomes* are indicators of the effects of a changed residential setting on the older person. As previously stated, personal state outcomes are evaluated specifically in terms of the following constructs: (a) self-reported health representing the physical well-being of the older person; (b) measures of morale, depression, and self-esteem reflecting the older person's intra-psychic well-being; and (c) desired control which measures an individual's feelings of control over life and environment. The following research question is presented to address the changes that occur in the personal state outcomes of movers over a one-year period of adjustment at the government-subsidized senior housing project:

➤ *Research Question 5*

What changes occur in the personal state outcomes of recent movers to a government-subsidized senior housing project?

A primary goal of this study is to evaluate the influence of changes in personal and environmental attributes on the personal outcomes of older movers. The first set of research questions (Research Questions 1 through 5) evaluates the change that

occurred between the previous and present residences. The sixth and final research question addresses the last objective of the study: (vi) to determine the effects of changes in personal resources, environmental content, and behaviour circuits upon the personal outcomes of recent movers to government-subsidized senior housing.

Therefore, the focus of this research question is specifically on the causal relationships proposed by the conceptual model between personal state outcomes and changes in the antecedent constructs. Research Question 6 considers the effect of both *personal resource transitions* and *changes in the functionally relevant environment* on the residential adjustment of older movers:

➤ *Research Question 6*

Do changes in personal resources, environmental content, and behavioural circuits influence the personal outcomes of recent movers to a government-subsidized senior housing project?

### 3.4 Summary

The ecological perspectives on environment and aging represent the foundations of the present study's conceptual model. More specifically, Golant's (1998) model of residential adjustment outcomes is utilized as a broad framework to incorporate the perspective of change in person-environment relationships. The model for the research program proposes that changes in personal and environmental attributes are related to the personal state outcomes of recent movers to government-subsidized senior housing. A major strength of this model is the explicit temporal perspective of the antecedent constructs of residential relocations. Thus, the model recognizes that different individuals have experienced different trajectories of environmental and

individual change over time which will ultimately influence their personal state outcomes in changed residential settings (Golant, 1998: 36).

Based on the conceptual model, research questions are developed to address the objectives of the study. The first group of research questions addresses the study objectives to investigate stable individual characteristics, as well as changes in the personal resources, local neighbourhood environments, behaviour circuits, and personal state outcomes of recent movers to government-subsidized senior housing. The final research question focuses on the foremost objective of the study to determine the effects of change in both the personal and environmental attributes upon the personal outcomes of older movers.

## **Chapter 4**

### **Methodology:**

#### **Data Sources and Data Collection**

This chapter outlines the data sources and data collection procedures of the study. As the main objective of the investigation is to evaluate the effects of changes in personal resources, local environmental settings, and behavioural circuits on the personal outcomes of recent movers to senior housing projects, a longitudinal survey design was necessary. The study was funded through a Social Sciences and Humanities (SSHRC) Research Grant received by Dr. Geoffrey C. Smith (Grant No. 410-98-1241). As project coordinator, the author of this dissertation was involved in all facets of the study including the conceptualization of the research objectives, design of the survey instruments, development and supervision of data collection procedures, and statistical analysis of the data.

The chapter commences with a description of the study area and an overview of government-subsidized senior housing in Winnipeg. This discussion is followed by an explanation of the selection of government-subsidized senior housing projects included in the study. In the second section of the chapter, a description of the design of both Survey 1 and Survey 2 of the longitudinal design is first provided followed by an overview of the instruments that were administered in the surveys. The third section addresses the selection of the sample of respondents and provides an outline of the data collection procedures associated with the surveys. Finally, the response rates of the surveys are reviewed and characteristics of the samples are compared with those of the older population of Canada.

#### **4.1 The Study Area and the Selection of Senior Housing Projects**

The primary focus of the present study is on the experiences of older movers to government-subsidized senior housing in the city of Winnipeg. As the provincial capital of Manitoba, Winnipeg represents an appropriate geographic context in which to investigate issues related to an aging population. The distribution of the older population in this metropolitan centre is comparable to the aging profile of Canada in general. In 2001, for example, the 55 years of age and older cohort accounted for 22.6 per cent of the population of the Winnipeg Census Metropolitan Area (CMA) compared to 22.5 per cent of the population of all Canadian CMAs (Statistics Canada, 2001). These similarities suggest that Winnipeg has a representative demographic profile for investigating the circumstances of older adults.

In Chapter 1, a description of the development of social housing in Canada was provided. In Winnipeg, the two main categories of government-subsidized housing available to older adults 55 years of age and older are public housing owned by the Manitoba Housing Authority (MHA) and non-profit housing. Prior to the commencement of the field study, an inventory of senior housing projects was conducted using 1999 data (Age & Opportunity). It should also be noted that more recent seniors' housing data (Age & Opportunity, 2001, 2004) reveal that there have been no significant subsequent changes in Winnipeg's public and non-profit senior housing market.

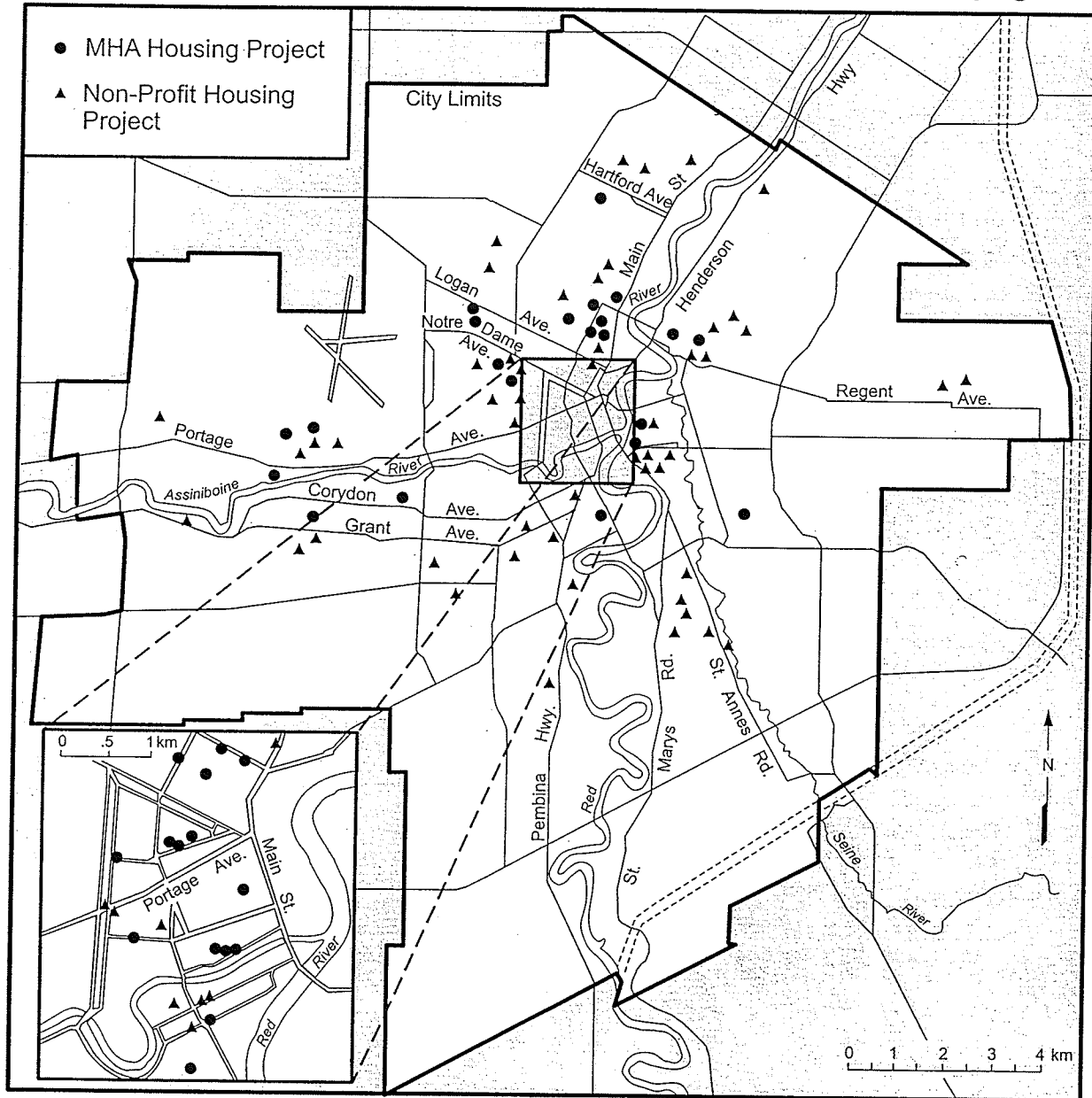
In 1999-2000, there were 39 MHA housing projects for older adults in the public sector. Of these, 29 were non-sponsored projects constructed, owned and managed by the MHA, while the remaining 10 projects were constructed and owned by the

MHA and separately managed by a sponsor. There were also 59 housing projects for older adults that were constructed, owned, and managed by non-profit organizations (e.g., church groups, service clubs, and advocacy groups) receiving federal and provincial government assistance (Skelton, 2000). Therefore, a total of 98 government-subsidized housing projects containing 9110 residential units were available to older adults in Winnipeg in 1999. Figure 4.1 portrays the location of these housing projects in Winnipeg. The map demonstrates that while senior housing projects were generally dispersed throughout the city, there was a tendency for public (MHA) housing to be concentrated in the inner city and non-profit housing projects to be located along the city's two major rivers.

The housing organizations of low-income senior housing projects typically offer a variety of on-site services that provide physical and social supports for the residents. These services include hairdressing salons, cooking and recreational facilities, tenant associations, and social events such as bingo nights. Most projects also offer an affordable congregate meal program that provides a lunch-time hot meal service between three and five times per week. Some projects receive visits from a grocery van on a weekly basis, while a shuttle service to a major-chain grocery store is offered weekly in other projects. Homecare services including light housekeeping assistance and homemakers are provided at the housing projects by the provincial homecare program with provision dependent on the assessment of the resident's needs. The medical facilities available to residents of government-subsidized senior housing exhibit considerable variation. While a small number of these senior housing projects have an on-site clinic, a public health nurse visits most projects at least once



Figure 4.1: Government-Subsidized Senior Housing In Winnipeg



Source: Age and Opportunity, 1999

per month to monitor health indicators. In addition, homecare nurses visit projects on a regular basis in order to administer medication and monitor health indicators of those residents assessed to have relatively poor or deteriorating health.

Despite the provision of on-site services, residents of government-subsidized senior housing are typically obliged to access a range of services and utilize established social networks in the broader community. In the present study, accessibility to the service and social environments is considered to be of particular importance because, while residents in low-income senior housing are usually ambulatory and required to live independently, the factors that precipitate a move are often indicative of a need for greater supports. With limited resources and declining physical capacity, these residents may experience difficulty in accessing the services and social networks that are essential to maintain independence. The issue of proximity to service and social environments is particularly pertinent for older persons who move to government-subsidized senior housing. Therefore, the selection of the projects to be included in the present study was based on accessibility-related criteria among government-subsidized senior housing residences in Winnipeg.

Of relevance to the selection process are the findings of an exploratory analysis comparing the availability of services to senior housing projects in Winnipeg with contrasting local neighbourhood environments (Smith, Sylvestre, & Ramsay, 2002). The findings of Smith, Sylvestre, and Ramsay (2002) suggest that older persons living in government-subsidized senior housing projects located in the inner city typically enjoy greater proximity to most of the key services. In comparison to the suburban areas of Winnipeg, the inner city includes several "service-rich"

neighbourhoods that include medical facilities and the city's main concentration of retail outlets in the downtown area. However, since the construction of social housing for seniors in the 1970s and 1980s, the availability of services in some deteriorating areas in the inner city has decreased with the closures of various businesses including banks and grocery stores (Smith et. al., 2002, p.33). There is also a greater sense of insecurity in inner city areas that may hinder an older person's access to their service and social environments. In contrast, many seniors of higher socio-economic status prefer to remain in suburban locations because these areas are considered to be safe environments and the provision of service resources has increased in recent years. Unfortunately, from the perspective of senior housing project residents with limited mobility, these services are generally concentrated in shopping malls and "big box" stores that are only accessible by motor vehicle.

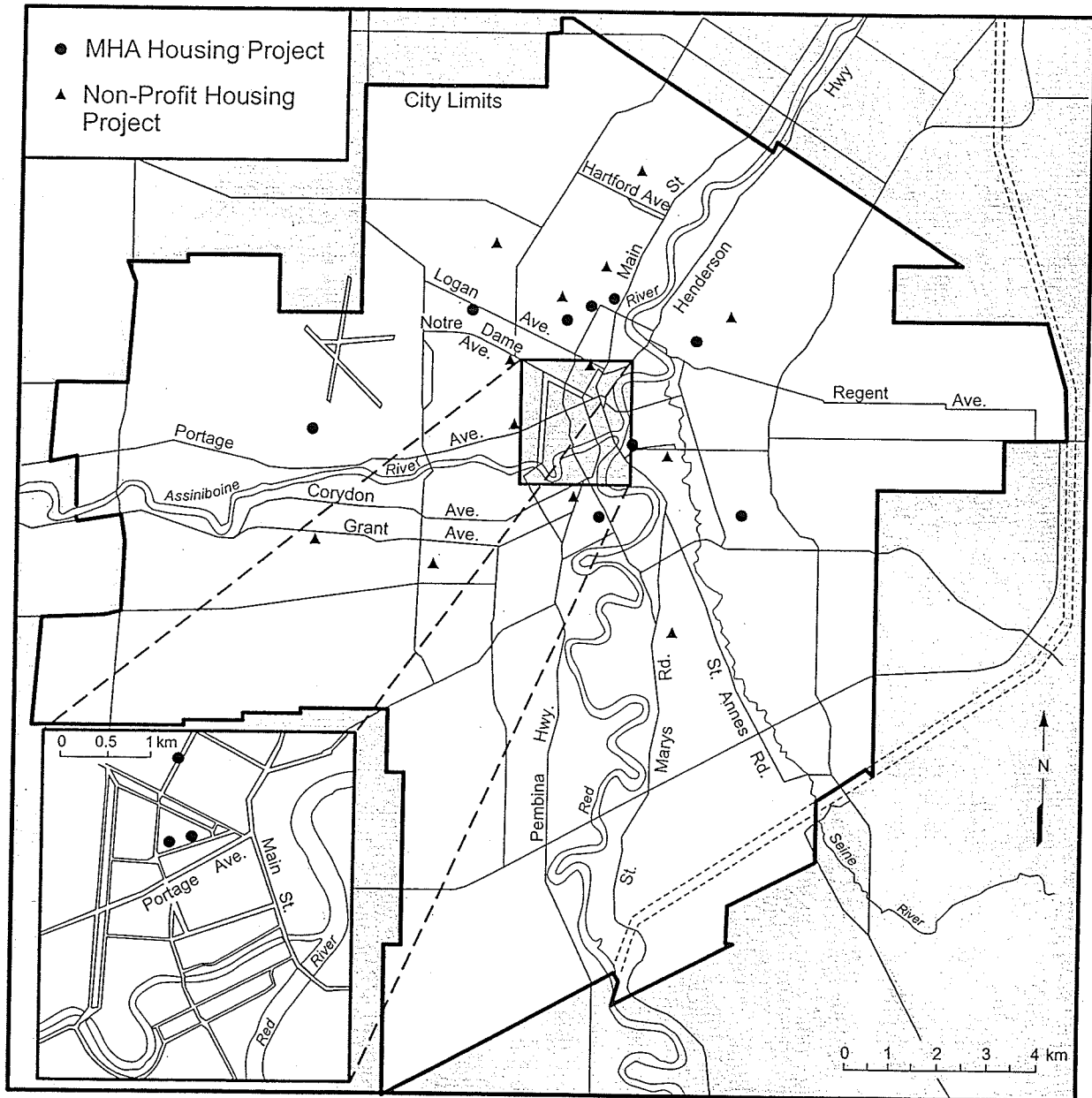
The above findings indicate that the location of the government-subsidized senior housing projects in Winnipeg provide older tenants with variable access to social and service environments. As a result, it was deemed important to select a locationally representative sample of senior housing projects from the entire city. It was therefore decided that approximately equal numbers of senior housing projects would be selected in the inner city and suburbs for the study. The distinction between the inner city and suburbs of Winnipeg is based on Ley's (1991) general criteria for an inner-city definition. Accordingly, the inner city of Winnipeg is comprised of Forward Sortation Units (FSU) that have 35 percent or more of the housing stock constructed prior to 1946. On this basis, using data from Statistics Canada (1997), it was determined that the inner city consists of six central FSUs that include the downtown

area. The remainder of the city contains the suburbs represented by 29 FSUs with more than 65 percent of housing stock constructed between 1946 and 1996.

The inner city/suburb division is used to ensure the selection of a locationally representative sample of the government-subsidized senior housing projects in Winnipeg. Of the total number of senior housing projects in Winnipeg, 39 are located in the inner city, while 59 are found in suburban locations. It was considered desirable to include broadly similar numbers of inner city and suburban projects on account of variations in the local neighbourhood environments typically associated with each of these "locational types". On this basis, 25 projects were selected with 13 projects in the inner city and 12 in suburban areas (Figure 4.2). The disproportionate number of projects in the inner city is justified on the grounds that meaningful inner city/suburb comparisons are desirable.

The 25 sample projects contain 2,971 units or 32.6 percent of the total number of government-subsidized senior housing units found in Winnipeg. The addresses of the projects are listed in Table 4.1 together with the ownership category and the inner city/suburb locational zone. The selected survey projects include MHA sponsored and non-sponsored buildings, as well as non-profit housing. Specifically, the survey inner city projects include 7 MHA non-sponsored (e.g. MHA, 817 Main St.), 4 MHA sponsored (e.g. Canadian German Society, 595 Mountain Ave.), and 2 non-profits projects (e.g. St. Andrew's Place, 425 Elgin Ave.). In addition, the survey housing projects in the suburbs include 6 projects owned and managed by MHA (e.g. MHA, 601 Osborne St.), 4 projects owned by MHA and operated by a non-profit organization (e.g. Kildonan Horizons, 505 Munroe Ave.), and 2 projects owned and

Figure 4.2: Government-Subsidized Senior Housing Projects In Winnipeg Selected for the Study



Source: Age and Opportunity, 1999

operated by non-profit organizations (e.g. Columbus Manor, 303 Goulet St.). Figure 4.2 illustrates the location of the 25 selected housing projects in Winnipeg.

**Table 4.1. Government-Subsidized Senior Housing, Projects Selected for the Study**

| <b>Project</b>  | <b>Ownership Category</b> | <b>Zone</b> |
|-----------------|---------------------------|-------------|
| 444 Kennedy     | MHA non-sponsored         | Inner City  |
| 385 Carlton     | MHA non-sponsored         | Inner City  |
| 817 Main        | MHA non-sponsored         | Inner City  |
| 425 Elgin       | Non-Profit                | Inner City  |
| 533 Greenwood   | Non-Profit                | Inner City  |
| 269 Dufferin    | MHA non-sponsored         | Inner City  |
| 595 Mountain    | MHA sponsored             | Inner City  |
| 880 Arlington   | MHA sponsored             | Inner City  |
| 145 Powers      | MHA non-sponsored         | Inner City  |
| 470 Pacific     | MHA non-sponsored         | Inner City  |
| 114 McGregor    | MHA sponsored             | Inner City  |
| 97 Keewatin     | MHA sponsored             | Inner City  |
| 515 Elgin       | MHA non-sponsored         | Inner City  |
| 601 Osborne     | MHA non-sponsored         | Suburb      |
| 101 Marion      | MHA non-sponsored         | Suburb      |
| 505 Munroe      | MHA sponsored             | Suburb      |
| 400 Stradbrook  | MHA sponsored             | Suburb      |
| 53 Stadacona    | MHA non-sponsored         | Suburb      |
| 125 Carriage    | MHA non-sponsored         | Suburb      |
| 875 Elizabeth   | MHA non-sponsored         | Suburb      |
| 60 Chesterfield | MHA non-sponsored         | Suburb      |
| 253 Edgeland    | MHA sponsored             | Suburb      |
| 865 Sinclair    | MHA sponsored             | Suburb      |
| 303 Goulet      | Non-Profit                | Suburb      |
| 525 Cathcart    | Non-Profit                | Suburb      |

#### 4.2 Survey Design

The study involves two interview surveys of recent movers to government-subsidized senior housing projects in Winnipeg, Manitoba. For each interview survey, the data were obtained by administering a questionnaire to residents of the 25 survey projects. This section involves an overview of the longitudinal survey design, together with the content of the questionnaires that were administered in the longitudinal surveys.

The surveys for the study were designed to collect data on the respondent's socio-demographic characteristics, personal resources including health and physical functioning measures, as well as personal state outcomes including levels of morale, depression, self-esteem, and control. In addition, data were obtained concerning the respondent's out-of-home travel patterns, social interaction, and evaluations and utilization of the local physical and service environments.

The interviews were designed to yield two waves of data. The first data wave was based on information elicited by the Survey 1 questionnaire that focuses on movers from conventional housing in the community to a government-subsidized senior housing project who had resided at the project for a minimum of one month and maximum of one year. The Survey 1 questionnaire garnered data from each respondent relating to (a) the residential setting immediately prior to the move, and (b) the current residential setting of the government-subsidized senior housing project. The questionnaire included a series of structured and open-ended questions relating to the personal characteristics, behaviours, evaluations of components of the environmental context of the residential setting, and personal state outcomes of the recent movers (Appendix A.5).

The second wave of data was collected in order to examine the subsequent circumstances and adjustment of the respondents interviewed in Survey 1. The second wave of data was based on information elicited by the Survey 2 questionnaire. Specifically, Survey 2 was comprised of follow-up interviews of Survey 1 respondents who had remained at the same project one year after the completion of the first interview. The Survey 2 questionnaire contained similar questions that were

administered in Survey 1 relating to the respondent's personal characteristics, personal outcomes, as well as the environmental context (Appendix B.3). However, the Survey 2 questionnaire gathered data relating only to the respondent's current residential setting (i.e., the government-subsidized senior housing project). Therefore, the data from the two surveys allowed the respondent to be tracked through three specific points in time. In Survey 1, the retrospective data was associated with the previous residential setting (Time 1). It should be noted that while respondents were asked to rate their health status in relation to their circumstances prior to moving, the remaining personal state outcomes (morale, depression, self-esteem, and desired control) were not measured retrospectively. Data associated with the remainder of the time period of the study relate to the senior housing project setting at the time of the first survey (Time 2), and at the time of the second survey approximately one year later (Time 3). The following sub-sections provide an overview of the response formats and instruments included in the questionnaires administered in each of Survey 1 (Appendix A.5) and Survey 2 (Appendix B.3).

#### **4.2.1 Personal Characteristics**

The Survey 1 and Survey 2 questionnaires contain a series of questions related to the respondent's socio-demographic and residential characteristics. Structured questions were included in both surveys to determine the respondent's gender, age, marital status, living arrangements, education, and income. The questionnaires also elicited information regarding the respondent's access to transportation resources. In



terms of the residential characteristics of the respondent, the Survey 1 questionnaire included questions to determine the location of, and length of residence at, the previous address of the respondent immediately prior to the move to the senior housing project. Both questionnaires included questions concerning the respondent's length of residence in (a) Winnipeg, and (b) at the senior housing project at the time of the interview. Finally, both questionnaires contained a series of open-ended questions that elicited comments from the respondents regarding their satisfaction with the move and the surrounding social and service environments, as well as the advantages and disadvantages of living in a government-subsidized senior housing project.

#### **4.2.2 Personal Resources**

Three instruments were included in the Survey 1 and Survey 2 questionnaires to assess both the physical health and functional ability of the respondents. The first measure was a standardized instrument used to elicit the number of chronic conditions experienced by the respondent. Functional ability was measured using two instruments that respectively evaluate activities of daily living (ADLs) (Katz, Ford, Moskowitz, Jackson, Jaffe, and Cleveland, 1963), and instrumental activities of daily living (IADLs) (Lawton & Brody, 1969). Both retrospective (Time 1) and current (Time 2) data concerning the health and functional status of the respondents were elicited by the Survey 1 questionnaire. The Survey 2 questionnaire only elicited data on health and functional status at the current time (Time 3). An expanded description of each of these three instruments is presented below. In addition, open-ended

questions were included to determine whether the respondent had experienced any changes in his/her health immediately after the move, as well as during the one-year period between surveys.

#### **4.2.2.1 Chronic Conditions**

The measurement of chronic conditions included in the present study was based on a summative instrument developed for the United States Health Insurance Study (U.S. National Center for Health Statistics, 1957). It is a standardized measurement instrument used in most gerontological research (Smith & Kingston, 1997). Respondents were first provided with a list of 18 health conditions and requested to indicate whether they had experienced each of these conditions within the past year. The measure of chronic conditions was then obtained by summing the number of conditions indicated. Although some of the conditions are more serious than others, it is generally believed that a greater number of reported conditions are indicative of both poorer health status and quality of life of the individual. Both acute and chronic conditions are included in the measure. The acute conditions are cancer, heart disease, high blood pressure, stroke, diabetes, and kidney disease. The chronic conditions are allergies, arthritis, palsy, trouble with eyes and ears, respiratory difficulty, as well as dental, stomach, foot, nerve, skin, and hip problems (Ferraro & Su, 2000).

#### **4.2.2.2 Activities of Daily Living**

In past research, the measurement of physical functioning initially employed impairment scales (McDowell & Newell, 1996). However, as it became important to measure both disability and handicap attention shifted to considering the activities that a person could or did perform. Accordingly, assessments of an individual's activities were developed to measure physical disability. Katz's (1963) Index of Activities of Daily Living (ADL) is an example of this type of measurement. Katz developed the Index to study the effects of treatment on the elderly and chronically ill. He selected activities that represent primary biological functions to be included in the Index. Based on Katz's (1963) Index of ADLs, the activities included in the present study were: eating, dressing, ability to walk, getting about the house, climbing stairs, getting in and out of bed, bathing, going to the washroom, ability to go outdoors in good weather or any weather, and foot care. A gradient scale was utilized to measure the level of functional independence of respondents when performing the activities (Lawton & Brody, 1969). Specifically, on a five-point scale respondents were asked to rate their ability to perform these activities independently with values ranging from "without any help" (1) to "unable to do it" (5).

#### **4.2.2.3 Instrumental Activities of Daily Living**

The ADL scales are concerned with more severe levels of disability relevant mainly to institutionalized patients and to the elderly. During the 1960s and 1970s, the ADL concept was extended to consider instrumental problems more typically experienced by those living in the community. Lawton and Brody (1969) developed

the scale, Instrumental Activities of Daily Living (IADL), in order to assess the instrumental competence of the older population. In an approach that was similar to that used to formulate Katz's (1963) Index of ADLs, Lawton and Brody's (1969) IADL scale is based on the theory that human behaviour can be ordered in a hierarchy of complexity required for functioning in a variety of tasks. In relation to the present study, the following tasks from Lawton and Brody's (1969) IADL scale were included: ability to use the phone, shopping, food preparation, light housekeeping, heavy housework, able to go to places out of walking distance, responsible for own medication, and ability to handle finances. Once again, respondents were asked to rate their ability to perform these activities on a five-point scale with values ranging from "without any help" (1) to "unable to do it" (5).

#### **4.2.3 The Physical Environment**

The Survey 1 and Survey 2 questionnaires included a series of questions relating to the physical environment of the residence and the surrounding neighbourhood. Nine items represented characteristics of the physical environment and included privacy, sidewalk conditions, safety from traffic, security from crime, neighbourhood noise, snow removal, types of neighbours, access to shops and services, and public transportation. Respondents were first asked to rate the salience or importance of each of these physical characteristics on a five-point scale ranging from "very unimportant" (1) to "very important" (5). Additionally, they were asked to rate their satisfaction with their residential setting in terms of each of these physical characteristics on a five-point scale that ranges from "bad" (1) to "excellent" (5). The

ratings of the physical environment were based on the respondents' salience and satisfaction levels with each of the previous and current residential settings, in the Survey 1 questionnaire, and the current residential setting only in the Survey 2 questionnaire. In both surveys, respondents were also asked to comment freely on any changes that occurred in their satisfaction with the physical environment.

#### 4.2.4 The Social Environment

Data were elicited in both Survey 1 and Survey 2 regarding access to, and activities in, the social environment. First, respondents were asked to rate the salience of the closeness of (a) friends, and (b) relatives, to the place of residence on a five-point scale ranging from "very unimportant" (1) to "very important" (5). In addition, they were requested to rate their satisfaction with closeness to each of family and friends on a seven-point scale ranging from "very dissatisfied" (1) to "very satisfied" (7).

Questions were also posed to determine the location of the respondent's friends, children, and other family members both within and outside Winnipeg. With regard to the respondent's spatial proximity to family members and friends, distance data were determined using *Maptitude*<sup>5</sup> which calculates actual street distances in Winnipeg. For locations outside of the city, provincial, national, and international maps were used to determine straight-line distances from Winnipeg. Distance data were calculated in relation to spatial separation of family members and friends for (a) the previous residence, and (b) the housing project. As relatively few changes in the

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<sup>5</sup> *Maptitude Geographic Information System, Version 3.0.* Boston, MA: Caliper Corporation, 1998.

addresses of family members and friends occurred between Time 2 and Time 3, it was decided that a separate distance data set for Time 2 would be unnecessary.

The respondent's interaction in the social environment was evaluated by a series of questions related to the frequency of contact with friends and family. Respondents were asked to indicate the frequency of visits with family (i.e., children, siblings, other family members) and friends based on a single eight-point scale that ranges from "never" (1) to "at least once per day" (8). For the analysis, these scores were converted into the number of days per year (e.g., once per week is equivalent to 52 days per year). The questionnaires also collected data concerning the type of transportation utilized by the respondents to access their social environment. Specifically, respondents were asked to indicate the frequency of use of each of seven transport modes (car driver, car passenger, public transit, handi-transit, walk, cycle, taxi) used to travel to the homes of family and friends on an eight-point scale ranging from "never" (1) to "at least once per day" (8). Respondents were also asked to provide information on the age, gender, and marital status of their friends and family. Finally, open-ended questions were included in the questionnaires to determine whether respondents experienced changes in either (a) the frequency of visits with friends and family members, or (b) use of transport modes to access the social environment.

The information gathered in the questionnaires regarding the social environment related to each of the previous residence (Time 1) and the current residence (Time 2) in Survey 1, and only at the current residence in Survey 2 (Time 3). Both the Survey 1 and Survey 2 questionnaires also included questions concerning the number of

friends that the respondent had within the senior housing project at Time 2 and Time 3 respectively.

#### 4.2.5 The Service Environment

The Survey 1 and Survey 2 questionnaires also collected information related to accessibility of, and activities in, the service environment. The two questionnaires both elicited ratings of salience and satisfaction in terms of the closeness of the place of residence to nine services including a grocery store, a pharmacy, a bank, a doctor, a hospital, a shopping centre, the public transit, entertainment outlets, and restaurants. To elicit the salience ratings, respondents evaluated the importance of each of these service sites on a five-point scale ranging from “very unimportant” (1) to “very important” (5). Respondents also rated their satisfaction with proximity to these sites on a seven-point scale that range from “very dissatisfied” (1) to “very satisfied” (7).

Using structured response formats, respondents were also asked to state the locations of services and recreational opportunities that they utilize in the local neighbourhood. Distance from the senior housing project to these services was determined using Maptitude, Version 3.0 (1998) to calculate street distances.<sup>6</sup> Furthermore, the questionnaires posed questions regarding the respondent’s frequency of trips to these services and recreational outlets. An eight-point response format was provided with selections that range from “never” (1) to “at least once per day” (8).

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<sup>6</sup> Proximity to the nearest bus stop was calculated using Winnipeg Transit’s Navigo On-Line Trip Planner system that provides itinerary schedules. The schedule provides detailed information including the number of minutes required to walk from the specified address to the nearest bus stop.

The Survey 1 and Survey 2 questionnaires also obtained information regarding the type of transportation used to access the service environment. Respondents were first requested to indicate the type of transportation mode (car driver, car passenger, public transit, handi-transit, walk, cycle, taxi) utilized to access the service sites. They were then requested to indicate the frequency of use of each transport mode on an eight-point scale ranging from “never” (1) to “at least once per day” (8). Respondents were also asked to comment freely on any changes that had occurred in either the frequency of visits to sites or the type of transportation used to access the service environment.

Data on components of the service environment were elicited in terms of each of the previous residence (Time 1) and the current residence (Time 2) in Survey 1, as well as at the current residence in Survey 2 (Time 3). In both surveys, respondents were also asked about their current use of services offered within the senior housing project including congregate meal programs, recreational activities, and medical services. In addition, they were asked to provide open-ended responses regarding the contribution of these services to their independence.

#### **4.2.6 Personal State Outcomes**

Survey 1 and Survey 2 questionnaires both included instruments to measure the current personal state outcomes of the respondent. The instruments chosen relate to the indicators specified by Golant (1998) that include intra-psychic well-being, general health, and control over life and the environment. Specifically, the instruments determine the self-rated health, morale, depression, self-esteem, and



desired control of respondents. First, the health measure was based on the respondent's self-reporting of health status. The Philadelphia Geriatric Center Morale Scale (Lawton, 1975) was used as an instrument to measure morale, while the Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977) determined the level of depression of an older person. Additionally, the self-esteem of older movers was measured by the Bachman revision (1970) of Rosenberg's self-esteem scale. Finally, control was measured by the administration in the surveys of Reid and Zeigler's (1981) Desired Control scale. In Survey 1, respondents were asked to rate their health both at the previous address (Time 1) and at the current residence (Time 2), while in Survey 2 this rating was applied to the current housing project (Time 3). In contrast, the four scales measuring morale, depression, self-esteem, and control were administered to the respondents in Survey 1 and Survey 2 to elicit personal state outcomes at the current residence (Time 2 & Time 3), they did not elicit retrospective data relating to the previous address (Time 1). Descriptions of each of the scales measuring the personal state outcomes are summarized below.

#### **4.2.6.1 Self-Rated Health**

Self-rated health was measured in the surveys by a global question that elicits self-reports of health status. Frequently used as an assessment of overall health, a single-item question elicits self-reports of health status (Liang, 1986). Respondents were asked to rate their overall health based on a five-point scale ranging from "bad" (1) to "excellent" (5).

#### **4.2.6.2 The Philadelphia Geriatric Center (PGC) Morale Scale**

The Philadelphia Geriatric Center (PGC) Morale Scale (Lawton, 1975) determines the life satisfaction of respondents. It has been widely used as a multidimensional measure of the subjective well-being of the elderly. The PGC Morale Scale was developed in the context of elderly housing research (Lawton, 1972; Morris & Sherwood, 1975) and has been used in a wide variety of gerontological studies (e.g., Kim & Moen, 2002; Martin, Grunendahl, & Martin, 2001). The scale contains 17 items that measure morale on three subscales (derived from factor analyses): agitation, attitude toward own aging, and lonely dissatisfaction (Lawton, 1975). Responses to the scale items are based on a yes/no format. An earlier 22-item version of the scale (Lawton, 1972), test-retest reliabilities of 0.75 and 0.80 were reported for two samples (Kane & Kane, 1981).

#### **4.2.6.3 The Center for Epidemiological Studies Depression Scale**

Depressive symptoms were evaluated using the Center for Epidemiological Studies Depression Scale (CES-D) developed by Radloff (1977) to identify depression in the general population. The scale includes 20 items that subsume affective components including depressed mood, feelings of guilt and worthlessness, and feelings of helplessness and hopelessness. A four-point response format ranging from "rarely or none of the time" (0) to "most or all the time" (3) is used to indicate the occurrence of 20 depressive symptoms in the past week. The items for the CES-D scale were selected from existing scales, including Beck's Depression Inventory (BDI), Zung's Self-Rating Depression Scale (SDS), Raskin's Depression Scale, and

the Minnesota Multiphasic Personality Inventory (McDowell & Newell, 1996). Radloff (1977) reports alpha coefficients of 0.85 for reliability, while the scale has been found to have a high level of validity compared to other scales (McDowell & Newell, 1996).

#### **4.2.6.4 Bachman's Revision of Rosenberg's Self-Esteem Scale**

Self-esteem is an important coping resource (van Baarsen, 2002) that is regarded as either an indicator or facilitator of adaptation in a new residential setting. The Bachman revision (1970) of Rosenberg's (1965) Self-Esteem Scale is a widely used unidimensional measure of global self-esteem. The scale consists of ten items with a yes/no response format. It has a reported reliability of 0.75 and high construct validity (Bachman & O'Malley, 1977). The scale is a composite of two measures respectively comprised of (i) six items from Rosenberg's (1965) original Self-Esteem Scale, and (ii) four replacement items (Bachman, 1970; Bachman & O'Malley, 1977) from an attitude scale devised by Cobb and his colleagues (1966). Two first-order factors are yielded in the scale: usefulness/competence and positive self-regard. It has been suggested that Bachman's Revision of Rosenberg's Self-Esteem Scale is particularly applicable to the measurement of self-esteem of older adults because the desire to feel useful is considered to be an important source of their psychological well-being (Ranzijn, Keeves, Luszcz, & Feather, 1998).

#### 4.2.6.5 Reid and Zeigler's Desired Control Scale

Reid and Zeigler (1981) propose that a greater sense of control enables older people to recognize an association between what they do and the positive reinforcements that they receive. In the context of the present study, the subject's personal control beliefs represent one component of his/her personal state outcomes in association with a changed residential setting (Golant, 1998). Using Rotter's social learning theory (Rotter, 1954, 1966, 1972) as a conceptual basis, Reid and Zeigler (1981) developed a scale that measures both the desire and expectancy of the older person for obtaining a series of reinforcements. Specifically, Reid and Ziegler's (1981) Desired Control Scale contains two parallel sets of 35-items that measure Desire and Expectancy. Desire items measure the degree to which an individual desires particular reinforcements, while Expectancy items measure the extent to which the individual feels that he or she can obtain these particular reinforcements. The present study employed a short-form version of the instrument that includes parallel sets of 16 items that each measure Desire and Expectancy. Items measuring Desire utilize a five-point response format that ranges from "very undesirable" (1) to "very desirable" (5). Items measuring Expectancy range from "strongly disagree" (1) to "strongly agree" (5). A high degree of internal consistency is maintained for the short-form version, with alpha values of 0.73 and 0.76 registered for Desire and Expectancy respectively (Reid & Ziegler, 1981).

### 4.3 Sample Design and Data Collection Procedures

This section provides a description of the sample design and data collection procedures utilized in the study. The section commences with an explanation of the process used to select respondents for inclusion in the study. This is followed by an overview of the conduct of both Survey 1 and Survey 2.

For the present study, the research population includes individuals 55 years of age and over. Although age 65 is generally considered to be the marker for studies of aging populations, it is notable that Neugarten (1978) identified 55 years to be a meaningful lower age limit to define the aging population. In the context of the present study, the age of 55 years was deemed to be a more appropriate baseline for defining "persons of older age" as many older adults seek accommodation in government-subsidized senior housing prior to attaining 65 years of age.

In relation to Survey 1, persons 55 years of age and over who had moved from the community within the past year to one of the 25 selected government-subsidized senior housing projects were initially eligible for inclusion. To ensure that residents had at least some familiarity with service and social environments proximate to the housing project, it was decided to exclude from the survey any person who had not resided in the project for at least one month. On this basis, recent movers were operationally defined as those who had resided at the housing project between one and twelve months. The listings of recent movers to the 25 senior housing projects were obtained by contacting the appropriate housing authorities. In the case of non-sponsored Manitoba Housing Authority projects, a letter was first sent to the Director of the Manitoba Housing Authority (MHA) to obtain approval to interview tenants

(Appendix A.2). For both sponsored Manitoba Housing Authority projects and non-profit housing projects, the managers of the buildings were contacted directly to request their cooperation in providing the names of new tenants in the spring of 1999.

Information concerning the research was distributed to the MHA Director, as well as project managers for those buildings that were not managed by the housing authority. A letter (Appendix A.3) was sent to them explaining the research and requesting their assistance. They were also provided with a copy of the cover letter (Appendix A.4) that was to be sent to residents defined as "recent movers". In addition, a copy of the Survey 1 questionnaire was included to outline the nature of the data that would be elicited from the respondents (Appendix A.5).

The project managers were asked to provide a list of names of "recent movers" to their buildings according to the following eligibility criteria. First, eligible residents were defined to be 55 years of age and over and living the lifestyle of a senior, that is, not in the paid labour force. Second, eligible residents must have moved into the building between May, 1998, and May, 1999.

Members of a total of 435 households (253 in inner city projects and 182 in suburban projects) in the 25 selected senior housing projects were identified to be "recent movers" on the basis of the stated eligibility criteria. Once households were identified, the cover letter of introduction was forwarded (Appendix A.4). This letter requested the participation of one member of the household in the research program. It briefly described the research and outlined the type of information that would be requested during the interviews. The households were assured that their answers would be treated with the strictest confidence and that participation in this study

would not affect their tenancy in the senior housing project. In addition, the letter affirmed that the management of their project supported the study. In the case of 19 households that included two persons eligible for inclusion in the survey, the person who had initial contact with the interviewer was asked to complete the interview.

Three interviewers with extensive experience interviewing older adults were employed to conduct the interviews. Approximately one week after the introductory letter was sent to a senior housing project, the interviewers attempted to contact the eligible resident either by phone or in-person if a telephone number was not available. Attempts were made to contact selected residents at least four times if necessary. Once the individual had been contacted, an appointment was arranged for a personal interview. Interviews were conducted in either the respondent's apartment or in the lounge area of the building. The administration of the questionnaire in Survey 1 took approximately one hour to complete on average (Appendix A.5). Overall the survey was completed within a period of approximately five months (June-November, 1999). The extended period required to complete Survey 1 reflects the time that was necessary for all of the housing managers to provide the names of eligible residents.

Prior to commencing the Survey 1 interview, signed consent was obtained from the respondent in the form of his/her signature on the consent form attached to the introductory letter (Appendix A.4). The interview was initiated with an explanation of the purpose of the study. The respondent was then advised that he or she was not obligated to answer any questions and could terminate the interview at any time. The questionnaire contained two screening questions to confirm that the eligibility requirements had been fulfilled, i.e. that the respondent was 55 years of age or older

and had lived in the senior housing residence for more than one month and less than one year. If these requirements were not satisfied, the interview was immediately terminated. Within one week of the completion of the Survey 1 interview, a letter of thanks was sent to the participants (Appendix A.6). In this letter, the respondents were reminded that a second survey would be conducted the following year.

Survey 2 commenced in June of 2000. The Director of MHA and the project managers were first sent a letter to remind them of the study and that the interviewers would be returning to the senior housing projects. Letters were then sent to the addresses of respondents who completed the Survey 1 questionnaire requesting their participation in the second survey (Appendix B.1). In order to ensure that the second survey was conducted approximately one year after the first survey, the date on which each of these letters was sent corresponded with the one-year marker of the date of the Survey 1 interview. The letters were sent to the addresses that the respondents occupied at the time of Survey 1. If the letter was returned by the post office as undeliverable, the last-known telephone number was called. If the interviewer could not locate the respondent, the caretaker, project manager, or tenant resource worker was contacted to determine his or her whereabouts. If the respondent had moved, no other attempt was made to contact that person because only those remaining in the senior housing project were eligible for re-interview in Survey 2. For those who could not be contacted but were still living in the senior housing project, the interviewers attempted to contact the respondent by either telephone or in-person at least four times if necessary.



The same interviewing team conducted the follow-up interviews (Survey 2). Once again, consent to participate in the survey was obtained from the respondent in the form of a signature on the Survey 2 consent form (Appendix B.2). Respondents were again informed that there was no obligation to answer any questions and that the interview could be terminated at any time. In common with the Survey 1 interviews, interviews for Survey 2 were typically completed within approximately one hour (Appendix B.3). In order that respondents were interviewed one year after Survey 1 was conducted, Survey 2 also took five months to complete (June-November, 2000). Approximately one week after Survey 2 was completed, a final letter of thanks (Appendix B.4) was sent to the respondents.

#### **4.4 Response Rates**

For each survey, the response rate for the entire sample is first discussed followed by a comparison of the response rates for the inner city and suburban sub-groups. Selected socio-demographic characteristics of the Survey 1 and Survey 2 samples are then compared with those of the older population of Canada. This is followed by a comparison of the Survey 1 and Survey 2 samples with reference to those respondents who did not complete the second survey.

Of the 435 individuals who were initially contacted to participate in the study, a total of 242 respondents fully completed the Survey 1 questionnaire, thus representing an overall response rate of 55.6 percent. Table 4.2 illustrates that the overall response rate for Survey 1 was depressed in part by potential respondents who could not be contacted (15.6 percent) or had already moved (3.0 percent). A further 12.2 percent

of potential respondents were found to be ineligible through telephone and interview screening (i.e., they were either too young or had lived in the building more than one year when contacted). Of the 10.4 percent of the potential respondents who refused to be interviewed, 7.4 percent were not interested, while 3.0 percent were too ill. A further 3.2 percent were either cognitively impaired or could not speak English.

**Table 4.2. Response Rate and Reasons for Non-Responses, Survey 1 (N = 435)**

| <b>Status of Subject</b>                           | <b>% (n)</b> |
|--|--------------|
| <i>Completed Interview</i>                         | 55.63 (242)  |
| <i>Refused, not interested</i>                     | 7.36 (32)    |
| <i>Refused, too ill</i>                            | 2.99 (13)    |
| <i>Unable to Contact</i>                           | 15.63 (68)   |
| <i>Moved from Building</i>                         | 2.99 (13)    |
| <i>Cognitive Impairment</i>                        | 1.84 (8)     |
| <i>Could not speak English</i>                     | 1.38 (6)     |
| <i>Ineligible, too young</i>                       | 7.82 (34)    |
| <i>Lived in building &lt;1 month or &gt;1 year</i> | 4.37 (19)    |

Survey 1 respondents included 135 inner city residents and 107 suburban residents, representing response rates of 53.4 percent and 58.8 percent respectively (Table 4.3). Table 4.3 also includes the breakdown of the reasons of non-responses for potential respondents in each of the inner city and suburbs. With regard to non-responses of the two locational subgroups, a notable contrast concerns the higher percentage of potential respondents in the inner city (19.4 percent) who could not be contacted compared to potential respondents in the suburbs (10.4 percent).

Interviewers encountered greater difficulties contacting individuals in the inner city as many of the potential respondents did not have telephones and could not be located when the interviewer visited the housing project. Otherwise, the percentage frequencies of "non-response reasons" for each of the inner city and suburban sub-

samples are broadly similar to the pattern of frequencies recorded for the entire sample.

**Table 4.3. Inner City versus Suburbs: Response Rates and Reasons for Non-Responses, Survey 1**

| Status of Subject                  | Inner City (N=253)<br>% (n) | Suburbs (N=182)<br>% (n) |
|------------------------------------|-----------------------------|--------------------------|
| <i>Completed Interview</i>         | 53.36 (135)                 | 58.79 (107)              |
| <i>Refused, not interested</i>     | 6.72 (17)                   | 8.24 (15)                |
| <i>Refused, too ill</i>            | 1.98 (5)                    | 4.40 (8)                 |
| <i>Unable to Contact</i>           | 19.37 (49)                  | 10.44 (19)               |
| <i>Moved from Building</i>         | 3.56 (9)                    | 2.20 (4)                 |
| <i>Cognitive Impairment</i>        | 1.19 (3)                    | 2.75 (5)                 |
| <i>Could not speak English</i>     | 1.98 (5)                    | 0.55 (1)                 |
| <i>Ineligible, too young</i>       | 8.30 (21)                   | 7.14 (13)                |
| <i>Ineligible, bldg &gt;1 year</i> | 3.56 (9)                    | 5.49 (10)                |

A comparison of Survey 1 sample data and census data was conducted in order to determine whether the sample was representative of the older population of Winnipeg and of Canada in 2001 in terms of age, gender, and marital status (Statistics Canada, 2001a; Statistics Canada, 2001b). Table 4.4 reveals that the entire sample closely reflected the older population of Winnipeg and Canada in relation to age and gender. However, some small differences are registered that are of interest. While persons age 65 to 74 were under-represented in the entire sample, the slight over-representation of the 55 to 64 years age group may reflect the requirement that sample members be limited to new tenants of senior housing projects who had recently lived in the community. Consequently, many of these first-time tenants were "young-old" adults who moved to government-subsidized housing in order to obtain affordable housing. It is also interesting to note the slight over-representation of those 85 and over in the Survey 1 sample. It is possible that this reflects the fact that the aging

process creates the need for the “oldest-old” individuals to seek more supportive residential environments as they experience decrements in their social, financial and physical resources (Beland, 1984; Everitt & Gfellner, 1996; Gutman, 1980; Leung, 1992; Mercer, 1979; Wiseman, 1980). Table 4.4 also discloses a slight over-representation of females in the Survey 1 sample relative to the older population of Canada. As previously noted (Beland, 1984; Kanaroglou & Diegel, 1990; Meyer & Speare, 1985; Smith, 1998a; Varady, 1984), older females are more likely than older males to be over-represented in government-subsidized senior housing.

**Table 4.4. Age, Gender, and Marital Status of the Older Population (55 years and over) of Canada, Winnipeg, and the Survey 1 Sample**

|                       | Canada<br>(N=6,846,789)<br>% (n) | Winnipeg<br>(N=141,885)<br>% (n) | Sample<br>(N=242)<br>% (n) |
|-----------------------|----------------------------------|----------------------------------|----------------------------|
| <b>Age</b>            |                                  |                                  |                            |
| 55-64                 | 42.64 (2,919,129)                | 38.25 (54,265)                   | 45.87 (111)                |
| 65-74                 | 31.47 (2,154,608)                | 30.63 (43,460)                   | 25.62 (62)                 |
| 75-84                 | 19.61(1,342,523)                 | 22.87 (32,455)                   | 18.60 (45)                 |
| 85+                   | 6.29 (430,529)                   | 8.25 (11,705)                    | 9.92 (24)                  |
| <b>Gender</b>         |                                  |                                  |                            |
| Male                  | 45.55 (3,118,679)                | 43.06 (61,100)                   | 42.98 (104)                |
| Female                | 54.45 (3,728,110)                | 56.94 (80,785)                   | 57.02 (138)                |
| <b>Marital Status</b> |                                  |                                  |                            |
| Married               | 65.48 (4,482,979)                | N/A                              | 11.98 (29)                 |
| Widowed               | 20.78 (1,422,547)                | N/A                              | 32.64 (79)                 |
| Single                | 6.05 (414,493)                   | N/A                              | 16.12 (39)                 |
| Divorced/Separated    | 7.69 (526,770)                   | N/A                              | 39.26 (95)                 |

Source: Statistics Canada (2001)

Table 4.4 discloses that the greatest differences between the older population of Canada and the study sample are in terms of marital status. Compared to Canadian seniors in general a much higher proportion of the entire sample was either widowed or separated or divorced. Only 12.0 percent of the study's Survey 1 sample was

married compared to 65.5 percent of the older population of Canada in 2001. This is clearly consistent with the findings of earlier work disclosing that most residents of government-subsidized senior housing are single (Beland, 1984; Kanaroglou & Diegel, 1990; Meyer & Speare, 1985; Smith, 1998a; Varady, 1984).

A total of 149 of the 242 respondents who completed Survey 1 also fully completed the Survey 2 interview, representing a follow-up response rate of 61.6 percent (Table 4.5). Table 4.5 also includes the reasons for the non-responses in Survey 2. Almost one-quarter of the respondents (22.3 percent) could not be re-interviewed as they had moved from the senior housing project in the year between surveys. In addition, 5.4 percent of respondents could not be contacted, while 4.6 percent of the Survey 1 sample refused to participate in the second survey. Non-responses were also the result of illness (2.5 percent) and death (3.7percent).

**Table 4.5. Response Rates and Reasons for Non-Responses, Survey 2 (N = 242)**

| <b>Status of Respondent</b>    | <b>% (n)</b> |
|--------------------------------|--------------|
| <i>Completed Interview</i>     | 61.57 (149)  |
| <i>Moved from Building</i>     | 22.31 (54)   |
| <i>Refused, not interested</i> | 4.55 (11)    |
| <i>Refused, too ill</i>        | 1.24 (3)     |
| <i>Hospitalized</i>            | 1.24 (3)     |
| <i>Deceased</i>                | 3.72 (9)     |
| <i>Unable to Contact</i>       | 5.37 (13)    |

A total of 78 inner city respondents and 71 suburban respondents completed the Survey 2 interview, thus representing response rates of 57.8 percent and 66.4 percent respectively (Table 4.6). The reasons for non-responses for both inner city and suburban respondents are also outlined in Table 4.6. The percentage frequency distributions of non-responses for the inner city and suburban sub-samples are fairly

similar, although the tendency for inner city respondents to be relatively mobile is underscored by the slightly higher percentage who had moved from the building since the first interview. As in Survey 1, a greater proportion of inner city respondents could not be contacted for Survey 2. In part, this again reflects the greater problems encountered by interviewers locating respondents in inner city locations primarily due to the lack of regular access to a telephone.

**Table 4.6. Inner City versus Suburbs: Response Rates and Reasons for Non-Responses, Survey 2**

| Status of Subject              | Inner City (N=135)<br>% (n) | Suburbs (N=107)<br>% (n) |
|--------------------------------|-----------------------------|--------------------------|
| <i>Completed Interview</i>     | 57.78 (78)                  | 66.36 (71)               |
| <i>Moved from Building</i>     | 23.70 (32)                  | 20.56 (22)               |
| <i>Refused, not interested</i> | 4.44 (6)                    | 4.67 (5)                 |
| <i>Refused, too ill</i>        | 0.74 (1)                    | 1.87 (2)                 |
| <i>Hospitalized</i>            | 0.74 (1)                    | 1.87 (2)                 |
| <i>Deceased</i>                | 5.19 (7)                    | 1.87 (2)                 |
| <i>Unable to Contact</i>       | 7.41 (10)                   | 2.80 (3)                 |

A comparison between the Survey 2 sample and census data was made in order to compare the sample to the population 55 years or older in Winnipeg and Canada in terms of age, gender, and marital status (Statistics Canada, 2001a; Statistics Canada, 2001b). Table 4.7 reveals that the Survey 2 sample was reasonably representative of the older population of both Winnipeg and Canada in terms of age and gender.

However, there are some moderate differences worthy of comment. First, there was an under-representation in the Survey 2 sample of persons between the ages of 65 and 74 and an over-representation of persons 75 years of age and over. In part, the differences reflect a tendency for some "old-old" people to move to more supportive housing environments in response to decrements in physical and financial resources

that may occur with advancing age. The differences in marital status are particularly notable as most sample members were single reflecting the typical profile of a tenant of low-income senior housing. In contrast, 65.5 percent of the Canadian population 55 years of age and over was married in 2001.

**Table 4.7. Age, Gender, and Marital Status of the Older Population (55 years and over) of Canada, Winnipeg and the Survey 2 Sample**

|                    | Canada<br>(N=6,846,789)<br>% (n) | Winnipeg<br>(N=141,885)<br>% (n) | Sample<br>(N=149)<br>% (n) |
|--------------------|----------------------------------|----------------------------------|----------------------------|
| <b>Age</b>         |                                  |                                  |                            |
| 55-64              | 42.64 (2,919,129)                | 38.25 (54,265)                   | 42.28 (63)                 |
| 65-74              | 31.47 (2,154,608)                | 30.63 (43,460)                   | 24.83 (37)                 |
| 75-84              | 19.61(1,342,523)                 | 22.87 (32,455)                   | 22.82 (34)                 |
| 85+                | 6.29 (430,529)                   | 8.25 (11,705)                    | 10.07 (15)                 |
| <b>Gender</b>      |                                  |                                  |                            |
| Male               | 45.55 (3,118,679)                | 43.06 (61,100)                   | 39.60 (59)                 |
| Female             | 54.45 (3,728,110)                | 56.94 (80,785)                   | 60.40 (90)                 |
| <b>Marital</b>     |                                  | N/A                              |                            |
| Married            | 65.48 (4,482,979)                |                                  | 7.38 (11)                  |
| Widowed            | 20.78 (1,422,547)                |                                  | 41.61 (62)                 |
| Single             | 6.05 (414,493)                   |                                  | 15.44 (23)                 |
| Divorced/Separated | 7.69 (526,770)                   |                                  | 35.57 (53)                 |

Source: Statistics Canada (2001)

While the response rate of 61.6 percent for Survey 2 is considered to be acceptable, the validity of the results could be questionable due to the attrition of 40 percent of the Survey 1 sample (Hennekens, Buring, & Mayrent, 1987). It is, therefore, important to compare socio-demographic and health-related characteristics of those respondents who participated in Survey 2 with (a) all respondents who participated in Survey 1, and (b) respondents who participated in Survey 1 only and were thus lost to attrition. According to Table 4.8, a comparison of the two groups reveals that the over-representation of females had increased slightly in the Survey 2 sample

**Table 4.8. Socio-Demographic, General Health, and Environmental Characteristics of Lost and Retained Respondents, Percentage Frequencies**

|                                     | Survey 2 Sample<br>(n = 149) | Survey 1 Lost<br>Respondents<br>(n = 93) | Survey 1 Sample<br>(n = 242) |
|-------------------------------------|------------------------------|--|------------------------------|
| <b>Age</b>                          |                              |  |                              |
| 55-64                               | 42.29 (63)                   | 51.61 (48)                               | 45.87 (111)                  |
| 65-74                               | 24.83 (37)                   | 26.88 (25)                               | 25.62 (62)                   |
| 75-84                               | 22.82 (34)                   | 11.83 (11)                               | 18.60 (45)                   |
| 84+                                 | 10.07 (15)                   | 9.68 (9)                                 | 9.92 (24)                    |
| <b>Gender</b>                       |                              |  |                              |
| Male                                | 39.60 (59)                   | 48.39 (45)                               | 42.98 (104)                  |
| Female                              | 60.40 (90)                   | 51.61 (48)                               | 57.02 (138)                  |
| <b>Marital Status</b>               |                              |  |                              |
| Single                              | 16.11 (24)                   | 16.13 (15)                               | 16.12 (39)                   |
| Widowed                             | 38.26 (57)                   | 23.66 (22)                               | 32.64 (79)                   |
| Divorced/separated                  | 36.24 (54)                   | 44.09 (41)                               | 39.26 (95)                   |
| Married                             | 9.40 (14)                    | 16.13 (15)                               | 11.98 (29)                   |
| <b>Education</b>                    |                              |  |                              |
| Elementary                          | 20.81 (31)                   | 21.51 (20)                               | 21.08 (51)                   |
| Secondary                           | 61.07 (91)                   | 65.59 (61)                               | 62.81 (152)                  |
| Trade/college                       | 10.07 (15)                   | 7.53 (7)                                 | 9.09 (22)                    |
| University                          | 8.05 (12)                    | 5.38 (5)                                 | 7.02 (17)                    |
| <b>Income</b>                       |                              |  |                              |
| <\$10,000                           | 49.66 (74)                   | 51.61 (48)                               | 50.41 (122)                  |
| \$10,000-\$19,999                   | 42.28 (63)                   | 41.94 (39)                               | 42.15 (102)                  |
| \$20,000-\$49,999                   | 8.05 (12)                    | 6.45 (6)                                 | 7.44 (18)                    |
| <b>Self-Rated Health</b>            |                              |  |                              |
| Excellent/good                      | 42.29 (63)                   | 33.34 (31)                               | 38.84 (94)                   |
| Fair                                | 38.26 (57)                   | 36.56 (34)                               | 37.60 (91)                   |
| Poor/bad                            | 19.47 (29)                   | 30.11 (28)                               | 23.56 (57)                   |
| <b>Chronic Conditions</b>           |                              |  |                              |
| 0-2 conditions                      | 18.79 (28)                   | 21.05 (20)                               | 19.84 (48)                   |
| 3-4 conditions                      | 33.56 (50)                   | 25.81 (24)                               | 30.58 (74)                   |
| 5-6 conditions                      | 24.83 (37)                   | 27.96 (26)                               | 26.03 (63)                   |
| 7-13 conditions                     | 22.82 (34)                   | 24.73 (23)                               | 23.55 (57)                   |
| <b>ADLs</b>                         |                              |  |                              |
| No limitations                      | 28.19 (42)                   | 36.56 (34)                               | 31.40 (76)                   |
| 1-2 limitations                     | 22.15 (33)                   | 25.81 (24)                               | 23.55 (57)                   |
| 3-8 limitations                     | 24.83 (37)                   | 13.98 (13)                               | 20.66 (50)                   |
| 9-17 limitations                    | 24.83 (37)                   | 23.66 (22)                               | 24.38 (59)                   |
| <b>Project Location</b>             |                              |  |                              |
| Inner City                          | 52.35 (78)                   | 61.29 (57)                               | 55.79 (135)                  |
| Suburbs                             | 47.65 (71)                   | 38.71 (36)                               | 44.21 (107)                  |
| <b>Length at Previous Residence</b> |                              |  |                              |
| Less than 1 year                    | 14.77 (22)                   | 22.58 (21)                               | 17.77 (43)                   |
| 1-2 years                           | 19.46 (29)                   | 30.11 (28)*                              | 23.14 (56)                   |
| 3-5 years                           | 16.11 (24)                   | 7.53 (7)                                 | 12.81 (31)                   |
| 6-10 years                          | 17.45 (26)                   | 13.98 (13)                               | 16.12 (39)                   |
| 11 years or more                    | 32.21 (48)                   | 25.81 (24)                               | 30.17 (73)                   |

\* $p < 0.05$  using chi-square ( $\chi^2$ ) analysis.



compared to the Survey 1 sample. In relation to marital status, the over-representation of unmarried persons was somewhat more pronounced for the Survey 2 sample compared to the Survey 1 sample. Chi-square ( $\chi^2$ ) analysis was conducted to determine whether any differences existed between characteristics of the Survey 2 respondents (N=149) and the Survey 1 respondents lost through attrition (N=93). The results of this analysis reveal that the only significant difference between the two groups was the length of time that they lived at the previous residence ( $\chi^2=9.8$ , d.f.=4,  $p<0.05$ ). Specifically, respondents who had lived at their previous residence for no more than two years were less likely to participate in the follow-up study. This suggests that many of the respondents lost to Survey 2 were frequent movers. In this regard, it is also noteworthy that a move from the housing project was reported to be the most frequent reason for non-responses in Survey 2 (Table 4.6). Overall, the results of the chi-square ( $\chi^2$ ) analysis confirm that the Survey 1 and Survey 2 samples were broadly similar in terms of their socio-demographic and health-related characteristics.

#### **4.5 Summary**

This chapter has incorporated an extensive overview of the data sources and data collection procedures utilized in this study. The first section of the chapter provides a description of the study area including an overview of the government-subsidized senior housing market in Winnipeg, general comments on the service resources typically found within the housing projects and the local neighbourhoods, and an explanation of the selection of 25 government-subsidized housing projects for the

present study. In Section 4.2, the design of Survey 1 and Survey 2 was outlined. Specifically, the two surveys required for the longitudinal study were comprised of response formats and instruments to garner information regarding the personal state outcomes, personal characteristics and health status of the respondents, as well as the content and behaviour circuits of the local neighbourhood setting comprised of the physical, social and service environments. The Survey 1 questionnaire elicited data at both the current senior housing project (within 1-12 months of the move) and the previous residence (Time 1 and Time 2), while Survey 2 only obtained information concerning the current circumstances of the respondents at the project after a one-year period has expired (Time 3). In Section 4.3 the determination of the sample was explained, while the procedures used to administer the questionnaires were outlined. This was followed in Section 4.4 by an examination of the response rates for the two surveys including the reasons for non-responses. The same section included a comparison of each of Survey 1 and Survey 2 samples with the Canadian older population in terms of selected socio-demographic characteristics. Finally, characteristics of each of the Survey 1 and Survey 2 samples were compared with those respondents who completed Survey 1 only. In the following chapter, the data are described and, in particular, the magnitude and direction of change is examined.

**Chapter 5**  
**Results I: Changes Associated with**  
**Residential Relocation (Research Questions 1-5)**

In order to examine the personal outcomes of older movers to government-subsidized senior housing projects, it is important to first consider the changes experienced by sample respondents in association with the move. This chapter examines changes in the antecedent constructs and personal state outcomes outlined in the conceptual framework of the study (Figure 3.2). As a basis for this investigation, the chapter also focuses on the personal characteristics of the sample. Specifically, this chapter addresses the first group of research questions:

- 1) What are the personal and residential characteristics of recent movers to government-subsidized senior housing projects?
- 2) What changes in the personal resources of older adults occur after a move to a government-subsidized senior housing project?
- 3) Are there notable modifications in the local physical, social, and service environments of recent movers to a government-subsidized senior housing project?
- 4) Are there significant changes in individual social and service behaviour circuits of recent movers to a government-subsidized senior housing project?
- 5) What changes occur in the personal state outcomes of recent movers to a government-subsidized senior housing project?

The following presentation of the results of the analysis is organized into five sections in accordance with the first five research questions. The analysis was conducted using descriptive statistical methods and bivariate inferential statistical testing procedures to examine the socio-demographic characteristics of older movers, and evaluate change in the antecedent constructs and personal state outcomes defined

by the study's conceptual model. For both the antecedent construct variables and personal state outcomes, tests were conducted to determine whether change in each variable was significant during the study period (Appendix C). In addition, associations among the socio-demographic and residential characteristics of age, gender, and urban location were tested for significance (Appendix D).<sup>7</sup> To further address the research questions, qualitative comments from respondents are also presented in this chapter.

### 5.1 Research Question 1

Research Question 1 asks: What are the personal and residential characteristics of recent movers to government-subsidized senior housing projects? First, socio-demographic characteristics are investigated including age, gender, marital status, education, income, income adequacy, car ownership, number of children, and the marital status and gender of the geographically closest child. Second, the residential characteristics of respondents are examined in relation to the reasons for moving, length of time at the present and previous residence, distance to the previous residence, and length of time in Winnipeg. In addition, the internal residential environment of the senior housing project is evaluated in terms of frequency of the respondent's use of congregate meals, and number of friends reported in the building.

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<sup>7</sup> For each of these two sets of tests, paired *t*-tests are performed on associations involving continuous data, while the non-parametric chi-squared ( $\chi^2$ ) test evaluates associations between variables measured by cross-tabulations of nominal and ordinal data. The non-parametric test is used to determine the significance of differences between paired scores when the assumptions required by the paired-samples *t*-test cannot be made. Both methods test the null hypothesis that there is no difference between the two samples (Robinson, 1998). Appendix C summarizes the results of the tests conducted to determine the significance of change in antecedent construct variables and personal state outcomes, and Appendix D provides only the significant associations found with socio-demographic and residential characteristics.

### 5.1.1 Socio-Demographic Characteristics

Table 5.1 presents data on the age and gender distributions of the entire sample at Time 3. While the mean age of the entire sample was 68.7 years, the ages of the respondents ranged from 55 years to 97 years. Although high proportions of residents of low-income senior housing are typically comprised of the “old-old” age cohort, the age profile of this sample was comprised primarily of the “young-old” age cohort, with approximately two-thirds of the respondents less than 75 years of age. This clearly reflects the fact that sample members were limited to persons who had only recently moved to senior housing projects from the community. With regard to gender, 60.4 percent of the entire sample was female which is consistent with typically gendered resident profiles associated with government-subsidized senior housing.

**Table 5.1. Age by Gender of Entire Sample (N = 149), Time 3: Percentage Frequencies, Mean Values, and Standard Deviations**

| Age<br>(years)           | Male<br>n=59<br>% (n) | Female<br>n=90<br>% (n) | Total<br>n=149<br>% (n) |
|--------------------------|-----------------------|-------------------------|-------------------------|
| 55-64                    | 57.63 (34)            | 32.22 (29)              | 42.28 (63)              |
| 65-74                    | 27.19 (16)            | 23.33 (21)              | 24.83 (37)              |
| 75-84                    | 6.78 (4)              | 33.33 (30)              | 22.82 (34)              |
| 85 or more               | 8.47 (5)              | 11.11 (10)              | 10.07 (15)              |
| <b>Mean/S.D. (years)</b> | 64.93/11.11           | 71.12/10.77             | 68.67/11.29             |

Data on the marital status and living arrangements of the entire sample at Times 1-3 are presented in Table 5.2. Consistent with the “typical profile” of residents of low-income senior housing, over 90 percent of respondents in the study were single.

One finding of particular interest is that throughout the study period approximately one-third of the female respondents were widows, while approximately one-fifth of male respondents were separated or divorced. Above all, it is notable that females who were either single or widowed represented over half of the sample.

While the marital status of the respondents was stable throughout the study period, some change in living arrangements occurred after the move to the senior housing project. Specifically, the percentage of the entire sample living alone increased from 73.2 percent at the previous residence (Time 1) to 92.0 percent at each of Time 2 and Time 3. The decrease in the number of respondents living with others after moving to government-subsidized senior housing suggests that some respondents were likely to become more reliant on supportive social and service environments.

**Table 5.2. Marital Status and Living Arrangements of the Entire Sample (N = 149), Times 1-3: Percentage Frequencies**

|                           | Time 1<br>% (n) | Time 2<br>% (n) | Time 3<br>% (n) |
|---------------------------|-----------------|-----------------|-----------------|
| <i>Marital Status</i>     |                 |                 |                 |
| Single                    | 16.11 (24)      | 16.11 (24)      | 15.44 (23)      |
| Married                   | 7.38 (11)       | 9.40 (14)       | 7.38 (11)       |
| Widowed                   | 38.26 (57)      | 38.26 (57)      | 41.61 (62)      |
| Divorced/Separated        | 38.26 (57)      | 36.24 (54)      | 35.57 (53)      |
| <i>Living Arrangement</i> |                 |                 |                 |
| Lives Alone               | 73.15 (109)     | 91.95 (137)     | 91.95 (137)     |
| Lives with Other(s)       | 26.85 (40)      | 8.05 (12)       | 8.05 (12)       |

Table 5.3 provides data concerning five variables relating to the socio-economic status and social resources of the sample at Times 2-3: number of cars, education level, household income, income satisfaction, and number of children. First, the high percentage of households without a car (e.g., 83.2 percent at Time 3) clearly

illustrates the lack of mobility resources available to most respondents. In relation to the identical education level data sets relating to Times 2 and 3, the majority of respondents (61.1 percent) had obtained a grade 7 to 12 education, while the remainder were almost equally divided into those who received pre-grade/no education and those who received college education.

**Table 5.3. Socio-Economic Status and Social Resources of Entire Sample (N = 149), Times 2-3: Percentage Frequencies, Mean Values, and Standard Deviations**

|                                       | Time 2<br>% (n) | Time 3<br>% (n) |
|---------------------------------------|-----------------|-----------------|
| <i>Number of Cars in Household</i>    |                 |                 |
| No cars                               | 81.21 (121)     | 83.22 (124)     |
| One or more cars                      | 18.79 (28)      | 16.78 (25)      |
| <i>Level of Education</i>             |                 |                 |
| Pre-grade/No School                   | 4.03 (6)        | 4.03 (6)        |
| Grades 1 to 6                         | 16.78 (25)      | 16.78 (25)      |
| Grades 7 to 12                        | 61.07 (91)      | 61.07 (91)      |
| College Non-Degree                    | 10.07 (15)      | 10.07 (15)      |
| College Degree                        | 8.05 (12)       | 8.05 (12)       |
| <i>Household Income</i>               |                 |                 |
| < \$10,000                            | 49.66 (74)      | 51.01 (76)      |
| \$10,000-\$19,999                     | 42.28 (63)      | 43.62 (65)      |
| \$20,000 +                            | 8.05 (12)       | 5.37 (8)        |
| <i>Income Satisfies Current Needs</i> |                 |                 |
| Very Well                             | 14.09 (21)      | 23.49 (35)      |
| Fairly Well                           | 32.21 (48)      | 34.90 (52)      |
| Just Adequately                       | 26.17 (39)      | 26.17 (39)      |
| Some Difficulty                       | 19.46 (29)      | 12.08 (18)      |
| Totally Inadequate                    | 8.05 (12)       | 3.36 (5)        |
| <i>Number of Children</i>             |                 |                 |
| No Children                           | 24.83 (37)      | 24.83 (37)      |
| 1-2                                   | 42.95 (64)      | 42.95 (64)      |
| 3 or more                             | 18.79 (28)      | 18.79 (28)      |
| Mean/S.D.                             | 2.87/2.69       | 2.87/2.69       |

Almost all respondents (e.g., 94.6 percent at Time 3) reported an income of less than \$20,000 per year. This underscores the low-income status of residents of government-subsidized senior housing who may thus require significant supports in the residential adjustment process. While the income level of the entire sample did not exhibit much change between Time 2 and Time 3, Table 5.3 indicates notable changes in the respondents' assessments of income adequacy. Specifically, many respondents reported that their financial situation had improved markedly because of their move to subsidized senior housing as the following statements illustrate:

*Finance was the main reason for our move. We are definitely saving here as our rent goes according to our income.* (ID#88, 62 years old, female, inner city project)

*The rent is considerably lower ... I'm so much better off financially.*  
(ID#54, 68 years old, female, suburban project)

Number of children per respondent is one indicator of the amount of potential social support an older person may receive. At Time 3, only 33 respondents (22.2 percent) in the entire sample reported having no children. In relation to the sub-sample of respondents with children, over half (56.0 percent) reported that the most proximate child at Time 3 was female. Additionally, 66.4 percent reported that the closest child was married (Appendix E).<sup>8</sup>

It is noteworthy that several personal characteristics were found to be associated with age, gender, and urban location. For example, more females were single

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<sup>8</sup> In Appendix E, a comparison of the socio-demographic and residential characteristics is presented between the entire sample (N=149) and the sub-sample with at least one child (N=116) at the time of Survey 2. The table reveals that the sub-group of parents is comprised of a slightly higher proportion of females and persons who are widowed or separated/divorced. Overall, however, the characteristics of both groups are relatively similar.



(Appendix D.1) and clearly registered an “older” age profile (Appendix D.2). Additionally, the majority of respondents who were married were also under the age of 75 years (Appendix D.3). In terms of socio-economic status, the suburban subgroup recorded higher levels of education (Appendix D.4), whereas younger respondents reported lower incomes and lower income satisfaction (Appendix D.5-6). Finally, respondents who were older females (Appendix D.7) or inner city residents (Appendix D.8) expressed greater income satisfaction.

### 5.1.2 Residential Characteristics

In relation to the residential characteristics of the entire sample, data are first presented concerning the reasons stated by respondents for moving to the housing project in Table 5.4.<sup>9</sup> The table indicates that the most frequently reported reasons for moving to a senior housing project were declining health, physical difficulties at the previous residence (relating mainly to the size, maintenance, and deterioration of the dwelling, and the need to use stairs), and financial reasons. Representative comments garnered from open-ended questions include:

*When I lived on [street name] it was harder for me. I had stairs to climb. Also the laundromat was a few blocks away and I had to walk. I was always pretty tired. (ID#72, 62 years old, male, suburban project)*

*Now I don't have to do any maintenance work like painting, repairing appliances, or shovelling snow. (ID#238, 63 years old, female, suburban project)*

*My husband died and I couldn't handle the house financially so I had no choice to move. I knew I would be better off financially. (ID#99, 77 years old, female, suburban project)*

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<sup>9</sup> In most cases, respondents reported more than one reason for moving. A total of 424 reasons were reported. Therefore, the percentages presented in Table 5.4 are based on these multiple responses.

In the context of the present study, it is also important to note the small percentages of respondents who specifically indicated that they wanted to be closer to friends and family (6.6 percent), as well as services (3.3 percent). Additionally, small percentages of respondents specified that they required a more supportive housing environment because of the loss of or separation from a spouse, or feared crime in the neighbourhood of their previous residence.

**Table 5.4. Reasons for Moving of Entire Sample (N = 149): Percentage Frequencies**

| Reasons for Moving                        | % (N=424)  |
|---|------------|
| Declining Health                          | 20.28 (86) |
| Physical Difficulties: Previous Residence | 20.28 (86) |
| Financial Reasons                         | 13.92 (59) |
| Death of Relative or Friend               | 7.78 (33)  |
| Closer to Friends and Family              | 6.60 (28)  |
| Death/Separation (PCH) Spouse             | 4.95 (21)  |
| Greater Access to Services/Conveniences   | 3.30 (14)  |
| Children or Other Relative Left Home      | 3.07 (13)  |
| Wanted to Live Alone/More Privacy         | 2.83 (12)  |
| Fear of Crime in Previous Area            | 2.36 (10)  |
| Problems with Previous Tenants/Noise      | 1.65 (7)   |
| Previous Residence Sold/Closed            | 1.67 (7)   |
| To Return to Old Neighbourhood/Winnipeg   | 0.94 (4)   |

n= number of respondents reporting reason for moving

Table 5.5 indicates the respondent's length of residence at the government-subsidized senior housing project at the time of each survey. As a result of the eligibility criteria associated with the sample design, the length of residence of respondents at Time 2 (Survey 1) was limited to a range of 1-12 months. Table 5.5 discloses that while approximately one-quarter of the sample had resided in the project for four months or less at Time 2, over one-half had lived at this location

between nine months and one year. By Time 3, over three-quarters of the respondents had lived at the project for a period of between 16 and 24 months.

**Table 5.5. Length of Residence at Senior Housing Project of the Entire Sample (N = 149), Times 2-3: Percentage Frequencies, Mean Values, and Standard Deviations**

| Length of Residence<br>(months) | Time 2<br>% (n) | Time 3<br>% (n) |
|---------------------------------|-----------------|-----------------|
| 1 to 4                          | 24.16 (36)      | N/A             |
| 5 to 8                          | 23.49 (35)      | N/A             |
| 9 to 12                         | 52.35 (78)      | N/A             |
| 13 to 16                        | N/A             | 21.48 (32)      |
| 17 to 20                        | N/A             | 24.16 (36)      |
| 21 to 24                        | N/A             | 54.36 (81)      |
| Mean/S.D. (months)              | 4/0.49          | 16/0.49         |

When considering the residential characteristics of the sample, it is also important to determine the respondent's previous residential mobility. In Table 5.6, data concerning length of residence at each of the two addresses occupied immediately prior to the move to the senior housing project are presented. This table illustrates

**Table 5.6. Length of Residence at Previous Addresses of the Entire Sample (N = 149): Percentage Frequencies, Mean Values, and Standard Deviations**

| Length of Residence<br>(years) | Most Recent Previous<br>Address<br>% (n) | 2 <sup>nd</sup> Previous<br>Address<br>% (n) |
|--------------------------------|--|--|
| < 1                            | 14.77 (22)                               | 7.38 (11)                                    |
| 1-2                            | 19.46 (29)                               | 21.48 (32)                                   |
| 3-5                            | 16.12 (24)                               | 25.50 (38)                                   |
| 6-10                           | 17.45 (26)                               | 18.79 (28)                                   |
| 11-20                          | 16.78 (25)                               | 20.13 (30)                                   |
| 21-30                          | 7.38 (11)                                | 3.36 (5)                                     |
| >30                            | 8.05 (12)                                | 3.36 (5)                                     |
| Means/S.D. (years)             | 10 years/12.36                           | 8 years/8.96                                 |

both residentially stable and highly mobile respondents were included in the entire sample. For example, in terms of length of residence at the most recent previous address, 32.2 percent of the entire sample registered values of eleven years and over compared to 34.2 percent whose duration of residence was only two years or less.

Data relating to distance from the most recent previous address (Table 5.7) reveal that the majority of the entire sample was composed of short-distance movers to senior housing projects. For instance, almost one-half the sample lived less than three kilometres from their previous residence after the move, while only a small number of respondents (n=17) moved to the senior housing project from origins located outside the city of Winnipeg. These findings suggest that, prior to the move, at least some

**Table 5.7. Distance From Most Recent Previous Addresses for the Entire Sample (N = 149): Percentage Frequencies, Mean Values, and Standard Deviation**

| Distance<br>(kilometers)           | % (n)        |
|------------------------------------|--------------|
| 0 – 0.99                           | 24.83 (37)   |
| 1.00 – 2.99                        | 24.16 (36)   |
| 3.00 – 5.99                        | 18.79 (28)   |
| 6.00 – 9.99                        | 13.42 (20)   |
| 10.00 – 24.99                      | 7.38 (11)    |
| 25.00 – 99.99                      | 6.04 (9)     |
| 100.00 or more                     | 5.37 (8)     |
| Mean/S.D. (kms) moves of < 10 kms. | 3.0/2.66     |
| Mean/S.D. (kms) all moves          | 64.95/307.61 |

respondents may have had a degree of familiarity with the neighbourhood in which their senior housing project was located. As the following comments illustrate, some respondents were able to move in proximity to their previous residence:

*I've lived in the same neighbourhood for 30 years. So I enjoy being in the same surroundings. (ID#49, 76 years old, female, inner city project)*

*Everything is still the same, I just lived a few blocks away from here.*  
(ID#61, 65 years old, male, inner city project)

On the other hand, some respondents indicated that they had moved to unfamiliar areas of the city:

*It's taken time for me to get to know the neighbourhood a little better. I lived in St. James for 48 years and this was unfamiliar territory.* (ID#94, 77 years old, female, suburban project)

Finally, Table 5.8 presents data concerning the length of residence of the respondents in Winnipeg. At Time 2, over three-quarters of the sample had lived in Winnipeg for over 20 years, while only 4.0 percent of the sample had lived in the city for less than a year. This suggests that the majority of respondents were very familiar with at least some neighbourhood environments in Winnipeg.

**Table 5.8. Length of Residence of the Entire Sample (N=149) in Winnipeg, Times 2-3: Percentage Frequencies, Mean Values, and Standard Deviations**

| Length of Residence<br>(years) | Time 2<br>% (n) | Time 3<br>% (n) |
|--------------------------------|-----------------|-----------------|
| 1-10                           | 13.42 (20)      | 15.44 (23)      |
| 11-20                          | 11.41 (17)      | 8.72 (13)       |
| 21-40                          | 22.15 (33)      | 22.15 (33)      |
| 41-60                          | 33.56 (50)      | 34.22 (51)      |
| 61-86                          | 19.46 (29)      | 19.46 (29)      |
| Mean/S.D. (years)              | 41.27/23.32     | 42.15/23.60     |

The residential characteristics of the sample are also significantly related to age, gender, and urban location. Specifically, suburban respondents registered longer lengths of residence at both the senior housing project and the most recent previous residence than their inner city counterparts (Appendix D.9-10). In addition, younger

respondents were more likely to have lived a shorter period of time in both the most recent and second most recent previous residence than older respondents (Appendix D.11-12). Not surprisingly, length of residence in Winnipeg was positively associated with age (Appendix D.13), while females typically lived at the second most-recent previous address longer than males (Appendix D.14).

### 5.1.3 The Internal Residential Environment of the Senior Housing Project

The internal residential environment of the senior housing project was evaluated in terms of (a) congregate meal programs, and (b) number of friends, within the project. Of the 25 senior housing projects included in the study, 13 provide a congregate meal program between three and five times a week. Table 5.9 outlines the frequency of use of congregate meal programs by the entire sample at Time 2 and Time 3. The table reveals that approximately one-third of all respondents utilized the congregate meal program at Time 2 with relatively little change during the subsequent one-year period. Over the one-year period, only 11.4 percent of the entire sample reported using the program more frequently compared to 16.1 percent who recorded a decrease

**Table 5.9. Use of Congregate Meal Programs by the Entire Sample (N=149): Percentage Frequencies**

| Frequency of Use    | Time 2<br>% (n) | Time 3<br>% (n) |
|---------------------|-----------------|-----------------|
| 1 Meal per Day      | 6.04 (9)        | 5.37 (8)        |
| 1-6 Meals per Week  | 14.09 (21)      | 12.08 (18)      |
| 1-3 Meals per Month | 7.38 (11)       | 5.37 (8)        |
| >1 Meal per Month   | 3.36 (5)        | 6.71 (10)       |
| Never               | 27.52 (41)      | 28.86 (43)      |
| Program Unavailable | 41.61 (62)      | 41.61 (62)      |

in use. Not surprisingly, there was a tendency for older residents requiring greater supports to access the meal programs more frequently. For instance, one of the elderly residents stated:

*I'm getting one meal a day prepared for me here. That's what I needed.*  
(ID#148, 85 years old, male, suburban project)

Table 5.10 summarizes the number of friends in the housing project that were reported by respondents at Time 2 and Time 3. The social environment within the senior housing project was particularly important for some respondents as their comments suggest that an enhanced social environment within the building contributed to more positive outcomes:

*I really enjoy socializing with others and it helps from getting lonely.* (ID#49, 76 years old, female, inner city project)

*When I first moved here I was feeling kind of lost but since then I have made some friends within the building.* (ID#89, 65 years old, female, inner city project)

*It's nice to have the contact with others especially living alone.* (ID#85, 77 years old, female, suburban project)

*It's comforting to meet others your age and to hear that some of them are having similar feelings about growing old.* (ID#82, 84 years old, female, suburban project)

According to Table 5.10, the mean number of friends in the building increased slightly over the one-year period. While 32.9 percent of the sample reported fewer friends, there was an increase in the number of friends for 39.6 percent of respondents. However, the difference between the mean number of friends at the project at Times 2 and 3 was non-significant (Appendix C.1).

**5.10. Number of Friends at the Senior Housing Project for the Entire Sample (N=149), Times 2-3: Frequency Distributions, Mean Values, and Standard Deviations**

| Number of Friends | Time 2     | Time 3     |
|-------------------|------------|------------|
|                   | % (n)      | % (n)      |
| 0                 | 32.21 (48) | 28.19 (42) |
| 1-4               | 37.58 (56) | 36.91 (55) |
| 5-9               | 14.09 (21) | 16.78 (25) |
| 10-14             | 10.74 (16) | 11.41 (17) |
| >14               | 5.37 (8)   | 6.71 (10)  |
| <b>Mean/S.D.</b>  | 4.35/7.27  | 4.85/7.32  |

Overall, this descriptive analysis discloses that most of the demographic and residential attributes of the respondents were broadly consistent with resident profiles typically associated with government-subsidized senior housing accommodation. The sample was composed largely of low-income, single females who moved primarily as a result of reductions in physical and financial resources. The main difference was the atypically “young” age profile of the sample residents, which reflects the fact that the sample is limited to newcomers to the projects who previously lived in the community. For many older adults, this type of relocation likely represented the first post-retirement move.

**5.2 Research Question 2**

Research Question 2 asks: What changes in the personal resources of older adults occur after a move to a government-subsidized senior housing project? To address this question, data are presented in relation to three measures of behavioural competence and physical health conditions. Specifically, measures of activities of daily living, instrumental activities of daily living, and number of chronic conditions



are used to determine the personal resource transitions that occurred between the previous residence (Time 1) and the current senior housing project residence (Time 2 and Time 3).

Behavioural competence is assessed by two measures concerning (a) the ability to perform activities of daily living (ADL)<sup>10</sup>, and (b) the ability to perform instrumental activities of daily living (IADL)<sup>11</sup> (Appendix F)<sup>12</sup>. In each case the measure is a five-point scale derived from scores ranging from 1 (without any help) to 5 (unable to do it). ADL and IADL limitations are then defined in terms of the total number of items receiving scores of 2-5 points (i.e., indicating that at least some assistance is required in order to perform the task).

The numbers of ADL limitations reported by respondents at Times 1-3 are summarized in Table 5.11. An average of 2.6 ADL limitations was recorded by the entire sample immediately prior to the move (Time 1). At Time 2 and Time 3, the entire sample reported an average of 2.8 limitations and 3.0 limitations respectively. Although the proportion of respondents with no ADL limitations did not change between Time 1 and Time 3, 52 respondents or 34.9 percent of the entire sample registered a net increase in the number of limitations during this period (Appendix F.1). Of these, 38 respondents (25.5 percent of the entire sample) recorded increases

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<sup>10</sup> Based on Katz's (1963) Index of ADLs, eleven activities of daily living are included: eating, dressing, ability to walk, getting about the house, climbing stairs, getting in and out of bed, bathing, going to the washroom, ability to go outdoors in good weather or any weather, and foot care.

<sup>11</sup> Eight tasks from Lawton and Brody's (1969) IADL scale are included: ability to use the phone, shopping, food preparation, light housekeeping, heavy housework, able to go to places out of walking distance, responsible for own medication, ability to handle finances.

<sup>12</sup> Changes that occurred during the study period are also considered at the individual level with the frequency distributions of measured differences for antecedent constructs and outcomes presented in Appendix F. Change is considered at three time intervals: between Time 1 and Time 2 (Times 1-2); between Time 1 and Time 3 (Times 1-3); and between Time 2 and Time 3 (Times 2-3).

of only one or two limitations between Time 1 and Time 3. The modest increase in number of reported ADL limitations may be reflective of an increase in frailty of some tenants. It may also illustrate the availability of, and subsequent dependency on, services at the senior housing project such as the provincial homecare program (e.g. help with bathing and foot care) that some respondents were unable to access at the previous residence. For example, the percentage of respondents reporting the need for assistance with bathing increased from 25.5 percent at Time 1 to 55.0 percent at Time 3. According to several respondents, access to homecare services in the housing project allowed them to remain independent:

*Homecare and nurse come here but wouldn't come to the hotel to help me.* (ID#15), 56 years old, female, inner city project)

*Someone brings me my meals and someone does my laundry and housework. I also get help with my bath. All that keeps me here and not in a PCH.* (ID#75, 77 years old, female, suburban project)

**Table 5.11. Number of Limitations for the Entire Sample (N=149) in Activities of Daily Living (ADL), Times 1-3: Percentage Frequencies, Mean Values, and Standard Deviations**

| # of ADL Limitations | Time 1<br>% (n) | Time 2<br>% (n) | Time 3<br>% (n) |
|----------------------|-----------------|-----------------|-----------------|
| 0                    | 37.58 (56)      | 34.23 (51)      | 35.57 (53)      |
| 1-2                  | 26.17 (39)      | 25.50 (38)      | 20.81 (31)      |
| 3-4                  | 10.07 (15)      | 12.75 (19)      | 9.40 (14)       |
| 5-6                  | 10.74 (16)      | 10.07 (15)      | 16.11 (24)      |
| 7-8                  | 11.41 (17)      | 13.42 (20)      | 10.74 (16)      |
| 9-10                 | 4.03 (6)        | 4.03 (6)        | 7.38 (11)       |
| <b>Mean /S.D.</b>    | 2.56/2.92       | 2.79/2.94       | 3.00/3.15       |

Other additional ADL limitations reported between Time 1 and Time 3 relate primarily to bathing (55.0 percent of the entire sample), climbing stairs (54.4

percent), and mobility outside the senior residence (36.9 percent). During the same period, there was a reduction in the number of ADL limitations reported by 15.4 percent of the entire sample with decreases ranging from one to six limitations (Appendix F.1). The activities for which some respondents no longer required assistance at Time 3 included bathing, climbing stairs, and foot care.

The second measure of behavioural competence, Instrumental Activities of Daily Living (IADLs), is evaluated on the basis of the total number of limitations on eight IADL tasks. The numbers of IADL limitations reported by respondents at Times 1-3 are summarized in Table 5.12.

**Table 5.12. Number of Limitations for the Entire Sample (N=149) in Instrumental Activities of Daily Living (IADL), Times 1-3: Percentage Frequencies, Means Values, and Standard Deviations**

| # of IADL Limitations | Time 1<br>% (n) | Time 2<br>% (n) | Time 3<br>% (n) |
|-----------------------|-----------------|-----------------|-----------------|
| 0                     | 51.68 (77)      | 50.34 (75)      | 47.65 (71)      |
| 1-2                   | 24.16 (36)      | 21.48 (32)      | 17.45 (26)      |
| 3-4                   | 15.44 (23)      | 15.44 (23)      | 17.45 (26)      |
| 5-6                   | 5.37 (8)        | 7.38 (11)       | 12.08 (18)      |
| 7-8                   | 3.36 (5)        | 5.37 (8)        | 5.37 (8)        |
| <b>Mean/S.D.</b>      | 1.38/1.92       | 1.60/2.14       | 1.89/2.30       |

While respondents reported an average of 1.4 IADL limitations prior to moving to the senior housing project, the mean value increased to 1.6 limitations at Time 2 and 1.9 limitations at Time 3. Overall, 34.2 percent of the entire sample registered an increase in the number of IADL limitations between Time 1 and Time 3, the majority of whom reported an increase of one or two limitations (Appendix F.2). By Time 3, more respondents required assistance with heavy housework, finances, the preparation of meals, and shopping. It is also notable that the proportion of

respondents with five or more IADL limitations increased from 8.7 percent at the previous residence (Time 1) to 17.5 percent at Time 3. As in the case of ADL limitations, the increase in IADL limitations can partly be attributed to improved access to, and dependency on, support services available at the government-subsidized senior housing project. Of particular note, the proportion of the sample requiring assistance with their finances increased from 3.4 percent at the previous residence to 14.1 percent at Time 3. In addition, respondents spoke frequently about the benefits of congregate meals and the housecleaning and care services provided by the homecare program:

*I can have good meals. My place is kept clean, and help is there if I need it.* (ID#62, 57 years old, male, inner city project)

*I have the nurse here to take my blood pressure that saves me from leaving the building. The Homecare that comes in to clean saves me from having to hire someone. I couldn't depend on my daughters for any cleaning.* (ID#81, 78 years old, male, suburban project)

In contrast, 12.8 percent of sample members reported a reduction in IADL limitations, with the decreases ranging from one to three activities between Time 1 and Time 3 (Appendix F.2). Some respondents reported that they no longer needed assistance for shopping, heavy and light housework, as well as going to places outside of walking distance. At Time 3, the IADL limitations most frequently reported by respondents were heavy housework (43.0 percent of the entire sample), shopping (37.6 percent), and reaching places out of walking distance (34.9 percent).

The third personal resource construct is a measure of physical health based on the total number of 18 possible chronic conditions reported by the respondents. Table 5.13 indicates the number of chronic conditions registered by members of the entire

sample at Times 1-3. It is notable that the number of chronic conditions among the entire sample exhibited considerable variation throughout the study period. For instance at Time 3, 18.1 percent of the sample reported 2 or fewer conditions compared to 25.5 percent registering between 7 and 12 conditions. The most frequently cited conditions at Time 3 included arthritis (65.1 percent of the entire sample), high blood pressure (41.6 percent), foot problems (36.9 percent), eye trouble (34.9 percent), ear trouble (34.9 percent), and hip problems (32.2 percent).

**Table 5.13. Number of Chronic Conditions for the Entire Sample (N=149), Times 1-3: Percentage Frequencies, Means Values, and Standard Deviations**

| # of Chronic Conditions | Time 1<br>% (n) | Time 2<br>% (n) | Time 3<br>% (n) |
|-------------------------|-----------------|-----------------|-----------------|
| 0                       | 2.01 (3)        | 2.01 (3)        | 0.67 (1)        |
| 1-2                     | 20.13 (30)      | 16.78 (25)      | 17.45 (26)      |
| 3-4                     | 26.85 (40)      | 33.36 (50)      | 32.89 (49)      |
| 5-6                     | 28.19 (42)      | 24.83 (37)      | 23.49 (35)      |
| 7-8                     | 15.44 (23)      | 15.44 (23)      | 17.45 (26)      |
| 9-10                    | 6.71 (10)       | 6.04 (9)        | 6.71 (10)       |
| 11-13                   | 0.67 (1)        | 1.34 (2)        | 1.34 (2)        |
| <b>Mean/S.D.</b>        | 4.65/2.48       | 4.66/2.50       | 4.72/2.49       |

While Table 5.13 reveals virtually no change in the number of conditions after residential relocation, the data masks considerable changes that occurred among the entire sample. In fact, only 18.8 percent of the sample reported no changes in the number of chronic conditions from Time 1 to Time 3 (Appendix F.3). Of those reporting changes, 40.9 percent of the entire sample reporting decreases in the number of chronic conditions (ranging from 1 to 5 conditions) were virtually balanced by 40.3 percent registering increases (ranging from 1 to 6 conditions). Those conditions that increased most frequently during the study period included

allergies, cancer, stroke, and hip problems. Conversely, eye, dental and stomach problems, and palsy were the conditions that were reported less frequently at Time 3.

Many respondents indicated that their health had become worse after moving to the senior housing project:

*I had a stroke. I'm having a little more difficulty in walking. Before I only needed a cane, but now I need the use of a walker. (ID#38, 63 years old, male, inner city project)*

*Everything is worse: my heart, my arthritis, my cancer. (ID#58, 64 years old, male, inner city project)*

*I lost my leg because of diabetes in January of 2000. (ID#222, 91 years old, male, suburban project)*

Meanwhile, others considered their health to have improved:

*My health is much better now since I'm taking insulin. (ID#136, 63 years old, female, inner city project)*

*My ulcer has improved. I'm on new medication and my balance is much better. My walking and my balance have improved and because I have accepted my health problems, my attitude has improved. There are others in the building who are worse off than me. (ID#111, 83 years old, female, suburban project)*

Tests of association confirm that age was positively associated with the three personal resource constructs. Throughout the study, older respondents reported significantly greater numbers of ADL and IADL limitations, and chronic conditions relative to their younger counterparts (Appendix D.15-17). In addition, significant differences were found between Time 1 and Time 2 and between Time 1 and Time 3 in the mean number of ADLs and IADLs reported by the entire sample (Appendix C.2-3). However, no significant differences were registered between the mean

number of chronic conditions reported at the previous residence and at the senior housing project (Appendix C.4).

Overall, data relating to the above three personal resource constructs generally indicate that while personal resource transitions occurred, most respondents did not experience substantial decrements in their health status after the move to the senior housing project. Moreover, 6.0 percent of the entire sample reported no changes whatsoever on any of the constructs. On the other hand, the data indicate that no fewer than 81.2 percent of the entire sample experienced change in the number of chronic conditions, while approximately half of all respondents reported change in the number of ADL (50.3 percent) and IADL (47.0 percent) limitations.

### **5.3 Research Question 3**

Research Question 3 asks: Are there notable modifications in the local physical, social, and service environment after a move to a government-subsidized senior housing project? The following sub-sections examine components of the physical, social, and service environments based on both resident-appraised and observer-defined measurements of environmental change.

#### **5.3.1 Resident-Appraised Change in the Physical Environment**

This sub-section considers change in satisfaction ratings of salient features of the physical environment. Resident appraisals of the local physical environments of the senior housing project and the previous residence were determined on the basis of six attributes (Tables 5.14, 5.15). First, to determine the salience of each of these

attributes, respondents were requested to rate each on a five-point scale ranging from “very unimportant” (1) to “very important” (5). Table 5.14 outlines the proportion of the sample that rated each attribute as either “important” (rating of 4) or “very important” (rating of 5). The most salient attributes in the overall appraisals of the physical environment registered by the entire sample include security from crime, sidewalk conditions, traffic safety, and snow removal.

**Table 5.14. Salience of Physical Environment Attributes for the Entire Sample (N=149), Time 3: Percentage Frequencies**

| <b>Attributes of the Physical Environment</b> | <b>Very Important/ Important % (n)</b> | <b>Neither/Unimportant/ Very Unimportant</b> |
|---|--|--|
| <b>Security from Crime</b>                    | 93.96 (140)                            | 6.04 (9)                                     |
| <b>Sidewalk Conditions</b>                    | 85.91 (128)                            | 14.09 (21)                                   |
| <b>Traffic Safety</b>                         | 79.19 (118)                            | 20.81 (31)                                   |
| <b>Snow Removal</b>                           | 79.19 (118)                            | 20.81 (31)                                   |
| <b>Public Transit</b>                         | 70.47 (105)                            | 29.53 (44)                                   |
| <b>Neighbourhood Noise</b>                    | 67.12 (100)                            | 32.89 (49)                                   |

Table 5.15 summarizes the satisfaction ratings of the six neighbourhood attributes at Times 1-3 on a five-point scale from “bad” (1) to “excellent” (5). The table indicates that immediately after the move to the senior housing project (Time 2), the proportion of respondents rating security from crime and snow removal as “good” or “excellent” increased by 24.8 percent and 20.8 percent respectively. Moreover, the high level of satisfaction with these attributes at Time 2 was maintained at Time 3. In contrast, the more modest increases in the proportion of the sample that registered good/excellent ratings of sidewalk conditions, traffic safety, public transit, and neighbourhood noise registered between Time 1 and Time 2 were followed by



decreased ratings at Time 3 with the exception of public transit. However, high levels of satisfaction with the attributes of the physical environment were generally maintained at Time 3.

It is noteworthy that no fewer than 42.3 percent of respondents recorded an improvement in the rating of the most salient attribute, security from crime, between Time 1 and Time 3 (Appendix F.4). In fact, many respondents made unstructured comments regarding improved security at the senior housing project:

*I'm feeling so much safer here that I wouldn't hesitate to take a bus to go shopping or visit my sister. I'm more apt to take a bus here than before ... the lighting around the area is much better. This is a safer environment. (ID#87, 73 years old, female, inner city project)*

*I can lock that door and don't have to worry – security. Had a place in East Kildonan and I was broken into twice – and you never sleep well after that. (ID#215, 57 years old, male, suburban project)*

On the other hand, 18.8 percent of the entire sample regarded security to be better at their previous residence (Appendix F.4). The following open-ended comments illustrate that some respondents felt less secure at the senior housing project:

*I don't like to go out here too much because of the park across the street – the people who are in there day and night – it scares me. (ID#22, 68 years old, female, inner city project)*

*I'm not as safe here. Lots of times I'm afraid to walk outside. (ID#103, 60 years old, female, inner city project)*

*It's not always safe here. I stay in my room with the door locked after dark. Too many people roaming the hallways looking for hand-outs. (ID#102, 60 years old, female, inner city project)*

**Table 5.15. Satisfaction with Physical Environment Attributes for the Entire Sample (N=149), Times 1-3: Percentage Frequencies**

| Satisfaction Level         | Time 1<br>% (n) | Time 2<br>% (n) | Time 3<br>% (n) |
|----------------------------|-----------------|-----------------|-----------------|
| <i>Security from Crime</i> |                 |                 |                 |
| Excellent/Good             | 55.03 (82)      | 79.87 (119)     | 74.50 (111)     |
| Fair/Poor/Bad              | 44.96 (67)      | 20.14 (30)      | 25.50 (38)      |
| <i>Sidewalk Conditions</i> |                 |                 |                 |
| Excellent/Good             | 71.14 (106)     | 81.88 (122)     | 67.78 (101)     |
| Fair/Poor/Bad              | 28.85 (43)      | 18.12 (27)      | 32.21 (48)      |
| <i>Traffic Safety</i>      |                 |                 |                 |
| Excellent/Good             | 69.12 (103)     | 72.48 (108)     | 58.39 (87)      |
| Fair/Poor/Bad              | 30.87 (46)      | 27.52 (41)      | 41.61 (62)      |
| <i>Snow Removal</i>        |                 |                 |                 |
| Excellent/Good             | 74.50 (111)     | 95.30 (142)     | 93.96 (140)     |
| Fair/Poor/Bad              | 25.50 (38)      | 4.70 (7)        | 6.04 (9)        |
| <i>Public Transit</i>      |                 |                 |                 |
| Excellent/Good             | 79.86 (119)     | 91.94 (137)     | 91.94 (137)     |
| Fair/Poor/Bad              | 20.13 (30)      | 8.05 (12)       | 8.05 (12)       |
| <i>Neighbourhood Noise</i> |                 |                 |                 |
| Excellent/Good             | 56.38 (84)      | 65.77 (98)      | 59.73 (89)      |
| Fair/Poor/Bad              | 43.62 (65)      | 34.23 (51)      | 40.26 (60)      |

Almost equal proportions of the sample experienced either an increase (25.5 percent) or a decrease (24.2 percent) in satisfaction with the second most salient physical environment attribute, sidewalk conditions, between Time 1 and Time 3. However, between Time 2 and Time 3, 36.2 percent of the sample reported a decrease in satisfaction with sidewalk conditions compared to 12.1 percent who reported an increase in satisfaction (Appendix F.5). However, the respondents offered no comments to explain these changes.

As a result of the changes in the resident appraisals of the salient neighbourhood attributes, between Time 1 and Time 2 and Time 2 and Time 3, significantly increased satisfaction was recorded with security from crime, sidewalk conditions, and traffic safety (Appendix C.5-7). However, there were no significant changes in the respondents' ratings of snow removal during the study period (Appendix C.8).

Some significant associations were found between the ratings of the physical environment and the socio-demographic characteristics of age, gender, and urban location. Specifically, compared to their younger counterparts, higher proportions of respondents 75 years or older rated security in the neighbourhood and traffic safety more positively at each of Times 1 and 2, snow removal more positively at Time 3, and sidewalk conditions more positively at their previous residence (Time 1) (Appendix D.18-21). Females evaluated both sidewalk conditions and traffic safety at their previous address more positively than males (Time 1) (Appendix D.22-23). However, inner city residents generally rated snow removal at the senior housing project less favourably than their suburban counterparts (Appendix D.24).

Overall, changes in the resident appraisals of the physical environment resulting from a move to a government-subsidized senior housing project did not exhibit a consistent trend. More specifically, improved satisfaction with some attributes (e.g., security from crime and snow removal) was partly balanced by decreased satisfaction with others (e.g., sidewalk conditions and traffic safety).

### **5.3.2 Observer-Defined and Resident-Appraised Change in the Content of the Social Environment**

The conceptual model of the study (Figure 3.2) indicates that personal outcomes resulting from residential relocation are related to both observer-defined and resident-appraised changes in the content of the social environment. In relation to that part of Research Question 3 concerning changes in the social environment, this sub-section presents data relating to these changes as a result of the move from the community to the senior housing project.

Resident-appraised changes in the content of the social environment were evaluated in terms of (i) the salience of proximity to family members and friends, and (ii) satisfaction with proximity to family and friends. To determine the salience of the social environmental components, respondents were asked to rate the importance of their spatial proximity to (a) family members, and (b) friends, on a five-point scale ranging from "very unimportant" (1) to "very important" (5). Table 5.16 discloses that at Time 3 proximities to friends and family members were characterized by fairly similar distributions of salience ratings.<sup>13</sup> For instance, slightly over 40 percent of the entire sample considered proximity to either family members or friends to be "very important" or "important", while less than 25 percent considered the proximities to be "very unimportant" or "unimportant" in either case.

**Table 5.16. Salience of Proximity to Family and Friends for the Entire Sample (N=149), Time 3: Percentage Frequencies**

| Salience         | Family Members | Friends    |
|------------------|----------------|------------|
|                  | % (n)          | % (n)      |
| Very Important   | 8.05 (12)      | 2.68 (4)   |
| Important        | 32.89 (49)     | 40.94 (61) |
| Neither          | 34.90 (52)     | 32.21 (48) |
| Unimportant      | 22.82 (34)     | 22.82 (34) |
| Very Unimportant | 1.34 (2)       | 1.34 (2)   |

In relation to resident appraisals of changes in the social environment, Table 5.17 provides data concerning the entire sample's satisfactions with proximity to each of family members and friends at Times 1-3. The data are based on responses on a seven-point scale with values ranging from "very dissatisfied" (1) to "very satisfied" (7). While the majority of respondents expressed generally high satisfaction levels

<sup>13</sup> As the ratings of salience for proximity to family and friends were similar for both Times 2 and 3, Table 5.16 provides data related only to Time 3.

**Table 5.17. Satisfactions with Proximity to Family and Friends for the Entire Sample (N=149), Times 1-3: Percentage Frequencies**

| Satisfaction Level             | Time 1<br>% (n) | Time 2<br>% (n) | Time 3<br>% (n) |
|--------------------------------|-----------------|-----------------|-----------------|
| <i>Family Members</i>          |                 |                 |                 |
| Very Satisfied                 | 3.36 (5)        | 8.72 (13)       | 9.40 (14)       |
| Satisfied                      | 55.70 (83)      | 57.05 (85)      | 65.10 (97)      |
| Slightly Satisfied             | 9.40 (14)       | 10.07 (15)      | 6.71 (10)       |
| Neither Satisfied/Dissatisfied | 14.09 (21)      | 14.09 (21)      | 14.77 (22)      |
| Slightly Dissatisfied          | 8.05 (12)       | 4.70 (7)        | 2.01 (3)        |
| Dissatisfied                   | 7.38 (11)       | 4.70 (7)        | 2.01 (3)        |
| Very Dissatisfied              | 2.01 (3)        | 0.67 (1)        | 0.00 (0)        |
| <i>Friends</i>                 |                 |                 |                 |
| Very Satisfied                 | 6.04 (9)        | 12.08 (18)      | 15.44 (23)      |
| Satisfied                      | 57.72 (86)      | 49.66 (74)      | 50.34 (75)      |
| Slightly Satisfied             | 12.08 (18)      | 11.41 (17)      | 4.70 (7)        |
| Neither Satisfied/Dissatisfied | 19.46 (29)      | 21.48 (32)      | 23.49 (35)      |
| Slightly Dissatisfied          | 0.67 (1)        | 3.36 (5)        | 4.03 (6)        |
| Dissatisfied                   | 2.68 (4)        | 2.01 (3)        | 2.01 (3)        |
| Very Dissatisfied              | 1.34 (1)        | 0.00 (0)        | 0.00 (0)        |

with regard to their spatial proximity to family and friends prior to moving, Table 5.17 illustrates that satisfaction scores were even higher at the senior housing project. For example, the proportion of the sample who were either ‘satisfied’ or ‘very satisfied’ with their proximity to family increased from 59.1 percent at the previous residence (Time 1) to 74.5 percent at the senior housing project at Time 3. Furthermore, from Time 1 to Time 3, 35.6 percent of the sample reported improved satisfaction with proximity to family, and only 15.4 percent of respondents recorded lower satisfaction scores during this time period (Appendix F.8). Alternatively, 28.9 percent of respondents rated satisfaction to proximity to friends more positively at Time 3 compared to Time 1, while 22.8 percent indicated lower satisfaction scores during this period (Appendix F.9). Overall, the data indicate that higher percentages

of the entire sample were satisfied with proximity to both family members and friends after the move (Times 2-3). Significant differences were found in the satisfaction ratings of proximity to both family and friends throughout the study period (Appendix C.9 & C.10).

Observer-defined changes in the content of the social environment were evaluated in terms of proximity to family and friends. Table 5.18 summarizes the distances (in kilometres) of the homes of the closest child, sibling, and friend from the respondent's place of residence at Time 1 and Time 3. In addition, Table 5.19 reports the means and standard deviations of these distances for two sub-samples: (a) those reporting a closest child, sibling, or friend in Winnipeg (<25km); and (b) all those reporting a closest child, sibling, or friend. The respective data relate only to those respondents who reported having at least one child or one sibling or one friend (Appendix G).<sup>14</sup> Table 5.18 discloses that after the move there was a moderate increase in the proportion of the sample living within ten kilometres of the closest child. For example, while 62.9 percent of respondents resided within 10 kilometres of their closest child at the previous address, 75.0 percent of the entire sample enjoyed similar spatial proximity after the move to the senior housing project.

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<sup>14</sup> In addition to the three main groups, other family members such as parents, grandchildren, as well as nieces and nephews were also, in some cases, seen on a regular basis. With regard to the regression models developed in Chapter 6, data on other family members are included for the operationalization of observer-defined and resident-appraised changes in the content and behaviour circuits of the social environment. Therefore, information concerning distance to, and frequency of visits with, other family members (n=25) is presented in Appendix G.

**Table 5.18. Distance Separation (km) from Closest Child, Sibling, and Friend, Time 1-3: Percentage Frequencies**

| Distance<br>(kilometres)       | Time 1<br>% (n) | Time 3<br>% (n) |
|--------------------------------|-----------------|-----------------|
| <i>Closest Child (N=116)</i>   |                 |                 |
| 0.00                           | 5.17 (6)        | 1.72 (2)        |
| 0.01 - 1.99                    | 17.24 (20)      | 21.55 (25)      |
| 2.00 - 4.99                    | 25.00 (29)      | 26.72 (31)      |
| 5.00 - 9.99                    | 15.52 (18)      | 25.00 (29)      |
| 10.00 - 24.99                  | 11.21 (13)      | 7.76 (9)        |
| 25.00 - 99.99                  | 14.66 (17)      | 6.03 (7)        |
| 100.00 +                       | 11.21 (13)      | 11.21 (13)      |
| <i>Closest Sibling (N=122)</i> |                 |                 |
| 0.00                           | 4.10 (5)        | 1.64 (2)        |
| 0.01 - 1.99                    | 13.93 (17)      | 19.67 (24)      |
| 2.00 - 4.99                    | 19.67 (24)      | 16.39 (20)      |
| 5.00 - 9.99                    | 17.21 (21)      | 16.39 (20)      |
| 10.00 - 24.99                  | 8.20 (10)       | 11.48 (14)      |
| 25.00 - 99.99                  | 4.92 (6)        | 3.28 (4)        |
| 100.00 +                       | 31.97 (39)      | 31.15 (38)      |
| <i>Closest Friend (N=94)</i>   |                 |                 |
| 0.00                           | 4.26 (4)        | 15.96 (15)      |
| 0.01 - 1.99                    | 35.12 (33)      | 34.04 (32)      |
| 2.00 - 4.99                    | 29.78 (28)      | 24.47 (23)      |
| 5.00 - 9.99                    | 17.02 (16)      | 13.83 (13)      |
| 10.00 - 24.99                  | 12.77 (12)      | 11.70 (11)      |
| 25.00 - 99.99                  | 1.06 (1)        | 0.00 (0)        |

Moreover, Table 5.19 discloses that the average distance to the closest child within Winnipeg decreased from 5.1 kilometres before the move (Time 1) to 4.6 kilometres at the senior housing project (Time 3). Nevertheless, almost equal proportions of the sub-sample with at least one child recorded either a decrease (27.6 percent) or an increase (26.7 percent) of up to five kilometres in distance to the closest child (Appendix F.10). No significant differences were found between the previous residence and the project in the mean distance to the closest child (Appendix C.11).

Tables 5.18 and 5.19 disclose relatively limited change in the distance separation from the closest sibling after a move to a government-subsidized senior housing project. It is noteworthy that decreases of less than five kilometres were recorded by 31.2 percent of the sample in distance separation to the closest sibling, while 18.0 percent of respondents recorded an increase of up to 5.0 kilometres (Appendix F.11). Differences in the mean distance to the closest sibling from the previous residence to the senior housing project were non-significant (Appendix C.12).

**Table 5.19. Distance to Closest Child, Sibling and Friend, in Winnipeg (< 25 kms) and Entire Sample, Time 1 and Time 3: Mean Values and Standard Deviations**

|                                | Time 1<br>$\bar{X}/S.D.$ | Time 3<br>$\bar{X}/S.D.$ |
|--------------------------------|--------------------------|--------------------------|
| <i>Closest Child (N=116)</i>   |                          |                          |
| Child in Winnipeg (< 25 km)    | 5.08/4.86 (n=86)         | 4.64/3.95 (n=96)         |
| Entire Sample with Children    | 182.94/712.56            | 161.50/77.84             |
| <i>Closest Sibling (N=122)</i> |                          |                          |
| Siblings in Winnipeg (< 25 km) | 5.33/4.95 (n=80)         | 5.23/4.58 (n=81)         |
| Entire Sample with Siblings    | 772.46/2751.08           | 765.82/2752.84           |
| <i>Closest Friend (N=106)</i>  |                          |                          |
| Friend in Winnipeg (< 25 km)   | 4.23/4.35 (n=104)        | 3.51/3.93 (n=106)        |
| Entire Sample with Friends     | 4.67/6.11                | 3.51/3.93                |

The distinguishing feature of distance to the closest friend is the high proportion of proximate friends who lived less than two kilometres from respondents throughout the study period (Table 5.18). Moreover, this proportion increased from 39.4 percent at the previous residence (Time 1), to 50.0 percent at the senior housing project (Time 3). Table 5.19 indicates that the mean distance to the closest friend within Winnipeg decreased from 4.2 kilometres at the previous residence (Time 1) to 3.5 kilometres at



the senior housing project (Time 3). For the entire sample who reported having a friend, decreases in distance separation of less than 10 kilometres were registered by 61.7 percent of the sample, while increases of up to 9.99 kilometres were recorded by 36.2 percent of respondents (Appendix F.12). No significant differences were found in the mean distance to the closest friend during the study period (Appendix C.13).

Some significant associations were disclosed at specific times during the study period between various aspects of the social environment and the socio-demographic characteristics of age, gender, and urban location. Respondents under the age of 75 were significantly more likely to live in closer proximity to their siblings (Time 1 & Time 3) and friends (Time 3) than their older counterparts (Appendix D.25-26). Additionally, the “young-old” generally expressed significantly higher levels of satisfaction with proximity to friends at the senior housing project (Times 2 & 3) (Appendix D.27). It is also notable that more female respondents were significantly more satisfied with their proximity to family at each of the three times of the study period than males (Appendix D.28).

In summary, changes in the content of the social environment were demonstrated by both observer-defined and resident-appraised measures. For many respondents, distance to children, siblings, and friends decreased after the move, while there was also an increase in satisfaction with proximity to family and friends.

### **5.3.3 Observer-Defined and Resident-Appraised Change in the Content of the Service Environment**

This sub-section investigates changes in the respondent’s service environment as a result of the move to a low-income senior housing project. The analysis commences

with an evaluation of change in the content of the observer-defined service environment in terms of residential proximity to the closest major-chain grocery store, regional shopping centre, and bus stop. Data are then presented on residential appraisals of each individual concerning two components of the service environment: (a) salience of service site proximities at Time 3; and (b) satisfaction with residential proximities to salient service sites for Times 1-3. Finally, the service environment is further evaluated in relation to travel distances to observer-defined service sites.

Table 5.20 presents observer-defined data relating to the most proximate bus stop, regional shopping centre, and major-chain grocery store from (a) the previous residence, and (b) the senior housing project. These three categories of services are broadly indicative of the content of the local service environment, and access to the selected sites may assume importance in maintaining the older person's independence. It was possible to obtain complete data for the location of sites in the three service categories for all of the senior housing projects included in this study, and the previous residences of respondents who had previously lived in Winnipeg. In relation to the previous residence, respondents who had lived in other Canadian urban centres were assigned the mean values of times/distances from the residence to the most proximate bus stop, shopping centre, and grocery store determined for respondents who had previously lived in Winnipeg. Those respondents who previously resided in rural Manitoba or Saskatchewan were assigned the absolute maximum value of the time/distance to the most proximate service site per category for previous residences located in Winnipeg.

**Table 5.20. Spatial Proximity of the Closest Bus Stop, Major Shopping Centre, and Major-Chain Grocery Store to Place of Residence at Time 1 and Time 3 for the Entire Sample (N=149): Percentage Frequencies, Mean Values, and Standard Deviations**

| <b>Spatial Proximity Service</b>                                | <b>Time 1<br/>% (n)</b> | <b>Time 3<br/>% (n)</b> |
|---|-------------------------|-------------------------|
| <i>Walking Time to Bus Stop (Minutes)</i>                       |                         |                         |
| 1 - 2   | 27.51 (31)              | 23.49 (35)              |
| 3 - 4   | 24.16 (36)              | 69.13 (103)             |
| 5 - 6   | 23.49 (35)              | 7.38 (11)               |
| 7 - 9   | 8.05 (12)               | 0.00 (0)                |
| 10 - 14   | 7.38 (11)               | 0.00 (0)                |
| 15 - 18   | 9.40 (14)               | 0.00 (0)                |
| <b>Mean/S.D.</b>  | <b>5.72/4.84</b>        | <b>3.15/0.93</b>        |
| <i>Distance to Shopping Centre (kilometres)</i>                 |                         |                         |
| 0 - 0.49  | 0.00 (0)                | 16.11 (24)              |
| 0.50 - 0.99   | 5.37 (8)                | 0.00 (0)                |
| 1.0 - 1.99  | 6.04 (9)                | 31.54 (47)              |
| 2.0 - 4.99  | 28.19 (42)              | 46.98 (70)              |
| 5.0 - 9.99  | 38.93 (58)              | 5.37 (8)                |
| 10.0 or more  | 21.48 (32)              | 0.00 (0)                |
| <b>Mean/S.D.</b>  | <b>7.63/6.21</b>        | <b>2.30/1.51</b>        |
| <i>Distance to Major-Chain Grocery Supermarket (kilometres)</i> |                         |                         |
| 0 - 0.49  | 9.40 (14)               | 26.85 (40)              |
| 0.50 - 0.99   | 14.77 (22)              | 46.31 (69)              |
| 1.0 - 1.99  | 23.49 (35)              | 24.16 (36)              |
| 2.0 - 4.99  | 37.58 (56)              | 2.68 (4)                |
| 5.0 - 9.99  | 10.74 (16)              | 0.00 (0)                |
| 10.0 or more  | 4.03 (6)                | 0.00 (0)                |
| <b>Mean/S.D.</b>  | <b>4.51/12.42</b>       | <b>0.76/0.53</b>        |

Table 5.20 indicates that the average number of minutes required to walk to the nearest bus stop was reduced for the entire sample after the move to the senior housing project. In fact, a decrease in the number of minutes was recorded by 59.7 percent of the sample between Time 1 and Time 3 (Appendix F.13). Table 5.20 also

illustrates that all respondents at the senior housing projects were required to walk no more than six minutes in order to access a bus stop, while only approximately three quarters of the entire sample enjoyed similar proximity at their previous residences. The following unstructured remarks illustrate that respondents typically appreciated greater proximity to public transit at the senior housing project:

*My access to transportation has definitely improved because the bus stop is right outside the door of the apartment. (ID#186, 71 years old, male, inner city project)*

*The bus stop is closer, it's a block closer than at my home on [name of street]. (ID#49, 76 years old, female, inner city project)*

However, some concerns were expressed among the minority of the respondents (27.5 percent) who experienced an increase in walking time to the nearest bus stop after moving to the senior housing project:

*When you have to walk to take the bus it is scary. The other apartment – bus was right near the door of the block – much safer. (ID#22, 68 years old, female, inner city project)*

In the present study, four enclosed suburban regional shopping malls and the downtown area (which includes planned enclosed shopping centres) are classified as “major shopping centres”. Unlike the downtown area, each of the four regional shopping centres contains a major-chain supermarket. However, since none of the senior housing projects have their closest major-chain grocery supermarket located in any of the major shopping centres, the two sets of “most proximate outlets” (i.e., “major shopping centres” and “major-chain grocery supermarkets”) represent independent categories of shopping opportunities.

Table 5.20 discloses that the mean distance to the most proximate shopping centre decreased from 7.63 to 2.30 kilometres for the entire sample after the move to the senior housing project. Typically, one respondent commented:

*I'm closer to the shopping centre. (ID#126, 58 years old, female, suburban project)*

The same table also indicates that while 60.4 percent of the respondents lived five kilometres or more from a major shopping centre while at the previous residence, no less than 94.6 percent of sample members resided in a senior housing project that was located less than five kilometres from a major centre. Moreover, 91.3 percent of the entire sample recorded a decrease in distance to the most proximate shopping centre as a result of the move (Appendix F.14).

Table 5.20 also discloses that mean distance to the most proximate major-chain grocery supermarket decreased substantially from 4.51 kilometres to 0.76 kilometres after the move to government-subsidized senior housing. While 52.4 percent of the entire sample lived two kilometres or more from the most proximate major-chain grocery supermarket while at their previous residence, 73.2 percent lived in senior housing projects located less than one kilometre from the nearest outlet. In fact, no fewer than 81.2 percent of the respondents registered increases in proximity to a major-chain grocery supermarket as illustrated by the following statements:

*Where I lived on [name of street], I had to go far to Safeway. Here I'm right across the street from groceries and where I cash my cheque too. (ID#230, 55 years old, female, inner city project)*

*Safeway and Superstore are close to walk to. (ID#26, 68 years old, female, suburban project)*

Only 15.4 percent of the sample recorded an increase in the distance separation from the nearest major-chain grocery supermarket after moving to the senior housing project (Appendix F.15). As the comments illustrate, some senior housing projects were not in close proximity to a larger grocery store:

*The only problem is the big grocery stores are too far away. (ID#181, 63 years old, male, inner city project)*

The above discussion demonstrates the changes that occurred in the content of the service environment after moving to the senior housing project. Specifically, significant differences were found between Time 1 and Time 3 in the mean distance to the closest bus stop, shopping centre, and major-chain grocery store (Appendix C.14-16).

In relation to resident-appraised change, the salience of the service environment components was determined by requesting that the respondents rate the importance of proximity to 18 service sites (bank, small grocery store, major-chain grocery store, pharmacy, doctor's office, public transit, church, hospital, friends, shopping centre, family, restaurant, library, seniors centre, leisure, entertainment, sports facility, and bar) on a five-point scale with scores ranging from "very unimportant" (1) to "very important" (5). According to the proportion of respondents who indicated that proximity to each site is either "important" (4) or "very important" (5), the service sites with the highest salience for the entire sample at Time 3 included: bank (75.2 percent of respondents), small grocery store (74.5 percent), major-chain grocery store (74.5 percent), pharmacy (71.8 percent), and physician's office (68.5 percent) (Table 5.21). In light of their relative importance, these five service sites were selected to be

included in subsequent analysis relating to resident-appraised change in the service environment.

**Table 5.21. Salience of Proximity to Bank, Small Grocery Store, Major-Chain Grocery Store, Pharmacy, and Physician's Office for the Entire Sample (N=149), Time 3: Percentage Frequencies**

| <b>Salience</b>         | <b>Bank</b> | <b>Small Grocery</b> | <b>Major Grocery</b> | <b>Pharmacy</b> | <b>Physician's Office</b> |
|-------------------------|-------------|----------------------|----------------------|-----------------|---------------------------|
| <b>Very Important</b>   | 17.4 (26)   | 21.5 (32)            | 23.5 (35)            | 12.8 (19)       | 15.4 (23)                 |
| <b>Important</b>        | 57.7 (86)   | 53.0 (79)            | 51.0 (76)            | 59.1 (88)       | 53.0 (79)                 |
| <b>Neither</b>          | 18.8 (28)   | 21.5 (32)            | 18.1 (27)            | 16.8 (25)       | 16.8 (25)                 |
| <b>Unimportant</b>      | 5.4 (8)     | 4.0 (6)              | 6.7 (10)             | 10.7 (16)       | 14.1 (21)                 |
| <b>Very Unimportant</b> | 0.7 (1)     | 0.00 (0)             | 0.7 (1)              | 0.7 (1)         | 0.7 (1)                   |

Resident appraisals of proximity to services were first evaluated in terms of a global measure of satisfaction. Proximity to services in general was rated by 89.3 percent of the entire sample to be either "important" or "very important". Table 5.22 discloses that at Time 3, 89.9 percent of the entire sample registered a "good" or "excellent" rating of proximity to services, representing a percentage point increase of no less than 20.1 points since Time 1. This suggests that the move generally resulted in greater satisfaction with proximity to necessary shops, goods, services, and care facilities. Significant differences were found in satisfaction with proximity to services (Appendix C.17). A comparison between Time 1 and Time 3 reveals that while 35.6 percent of respondents experienced an improvement in their satisfaction rating of proximity, only 12.8 percent of the sample recorded a decline after the move (Appendix F.16). As the following unstructured comments demonstrate, however, changes in the overall satisfaction with proximity to services at the senior housing project varied:

*My satisfaction has increased because everything is within walking distance, within two blocks of my apartment. (ID#136, 63 years old, female, inner city project)*

*My satisfaction has decreased, there's nothing really close to this block compared to my last residence. (ID#217, 95 years old, female, suburban project)*

**Table 5.22. Satisfaction of the Entire Sample (N=149) with Proximity to Services, Times 1-3: Percentage Frequencies**

| Satisfaction Level | Time 1<br>% (n) | Time 2<br>% (n) | Time 3<br>% (n) |
|--------------------|-----------------|-----------------|-----------------|
| Excellent          | 12.75 (19)      | 30.20 (45)      | 25.50 (38)      |
| Good               | 57.05 (85)      | 58.39 (87)      | 64.43 (96)      |
| Fair               | 18.12 (27)      | 8.72 (13)       | 6.71 (10)       |
| Poor               | 10.74 (16)      | 1.34 (2)        | 1.34 (2)        |
| Bad                | 1.34 (2)        | 1.34 (2)        | 2.01 (3)        |

Satisfaction ratings of proximity to each of the four salient service categories (grocery stores<sup>15</sup>, pharmacy, bank, and doctor's office) for Times 1-3 were based on a seven-point scale ranging from "very dissatisfied" (1) to "very satisfied". Table 5.23 summarizes the percentages of respondents who assigned the two most positive ratings ("very satisfied" and "satisfied"). Generally, these data indicate that respondents expressed high levels of satisfaction with proximity to the four service categories throughout the study period. Nevertheless, there is a trend towards higher levels of satisfaction after the move to the senior housing project, particularly in relation to grocery stores and pharmacies.

<sup>15</sup> Respondents were asked to rate their satisfaction with proximity to grocery stores in general. Small grocery and major-chain grocery stores were thus not differentiated when satisfaction ratings were elicited.



**Table 5.23. Percentages of the Entire Sample (N=149) Expressing Satisfaction\* with Proximity to Salient Service Categories, Times 1-3: Percentage Frequencies**

| Service Category          | Time 1<br>% (n) | Time 2<br>% (n) | Time 3<br>% (n) |
|---------------------------|-----------------|-----------------|-----------------|
| <i>Grocery Stores</i>     | 75.16 (112)     | 78.52 (117)     | 89.26 (133)     |
| <i>Pharmacy</i>           | 74.50 (111)     | 79.19 (118)     | 88.59 (132)     |
| <i>Bank</i>               | 79.87 (119)     | 77.85 (116)     | 82.55 (123)     |
| <i>Physician's Office</i> | 71.81 (107)     | 75.17 (112)     | 81.21 (121)     |

\*Rating of "very satisfied" or "satisfied"

At the individual level, approximately one-half of the respondents reported changes in their satisfaction levels with proximity to the service sites between Time 1 and Time 3 (Appendix F.17-20). Overall, the general trends indicate that higher proportions of respondents reported increased satisfaction with proximity to the sites. Significant differences were disclosed during three time periods in satisfaction with proximity to a grocery store, pharmacy, bank, and physician's office (Appendix C.18-21).

With respect to the second observer-defined component of change in the content of the service environment, Table 5.24 summarizes distances (in kilometres) from the place of residence to the outlet most frequently patronized by the respondent in each of the five service types for Time 1 and Time 3.<sup>16</sup> Not surprisingly, variable numbers of respondents reported accessing each service type at both Time 1 and Time 3.

Therefore, a respondent who did not report accessing a service type at either residence was omitted from the analysis.

<sup>16</sup> If the location of the most frequently used service site changed between Time 2 and Time 3, the distance at Time 3 was used as it was assumed that the respondent had by then become more familiar with the area surrounding the housing project. For example, one respondent commented that because she could not get a ride, she changed her most frequently patronized pharmacy to one located across the street from the senior housing project.

**Table 5.24. Distances to the Most Frequently Visited Small Grocery Store, Major-Chain Grocery Store, Pharmacy, Bank, and Physician's Office at Time 1 and Time 3 for Members of the Entire Sample: Percentage Frequencies, Mean Values, and Standard Deviations**

| Distance<br>(kilometres)               | Time 1<br>% (n) | Time 3<br>% (n) |
|--|-----------------|-----------------|
| <i>Small Grocery Store</i>             | (N=108)         | (N=114)         |
| 0.00 – 0.49                            | 26.85 (29)      | 35.09 (40)      |
| 0.50 – 0.99                            | 12.04 (13)      | 35.09 (40)      |
| 1.00 – 1.99                            | 44.44 (48)      | 8.77 (10)       |
| 2.00 – 4.99                            | 11.11 (12)      | 14.91 (17)      |
| ≥ 5.00 or more                         | 5.56 (6)        | 6.14 (7)        |
| Mean/S.D.                              | 1.59/1.96       | 1.45/2.46       |
| <i>Major-Chain Grocery Supermarket</i> | (N=101)         | (N=119)         |
| 0.00 – 0.49                            | 13.86 (14)      | 25.21 (30)      |
| 0.50 – 0.99                            | 21.78 (22)      | 21.85 (26)      |
| 1.00 – 1.99                            | 22.77 (23)      | 20.17 (24)      |
| 2.00 – 4.99                            | 27.72 (28)      | 27.73 (33)      |
| ≥ 5.00 or more                         | 13.86 (14)      | 5.04 (6)        |
| Mean/S.D.                              | 5.44/14.99      | 1.71/1.74       |
| <i>Pharmacy</i>                        | (N=128)         | (N=141)         |
| 0.00 – 0.49                            | 17.97 (23)      | 31.21 (44)      |
| 0.50 – 0.99                            | 18.75 (24)      | 22.70 (32)      |
| 1.00 – 1.99                            | 25.00 (32)      | 21.28 (30)      |
| 2.00 – 4.99                            | 28.13 (36)      | 17.73 (25)      |
| ≥ 5.00 or more                         | 10.16 (13)      | 7.09 (10)       |
| Mean/S.D.                              | 3.55/10.33      | 1.69/2.17       |
| <i>Bank</i>                            | (N=143)         | (N=140)         |
| 0 – 0.49                               | 16.78 (24)      | 27.14 (38)      |
| 0.50 – 0.99                            | 18.18 (26)      | 17.14 (24)      |
| 1.0 – 1.99                             | 16.78 (24)      | 25.71 (36)      |
| 2.0 – 4.99                             | 37.06 (53)      | 22.86 (32)      |
| ≥ 5.00 or more                         | 11.19 (16)      | 7.14 (10)       |
| Mean/S.D.                              | 2.71/3.56       | 1.88/2.30       |
| <i>Physician's Office</i>              | (N=141)         | (N=148)         |
| 0 – 0.49                               | 7.80 (11)       | 13.51 (20)      |
| 0.50 – 0.99                            | 9.22 (13)       | 22.30 (33)      |
| 1.0 – 1.99                             | 19.15 (27)      | 11.49 (17)      |
| 2.0 – 4.99                             | 22.70 (32)      | 24.32 (36)      |
| ≥ 10.00 or more                        | 14.89 (21)      | 6.76 (10)       |
| Mean/S.D.                              | 6.83/13.94      | 3.46/3.46       |

Table 5.24 indicates that there was an increase in the proportion of the sample living within less than one kilometre of the most frequently accessed site for each service type after moving to the senior housing project. In relation to the small grocery store type, the percentage of respondents living within one kilometre of the most frequently patronized store increased from 38.9 percent to 70.2 percent during the study period. However, the differences in the mean distances registered for this service type is the smallest among the five service types. It is notable that the most frequently patronized major-chain grocery store recorded the greatest decrease in mean distance after the move to the senior housing project. And while distance to the most frequently patronized physician's office also registered a substantial difference, the change in distance was more limited to the most frequently patronized pharmacy and bank.

At the individual level, decreases in distance to the most frequently visited sites between Time 1 and Time 3 were registered by 60.0 percent of the respondents for small grocery store, 53.2 percent for major-chain grocery supermarket, 63.0 percent for pharmacy, 62.5 percent for bank, and 60.3 percent for physician's office (Appendix F.21-25). As a result of the high proportion of the sample that experienced improved proximity to the service environment after moving, significant decreases were found in the mean distances to the most frequently visited major-chain grocery store, pharmacy, bank, and physician's office (Appendix C.22-25). Only changes in the mean distance from the previous residence to the senior housing project to the most frequently patronized small grocery store were not found to be significantly different (Appendix C.26).

Several significant associations were found between components of the service environment and the characteristics of age, gender, and urban location. Shopping centres and bus stops tended to be located further from both the previous residence and the senior housing project for the oldest residents of suburban projects compared to their inner city counterparts (Appendix D.29-31). In contrast, suburban projects and females were more likely to enjoy greater proximity to a major-chain grocery store at Time 3 (Appendix D.32-33). While respondents living in suburban projects were situated further from the most frequently accessed physician's office and small grocery store, they were more proximate to the most frequently visited major-chain grocery store (Appendix D.34-36). In addition, there was a tendency for younger respondents to live in senior housing projects in closer proximity to the most frequently patronized major-chain grocery store, pharmacy, bank, and physician's office (Appendix D.37-40). Women were more likely to rate general satisfaction with access to services negatively than men (Appendix D.41), while respondents under the age of 75 tended to be more satisfied with proximity to grocery stores, pharmacies, and banks than their older counterparts (Appendix D.42-44).

Some of the changes in service environments paralleled those associated with the social environment of respondents. For instance, proximity to resources increased as a result of the move to the senior housing project. In addition, respondents reported increased satisfaction with proximity to salient service categories.

#### **5.4 Research Question 4**

Research Question 4 asks: Are there significant changes in individual social and service behaviour circuits of recent movers to a government-subsidized senior housing project? The following two sub-sections consider observer-defined change in individual social and service behaviour circuits.

##### **5.4.1 Observer-Defined Change in Individual Social Behaviour Circuits**

The observer-defined measure of change in individual social behaviour circuits was assessed in terms of levels of interaction with family and friends and use of automobile transportation to access the social environment. For the first component, frequency of visits was evaluated on an eight-point scale ranging from “never” (1) to “at least once per day” (8) that was then converted into the number of days per year. Table 5.25 refers to the total number of visits per year with children, siblings, and friends at Times 1-3. The table reveals that throughout the study period over 55 percent of the sample visited with each of children and friends at least once a week. In comparison, only 25 percent of the sample reported visiting with siblings at least once a week during the same period. Overall, respondents reported visiting with friends with the greatest frequency. It is notable that the average number of visits with friends per year increased from 139 at Time 1 to 189 at Time 3. Relatively high mean values were also recorded for frequency of visits per year with children. In contrast, respondents reported visiting on average with siblings approximately once a week at both Time 1 and Time 3.

**Table 5.25. Frequency of Visits with Children, Siblings, and Friends, Times 1-3: Percentage Frequencies, Mean Values, and Standard Deviations**

| Frequency of Visits         | Time 1<br>% (n) | Time 2<br>% (n) | Time 3<br>% (n) |
|-----------------------------|-----------------|-----------------|-----------------|
| <i>All Children (N=116)</i> |                 |                 |                 |
| Once per day                | 13.79 (16)      | 9.48 (11)       | 13.79 (16)      |
| 1-6 visits per week         | 42.24 (49)      | 47.41 (55)      | 42.24 (49)      |
| 1-3 visits per month        | 18.10 (21)      | 17.24 (20)      | 25.00 (29)      |
| < 1 visits per month        | 11.21 (13)      | 12.93 (15)      | 9.48 (11)       |
| 0 visits per year           | 14.66 (17)      | 12.93 (15)      | 9.48 (11)       |
| Mean/S.D. per year          | 118.96/149.00   | 119.78/164.24   | 127.85/182.45   |
| <i>All Siblings (N=122)</i> |                 |                 |                 |
| Once per day                | 7.38 (9)        | 2.46 (3)        | 5.74 (7)        |
| 1-6 visits per week         | 18.03 (22)      | 23.77 (29)      | 22.95 (28)      |
| 1-3 visits per month        | 22.13 (27)      | 22.95 (28)      | 18.03 (22)      |
| < 1 visits per month        | 28.69 (35)      | 27.05 (33)      | 32.79 (40)      |
| 0 visits per year           | 23.77 (29)      | 23.77 (29)      | 20.49 (25)      |
| Mean/S.D. per year          | 53.66/119.20    | 46.25/100.13    | 52.75/111.41    |
| <i>All Friends (N=106)</i>  |                 |                 |                 |
| Once per day                | 14.15 (15)      | 15.09 (16)      | 22.64 (24)      |
| 1-6 visits per week         | 41.51 (44)      | 47.17 (50)      | 35.85 (38)      |
| 1-3 visits per month        | 20.75 (22)      | 18.87 (20)      | 15.09 (16)      |
| < 1 visits per month        | 16.04 (17)      | 13.21 (14)      | 16.98 (18)      |
| 0 visits per year           | 7.55 (8)        | 5.66 (6)        | 9.43 (10)       |
| Mean/S.D. per year          | 138.63/207.87   | 149.52/189.73   | 188.97/244.50   |

While increases in the number of visits with children and friends between Time 1 and Time 3 were reported by 41.4 percent and 38.7 percent of the sample respectively, these values were balanced by 38.8 percent and 45.3 percent of the respondents reporting corresponding decreases (Appendix F.26-27). As the following unstructured comments illustrate, some respondents enjoyed more frequent contact with family and friends due to increased proximity, while others indicated that they were more isolated in the senior housing project:

*My daughter can come and help me more often now because this is on her way home from work. (ID#200, 88 years old, female, suburban project)*

*My children come less often because they think I'm settled now and they don't have to come as often. (ID#212, 80 years old, female, suburban project)*

*I have been friends with some of the people in here for years – it's nice that we're together here in the same block. (ID#231, 76 years old, female, inner city project)*

*I have more difficulty in getting around now ... My friend is a busy lady so the most visiting we do is by phone. (ID#81, 78 years old, female, suburban project)*

Approximately one-third of the sample experienced an increase in the number of visits with siblings while a similar proportion reported a decrease in frequency visits (Appendix F.28). Variation among respondents in terms of change in frequency of visits with siblings is reflected by the following comments:

*I wanted to move to Winnipeg to be close to my brother ... my brother lives real close and we visit often. (ID#62, 56 years old, male, inner city project)*

*It's further for my brother to come now and he doesn't come as often. (ID#131, 80 years old, male, inner city project)*

It is also notable that the frequency of visits with children and siblings between Time 2 and Time 3 increased for 40.5 percent and 32.8 percent respectively, while 31.1 percent of the sample reported an increase in visits with friends. During the same period, friends were visited less often by 47.2 percent of the respondents, whereas frequency of visits with children and siblings decreased for 38.8 percent and 28.7 percent of the respondents respectively. Thus, at the individual level, the overwhelming majority of sample members experienced either positive or negative change in their frequencies of visits with children or friends or siblings after the move to the senior housing project. Despite these noted changes, no significant differences

were found concerning the mean frequency of visits with children, siblings, or friends (Appendix C.27-29).

The second observer-defined change in individual social behaviour circuits is measured by “access to automobile travel”. This measure is the number of each of family and friends visited as either “car driver” or “car passenger” at least once per month. Data on these automobile mode usages are summarized for the period Time 1–3 in Table 5.26. The data indicate moderate decreases in the proportion of the sample travelling by automobile to the homes of friends or family at least once per month immediately after moving to the senior housing project (Time 2), with further decreases during the subsequent year. Less than 20 percent of respondents were members of households that owned an automobile either before or after the move to the project. While it is thus not surprising to find that three-quarters (74.5 percent) of the sample did not travel by automobile to the homes of friends at least once per month at Time 1, it is less clear why this proportion had increased to 88.6 percent at Time 3. As family are more likely than friends to provide rides, 38.3 percent of the sample travelled by automobile to the homes of family at least once per month prior to moving, although this value decreased to only 26.9 percent at Time 3. Open-ended comments suggest that the disclosed decrease in the use of automobile transportation for travel to the homes of friends and family was partly related to the cessation of driving by older individuals:

*We both gave up driving and sold the vehicle.* (ID#226, 76 years old, female, suburban project)

*I don't see my friends as often anymore because I'm not driving my car anymore and my friends are all getting older too.* (ID#218, 82 years old, female, suburban project)



*I saw my daughter more before the move because I was driving then. (ID#169, 88 years old, female, inner city project)*

*I see my friend less often now because she sold her car but we talk on the phone more. (ID#241, 76 years old, female, suburban project)*

**Table 5.26. Use of Automobile Travel Mode to Visits Friends and Family by the Entire Sample (N=149), Times 1-3: Percentage Frequencies**

| <b>Car Driver or Passenger</b> | <b>Time 1<br/>% (n)</b> | <b>Time 2<br/>% (n)</b> | <b>Time 3<br/>% (n)</b> |
|--------------------------------|-------------------------|-------------------------|-------------------------|
| <i>To Friends</i>              |                         |                         |                         |
| Once per month or more         | 25.50 (38)              | 16.78 (25)              | 11.41 (17)              |
| Less than once per month       | 74.50 (111)             | 83.22 (124)             | 88.59 (132)             |
| <i>To Family Members</i>       |                         |                         |                         |
| Once per month or more         | 38.26 (57)              | 32.89 (49)              | 26.85 (40)              |
| Less than once per month       | 61.75 (92)              | 67.11 (100)             | 73.15 (109)             |

The decrease in the use of automobile transportation to access the social environment is also demonstrated when change at the individual level is considered (Appendix F.29-30). First, similar proportions of the sample recorded a decrease in the use of automobile transportation between Time 1 and Time 3 to access the homes of friends (16.8 percent) and family members (20.1 percent). Conversely, few respondents reported increases in the availability of a car to travel to the homes of friends (2.7 percent) and family (7.4 percent). Significant differences were found between Time 1 and Time 2 and Time 1 and Time 3 in the mean number of trips made in an automobile to the homes of friends and families (Appendix C.30-31).

Some significant associations were disclosed at specific times during the study period between individual social behaviour circuits and the socio-demographic characteristics of age, gender, and urban location. Respondents under the age of 75

(Time 1 & 2), and those in the inner city (Time 2) were significantly more likely to visit with friends more frequently than their respective suburban counterparts (Appendix D.45-46). This may reflect the greater degree of personal mobility of the young-old elderly, as well as the fact that younger respondents typically lived closer to friends. It is notable that female respondents visited with their children more frequently at both Time 1 and Time 2 (Appendix D.47). Female respondents were also significantly more likely to use automobile transportation to travel to the homes of family at Time 3 than their male counterparts (Appendix D.48).

Overall, the data disclose that important changes occurred in the individual social behaviour circuits of respondents after the move to the senior housing project. Although the increase in the proportion of respondents who visited weekly with family and friends after the move was non-significant, a significant decrease was found in the proportion of the sample utilizing vehicular transportation in order to access social contacts.

#### **5.4.2 Observer-Defined Change in Individual Service Behaviour Circuits**

Observer-defined change in individual service behaviour circuits includes two components: (a) trip frequencies to observer-defined service sites; and (b) use of automobile transportation to access observer-defined service sites. The first of these components is the trip frequency to salient service sites, which was evaluated on an eight-point scale ranging from “never” (1) to “at least once per day” (8) per service type. These ratings were converted into the number of days per year, which thus provided a simple measure of this variable. Table 5.27 presents data on the frequency

of visits to each of these site categories at the previous residence (Time 1), as well as Time 2 and Time 3. Overall, Table 5.27 indicates that over 60 percent of respondents consistently patronized each of the two grocery store categories throughout the study period. In addition, the table demonstrates that a slight increase was recorded between Time 1 and Time 3 in the average number of visits to each of these two site categories. In relation to trip frequencies at the individual level, almost equal proportions of the sample reported either an increase or decrease in frequency of visits to each of the two grocery store categories (Appendix F.31-32). Several respondents commented on increased frequency of trips to grocery stores as a result of greater proximity:

*Since I had my knee replacement in April, 1999, and now that I am closer to the grocery store and bank I can walk on my own. (ID#165, 72 years old, male, inner city project)*

*Now I can walk across the street to the Safeway. (ID#127, 73 years old, male, inner city project)*

Others commented on the decreases in trip frequency regardless of the improved proximity of the stores because of decrements in personal and environmental factors:

*It's hard for me to get my groceries. The stores around me don't deliver. The last time I went for groceries, I fell and I haven't tried going again. My daughter lives in Pinawa so I can't always depend on her. (ID#82, 84 years old, female, suburban project)*

*Things are closer but the neighbourhood is not safe so I don't go out for things as much as I used to. (ID#105, 60 years old, female, suburban project)*

**Table 5.27. Frequency of Visits of the Entire Sample (N=149) to Salient Service Categories, Times 1-3: Percentage Frequencies, Mean Values and Standard Deviations**

| Frequency of Visits              | Time 1<br>% (n) | Time 2<br>% (n) | Time 3<br>% (n) |
|----------------------------------|-----------------|-----------------|-----------------|
| <i>Small Grocery Store</i>       |                 |                 |                 |
| 1-7 per Week                     | 42.95 (64)      | 40.94 (61)      | 49.66 (74)      |
| 1-3 per Month                    | 21.48 (32)      | 20.81 (31)      | 16.78 (25)      |
| < 1 per Month                    | 2.01 (3)        | 0.67 (1)        | 2.01 (3)        |
| Never                            | 33.56 (50)      | 37.58 (56)      | 31.54 (47)      |
| <b>Mean/S.D.</b>                 | 49.62/67.36     | 45.28/63.50     | 52.87/62.51     |
| <i>Major-Chain Grocery Store</i> |                 |                 |                 |
| 1-7 per Week                     | 44.29 (66)      | 46.98 (70)      | 46.98 (70)      |
| 1-3 per Month                    | 20.81 (31)      | 22.82 (34)      | 24.83 (37)      |
| < 1 per Month                    | 0.67 (1)        | 2.01 (3)        | 4.03 (6)        |
| Never                            | 34.53 (51)      | 28.19 (42)      | 24.16 (36)      |
| <b>Mean/S.D.</b>                 | 48.30/68.91     | 55.60/73.55     | 55.39/71.34     |
| <i>Pharmacy</i>                  |                 |                 |                 |
| 1-7 per Week                     | 5.37 (8)        | 7.38 (11)       | 7.38 (11)       |
| 1-3 per Month                    | 56.38 (84)      | 53.69 (80)      | 46.98 (70)      |
| < 1 per Month                    | 23.49 (35)      | 23.49 (35)      | 29.53 (44)      |
| Never                            | 14.77 (22)      | 15.44 (23)      | 16.11 (24)      |
| <b>Mean/S.D.</b>                 | 12.19/15.24     | 14.76/24.56     | 14.67/33.19     |
| <i>Bank</i>                      |                 |                 |                 |
| 1-7 per Week                     | 22.82 (34)      | 23.49 (35)      | 22.15 (33)      |
| 1-3 per Month                    | 69.80 (104)     | 66.44 (99)      | 59.73 (89)      |
| < 1 per Month                    | 2.01 (3)        | 2.01 (3)        | 4.70 (7)        |
| Never                            | 5.37 (8)        | 8.05 (12)       | 13.42 (20)      |
| <b>Mean/S.D.</b>                 | 27.72/28.85     | 29.49/33.39     | 27.64/35.71     |
| <i>Physician's Office</i>        |                 |                 |                 |
| 1-7 per Week                     | 0.67 (1)        | 1.34 (2)        | 5.37 (8)        |
| 1-3 per Month                    | 37.58 (56)      | 44.30 (66)      | 34.23 (51)      |
| < 1 per Month                    | 53.69 (80)      | 46.31 (69)      | 55.03 (82)      |
| Never                            | 8.05 (12)       | 8.05 (12)       | 5.37 (8)        |
| <b>Mean/S.D.</b>                 | 7.74/8.38       | 8.85/11.03      | 10.38/15.44     |

Table 5.27 discloses that in aggregate there were few changes in the frequency of visits to a pharmacy throughout the study period, with the mean number of visits per year increasing only slightly between Time 1 and Time 3. Almost equal proportions of the sample reported either an increase or decrease in the frequency of visits to a pharmacy after moving to the senior housing project (Appendix F.33). In addition, little change occurred with regard to frequency of visits to banks during the study period. There was only a slight decrease in the mean number of visits to a bank per year after the move to the senior housing project. At the individual level, however, 34.9 percent of respondents reported a decrease in the frequency of visits to a bank during the study period, while only 24.8 percent of the sample recorded an increase (Appendix F.34). Table 5.27 indicates that aggregate changes in the frequency of visits to a physician were modest during the study period. At the individual level, 41.6 percent reported an increase in the frequency of visits to a physician, while a decrease was registered by 31.5 percent of the sample (Appendix F.35). It is interesting that significant differences were only registered for the frequency of visits to a physician's office between Time 2 and Time 3 (Appendix C.32-36).

Table 5.28 provides data relating to the second indicator of changes in the individual behaviour circuits of the service environment: transport modal usage to each of four categories of salient service sites (i.e., grocery store, pharmacy, bank, and physician's office) over the study period. For each respondent, the number of outlets in each of the four categories to which they travelled as either "car driver" or "car passenger" at least once per month was totalled to determine the usage of automobile travel mode to each site.

**Table 5.28. Usage of Automobile Travel Mode to Service Site Categories for the Entire Sample (N=149), Times 1-3: Percentage Frequencies**

| <b>Car Driver or Passenger</b> | <b>Time 1<br/>% (n)</b> | <b>Time 2<br/>% (n)</b> | <b>Time 3<br/>% (n)</b> |
|--------------------------------|-------------------------|-------------------------|-------------------------|
| <i>Grocery Store</i>           |                         |                         |                         |
| Once per month or more         | 38.93 (58)              | 42.28 (63)              | 67.79 (101)             |
| Less than once per month       | 61.07 (91)              | 57.72 (86)              | 32.21 (48)              |
| <i>Pharmacy</i>                |                         |                         |                         |
| Once per month or more         | 20.81 (31)              | 18.12 (27)              | 10.74 (16)              |
| Less than once per month       | 79.19 (118)             | 81.88 (122)             | 89.26 (133)             |
| <i>Bank</i>                    |                         |                         |                         |
| Once per month or more         | 28.86 (43)              | 24.83 (37)              | 22.15 (33)              |
| Less than once per month       | 71.14 (106)             | 75.17 (112)             | 77.85 (116)             |
| <i>Physician's Office</i>      |                         |                         |                         |
| Once per month or more         | 10.07 (15)              | 12.08 (18)              | 11.41 (17)              |
| Less than once per month       | 89.93 (134)             | 87.92 (131)             | 88.59 (132)             |

It is noteworthy that the highest percentages of respondents travelling by automobile were in the grocery store category. In addition, grocery stores represented the only site category to experience a percentage increase in the frequency of visits by automobile after the move to the senior housing project. Several respondents commented on this improved availability of automobile transportation provided by family members for grocery shopping:

*It's on my brother's way home from work and I'm further away from a large supermarket so he stops in and we go to the supermarket together. (ID#11, 60 years old, female, inner city project)*

*My daughters live close by now and they drive me to the store. (ID#30, 77 years old, female, suburban project)*

In relation to the other site categories, Table 5.28 indicates that there was a tendency for travel by automobile to decline after the move. At the individual level,

of those respondents who experienced change after the move, a greater percentage reported a decrease in automobile transportation to access the grocery store, pharmacy or bank (Appendix F. 36-38). However, almost equal proportions reported an increase (8.7 percent) or decrease (7.4 percent) in the use of automobile transportation to access the physician's office between Time 1 and Time 3 (Appendix F.39). It is notable that in some cases respondents were able to substitute other appropriate travel modes for automobile transportation as these statements illustrate:

*I don't have the convenience of my brother driving me as he did when I lived with him. But I have easy access to bus service if I want it, but I do a lot of walking to do my shopping and banking. (ID#135, 69 years old, male, inner city project)*

*My children are still available to drive me but things are closer so I can walk. (ID#151, 70 years old, female, suburban project)*

*The grocery van does help because I'm able to get my groceries and medication. I don't have to bother my grandchildren. I can take care of it on my own. (ID#51, 87 years old, male, inner city project)*

It is also interesting to note that significant differences were found between the previous residence and the senior housing project in the mean number of rides in an automobile per month between Time 1 and Time 3 and Time 2 and Time 3 to the grocery store and pharmacy, and to the bank between Time 1 and Time 3 (Appendix C.37-40).

Several significant associations were registered between components of the individual service behaviour circuits and the characteristics of age, gender, and urban location. The "young-old" elderly respondents patronized both small and major-chain grocery stores more frequently on average than their older counterparts (Appendix D.49-50), while residents of suburban projects visited major-chain grocery

stores more frequently than inner city residents (Appendix D.51). In part, the relationships registered reflect the relative paucity of major-chain grocery stores located in the inner city. Residents of suburban projects, and respondents younger than 75 years of age patronized pharmacies more frequently than their older and inner city counterparts respectively (Appendix D.52-53). One possible reason for this difference may relate to the greater reliance of older respondents on the home delivery service of prescriptions. And, finally, younger respondents in the sample reported a greater mean number of visits to a bank than their older counterparts (Appendix D.54), while residents of suburban projects visited their doctor less than inner city residents on average (Appendix D.55).

Some of the changes in individual service behaviour circuits paralleled those associated with the social environment of respondents. Respondents reported increased satisfaction with proximity to salient service categories. Despite the improved proximity of the service environment resources, however, there were only slight changes in the frequency of visits to service sites after the move. Finally, with the exception of grocery stores, respondents utilized automobile transportation less frequently to access the service environment after the move to the senior housing project.

### **5.5 Research Question 5**

The fifth research question asks: What changes occur in the personal state outcomes of recent movers to a government-subsidized senior housing project? Personal state outcome constructs include measures of self-rated health, morale,



depression, self-esteem, and control. Changes in these personal state outcomes over a one-year period are considered to be indicators of residential adjustment. While change in self-rated health was evaluated in terms of the entire study period, change data on the other personal state outcomes was limited to Time 2 and Time 3. In this sub-section, change in each of the five personal state outcomes is first evaluated on the basis of data elicited by the structured response formats. Representative open-ended responses are then presented concerning any aspects of adjustment deemed to be important by respondents.

Table 5.29 summarizes self-rated health scores of respondents for Times 1-3, with values ranging from 1 (bad) to 5 (excellent). Generally high levels of health were reported prior to the move to the senior housing project with 79.2 percent of respondents rating their health as at least "fair". Overall, the frequency distributions of health status of the sample exhibit only limited change during the study period. It should be noted that a percentage of respondents will experience a decrease in self-rated health because of aging and these changes are not related to the housing setting. However, respondents who rated their health as either "good" or "excellent" increased from 38.3 percent before the move (Time 1) to 49.0 percent at Time 3. At the individual level, only 12.8 percent of the entire sample recorded a reduced self-reported health score between Time 1 and Time 3, compared to 29.5 percent who reported better health (Appendix F.40). Nevertheless, the self-rated health frequencies presented in Table 5.29 were found to be significantly different for each of the three time periods (Appendix C.41).

**Table 5.29. Self-Rated Health for the Entire Sample (N=149), Times 1-3:  
Percentage Frequencies**

| <b>Self-Rated Health</b> | <b>Time 1<br/>% (n)</b> | <b>Time 2<br/>% (n)</b> | <b>Time 3<br/>% (n)</b> |
|--------------------------|-------------------------|-------------------------|-------------------------|
| <b>Excellent</b>         | 8.05 (12)               | 9.40 (14)               | 7.38 (11)               |
| <b>Good</b>              | 30.20 (45)              | 32.89 (49)              | 41.61 (62)              |
| <b>Fair</b>              | 40.94 (61)              | 38.26 (57)              | 35.57 (53)              |
| <b>Poor</b>              | 16.79 (25)              | 15.44 (23)              | 12.75 (19)              |
| <b>Bad</b>               | 4.03 (6)                | 4.03 (6)                | 2.68 (4)                |

Table 5.30 provides the PGC Morale Scale scores for Time 2 and Time 3 with scores ranging from 0 (low morale) to 14 (high morale).<sup>17</sup> Overall, the overwhelming majority of respondents recorded moderate or high levels of morale (i.e., scores over 6 points) at both Time 2 and Time 3. The table discloses that the mean morale score of respondents increased during the one-year period. Moreover, the percentage of respondents with scores above 8 increased from 49.7 percent to 63.1 percent. At the individual level, a decrease in morale was recorded by only 26.2 percent of the entire sample, while no less than 59.7 percent of the entire sample recorded an increase after one year. In fact, 32.2 percent of respondents recorded an increase of three points or more on the scale (Appendix F.41). There were significant differences between the mean PGC Morale scores recorded between Time 2 and Time 3 (Appendix C.42). Taken together these data affirm a general trend towards improved morale during the one-year period in the senior housing project.

<sup>17</sup> The reliability analysis for the PGC Morale Scale revealed that the Alpha (Cronbach) was 0.85 at both Time 2 and Time 3. The Alpha (Cronbach) is a model of internal consistency, based on the average inter-item correlation (SPSS, 1999).

**Table 5.30. PGC Morale Scores for the Entire Sample (N=149), Times 2-3: Percentage Frequencies, Mean Values, and Standard Deviations**

| PGC Morale Scale Score | Time 2<br>% (n) | Time 3<br>% (n) |
|------------------------|-----------------|-----------------|
| 0-2                    | 15.44 (23)      | 8.72 (13)       |
| 3-5                    | 14.09 (21)      | 9.40 (14)       |
| 6-8                    | 20.81 (31)      | 18.79 (28)      |
| 9-11                   | 28.19 (42)      | 31.54 (47)      |
| 12-14                  | 21.48 (32)      | 31.54 (47)      |
| Mean/S.D.              | 7.75/3.96       | 9.11/3.82       |

The third personal state outcome variable is the incidence of depression in the sample using the Center for Epidemiological Studies Depression Scale (CES-D) developed by Radloff (1977). Table 5.31 presents scores on the CES-D scale with scores ranging from 0 or no points (minimum depression) to 60 points (maximum depression).<sup>18</sup> Although scores of 16 or more are generally considered to indicate depression, Himmelfarb and Murrell (1983) have proposed that only scores of 19 or 20 and over are indicative of depression among persons age 55 and over. On the basis of the Himmelfarb and Murrell definition, the data indicate that moderate percentages of respondents experienced depression at the senior housing project, although those with scores of 19 or greater did increase from 3.4 percent at Time 2 to 18.1 percent at Time 3. Moreover, the table indicates that mean depression scores also increased significantly over the one-year period. Significant differences were found in the mean depression scores at Time 2 and Time 3 (Appendix C.43). Although almost equal proportions of the entire sample registered either an increase (48.3 percent) or decrease (46.3 percent) in depressive symptoms, it is notable that

<sup>18</sup> The reliability analysis of the CES-D Scale disclosed that the Alpha (Cronbach) was 0.70 at Time 2 and 0.91 at Time 3.

19.5 percent of respondents recorded an increase of 11 or more points during the one-year period (Appendix F.42).

**Table 5.31. CES-D Scores for the Entire Sample (N=149), Times 2-3: Percentage Frequencies, Mean Values, and Standard Deviations**

| CES-D Score      | Time 2<br>% (n) | Time 3<br>% (n) |
|------------------|-----------------|-----------------|
| 0-4              | 15.44 (23)      | 34.23 (51)      |
| 5-9              | 63.76 (95)      | 24.83 (37)      |
| 10-15            | 14.09 (21)      | 17.45 (26)      |
| 16-18            | 3.36 (5)        | 5.37 (8)        |
| 19-20            | 0.67 (1)        | 0.00 (0)        |
| 21-29            | 2.68 (4)        | 11.41 (17)      |
| 30-44            | 0.00 (0)        | 6.71 (10)       |
| <b>Mean/S.D.</b> | 8.01/4.72       | 10.52/10.321    |

Table 5.32 presents scores on Bachman's Revision (1970) of Rosenberg's (1965) Self-Esteem Scale for Time 2 and Time 3, with scores ranging from 0 points (low self-esteem) to 10 points (high self-esteem).<sup>19</sup> The table indicates that while 81.9 percent of respondents had self-esteem scores of 7 or over at Time 2, this value had slightly increased to 89.9 percent at Time 3. However, there were significant differences between the mean self-esteem scores between Time 2 and Time 3 (Appendix C.44). At the individual level, 35.6 percent of respondents recorded increased self-esteem between Time 2 and Time 3, while only 20.1 percent of the sample registered lower scores (Appendix F.43).

<sup>19</sup> For the Self-Esteem Scale, the Alpha (Cronbach) was 0.76 at Time 2 and 0.68 at Time 3.

**Table 5.32. Self-Esteem Scores for the Entire Sample (N=149), Times 2-3: Percentage Frequencies, Mean Values, and Standard Deviations**

| Self-Esteem Score | Time 2<br>% (n) | Time 3<br>% (n) |
|-------------------|-----------------|-----------------|
| 0-4               | 6.04 (9)        | 2.68 (4)        |
| 5-6               | 12.08 (18)      | 7.38 (11)       |
| 7-8               | 21.48 (32)      | 26.17 (39)      |
| 9                 | 21.48 (32)      | 19.46 (29)      |
| 10                | 38.93 (58)      | 44.30 (66)      |
| <b>Mean/S.D.</b>  | 8.32/1.95       | 8.68/1.62       |

Table 5.33 summarizes the scores for Time 2 and Time 3 on the short form version of Reid and Zeigler's (1981) Desired Control Scale. The scale has possible scores ranging from 0 (lowest level of desire and expectancy) to 400 (highest level of desire and expectancy).<sup>20</sup> Table 5.33 indicates that at Time 2, 72.5 percent of respondents registered moderate or higher levels of desired control (i.e., 200 points and over) compared to 63.1 percent at Time 3. During the one-year period, there was a slight decrease in the Desired Control mean scores, which was non-significant (Appendix C.45). At the individual level, the 49.7 percent of the entire sample recording a decrease in the Desired Control score were almost balanced by the 47.0 percent of the sample registering an increase (Appendix F.44). In addition, there was a significant association between gender and Desired Control scores at Time 3 with males recording lower mean scores than females (Appendix D.56).

<sup>20</sup> The Desired Control measure is created from two scales. The reliability analysis for the scale representing Desire indicates that Alpha (Cronbach) is 0.82 at Time 2 and 0.87 at Time 3. In contrast, the Expect Scale records Alpha (Cronbach) values of only 0.27 at Time 2 and 0.15 at Time 3.

**Table 5.33. Desired Control Scores for the Entire Sample (N=149), Times 2-3: Percentage Frequencies, Mean Values, and Standard Deviations**

| Desired Control Score | Time 2<br>% (n) | Time 3<br>% (n) |
|-----------------------|-----------------|-----------------|
| 50 – 99               | 0.00 (0)        | 0.67 (1)        |
| 100 – 149             | 2.68 (4)        | 2.68 (4)        |
| 150 – 199             | 24.83 (37)      | 33.56 (50)      |
| 200 – 249             | 63.09 (94)      | 48.99 (73)      |
| 250 – 299             | 8.72 (13)       | 14.09 (21)      |
| 300 – 350             | 0.67 (1)        | 0.00 (0)        |
| <b>Mean/S.D.</b>      | 212.08/29.59    | 210.68/33.61    |

Overall, the entire sample registered moderate changes in personal state outcomes over the one-year period. Specifically, self-rated health, morale, self-esteem, and number of depressive symptoms increased, while levels of desired control slightly decreased. Nonetheless, the mean scores at Time 2 for morale, depression, and self-esteem were found to be significantly different from the scores at Time 3.

Nevertheless, the aggregate data clearly mask the considerable variation in magnitude of the changes in personal state outcomes at the individual level.

As the comments below demonstrate, respondents experienced varying degrees of satisfaction with the broader outcomes of the move to a low-income senior housing project. Many respondents, for example, were very satisfied with the level of residential adjustment associated with the move as these comments demonstrate:

*Laundry facility, bus close by, grocery store close by, elevator, security. Lots of things – I really like it here. Everything is good for me here. (ID#72, 62 years old, male, suburban project)*

*I don't have any maintenance as I did in a house. Good security system. It's close to all amenities. (ID#53, 60 years old, male, inner city project)*

*The apartment is rent controlled. I have lived in this neighbourhood all my life. It's close to shopping, and the bus service is great. (ID#97, 56 years old, female, suburban project)*

*I made the adjustment, it's my home now. I don't want to move anywhere else. (ID#130, 64 years old, male, suburban project)*

*Everything is better. Buses are better – bus stop closer. Grocery store is right across the street. Handier for my daughter to visit. (ID#132, 77 years old, female, inner city project)*

*I feel better just knowing that the health clinic is right here. (ID#100, 62 years old, male, inner city project)*

In contrast, other respondents indicated that they were experiencing difficulties in adjusting to the new residential environment:

*I would have preferred to stay in my house. I lived there for over 30 years. I knew my neighbours and the streets. I didn't know anyone here or the area but I guess you could say I have adjusted – I had no choice. ... When I moved here I felt like a displaced person. I didn't know anyone in the area, but I've learned to accept living here. ... It's not like living in your own house. I find living here so confining but I have accepted that. (ID#85, 77 years old, female, suburban project)*

*I guess I'm resigned to living in here. I hated it so much when I first moved in. I couldn't sleep, I lost weight, I walked the floors. (ID#212, 80 years old, female, suburban project)*

*This does not feel like home. (ID#107, 69 years old, female, suburban project)*

These contrasts in residential adjustment demonstrate the importance of investigating those factors related to an older individual's personal state outcomes in a congregate setting.

## 5.6 Summary

This chapter has outlined the empirical analyses conducted to address the five research questions concerning personal characteristics and changes in the antecedent constructs and personal state outcomes outlined in the conceptual model of the present study. At both aggregate and individual levels, the results highlighted important characteristics of the sample, and revealed significant transformations in relation to change in the residential setting. According to the findings of Research Question 1, socio-demographic attributes of the respondents were broadly consistent with typical resident profiles associated with government-subsidized senior housing projects, with a high proportion of single females reporting low income levels. Although transitions in personal resources were associated with relocation, the analysis related to Research Question 2 revealed that most respondents did not experience substantial declines in health status.

Research Question 3 examines change in the physical, service, and social environments that may occur after the move to the government-subsidized senior housing project. Additionally, Research Question 4 considers changes in individual social and service behaviour circuits. Overall, resident appraisals of the physical environment concerning security and snow removal were more positive after the move, while sidewalk conditions and traffic safety were evaluated more negatively. In addition, important changes were observed in the respondents' social and service environments in the new residential setting. In general, the frequency of visits changed only slightly for respondents despite overall reductions in distances recorded to both social contacts and service sites. Similarly, there was a disclosed trend



towards an increase in satisfaction with proximity to the neighbourhood environment, although access to automobile transportation was reduced. Finally, in relation to Research Question 5, the personal state outcomes were compared at Time 2 and Time 3. The findings indicated that while a decrease was noted in desired control, there were increases in self-rated health, morale; self-esteem, and number of depressive symptoms.

## Chapter 6

### Results II: Explanation of Personal Outcomes of Residential Moves (Research Question 6)

In Chapter 5, the change in antecedent constructs (i.e., personal resources, local environmental setting, and behaviour circuits) and personal state outcomes of recent movers to government-subsidized senior housing were analyzed in relation to Research Questions 1-5. The conceptual model of this study proposes that the personal state outcomes are related to the antecedent constructs representing change in personal, environmental, and behavioural factors. In this chapter, therefore, Research Question 6 is addressed analytically:

- 6) Do changes in personal resources, environmental content, and behavioural circuits influence the personal outcomes of recent movers to a government-subsidized senior housing project?

The conceptual model of the study proposes that eight antecedent constructs representing changes in the person, environment, and behaviour are associated with the personal state outcomes of self-rated health, morale, depression, self-esteem, and control. Analytical tests were conducted to determine whether the antecedent constructs of the conceptual model predict the personal outcomes of older movers. Two sets of regression models were developed to address Research Question 6. In the first set of models, five separate regression equations were formulated for the entire sample of respondents (N=149) to predict the personal state outcomes included in the study (Models I-V). Additionally, a second set of regression models were developed in relation to a defined sub-sample of respondents who reported having at least one child (N=116) (Models VI-X).

The sub-sample with children was included in the analysis because research has demonstrated that children are important providers of instrumental and emotional support for older adults (Everitt & Gfellner, 1996; Gutman, 1978; Smith, 1991; Stephens & Bernstein, 1984). It has been found that these informal social support networks are particularly essential in the prevention of social isolation and institutionalization of tenants of low-income senior housing (Bothell et. al., 1999; Stephens & Bernstein, 1984). Furthermore, residential proximity influences the degree of intergenerational care-giving and support (Greenwell & Bengston, 1997; Litwak, 1985; Rogerson et. al., 1993; Smith, 1998c). These findings suggest that the lack of an informal social support network or the inaccessibility of the social environment may impact negatively upon the well-being of older adults. Therefore, the study proposes that personal state outcomes are influenced by changes in the informal social support networks resulting from a move to government-subsidized senior housing. A separate analysis was conducted on the sub-sample with children to determine whether predictors of their residential adjustment differed from those for the entire sample.

For each set of regressions, linear regression models were developed with each of the four personal state outcomes measured with continuous data (morale, depression, self-esteem, and control) that were treated as dependent variables. Each set of regression models also included a logistic regression model with the personal state outcome of self-rated health that was measured using dichotomous data treated as a dependent variable. The first section of the chapter (Section 6.1) includes an explanation of the coding of the socio-demographic control variables, antecedent

construct variables, and personal state outcome variables included in the analysis relating to Research Question 6.

As the maximum number of predictor variables to be included in a regression model is determined by sample size, a preliminary analysis was required to determine those antecedent construct variables included in the final regression models. Section 6.2 provides a description of the first part of the preliminary analysis involving the formulation of zero-order correlation matrices to test for multicollinearity among the independent variables. This is followed by the formulation of separate regression models for each antecedent construct variable to determine the level of significance of its relationship to each of the five personal state outcomes. The final models were formulated based on the antecedent construct variables that were found to be significant in the preliminary analyses. The concluding section (Section 6.3) describes the tests for the two sets of multiple regression models and provides an overview of the results of these tests.

### **6.1 Coding of Variables**

The coding of the antecedent construct variables and personal state outcome variables included in the analyses is described in this section. Sub-section 6.1.1 outlines the coding of the control variables that include socio-demographic and residential characteristics. The following sub-sections (6.1.2-6.1.5) outline the measures used to operationalize the variables comprising each of the eight antecedent constructs included in the conceptual framework of the study. The eight constructs are organized into four groups: (i) *personal resource transitions*; (ii) *observer-defined*

*change in the content of the social and service environments; (iii) resident-appraised change in the content of the physical, social, and service environments; and (iv) observer-defined change in the individual behaviour circuits in the social and service environments.* After the overview of the variables used to represent the antecedent constructs of the study's model, the coding of the five personal state outcome variables is explained.

In the present analysis, change was measured by residualizing each measure at Time 3 by the baseline measure at Time 1 (Lawton et. al., 1978).<sup>21</sup> If the measures were based on continuous data, one change score was included in the regression models. However, if the measures were categorical, the resulting change score included categories representing increase, decrease, and stability. To incorporate these change categories into the regression analysis, *indicator* or *dummy* variables were created (Robinson, 1998). The dummy variables employ a binary scale that has two values: 1 to denote the specified change category, and 0 for the remainder of the sample that did not record that change category. The number of new dummy variables to be computed is one less the number of categories comprising the original variable (Robinson, 1998). In this analysis, therefore, the category representing the most positive outcome was omitted from the regression model, thus representing the "reference category". Accordingly, the coefficients computed for the dummy variables represent the effect of each category compared to the reference category (SPSS, 1999).

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<sup>21</sup> With one exception, for each antecedent construct variable change is calculated according to measures at Time 1 and Time 3. Only change in the number of friends in the senior housing project is based on measures at Time 2 and Time 3.

This section also outlines the coding of additional variables that are related to tests of Models VI-X. In addition, relevant transformations of variables relating to the constructs are explained in this section. Appendix H consists of a detailed summary of the coding schemes and variable labels of all variables included in the regression analyses.

### **6.1.1 Socio-Demographic and Residential Characteristics**

Socio-demographic and residential characteristics of the respondents at Time 3 were treated as control variables. The socio-demographic variables included age, income adequacy, education level, and number of children. In addition, since the overwhelming majority of females in the sample were single, a measure was formulated that combined both gender and marital status and compared single females to all other sample members. Models VI-X also included the gender and marital status of the closest child.

Residential characteristics of the respondents were evaluated by two spatial proximity variables. The first variable was distance to the closest family member (either closest child, sibling, or other family member) or friend (in kilometres) at the senior housing project at the time of the second survey (Time 3). The second variable was distance from the senior housing project to the previous residence (in kilometres). Since the distance data for both variables were positively skewed, they were transformed into natural logarithms.

### **6.1.2 Personal Resource Transitions**

Personal resource transitions were represented by variables relating to changes in behavioural competence and physical health conditions: net change in number of limitations in activities of daily living (based on 17 ADL items), net change in the number of limitations in instrumental activities of daily living (based on 8 IADL items), and net change in the number of chronic conditions (based on 18 chronic conditions). The net differences between the number of ADL limitations, number of IADL limitations, and number of chronic conditions were calculated to create dummy variables that indicated whether the respondent had experienced an increase, decrease, or stability in relation to each of these measures of physical and functional health.

### **6.1.3 Observer-Defined Change in the Content of the Social and Service Environments**

Two variables were used to evaluate observer-defined change in the content of the social environment. The first variable was the change in distance to the most proximate family member or friend (in kilometres) living outside the respondent's place of residence. For Models VI-X, change in distance to the closest family member or friend was replaced by change in distance to the closest child. The construct was also represented by change in the number of friends at the housing project that occurred between Time 2 and Time 3.

Three variables were used to evaluate change in the content of the service environment associated with a changed residential setting: change in proximity to the closest bus stop, change in distance to the closest major shopping centre, and change

in distance to the closest major chain supermarket. First, change in proximity to the closest bus stop was measured in terms of the net difference in the number of minutes estimated as easy walking time to the closest bus stop. Change in distance to the closest major shopping centre and major chain supermarket were measured in terms of distance in kilometres from the respondent's residence to each of the sites.

#### **6.1.4 Resident-Appraised Change in the Content of the Social, Service, and Physical Environments**

First, the antecedent construct of resident-appraised change in the content of the social environment was represented by two variables concerning change in satisfaction with proximity to family members and change in satisfaction with proximity to friends. Change was determined by calculating differences in the satisfaction scores (based on a seven-point scale) with proximity to both family members and friends. These difference scores were then used as a basis for the creation of dummy variables that indicate whether satisfaction with proximity to family and friends either increased, decreased, or remained stable as either non-satisfaction (scores of 1-4) or satisfaction (scores of 5-7).

Resident-appraised change in the content of the service environment was evaluated based on the following variables: change in satisfaction with proximity to the outlets in each of the four salient service site categories (grocery store, pharmacy, bank, and physician's office), as well as change in global satisfaction with proximity to services. First, change in satisfaction with proximity to the four most salient service sites was based on the differences in the satisfaction scores on a seven-point scale. The dummy variables were derived from these difference scores and were



created according to whether respondent satisfaction increased, decreased, or remained stable as either non-satisfaction (scores of 1-4) or satisfaction (scores of 5-7).

Similarly, global satisfaction with proximity to services was evaluated on a five-point scale. Based on the difference scores, the dummy variables were created that specify whether respondent satisfaction increased, decreased, or remained stable as either non-satisfaction (scores of 1-3) or satisfaction (scores of 4-5).

With regard to resident-appraised change in the content of the physical environment, the four most salient attributes were identified as sidewalk conditions, security from crime, safety from traffic, and snow removal. For each of these attributes, resident-appraised change was calculated in terms of differences between the satisfaction scores on a five-point scale. Change per attribute was evaluated in terms of dummy variables that indicated whether respondent satisfaction increased, decreased, or remained stable as either non-satisfaction (scores of 1-3) or satisfaction (scores of 4-5).

#### **6.1.5 Observer-Defined Change in Individual Social and Service Behaviour Circuits**

Individual behaviour circuits were evaluated in terms of variables related to travel to both the social and service environments. First, two variables were used to evaluate change in individual social behaviour circuits associated with travel to social sites: (i) change in trip frequency to all family members and friends, and (ii) change in proximity to most frequently visited family member or friend. Change in trip frequency to all family members and friends was based on the difference in the

aggregate measure of the total number of trips annually to the homes of children, siblings, other family members, and friends. Change in proximity to the most frequently visited family member or friend was measured in terms of the difference in distance separation (in kilometres) from the previous residence to the senior housing project. For Models VI-X, change in individual social behaviour circuits was assessed by the following variables: (i) change in trip frequencies to children; and (ii) change in distance to the most frequently visited child.

Similarly, two variables were used to evaluate change in individual service behaviour circuits associated with patronage of the four salient service categories (i.e., grocery store<sup>22</sup>, pharmacy, bank, and physician's office): (i) change in aggregate frequency of all visits to the salient service sites, and (ii) change in aggregate trip distance to all the salient service sites. Change in the aggregate frequency of all visits to salient service sites was based on a composite measurement of the total number of visits per year to outlets in all of the four salient service site categories. Therefore, change in aggregate trip frequency was the difference in the respondent's annual total number of trips to the service environment between Time 1 and Time 3. Change in aggregate trip distance to the service environment was the difference in the total distance travelled to each of the four salient service sites during the same time period.

Change in individual social behaviour circuits also included two further variables related to the availability of automobile transportation. Specifically, access to automobile transportation was evaluated according to whether a car was used (either as driver or passenger) at least once a month for travel to the homes of each of (a)

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<sup>22</sup> As data was collected for both major-chain grocery stores and smaller grocery stores, the measure of change is based on the most frequently patronized site in either of these grocery store categories.

family members, and (b) friends. The scores were 0 (no access to automobile transport) and 1 (access to automobile transport). Change in the use of automobile transportation to the homes of either family or friends was based on the difference in scores. Using these change scores, two sets of dummy variables were created for travel to each of relatives and friends based on whether automobile travel increased, decreased, or remained stable (i.e., with either access or non-access to automobile transportation).

Change in individual service behaviour circuits was evaluated using similar measures of change in automobile travel to each of the four salient service sites (grocery store, pharmacy, bank, and physician's office). Specifically, the automobile travel scores specified whether automobile transportation was used (as either driver or passenger) at least once a month to visit each of the sites. Change in the use of automobile transportation to access the service environment was based on differences in the automobile travel scores for each type of salient service site. On the basis of these differences, sets of dummy variables were created for each of the four salient service site categories to indicate whether automobile travel increased, decreased, or remained stable (i.e., with either access or non-access to automobile transportation).

#### **6.1.6 Personal State Outcomes**

The personal state outcome variables included self-rated health, morale, depression, self-esteem, and desired control at Time 3. The variable of self-reported health was dichotomized to indicate either "bad/poor/fair" (0) or "good/excellent" (1) health. The remaining personal state outcome variables were measured using

continuous data. Specifically, morale was measured using the PGC Morale Scale with scores ranging between 0 (low morale) and 14 (high morale), while depression was evaluated using the CES Depression Scale with scores ranging from 0 (low depression) to 60 (high depression). Self-esteem was measured by the Bachman's revision of Rosenberg's Self-Esteem Scale with a range of scores between 0 (low self-esteem) and 10 (high self-esteem). Finally, desired control was evaluated using the Reid and Zeigler Desired Control Scale with scores ranging between 16 (low control) and 400 (high control).

## **6.2 The Preliminary Analysis: Development of the Regression Models**

A preliminary analysis was first conducted to specify those antecedent construct variables for inclusion in the regression models. There are formal limitations imposed on the number of independent variables in both linear and logistic regression equations (Hsieh, Bloch, & Larsen, 1998; Newton & Rudestam, 1999; Tabachnick & Fidell, 2001). As a result, the regression models for the study could only include a select number of predictors from the large set of variables representing the eight antecedent constructs. Those antecedent construct variables included in the models were determined through the preliminary analysis that consisted of two parts: first, a zero-order correlation analysis, and, second, an exploratory regression analysis.

To examine the antecedent construct variables for evidence of multicollinearity, two separate zero-order correlation matrices were constructed. Specifically, for each of the data sets relating to Models I-V and Models VI-X, a matrix was created that included Pearson product-moment correlation coefficients to indicate the strength and

direction of all possible interrelationships among all antecedent construct variables. Appendices I and J present correlations that were significant at  $p < 0.05$  in each of the matrices.

Correlations significant at the  $p < 0.05$  level and exceeding 0.80 were considered to be highly inter-correlated (Chang & Sanna, 2001). In relation to the zero-order correlation matrix for the entire sample ( $N=149$ ), a high correlation was found between one pair of variables: Satisfaction with Proximity to Pharmacy 4 and Satisfaction with Proximity to Grocery Store 4 (Appendix I). As the grocery store was considered to be more encompassing of the service environment, the dummy variables representing change in satisfaction with proximity to pharmacies were excluded from the remainder of the analysis for the entire sample. With regard to the zero-order correlation matrix relating to the sub-sample of respondents with children ( $N=116$ ), three pairs of variables were highly correlated: (a) Change in Distance to Service Sites and Change in Proximity to Closest Bus Stop; (b) Satisfaction with Proximity to Pharmacy 1 and Satisfaction with Proximity to Family 4; and (c) Satisfaction with Proximity to Grocery Store 1 and Satisfaction with Proximity to Pharmacy 4 (Appendix J). As a result, the variables representing change in proximity to the bus stop and change in satisfaction with proximity to pharmacies were eliminated from the subsequent analysis.

The exploratory regression analysis was conducted to identify and select a limited number of independent variables that are potentially strong predictors of the personal state outcomes. Separate sets of regression models were formulated for the entire sample and the sub-sample of respondents with children to determine the potential

explanatory power of each antecedent construct variable (or dummy variable set) treated as an independent variable with each personal state outcome treated as a dependent variable. The tests of these models provided an initial evaluation of the explanatory power of each antecedent construct variable.

Two sets of exploratory regression analyses were conducted to determine the independent variables for inclusion in Models I-X. For each set of models, separate regression models were formulated for each independent variable, or dummy variable set, to determine individual levels of significance. Regression equations were formulated for each antecedent construct variable (or variable set) with each of the five defined personal state outcomes. First, as the personal state outcome of self-rated health was measured with categorical data, a dichotomized dependent variable was created thereby necessitating the use of logistic regression. Least-squares linear regression (OLS) was employed for the dependent variables measured with continuous data: morale, depression, self-esteem and desired control.

For each exploratory regression equation, two blocks of independent variables were entered into the equation. A block of control variables comprised of the socio-demographic characteristics of Gender/Marital Status, Age, Education, and Income Adequacy was first entered.<sup>23</sup> Followed by the control block, the second block comprised either (a) one antecedent construct variable, or (b) a set of dummy variables representing categorical change. For each regression equation, variables of

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<sup>23</sup> Preliminary regression analyses were conducted to determine the significance of the control block variables in relation to the personal state outcomes (a complete list of control variables is outlined in sub-section 6.1.1). As the variables of Distance to Previous Residence, Distance to Closest Family Member or Friend at Time 3, and Number of Children are found to be non-significant for both sets of models, they are not included in subsequent analysis. In addition, for the analysis of the sub-sample with children, the variables of Gender of Closest Child and Marital Status of Closest Child are excluded because of non-significance.

significance were determined using the *block entry* selection process for both the control block and the block including the antecedent construct variable(s) with the criteria for removal set at  $p < 0.10$  (Finlayson, 2002). For those equations with a single independent variable comprising the second block (i.e., an antecedent construct variable measured with continuous data), the significance level of the variable's regression coefficient was determined. For those equations with the second block comprised of a set of dummy variables, the significance of the overall effect of the entry of the second block was evaluated in terms of the significance level of the  $F$  value for the linear regression model, and the  $\chi^2$  value for the logistic regression model.

As socio-demographic characteristics were treated as a block of control variables in the exploratory analysis, the remaining antecedent constructs consisted of 10 variables measuring change with continuous data, and 20 sets of dummy variables representing categorical change. For each personal state outcome, ten regression equations were formulated for the independent variables measured with continuous data, and 20 equations were formulated for the dummy variable sets that were also treated as independent variables. Therefore, 150 equations were formulated for each set of data comprising (a) the entire sample, and (b) the sub-sample with children. Overall, the entire exploratory analysis involved 300 regression equations.

Based on the results of the preliminary regression analyses, the final analytical models were developed to investigate the personal state outcomes of older movers to government-subsidized senior housing projects. In order to ensure that the number of independent variables did not exceed the maximum permitted by the sample size, the

following levels of significance were used as criteria for selection.<sup>24</sup> First, since a maximum of 12 independent variables could be included in Models I-V, a significance level of  $p < 0.10$  was selected for the four linear regression models relating to the personal state outcomes of morale, depression, self-esteem, and desired control (Models II-V). Second, a significance level of  $p < 0.05$  was designated as the criteria for inclusion of independent variables in the logistic regression model concerning self-rated health (Model I) because of the greater number of variables found to be significantly related to self-rated health in the exploratory regression analysis. Third, a maximum of only eight independent variables could be included in Models VI-X due to the smaller size of the sub-sample. Accordingly, to limit the number of independent variables selected for the models, a significance level  $p < 0.05$  was used.

The results of the exploratory regression analyses for the two sets of data are summarized in Table 6.1 for the entire sample, and Table 6.2 for the sub-sample with children.<sup>25</sup> These tables identify those antecedent construct variables that were included in the final models (Models I-X).

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<sup>24</sup> The rule of thumb for sample size calculation is:  $N > 50 + 8m$  (where  $m$  is the number of predictor variables) (Tabachnick & Fidell, 2001). Therefore, Models I-V ( $N=149$ ) could contain a total of 12 independent variables, while a maximum of eight predictor variables could be included for Models VI-X ( $N=116$ ).

<sup>25</sup> Statistical results of the exploratory regression models are presented in Appendix K ( $N=149$ ) and Appendix L ( $N=116$ ).



**Table 6.1. Preliminary Regression Models for the Entire Sample: Significant Antecedent Construct Variables (N=149)**

| Self-Rated Health  | PGC Morale  | CES Depression  | Self-Esteem   | Desired Control  |
|--|---|---|---|--|
| ◆ <i>Change in IADLs***</i>                                      | ◆ <i>Change in Satisfaction with Access to Services*</i>    | ◆ <i>Change in ADLs+</i>  | ◆ <i>Change in ADLs*</i>                                      | ◆ <i>Change in IADLs*</i>                                |
| ◆ <i>Change in Satisfaction with Safety from Traffic*</i>        | ◆ <i>Change in Satisfaction with Proximity to Pharmacy*</i> | ◆ <i>Change in IADLs+</i>   | ◆ <i>Change in IADLs**</i>                                    | ◆ <i>Change in Number of Friends at Project+</i>         |
| ◆ <i>Change in Satisfaction with Proximity to Grocery Store*</i> | ◆ <i>Change in Total Visits to Family and Friends**</i>     | ◆ <i>Change in Satisfaction with Proximity to Family+</i>             | ◆ <i>Change in Satisfaction with Access to Services***</i>    | ◆ <i>Change in Satisfaction with Access to Services+</i> |
| ◆ <i>Change in Access to Auto Transport to Grocery Store*</i>    |   | ◆ <i>Change in Satisfaction with Access to Services*</i>              | ◆ <i>Change in Satisfaction with Proximity Grocery Store*</i> | ◆ <i>Change in Satisfaction with Proximity to Bank+</i>  |
| ◆ <i>Change in Access to Auto Transport to Bank*</i>             |   | ◆ <i>Change in Satisfaction with Proximity to Pharmacy**</i>          | ◆ <i>Change in Total Visits with Family and Friends**</i>     |  |
|  |   | ◆ <i>Change in Satisfaction with Proximity to Physician's Office*</i> | ◆ <i>Change in Access to Auto Transport to Family+</i>        |  |
|  |   | ◆ <i>Change in Total Visits with Family and Friends**</i>             |   |  |

+ $p < 0.100$ ; \* $p < 0.050$ ; \*\* $p < 0.010$ ; \*\*\* $p < 0.001$

**Table 6.2. Preliminary Regression Models for the Sub-Sample with Children: Significant Antecedent Construct Variables (N=116)**

| <b>Self-Rated Health</b>  | <b>PGC Morale</b>  | <b>CES Depression</b>   | <b>Self-Esteem</b>   | <b>Desired Control</b>  |
|---|--|---|--|---|
| <ul style="list-style-type: none"> <li>◆ <i>Change in Chronic Conditions**</i></li> <li>◆ <i>Change in Access to Auto Transport to Bank***</i></li> </ul> | <ul style="list-style-type: none"> <li>◆ <i>Change in Chronic Conditions*</i></li> </ul> | <ul style="list-style-type: none"> <li>◆ <i>Change in IADLs*</i></li> <li>◆ <i>Change in Satisfaction with Access to Services*</i></li> <li>◆ <i>Change in Total Visits with Family and Friends*</i></li> </ul> | <ul style="list-style-type: none"> <li>◆ <i>Change in ADLs*</i></li> <li>◆ <i>Change in IADLs**</i></li> <li>◆ <i>Change in Satisfaction with Access to Services***</i></li> </ul> | <ul style="list-style-type: none"> <li>◆ <i>Change in Satisfaction with Access to Services**</i></li> <li>◆ <i>Change in Access to Auto Transport to Pharmacy*</i></li> </ul> |

+*p*<0.100; \**p*<0.050; \*\**p*<0.010; \*\*\**p*<0.001

### 6.3 The Regression Models

In this section, two sets of multiple regression models formulated on the basis of the exploratory analysis are presented. For Models II-V and VII-X, linear regression using the least-squares technique was employed as the four personal state outcomes (morale, depression, self-esteem, and control) were measured with continuous data. While logistic regression was employed for the dichotomized measure of self-rated health (Models I and VI).

For each model, two blocks were entered using the *block entry* process. Specifically, the socio-demographic control variables of Gender/Marital Status, Age, Education, and Income Adequacy were first entered as a block into the equation. This was followed by the entry of the second block comprised of those significant antecedent construct variables selected for inclusion in the model and identified in Table 6.1 for the entire sample, and Table 6.2 for the sub-sample with children. Table 6.3 presents the labels and coding schemes for all independent variables included in Models I-X.

For each of the logistic regression models (Models I and VI), the  $\chi^2$  distribution of the Wald statistic tests the statistical significance of the regression coefficients. The  $\chi^2$  distribution is also used to test the statistical significance of the increase in the level of explanation of the dependent variable after the entry of the first block of control variables, and the entry of the second block of independent variables into the logistic regression equation. Cox & Snell's  $R^2$  is a generalization of the Multiple  $R^2$  that is employed when maximum likelihood estimation is used to estimate the parameters of the logistic regression model (SPSS, 1999).

**Table 6.3: Labels and Coding of Variables Included in Regression Models**

| Variable Labels                                  | Coding of Variable or Dummy Variables   |
|--|---|
| Gender/Marital Status                            | Single Female = 0; Other (married male/female or single male) = 1   |
| Age  | Age of respondent based on year of birth  |
| Income Adequacy                                  | Meets needs with "some difficulty" or "totally inadequate" = 0; Meets needs at least "fairly well" = 1              |
| Education  | Grade 6 or less = 1; Grades 7-13 = 2; College/University = 3  |
| ADL 1 2 3  | 1 = increased, 2 = stable, 3 = decreased number of ADL limitations  |
| IADL 1 2 3                                       | 1 = increased, 2 = stable, 3 = decreased number of IADL limitations   |
| Chronic Conditions 1 2 3                         | 1 = increased, 2 = stable, 3 = decreased number of Chronic Conditions   |
| Satisfaction with Traffic Safety 1 2 3 4         | 1 = continued non-satisfaction, 2 = decreased satisfaction, 3 = continued satisfaction, 4* = increased satisfaction |
| Satisfaction with Proximity to Family 1 2 3 4    | 1 = continued non-satisfaction, 2 = decreased satisfaction, 3 = continued satisfaction, 4* = increased satisfaction |
| Satisfaction with Access to Services 1 2 3 4     | 1 = continued non-satisfaction, 2 = decreased satisfaction, 3 = continued satisfaction, 4* = increased satisfaction |
| Satisfaction with Proximity to Grocery 1 2 3 4   | 1 = continued non-satisfaction, 2 = decreased satisfaction, 3 = continued satisfaction, 4* = increased satisfaction |
| Satisfaction with Proximity to Bank 1 2 3 4      | 1 = continued non-satisfaction, 2 = decreased satisfaction, 3 = continued satisfaction, 4* = increased satisfaction |
| Satisfaction with Proximity to Physician 1 2 3 4 | 1 = continued non-satisfaction, 2 = decreased satisfaction, 3 = continued satisfaction, 4* = increased satisfaction |
| Auto Transport to Family 1 2 3 4                 | 1 = continued non-access, 2 = decreased access, 3 = continued access, 4* = increased access                         |
| Auto Transport to Grocery Store 1 2 3 4          | 1 = continued non-access, 2 = decreased access, 3 = continued access, 4* = increased access                         |
| Auto Transport to Pharmacy 1 2 3 4               | 1 = continued non-access, 2 = decreased access, 3 = continued access, 4* = increased access                         |
| Auto Transport to Bank 1 2 3 4                   | 1 = continued non-access, 2 = decreased access, 3 = continued access, 4* = increased access                         |
| Change in Number of Social Visits                | Change in total number of annual trips to family members and friends  |
| Change in Number of Visits with Children         | Change in total number of annual trips to all children  |
| Change in Number of Friends at Project           | Change in total number of friends in the senior housing project   |

\*Reference dummy variable not included in regression models.

For each of the linear regression models (Models II-V, VII-X), the standardized regression coefficients and the constant are tested for statistical significance by the  $t$  test. The partial  $F$  test is employed to evaluate the statistical significance of the increase in Multiple  $R^2$  in the linear regression models due to the entry of the control block of socio-demographic variables, and the block of significant antecedent construct variables. Finally, the overall goodness-of-fit or explanatory power of the linear model is evaluated by the Adjusted  $R^2$ .

In the following sub-sections, the tests and results of the regression analyses concerning Models I-V and Models VI-X are presented in turn. The results are then evaluated and interpreted in relation to Research Question 6. The interpretation and implications of the study findings are discussed in terms of the relative impact of changes in personal resources, environmental setting, and behaviour circuits on the personal outcomes of older movers to government-subsidized senior housing.

### **6.3.1 Tests of Regression Models I-V**

The data utilized to test Models I-V relate to the entire sample ( $N=149$ ) of the study. The results of the tests of the logistic regression model (Model I) and set of linear regression models (Model II-V) are presented in turn.

#### **6.3.1.1 Model I**

In Model I, the value of the Cox & Snell  $R^2$  discloses that the independent variables explained 30 percent of the variance of Self-Rated Health (Table 6.4).

While the increase in the Cox & Snell  $R^2$  after the entry of the control block was non-

significant in Model I, the results do indicate a positive and marginally significant ( $p < 0.10$ ) relationship between Self-Rated Health and Education. This implies that respondents who reported higher levels of education were more likely to rate their health positively.

The entry of the block of antecedent construct variables into Model I registered a significant ( $p < 0.05$ ) increase of 28 percent in the Cox & Snell  $R^2$ . Significant relationships were registered for two variables relating to *personal resource transitions* (IADL 2) and *resident-appraised changed in the content of the service environment* (Satisfaction with Proximity to Grocery Store 2). While marginally significant relationships were recorded for three of the *observer-defined change in individual service behaviour circuits* variables (Auto Transport to Grocery Store 1, Auto Transport to Bank 1, and Auto Transport to Bank 2).

The positive and significant ( $p < 0.01$ ) regression coefficient for IADL 2 indicates that respondents whose functional ability remained stable after moving to the senior housing project typically reported higher self-ratings of health. Unexpectedly, Satisfaction with Proximity to Grocery Store 2 was positively and significantly ( $p < 0.05$ ) related to Self-Rated Health. This result thus indicates that older movers rated their health more positively if they were less satisfied with the location of grocery stores at the senior housing project in comparison to the previous residence.

Each of the three marginally significant variables concerning *observer-defined change in individual service behaviour circuits* relate to access to automobile transportation. The negative standardized regression coefficients registered by Auto

**Table 6.4. Results of Regression Model I: Dependent Variable - Self-Rated Health (N=149)**

| Independent Variables                          | $\beta$ | Standard Error | Wald  | df | Significance <sup>1</sup> | Exp ( $\beta$ ) | 95.0% C.L. for Exp( $\beta$ ) |          |
|--|---------|----------------|-------|----|---------------------------|-----------------|-------------------------------|----------|
|  |         |                |       |    |                           |                 | Lower                         | Upper    |
| <i>Socio-Demographic Control Variables</i>     |         |                |       |    |                           |                 |                               |          |
| Gender/Marital Status                          | -0.073  | 0.422          | 0.027 | 1  | 0.869                     | 0.930           | 0.391                         | 2.210    |
| Age  | 0.037   | 0.025          | 2.244 | 1  | 0.134                     | 1.037           | 0.989                         | 1.089    |
| Income Adequacy                                | -0.321  | 0.470          | 0.467 | 1  | 0.494                     | 0.725           | 0.289                         | 1.821    |
| Education                                      | 0.583   | 0.342          | 2.900 | 1  | 0.089                     | 1.791           | 0.916                         | 3.503    |
| <i>Antecedent Construct Variables</i>          |         |                |       |    |                           |                 |                               |          |
| IADL 1   | 0.240   | 0.742          | 0.105 | 1  | 0.746                     | 1.272           | 0.297                         | 5.445    |
| IADL 2   | 1.782   | 0.719          | 6.143 | 1  | <b>0.013</b>              | 5.944           | 1.452                         | 24.332   |
| Satisfaction with Traffic Safety 1             | -1.342  | 0.894          | 2.254 | 1  | 0.133                     | 0.261           | 0.045                         | 1.507    |
| Satisfaction with Traffic Safety 2             | -0.401  | 0.584          | 0.472 | 1  | 0.492                     | 0.669           | 0.213                         | 2.102    |
| Satisfaction with Traffic Safety 3             | 0.436   | 0.557          | 0.612 | 1  | 0.434                     | 1.546           | 0.519                         | 4.607    |
| Satisfaction with Proximity to Grocery Store 1 | -7.291  | 24.027         | 0.092 | 1  | 0.762                     | 0.001           | 0.000                         | 1.929    |
| Satisfaction with Proximity to Grocery Store 2 | 1.620   | 0.694          | 5.456 | 1  | <b>0.019</b>              | 5.055           | 1.298                         | 19.687   |
| Satisfaction with Proximity to Grocery Store 3 | 0.241   | 0.485          | 0.247 | 1  | 0.619                     | 1.272           | 0.492                         | 3.289    |
| Auto Transport to Grocery Store 1              | 3.820   | 1.995          | 3.666 | 1  | <b>0.056</b>              | 45.612          | 0.914                         | 2277.307 |
| Auto Transport to Grocery Store 2              | 2.746   | 1.955          | 1.974 | 1  | 0.160                     | 15.582          | 0.338                         | 718.387  |
| Auto Transport to Grocery 3                    | 2.651   | 1.931          | 1.855 | 1  | 0.170                     | 14.173          | 0.322                         | 623.818  |
| Auto Transport to Bank 1                       | -2.651  | 1.434          | 3.416 | 1  | <b>0.065</b>              | 0.071           | 0.004                         | 1.174    |
| Auto Transport to Bank 2                       | -2.243  | 1.379          | 2.647 | 1  | <b>0.104</b>              | 0.106           | 0.007                         | 1.583    |
| Auto Transport to Bank 3                       | -0.693  | 1.364          | 0.258 | 1  | 0.612                     | 0.500           | 0.034                         | 7.253    |
| Constant                                       | -5.849  | 2.713          | 4.646 | 1  | 0.031                     | 0.003           |                               |          |
| -2 Log Likelihood: 145.397                     |         |                |       |    |                           |                 |                               |          |
| Cox & Snell $R^2$ : 0.303                      |         |                |       |    |                           |                 |                               |          |

Increase in Cox & Snell  $R^2$  due to entry of Socio-Demographic Control Variables: 0.021 ( $\chi^2=3.037$ ,  $df=4$ ,  $p<0.552$ )  
 Increase in Cox & Snell  $R^2$  due to entry of Antecedent Construct variables: 0.282 ( $\chi^2=48.307$ ,  $df=14$ ,  $p<0.000$ )

<sup>1</sup> Values significant at  $p<0.100$  level are indicated in bold type.

Transport to Bank 1 and Auto Transport to Bank 2 are both indicative of a tendency for lower health ratings after the move reported by those individuals who either continued to have no access, or experienced a decline in access, to automobile transportation in order to travel to a bank. The negative standardized regression coefficient recorded for Auto Transport to Grocery Store 1 suggests that those who perceived their health as better had higher expectations and were more critical of their surroundings because more positive ratings of health were elicited by respondents for whom automobile transportation to travel to the grocery store continued to be unavailable after the move. Taken together, these results imply that at least some indicators of obligatory travel are weak predictors of self-rated health.

#### 6.3.1.2 Models II-V

The results of the tests of the linear regression models for the entire sample (Models II-V) reveal that the overall levels of explanation ranged from 9 percent to 19 percent (Tables 6.5-6.8). Model II (Table 6.5) provided the lowest explanatory power accounting for only 9 percent of the overall explanation of PGC Morale. For this model, the entry of the block of control variables resulted in a significant ( $p < 0.05$ ) increase of 7 percent in the value of the Multiple  $R^2$ . The characteristics of Education and Income Adequacy each registered a positive and marginally significant ( $p < 0.10$ ) standardized regression coefficient. This indicates a moderate tendency for those respondents who recorded higher morale scores to also be more likely to have a higher level of education and greater satisfaction with the adequacy of their income.



**Table 6.5. Results of Regression Model II: Dependent Variable – PGC Morale (N=149)**

| Independent Variables  | Regression Coefficient<br>( <i>b</i> ) | Standard Error | Standardized Regression Coefficient<br>( $\beta$ ) | <i>t</i> | Significance <sup>1</sup> |
|--|--|----------------|--|----------|---------------------------|
| <i>Socio-Demographic Control Variables</i>   |  |                |  |          |                           |
| Gender/Marital Status  | 0.549                                  | 0.648          | 0.072  | 0.848    | 0.398                     |
| Age  | -0.015                                 | 0.030          | -0.046   | -0.510   | 0.611                     |
| Income Adequacy  | 1.137                                  | 0.682          | 0.147  | 1.668    | <b>0.098</b>              |
| Education  | 0.887                                  | 0.498          | 0.145  | 1.781    | <b>0.077</b>              |
| <i>Antecedent Construct Variables</i>  |  |                |  |          |                           |
| Satisfaction with Proximity to Services 1  | -5.412                                 | 1.971          | -0.234   | -2.746   | <b>0.007</b>              |
| Satisfaction with Proximity to Services 2  | -0.591                                 | 1.013          | -0.051   | -0.584   | 0.560                     |
| Satisfaction with Proximity to Services 3  | -0.018                                 | 0.683          | -0.002   | -0.026   | 0.979                     |
| Change in Number of Social Visits  | 0.002                                  | 0.001          | 0.118  | 1.437    | 0.153                     |
| Constant   | 7.746                                  | 2.359          |  | 3.284    | <b>0.001</b>              |
| Multiple $R^2$ : 0.139   |  |                |  |          |                           |
| Adjusted $R^2$ : 0.087   |  |                |  |          |                           |
| Increase in Multiple $R^2$ due to entry of Socio-Demographic Control Variables: 0.065 ( $F=2.392$ , $df=4$ , $p<0.054$ ) |  |                |  |          |                           |
| Increase in Multiple $R^2$ due to entry of Antecedent Construct Variables: 0.074 ( $F=2.679$ , $df=8$ , $p<0.009$ )      |  |                |  |          |                           |

<sup>1</sup> Values significant at  $p<0.100$  level indicated in bold type.

The entry of the block of antecedent construct variables in Model II registered a statistically significant ( $p < 0.01$ ) increase of 7 percent in  $R^2$  after the forced entry of the control block of variables. However, the results indicate that the only independent variable registering a significant relationship with morale concerns an aspect of *resident-appraised change in the content of the service environment*. Specifically, a statistically significant ( $p < 0.01$ ) and negative standardized regression coefficient was recorded for Satisfaction with Proximity to Services 1. This indicates that respondents were more likely to have low morale if they continued to experience dissatisfaction with proximity to services after the move to the senior housing project.

On the basis of the Adjusted  $R^2$  value registered for Model III, the model provided 14 percent of the overall explanation for CES Depression (Table 6.6). The increase in the Multiple  $R^2$  value after the entry of the control block was not significant. Moreover, the results of the test of Model III reveal that none of the socio-demographic characteristics were significantly related to depression. However, a significant ( $p < 0.01$ ) increase of 22 percent was recorded in the Multiple  $R^2$  value when the block of antecedent construct variables was entered into the regression equation.

Although *personal resource transitions* variables were not significant in Model III, the results do indicate that depression was related to two variables concerning the antecedent constructs of *resident-appraised change in the content of the service environment* and *observer-defined change in individual social behaviour circuits*. First, a positive and statistically significant ( $p < 0.01$ ) regression coefficient was

**Table 6.6. Results of Regression Model III: Dependent Variable - CES Depression Scale (N=149)**

| Independent Variables  | Standardized<br>Regression<br>Coefficient<br>( <i>b</i> ) | Standard<br>Error | Regression<br>Coefficient<br>( $\beta$ ) | <i>t</i> | Significance <sup>1</sup> |
|--|---|-------------------|--|----------|---------------------------|
| <i>Socio-Demographic Control Variables</i>   |   |                   |  |          |                           |
| Gender/Marital Status  | -1.211  | 1.777             | -0.059                                   | -0.681   | 0.497                     |
| Age  | -0.096  | 0.085             | -0.106                                   | -1.124   | 0.263                     |
| Income Adequacy  | -0.839  | 1.878             | -0.040                                   | -0.447   | 0.656                     |
| Education  | -1.349  | 1.324             | -0.082                                   | -1.019   | 0.310                     |
| <i>Antecedent Construct Variables</i>  |   |                   |  |          |                           |
| ADL1   | 1.530   | 2.785             | 0.071                                    | 0.549    | 0.584                     |
| ADL2   | -3.366  | 2.580             | -0.164                                   | -1.305   | 0.194                     |
| IADL1  | 1.409   | 2.972             | 0.065                                    | 0.474    | 0.636                     |
| IADL2  | -0.378  | 2.759             | 0.018                                    | 0.137    | 0.891                     |
| Satisfaction with Proximity to Family 1  | 2.929   | 4.006             | 0.066                                    | 0.731    | 0.466                     |
| Satisfaction with Proximity to Family 2  | -3.797  | 2.653             | -0.136                                   | -1.431   | 0.155                     |
| Satisfaction with Proximity to Family 3  | -3.398  | 2.215             | -0.164                                   | -1.534   | 0.128                     |
| Satisfaction with Proximity to Services 1  | 13.959  | 5.302             | 0.225                                    | 2.633    | <b>0.010</b>              |
| Satisfaction with Proximity to Services 2  | -0.372  | 2.761             | -0.012                                   | -0.135   | 0.893                     |
| Satisfaction with Proximity to Services 3  | 0.131   | 1.893             | 0.006                                    | 0.069    | 0.945                     |
| Satisfaction with Proximity to Physician 1   | 3.069   | 5.378             | -0.049                                   | -0.571   | 0.569                     |
| Satisfaction with Proximity to Physician 2   | -1.708  | 2.714             | -0.061                                   | -0.629   | 0.530                     |
| Satisfaction with Proximity to Physician 3   | -3.362  | 2.222             | -0.163                                   | -5.513   | 0.133                     |
| Change in Number of Social Visits  | -0.005  | 0.003             | -0.140                                   | -1.673   | <b>0.097</b>              |
| Constant   | 25.031  | 7.245             |  | 3.455    | <b>0.001</b>              |
| Multiple $R^2$ : 0.248   |   |                   |  |          |                           |
| Adjusted $R^2$ : 0.137   |   |                   |  |          |                           |
| Increase in Multiple $R^2$ due to entry of Socio-Demographic Control Variables: 0.032 ( $F=1.116$ , $df=4$ , $p<0.352$ ) |   |                   |  |          |                           |
| Increase in Multiple $R^2$ due to entry of Antecedent Construct Variables: 0.216 ( $F=2.248$ , $df=18$ , $p<0.005$ )     |   |                   |  |          |                           |

<sup>1</sup> Values significant at  $p<0.100$  level are indicated in bold type.

registered by Satisfaction with Proximity to Services 1. Thus, older persons who were dissatisfied with proximity to services at both the previous residence and the senior housing project were more likely to report greater symptoms of depression. Second, the negative and marginally significant ( $p < 0.10$ ) regression coefficient for Changes in Number of Social Visits suggests that increases in the number of visits to family members and friends after moving to the senior housing project was related to lower levels of depression.

Overall, the explanatory power of Model IV based on the Adjusted  $R^2$  was 19 percent (Table 6.7). For this model, the increase in  $R^2$  after the entry of the control block was non-significant. However, in Model IV the significant ( $p < 0.001$ ) increase in the value of  $R^2$  was registered due to the entry of the block of antecedent construct variables. In fact, this block accounted for 27 percent of the explanation of Self-Esteem before  $R^2$  is adjusted. Three of the antecedent construct variables comprising the block registered either statistically significant or marginally significant relationships with self-esteem.

First, a negative and statistically significant ( $p < 0.01$ ) standardized regression coefficient was registered for Satisfaction with Proximity to Services 1, which is an indicator of *resident-appraised change in the content of the service environment*. Thus, older persons who remained dissatisfied with proximity to services after the move were more likely to report lower self-esteem. Second, the *observer-defined change in individual social behaviour circuits* variable Auto Transport to Family 1 registered a statistically significant ( $p < 0.05$ ) and negative standardized regression coefficient. This reveals that older movers were more likely to report lower self-

**Table 6.7. Results of Regression Model IV: Dependent Variable - Self-Esteem (N=149)**

| Independent Variables                          | Regression Coefficient (b) | Standard Error | Standardized Regression Coefficient (β) | t      | Significance <sup>1</sup> |
|--|----------------------------|----------------|---|--------|---------------------------|
| <i>Socio-Demographic Control Variables</i>     |                            |                |   |        |                           |
| Gender/Marital Status                          | 0.051                      | 0.268          | 0.016                                   | 0.190  | 0.850                     |
| Age  | 0.010                      | 0.013          | 0.069                                   | 0.737  | 0.463                     |
| Income Adequacy                                | 0.094                      | 0.285          | -0.028                                  | -0.330 | 0.742                     |
| Education                                      | 0.330                      | 0.208          | 0.126                                   | 1.582  | 0.116                     |
| <i>Antecedent Construct Variables</i>          |                            |                |   |        |                           |
| ADL1   | -0.353                     | 0.425          | -0.103                                  | -0.830 | 0.408                     |
| ADL2   | 0.134                      | 0.396          | 0.041                                   | 0.338  | 0.736                     |
| IADL1  | -0.860                     | 0.458          | -0.250                                  | -1.876 | <b>0.063</b>              |
| IADL2  | -0.216                     | 0.429          | -0.066                                  | -0.503 | 0.616                     |
| Satisfaction with Proximity to Services 1      | -2.716                     | 0.850          | -0.275                                  | -3.196 | <b>0.002</b>              |
| Satisfaction with Proximity to Services 2      | -0.159                     | 0.449          | -0.032                                  | -0.354 | 0.724                     |
| Satisfaction with Proximity to Services 3      | -0.367                     | 0.309          | -0.112                                  | -1.187 | 0.237                     |
| Satisfaction with Proximity to Grocery Store 1 | -1.226                     | 1.159          | -0.088                                  | -1.058 | 0.292                     |
| Satisfaction with Proximity to Grocery Store 2 | -0.348                     | 0.423          | -0.080                                  | -0.822 | 0.413                     |
| Satisfaction with Proximity to Grocery Store 3 | 0.141                      | 0.312          | 0.043                                   | 0.451  | 0.653                     |
| Change in Number of Social Visits              | 0.001                      | 0.000          | 0.128                                   | 1.581  | 0.116                     |
| Auto Transport to Family 1                     | -0.966                     | 0.495          | -0.294                                  | -1.951 | <b>0.053</b>              |
| Auto Transport to Family 2                     | -0.738                     | 0.540          | -0.182                                  | -1.368 | 0.174                     |
| Auto Transport to Family 3                     | -0.369                     | 0.562          | -0.084                                  | -0.656 | 0.513                     |
| Constant                                       | 8.859                      | 1.169          |   | 7.580  | <b>0.000</b>              |
| Multiple R <sup>2</sup> : 0.294                |                            |                |   |        |                           |
| Adjusted R <sup>2</sup> : 0.191                |                            |                |   |        |                           |

Increase in Multiple R<sup>2</sup> due to entry of Socio-Demographic Control Variables: 0.021 (F=0.752, df=4, p<0.558)  
 Increase in Multiple R<sup>2</sup> due to entry of Antecedent Construct Variables: 0.273 (F=2.849, df=18, p<0.000)

<sup>1</sup> Values significant at p<0.100 level are indicated in bold type.

esteem if they continued to have no access to an automobile to travel to the homes of family members after the move. Third, the results disclose a weak relationship between one of the *personal resource transitions* variables and Self-Esteem. More specifically, a marginally significant ( $p < 0.10$ ) negative standardized regression coefficient was recorded for IADL 1. Therefore, lower levels of self-esteem were related to an increase in functional limitations that occurred after the move.

The results of the test of Model V disclose that the overall level of explanation (Adjusted  $R^2$ ) of Desired Control was 16 percent (Table 6.8). The entry of the block of control variables in this model resulted in a statistically significant ( $p < 0.01$ ) increase of 11 percent in the Multiple  $R^2$  value. Significant and positive regression coefficients were recorded for Education ( $p < 0.05$ ) and Income Adequacy ( $p < 0.10$ ), while the significant ( $p < 0.05$ ) standardized regression coefficient of the Gender/Marital Status variable was negative. Taken together, these results imply that higher desired control (i.e., greater feelings of control over the environment) was typically associated with single females, as well as respondents with higher education levels and higher ratings of income adequacy.

The entry of the block of antecedent construct variables in Model V registered a significant ( $p < 0.001$ ) increase of 13 percent in the Multiple  $R^2$  value. Four marginally significant ( $p < 0.10$ ) relationships were registered between Desired Control and variables concerning the antecedent construct of *resident-appraised changes in the content of the service environment*. However, these relationships are in unexpected directions. For instance, a positive standardized regression coefficient was recorded for Satisfaction with Proximity to Services 2. This suggests that older movers who

**Table 6.8. Results of Regression Model V: Dependent Variable - Desired Control (N=149)**

| Independent Variables   | Regression Coefficient<br>(b) | Standard Error | Standardized Regression Coefficient<br>(β) | t      | Significance <sup>1</sup> |
|---|-------------------------------|----------------|--|--------|---------------------------|
| <i>Socio-Demographic Control Variables</i>  |                               |                |  |        |                           |
| Gender/Marital Status   | -11.718                       | 5.605          | -0.173                                     | -2.091 | <b>0.039</b>              |
| Age   | -0.258                        | 0.275          | -0.087                                     | -0.939 | 0.349                     |
| Income Adequacy   | 10.434                        | 5.993          | 0.152                                      | 1.741  | <b>0.084</b>              |
| Education   | 9.319                         | 4.321          | 0.173                                      | 2.156  | <b>0.033</b>              |
| <i>Antecedent Construct Variables</i>   |                               |                |  |        |                           |
| IADL1   | -6.348                        | 8.814          | -0.089                                     | -0.720 | 0.473                     |
| IADL2   | 8.439                         | 8.515          | 0.125                                      | 0.991  | 0.324                     |
| Change in Number of Project Friends   | -0.526                        | 0.331          | -0.131                                     | -1.591 | 0.114                     |
| Satisfaction with Proximity to Services 1   | 0.820                         | 16.721         | 0.004                                      | 0.049  | 0.961                     |
| Satisfaction with Proximity to Services 2   | 16.832                        | 8.874          | 0.166                                      | 1.897  | <b>0.060</b>              |
| Satisfaction with Proximity to Services 3   | -0.284                        | 6.234          | -0.004                                     | -0.046 | 0.964                     |
| Satisfaction with Proximity to Bank 1   | -37.372                       | 19.824         | -0.159                                     | -1.885 | <b>0.062</b>              |
| Satisfaction with Proximity to Bank 2   | -16.215                       | 8.485          | -0.183                                     | -1.911 | <b>0.058</b>              |
| Satisfaction with Proximity to Bank 3   | -12.614                       | 6.503          | -0.186                                     | -1.940 | <b>0.055</b>              |
| Constant  | 215.162                       | 22.961         |  | 9.371  | <b>0.000</b>              |
| Multiple R <sup>2</sup> : 0.236   |                               |                |  |        |                           |
| Adjusted R <sup>2</sup> : 0.158   |                               |                |  |        |                           |
| Increase in Multiple R <sup>2</sup> due to entry of Socio-Demographic Control Variables: 0.106 (F=4.078, df=4, p<0.004) |                               |                |  |        |                           |
| Increase in Multiple R <sup>2</sup> due to entry of Antecedent Construct Variables: 0.130 (F=3.041, df=13, p<0.001)     |                               |                |  |        |                           |

<sup>1</sup> Values significant at p<0.100 level are indicated in bold type.

assessed proximity to services at the senior housing project more negatively than at their previous residence experienced higher desired control after moving. In addition, marginally significant standardized regression coefficients were registered by each of the three dummy variables representing change in satisfaction with proximity to a bank: Satisfaction with Proximity to Bank 1 (continued non-satisfaction); Satisfaction with Proximity to Bank 2 (decline in satisfaction); and Satisfaction with Proximity to Bank 3 (continued satisfaction). However, it is difficult to interpret these results because the negative sign for each of these coefficients indicates that lower desired control scores were more likely if older movers experienced an increase in satisfaction with proximity to a bank.

### **6.3.2 Tests of Regression Models VI-X**

The tests of Models VI-X were based on data relating to the sub-sample of respondents who reported having at least one child (N=116). Model VI was based on the logistic regression procedure, while linear regression was applied to Models VII-X.

#### **6.3.2.1 Model VI**

In Model VI, the Cox & Snell  $R^2$  value indicates that the overall explanation of Self-Rated Health was 25 percent (Table 6.9). For this model, the entry of the control block of socio-demographic characteristics into the equation was non-significant. Nonetheless, the marginally significant ( $p < 0.10$ ) and positive standardized regression coefficient registered for Education suggests that older movers with a higher level of



**Table 6.9. Results of Regression Model VI: Dependent Variable - Self-Rated Health (N=116)**

| Independent Variables   | $\beta$ | Standard Error | Wald  | df | Significance <sup>1</sup> | Exp ( $\beta$ ) | 95.0% C.L. for Exp( $\beta$ ) |        |
|---|---------|----------------|-------|----|---------------------------|-----------------|-------------------------------|--------|
|   |         |                |       |    |                           |                 | Lower                         | Upper  |
| <i>Socio-Demographic Control Variables</i>  |         |                |       |    |                           |                 |                               |        |
| Gender/Marital Status   | 0.406   | 0.463          | 0.769 | 1  | 0.381                     | 1.501           | 0.606                         | 3.720  |
| Age   | 0.022   | 0.023          | 0.983 | 1  | 0.321                     | 1.023           | 0.978                         | 1.069  |
| Income Adequacy   | -0.639  | 0.495          | 1.668 | 1  | 0.197                     | 0.528           | 0.200                         | 1.392  |
| Education   | 0.601   | 0.362          | 2.759 | 1  | <b>0.097</b>              | 1.825           | 0.897                         | 3.710  |
| <i>Antecedent Construct Variables</i>   |         |                |       |    |                           |                 |                               |        |
| Chronic Conditions 1  | -0.115  | 0.520          | 0.049 | 1  | 0.825                     | 0.892           | 0.322                         | 2.470  |
| Chronic Conditions 2  | 1.576   | 0.651          | 5.855 | 1  | <b>0.016</b>              | 4.834           | 1.349                         | 17.323 |
| Auto Transport to Bank 1  | -7.514  | 18.003         | 0.174 | 1  | 0.676                     | 0.001           | 0.000                         | 11.500 |
| Auto Transport to Bank 2  | -8.284  | 18.012         | 0.212 | 1  | 0.646                     | 0.000           | 0.000                         | 54.182 |
| Auto Transport to Bank 3  | -5.947  | 18.010         | 0.109 | 1  | 0.741                     | 0.003           | 0.000                         | 55.934 |
| Constant  | 4.408   | 18.086         | 0.059 | 1  | 0.807                     | 82.095          |                               |        |
| -2 Log Likelihood: 120.861  |         |                |       |    |                           |                 |                               |        |
| Cox & Snell $R^2$ : 0.249   |         |                |       |    |                           |                 |                               |        |
| Increase in Cox & Snell $R^2$ due to entry of Socio-Demographic Control Variables: 0.049 ( $x^2=5.490$ , $df=4$ , $p<0.241$ ) |         |                |       |    |                           |                 |                               |        |
| Increase in Cox & Snell $R^2$ due to entry of Antecedent Construct Variables: 0.200 ( $x^2=25.996$ , $df=5$ , $p<0.000$ )     |         |                |       |    |                           |                 |                               |        |

<sup>1</sup> Values significant at  $p<0.100$  level are indicated in bold type.

education were more likely to record higher ratings of health.

The increase in the Cox & Snell  $R^2$  after the entry of the second block of antecedent construct variables in Model VI was significant ( $p < 0.001$ ) accounting for an additional explanation of 20 percent of the variation of Self-Rated Health. The results indicate that Self-Rated Health was significantly related to one antecedent construct variable. Specifically, a statistically significant ( $p < 0.05$ ) and positive regression coefficient was recorded for the *personal resource transitions* variable Chronic Conditions 2 (i.e., stable number of chronic conditions). This result suggests that the maintenance of physical well-being contributed to higher self-reported health ratings after the move.

#### 6.3.2.2 Models VII-X

Tables 6.10-6.13 disclose that the Adjusted  $R^2$  values of the linear regression models (Models VII-X) ranged from 11 percent to 20 percent. Table 6.10 indicates that Model VII accounted for 11 percent of the explanation of the variation of PGC Morale. An increase of 11 percent in the Multiple  $R^2$  value after the entry of the control block was significant ( $p < 0.05$ ). The statistically significant ( $p < 0.05$ ) standardized regression coefficient for Gender/Marital Status in Model VII was positive indicating that single females were more likely to report lower morale. The statistically significant ( $p < 0.01$ ) positive standardized regression coefficient for Income Adequacy indicates that those who reported greater satisfaction with their incomes were more likely to record higher morale scores. These results provide evidence that specific sub-groups of older movers are at greater disadvantage in

**Table 6.10. Results of Regression Model VII: Dependent Variable - PGC Morale (N=116)**

| Independent Variables   | Regression Coefficient (b) | Standard Error | Standardized Regression Coefficient (β) | t      | Significance <sup>1</sup> |
|---|----------------------------|----------------|---|--------|---------------------------|
| <i>Socio-Demographic Control Variables</i>  |                            |                |   |        |                           |
| Gender/Marital Status   | 1.556                      | 0.752          | 0.192                                   | 2.069  | <b>0.041</b>              |
| Age   | -0.099                     | 0.036          | -0.025                                  | -0.242 | 0.809                     |
| Income Adequacy   | 2.073                      | 0.808          | 0.257                                   | 2.566  | <b>0.012</b>              |
| Education   | 0.785                      | 0.563          | 0.127                                   | 1.394  | 0.166                     |
| <i>Antecedent Construct Variables</i>   |                            |                |   |        |                           |
| Chronic Conditions 1  | -0.081                     | 0.821          | -0.010                                  | -0.099 | 0.921                     |
| Chronic Conditions 2  | 2.205                      | 0.996          | 0.228                                   | 2.214  | <b>0.029</b>              |
| Constant  | 5.783                      | 2.733          |   | 2.116  | <b>0.037</b>              |
| Multiple R <sup>2</sup> : 0.160   |                            |                |   |        |                           |
| Adjusted R <sup>2</sup> : 0.112   |                            |                |   |        |                           |
| Increase in Multiple R <sup>2</sup> due to entry of Socio-Demographic Control Variables: 0.108 (F=3.167, df=4, p<0.017) |                            |                |   |        |                           |
| Increase in Multiple R <sup>2</sup> due to entry of Antecedent Construct Variables: 0.052 (F=3.280, df=6, p<0.005)      |                            |                |   |        |                           |

<sup>1</sup> Values significant at p<0.100 level are indicated in bold type.

relation to negative outcomes of residential relocation. That is, older females and those with financial difficulties were more likely to experience negative outcomes.

While the entry of the second block of antecedent construct variables resulted in an increase of only five percent in the value of  $R^2$ , the results presented in Table 6.10 disclose that the increase was significant ( $p < 0.01$ ). In common with Model VI, the personal state outcome (PGC Morale) was significantly related only to one antecedent construct variable. Specifically, a positive and statistically significant ( $p < 0.05$ ) standardized regression coefficient was recorded by the *personal resource transitions* variable of Chronic Conditions 2 (i.e., stable number of chronic conditions). This suggests that higher morale was more likely to be enjoyed by respondents with stable health after the move to the senior housing project.

The Adjusted  $R^2$  value for Model VIII indicates that the model provided 11 percent of the overall explanation for the CES Depression Scale (Table 6.11). The increase in the Multiple  $R^2$  resulting from the entry of the first control block was non-significant, with none of the socio-demographic variables significant. However, the entry of the block of antecedent construct variables registered a significant ( $p < 0.05$ ) increase of 14 percent in the Multiple  $R^2$  value. The two antecedent construct variables that are significant indicators of depression respectively concern *resident-appraised change in the content of the service environment* and *personal resource transitions*.

First, Satisfaction with Proximity to Services 1 registered a significant ( $p < 0.05$ ) and positive standardized regression coefficient. This implies that higher depression scores were related to negative assessments of local neighbourhood service resources

**Table 6.11. Results of Regression Model VIII: Dependent Variable - CES Depression Scale (N=116)**

| Independent Variables   | Regression Coefficient (b) | Standard Error | Standardized Regression Coefficient (β) | t      | Significance <sup>1</sup> |
|---|----------------------------|----------------|---|--------|---------------------------|
| <i>Socio-Demographic Control Variables</i>  |                            |                |   |        |                           |
| Gender/Marital Status   | -2.640                     | 2.044          | -0.123                                  | -1.291 | 0.200                     |
| Age   | -0.110                     | 0.100          | -0.118                                  | -1.099 | 0.274                     |
| Income Adequacy   | -1.524                     | 2.246          | -0.071                                  | -0.679 | 0.499                     |
| Education   | -1.932                     | 1.530          | -0.117                                  | -1.263 | 0.210                     |
| <i>Antecedent Construct Variables</i>   |                            |                |   |        |                           |
| IADL 1  | 5.868                      | 3.252          | 0.253                                   | 1.804  | <b>0.074</b>              |
| IADL 2  | 0.064                      | 3.067          | 0.003                                   | 0.021  | 0.983                     |
| Satisfaction with Proximity to Services 1   | 12.599                     | 5.591          | 0.222                                   | 2.254  | <b>0.026</b>              |
| Satisfaction with Proximity to Services 2   | -0.594                     | 3.101          | -0.019                                  | -0.191 | 0.936                     |
| Satisfaction with Proximity to Services 3   | 0.175                      | 2.166          | 0.008                                   | 0.081  | 0.026                     |
| Change in Number of Visits with Children  | -0.008                     | 0.005          | -0.134                                  | -1.407 | 0.162                     |
| Constant  | 21.420                     | 8.027          |   | 2.669  | <b>0.009</b>              |
| Multiple R <sup>2</sup> : 0.190   |                            |                |   |        |                           |
| Adjusted R <sup>2</sup> : 0.108   |                            |                |   |        |                           |
| Increase in Multiple R <sup>2</sup> due to entry of Socio-Demographic Control Variables: 0.046 (F=1.262, df=4, p<0.290) |                            |                |   |        |                           |
| Increase in Multiple R <sup>2</sup> due to entry of Antecedent Construct Variables: 0.144 (F=2.317, df=10, p<0.017)     |                            |                |   |        |                           |

<sup>1</sup> Values significant at p<0.100 level are indicated in bold type.

at both the previous residence and the senior housing project. Second, the marginally significant ( $p < 0.10$ ) positive standardized regression coefficient of IADL 1 indicates that depression scores were typically higher among respondents who, after completion of the move, experienced an increase in the number of instrumental activities of daily living for which they required assistance.

The results of the test of Model IX disclose that the model explained 28 percent of the variation of Self-Esteem (Table 6.12). For the entry of the control block of socio-demographic variables, the increase in  $R^2$  was non-significant. However, there was a statistically significant relationship between Self-Esteem and Education. Specifically, the positive and significant ( $p < 0.05$ ) standardized regression coefficient indicates that older movers with a higher education level were more likely to record higher self-esteem. The increase in  $R^2$  of 24 percent after the entry of the second block was significant ( $p < 0.001$ ). In common with Model VIII, the results indicate that Self-Esteem was related to one antecedent construct variable concerning *resident-appraised change in the content of the service environment*: Satisfaction with Proximity to Services 1 (i.e., continued non-satisfaction with proximity to services). The statistically significant ( $p < 0.001$ ) standardized regression coefficient for this variable was negative. This suggests that respondents were more likely to experience lower self-esteem if they were dissatisfied with proximity to services at both the previous residence and the senior housing project.

**Table 6.12. Results of Regression Model IX: Dependent Variable - Self-Esteem (N=116)**

| Independent Variables  | Regression Coefficient<br>( <i>b</i> ) | Standard Error | Standardized Regression Coefficient<br>( $\beta$ ) | <i>t</i> | Significance <sup>1</sup> |
|--|--|----------------|--|----------|---------------------------|
| <i>Socio-Demographic Control Variables</i>   |  |                |  |          |                           |
| Gender/Marital Status  | 0.081                                  | 0.310          | 0.024  | 0.262    | 0.794                     |
| Age  | 0.012                                  | 0.015          | 0.085  | 0.830    | 0.409                     |
| Income Adequacy  | -0.119                                 | 0.334          | -0.035   | -0.335   | 0.724                     |
| Education  | 0.476                                  | 0.228          | 0.184  | 2.091    | <b>0.039</b>              |
| <i>Antecedent Construct Variables</i>  |  |                |  |          |                           |
| ADL 1  | -0.672                                 | 0.494          | -0.191   | -1.361   | 0.177                     |
| ADL 2  | 0.035                                  | 0.445          | 0.010  | 0.078    | 0.938                     |
| IADL 1   | -0.726                                 | 0.526          | -0.200   | -1.379   | 0.171                     |
| IADL 2   | -0.019                                 | 0.465          | -0.006   | -0.041   | 0.968                     |
| Satisfaction with Proximity to Services 1  | -3.221                                 | 0.828          | -0.362   | -3.889   | <b>0.000</b>              |
| Satisfaction with Proximity to Services 2  | -0.241                                 | 0.474          | -0.050   | -0.508   | 0.613                     |
| Satisfaction with Proximity to Services 3  | -0.166                                 | 0.332          | -0.050   | -0.499   | 0.619                     |
| Constant   | 7.586                                  | 1.198          |  | 6.334    | <b>0.000</b>              |
| Multiple $R^2$ : 0.279   |  |                |  |          |                           |
| Adjusted $R^2$ : 0.198   |  |                |  |          |                           |
| Increase in Multiple $R^2$ due to entry of Socio-Demographic Control Variables: 0.040 ( $F=1.091$ , $df=4$ , $p<0.365$ ) |  |                |  |          |                           |
| Increase in Multiple $R^2$ due to entry of Antecedent Construct Variables: 0.239 ( $F=3.450$ , $df=11$ , $p<0.000$ )     |  |                |  |          |                           |

<sup>1</sup> Values significant at  $p<0.100$  level are indicated in bold type.

Finally, the results of the test of Model X show that the independent variables explained 27 percent of the variance of Desired Control (Table 6.13). The increase in the Multiple  $R^2$  after the entry of the control block was 11 percent, which was significant ( $p < 0.05$ ). It is notable that each of the four socio-demographic variables comprising the block was a significant indicator of Desired Control. The standardized regression coefficient was negative and marginally significant ( $p < 0.10$ ) for both Age and Gender/Marital Status, while Education and Income Adequacy of each registered a significant ( $p < 0.05$ ) and positive standardized regression coefficient. Taken together, these findings reveal that those respondents who reported higher desired control (i.e., greater feelings of control over the environment) were typically younger, single and female, and had both higher levels of education and income satisfaction.

The increase of 17 percent in the value of Multiple  $R^2$  after the entry of the block of antecedent construct variables was significant ( $p < 0.001$ ). Significant relationships were recorded between Desired Control and four antecedent construct variables. One of these variables relates to *resident-appraised changes in the service environment*: Satisfaction with Proximity to Services 3 (i.e., continued satisfaction with proximity to services). However, it is difficult to interpret the results as the significant ( $p < 0.01$ ) and negative regression coefficient for this variable indicates that lower levels of desired control were more likely if satisfaction with proximity to services remained stable after the move had taken place.

The other three significant antecedent construct variables in Model X are a set of dummy variables concerning *observer-defined change in individual service behaviour*



**Table 6.13. Results of Regression Model X: Dependent Variable - Desired Control (N=116)**

| Independent Variables   | Regression Coefficient<br>(b) | Standard Error | Standardized Regression Coefficient<br>(β) | t      | Significance <sup>1</sup> |
|---|-------------------------------|----------------|--|--------|---------------------------|
| <i>Socio-Demographic Control Variables</i>  |                               |                |  |        |                           |
| Gender/Marital Status   | -11.420                       | 6.057          | -0.169                                     | -1.886 | <b>0.062</b>              |
| Age   | -0.532                        | 0.285          | -0.183                                     | -1.870 | <b>0.064</b>              |
| Income Adequacy   | 13.728                        | 6.687          | 0.204                                      | 2.053  | <b>0.043</b>              |
| Education   | 8.694                         | 4.457          | 0.169                                      | 1.951  | <b>0.054</b>              |
| <i>Antecedent Construct Variables</i>   |                               |                |  |        |                           |
| Satisfaction with Proximity to Services 1   | -10.860                       | 16.428         | -0.061                                     | -0.661 | 0.510                     |
| Satisfaction with Proximity to Services 2   | 6.561                         | 9.191          | 0.068                                      | 0.714  | 0.477                     |
| Satisfaction with Proximity to Services 3   | -18.667                       | 6.363          | -0.279                                     | -2.933 | <b>0.004</b>              |
| Auto Transport to Pharmacy 1  | 58.249                        | 21.601         | 0.781                                      | 2.697  | <b>0.008</b>              |
| Auto Transport to Pharmacy 2  | 60.562                        | 22.314         | 0.716                                      | 2.714  | <b>0.008</b>              |
| Auto Transport to Pharmacy 3  | 75.208                        | 24.400         | 0.552                                      | 3.082  | <b>0.003</b>              |
| Constant  | 176.919                       | 28.388         |  | 6.232  | <b>0.000</b>              |
| Multiple R <sup>2</sup> : 0.273   |                               |                |  |        |                           |
| Adjusted R <sup>2</sup> : 0.199   |                               |                |  |        |                           |
| Increase in Multiple R <sup>2</sup> due to entry of Socio-Demographic Control Variables: 0.106 (F=3.106, df=4, p<0.018) |                               |                |  |        |                           |
| Increase in Multiple R <sup>2</sup> due to entry of Antecedent Construct Variables: 0.167 (F=3.714 df=10, p<0.000)      |                               |                |  |        |                           |

<sup>1</sup> Values significant at p<0.100 level are indicated in bold type.

*circuits* in relation to access to automobile transportation for trips to pharmacies. Specifically, significant ( $p < 0.01$ ) positive standardized regression coefficients were recorded for three dummy variables: Auto Transport to Pharmacy 1 (continued non-access), Auto Transport to Pharmacy 2 (decline in access), and Auto Transport to Pharmacy 3 (continued access). This indicates that higher levels of desired control were recorded by those older movers who experienced an increase in access to automobile transportation to travel to the pharmacy.

### **6.3.3 Models I-X: An Overview of the Results**

The results of the tests of the regression models address Research Question 6, which concerns the influence of changes in personal resources, environmental content, and behaviour circuits on the personal state outcomes of older movers to government-subsidized senior housing. Overall, the tests of the regression models disclosed only moderate levels of explanation of the personal state outcomes. The low levels of explanation can partly be attributed to the exclusion of stable psychological attributes in the study's conceptual framework. For example, Golant's (1998) conceptual framework proposes that variables related to an individual's personality style are likely to be key predictors of the outcomes of adjustment to a new residential setting.

Despite the low explanatory power of the models, the results do reveal some notable relationships between personal state outcomes and the antecedent construct variables. More specifically, these findings afford evidence of the personal, environmental, and behavioural factors that contribute to the personal outcomes of

older people in a new residential setting. In addition, the results indicate that the outcomes are also related to the socio-demographic characteristics of elderly movers. The discussion that follows provides an overview and comparison of the results of the tests of Models I-V and Models VI-X.

In relation to the two sets of regression models, the results reveal that they provide broadly similar levels of overall explanatory power. Interestingly, for each set of models, the model with self-esteem as the dependent variable (i.e., Model IV and Model IX) registered the highest level of explanation. In addition, the models that included desired control as the dependent variable had relatively high levels of explanatory power. However, considerably higher levels of explanatory power were recorded for self-rated health and depression in Models I and III compared to Models VI and VIII. In addition, morale is the dependent variable that registered the lowest levels of explanation in both Model II and Model VII.

In relation to Research Question 6, it is particularly notable that the entry of the block of antecedent construct variables recorded a significant increase in  $R^2$  for all regression models included in the analysis. These results thus imply that at least some changes in personal, environmental, and behavioural factors were significant as predictors of personal outcomes of older movers. In particular, it is important to compare the relative influence of these sets of variables on the personal state outcomes of both the entire sample (Models I-V) and the sub-sample of respondents with children (Models VI-X). Specifically, the results of the models reveal that, for both sets of models, personal outcomes were related to changes in personal resources, resident appraisals of service proximity, and behaviour circuits in the service

environment. Conversely, changes in social behaviour circuits were associated with personal outcomes for the entire sample only.

The results provide evidence that variables relating to *personal resource transitions* have a significant impact on the personal state outcomes of older movers. Specifically, the findings reveal that more positive outcomes were related to the stability of functional abilities and physical health. For the entire sample, for example, higher self-ratings of health were related to a stable number of IADL limitations. In addition, higher ratings of health and higher morale scores were related to a stable number of chronic conditions for the sub-sample with children. Therefore, these results disclose that the stability of the older mover's personal resources was an important prerequisite for realization of positive outcomes from residential moves. However, an increase in the number of IADL limitations for the entire sample was related to lower self-esteem, and higher depressive symptoms for the sub-sample of parents. Thus, declines in functional ability appeared to have a negative impact on personal outcomes, which may possibly be related to the decreased ability to access resources in the local neighbourhood environment.

Within the domain of environmental content, the antecedent construct of *resident-appraised change in the content of the service environment* contributed to the explanatory power of the models. Most notably, the findings concerning both sets of models indicated that continued dissatisfaction with proximity to services after moving produced negative personal outcomes. For example, respondents in the entire sample who reported dissatisfaction with proximity to services at both the previous residence and the senior housing project were more likely to experience lower morale

and self-esteem, as well as greater depressive symptoms. In addition, the sub-sample with children was more likely to register lower self-esteem and higher depression if they experienced continued dissatisfaction with proximity to services. Although the results are difficult to interpret, for both sets of models, higher desired control was more likely to be experienced if there was a decrease in satisfaction with proximity to services. Overall, these results are noteworthy because they highlight the importance of subjective assessments of the proximity of services in the neighbourhood in relation to the personal outcomes of older movers.

With regard to the service environment, the results disclose that personal outcomes of older movers were related to variables concerning the antecedent construct of *observer-defined change in individual service behaviour circuits*. For the entire sample, lower ratings of health were more likely to occur when the respondent experienced continuing inaccessibility, or a decline in accessibility, to automobile transportation for travel to banks. In contrast, higher levels of desired control were recorded for the sub-sample of older movers with children who experienced an increase in access to automobile transportation to travel to pharmacies. These results demonstrate the importance of automobile transportation for older movers specifically for travel to infrequently patronized service sites such as banks and pharmacies. These service sites are often located at considerable distances from the place of residence.

In terms of Models I-V, it is noteworthy that self-rated health was related to a further antecedent construct variable concerning *observer-defined change in individual service behaviour circuits*: Auto Transport to Grocery Store 2. Positive

ratings of health were related to a decline in access to automobile transportation for trips to grocery stores. With regard to the antecedent construct of *resident-appraised change in the content of the service environment*, higher self-ratings of health were related to declines in satisfaction with proximity to grocery stores. One possible explanation for these findings concerning grocery stores is that some healthier respondents were able to compensate for poor proximity to outlets by utilizing other forms of transportation such as public transit for food shopping purposes.

For the entire sample, the results of the tests of the regression models disclose that certain behavioural elements of the social setting influenced personal state outcomes. Specifically, some variables concerned with the antecedent construct of *observer-defined change in individual social behaviour circuits* contributed to the overall explanation of some personal outcomes. For example, higher levels of depression were related to a decrease in the number of visits with family members and friends after the move. Furthermore, lower self-esteem was related to the continued unavailability of automobile transportation for travel to the homes of family after the move. Generally, these results provide evidence of the importance of accessibility to the social environment for the well-being of older adults. For the sub-sample with children, however, it was notable that outcomes of residential moves were not related to the social behaviour circuits. This suggests that because respondents were more likely to rely on informal social support networks, the constraints of the environment were less relevant.

It is noteworthy that the entry of the block of socio-demographic control variables into the regression equations only produced a significant increase in the level of

explanation of morale and desired control in each set of regression models. However, the results do suggest that certain socio-demographic variables were key indicators of personal state outcomes. In particular, respondents reporting higher levels of education and greater income adequacy were more likely to experience better health, higher morale, and higher desired control in both sets of models. This clearly illustrates that those older movers with limited socio-economic resources were at greater risk of experiencing negative personal state outcomes. With regard to the subsample with children, the findings that (a) single females were more likely to report lower morale, and (b) older respondents reported lower desired control, support previous research findings that have emphasized the greater vulnerability of older women in publicly funded senior housing (Gonyea et. al., 1990; Young, 1998). However, other results from the two sets of models do not afford further support for the proposition that certain segments of the older population are at greater risk when they move to senior housing. For example, it is unclear why single females recorded higher desired control scores in both sets of regression models. It is possible that some of these older women felt greater control in their environment because of the continuing support provided by their children. Interestingly, older respondents in the entire sample rated their health more positively in comparison to their younger counterparts.

Overall, the results concerning Research Question 6 demonstrate that complex relationships exist between personal resources, service accessibility, proximity to informal supports, activity spaces, and the personal state outcomes of older movers to government-subsidized senior housing. Thus, the findings provide support for a

comprehensive ecological approach that incorporates personal, environmental, and behavioural factors in the investigation of the outcomes of older movers to a new residential setting. In relation to Research Question 6, the results of the study provide evidence that personal outcomes were related to some of these factors even though the overall explanatory power of the regression models was limited.

The results of the study underscore the importance of changes in personal resources on the personal state outcomes of older movers. In particular, while the stability of functional and physical health was related to positive outcomes, those older movers who reported increases in IADL limitations also experienced more negative outcomes. Interestingly, those individuals who first received instrumental supports such as meal preparation and housecleaning after moving, were more likely to experience negative outcomes. These results highlight the need to focus on those at greater risk after moving to government-subsidized senior housing due to diminished physical capacities (Chen & Wilmoth, 2004; Choi, 1996; Longino, et al., 1991; Longino, 2001; Meyer & Cromley, 1989; Speare et. al., 1991).

Overall, the results provide evidence that certain aspects of the neighbourhood environment contribute to more positive personal state outcomes. For both sets of regression models, the independent variables with the greatest explanatory power related to the construct of *resident-appraised change in the content of the service environment*, particularly concerning proximity to the service environment. For example, the results indicate that depression was positively related to continued dissatisfaction with proximity to services at both the previous residence and the senior housing project, while morale and self-esteem were negatively related to the same



independent variable. In broader terms, the importance of variables concerning the construct of *resident-appraised change in the content of the service environment* implies that outcomes of residential moves are more likely to be positive if the local neighbourhood environment of the project is "service rich". Moreover, this finding is consistent with the results of previous related research that has found proximity to service resources to be positively related to the well-being of older people (Bohland & Herbert, 1983; Cutler, 1972; Kahana et. al., 1976; Lawton et. al., 1980; Reitzes et. al., 1991).

One important difference between the two sets of regression models is that variables representing *observer-defined change in individual social behaviour circuits* significantly contributed only to the explanation of the personal state outcomes of the entire sample. Moreover, the results of Models I-V clearly demonstrate the importance of the contextual effects of the social environment in the personal outcomes of older movers to low-income senior housing. For example, positive outcomes were related to an increase in visits with family and friends. In contrast, the continuing inaccessibility of automobile transportation to travel to the homes of family resulted in more negative outcomes. As the antecedent construct variable of change in the number of friends in the project was not significant in any of the models, it can be surmised that social relationships in the project were less important predictors of personal outcomes than social networks in the surrounding neighbourhood (Hinrichsen, 1985; Sheehan, 1986). Overall, the findings of the study thus provide additional evidence of the importance of care-giving environments

related to external informal social support networks in the process of adjustment to a new residential setting (Golant, 1980; Wacker et. al., 1998; Ward et. al., 1988).

In relation to the service environment, the results of both sets of models demonstrate that personal outcomes were related to *observer-defined change in the behaviour circuits of the service environment*. For example, negative self-ratings of health were related to the continued inaccessibility of automobile transportation to banks for the entire sample. In contrast, for the sub-sample with children, higher desired control was related to an increase in access to automobile transport to pharmacies. These results demonstrate the importance of personal mobility within the local neighbourhood service environment in relation to outcomes of residential relocation (Cutler & Coward, 1992; Stahl, 1987). Furthermore, the findings suggest that vehicular transportation to travel to pharmacy and banking sites is more significant for positive outcomes than is travel to grocery stores. As grocery stores are typically more proximate to senior housing projects, automobile transportation may not be required in order to access this service type.

The results of the study also highlight the impact of specific socio-demographic characteristics of older movers on personal outcomes. Most notably, an older mover reporting a higher level of education and greater satisfaction with income was more likely to experience positive outcomes. Moreover, the results suggest that single females with children were more likely to experience negative outcomes. Taken together, these findings illustrate the vulnerability of older females, particularly those with diminished economic resources, in new residential settings (Beland, 1984; Kanaroglou & Diegel, 1990; Krout & Pillemer, 2003; Lawton, 1986; Smith &

Gauthier, 1995; Smith & Sylvestre, 2001; Varady, 1984:). Thus, the needs of older women in publicly funded housing deserve particular attention.

In response to Research Question 6, therefore, the results broadly indicate that personal state outcomes are related to personal resource transitions, changes in the social and service components of the neighbourhood environment, and local behaviour circuits. In particular, the study provides evidence of the importance of subjective assessments of service proximity as a predictor of personal outcomes. At the same time, it must be noted that the antecedent constructs explicitly defined in terms of objective indicators of geographical access (i.e., physical spatial separation) provided little explanatory power in the regression models.

As Golant (1998) proposed in his model of residential adjustment, a temporal perspective is required to compare the previous residence and the current housing situation in relation to residential adaptation. According to the results of this study, personal outcomes of residential moves are related to changes in personal, environmental, and behavioural factors that occur as a result of the move to senior housing. It is particularly interesting that the antecedent construct variable of greatest significance in the regression models was continued dissatisfaction with proximity to the service environment. Golant (1998) proposes that older movers rate their current housing based on previous residential experiences. Therefore, it is possible that the dissatisfaction is evidence that the past housing history of an individual is particularly important in understanding the adjustment process of older movers.

In relation to the macro-environment of the neighbourhood, the results underscore the importance of subjective dimensions of the service environment and change in the

behaviour circuits of the service and social environments. More specifically, the study provides evidence to support Golant's (1998) proposal that subjective interpretations may assume more importance than objective measures of the housing environment for older adults. In addition, the importance of the antecedent constructs of *observer-defined change in individual social and service behaviour circuits* demonstrates that an older person's interaction with the environment is a factor that influences their well-being after residential relocation (Golant et. al., 1989).

#### 6.4 Summary

This chapter presents the tests of two sets of regression models developed to address Research Question 6. The sets of regression models respectively relate to the entire sample and the sub-sample with children. An outline of the coding and transformations of the variables initially included in the regression analysis was first offered. An exploratory analysis conducted to determine the antecedent construct variables to be included in the regression models followed. Next, the tests of the regression models were outlined and the results presented. This was followed by an overview of these results and their implications. Overall, the results of the regression models reveal that personal outcomes are related to changes in personal resources, the local neighbourhood setting, and individual behaviour circuits. In addition, the effects of key socio-demographic variables on these outcomes were noted.

## Chapter 7 Summary and Implications for Policy and Future Research

The primary goal of this study was to investigate the effect of changes in personal resources, behaviour circuits, and local environmental settings on the personal state outcomes of older movers to government-subsidized senior housing projects in the city of Winnipeg, Manitoba. The study involved a conceptual model developed from Golant's (1998) model of the outcomes of adjustment to a new residential setting. Six research questions were formulated. The first five of these questions related to descriptive aspects of change in both the older mover and the local neighbourhood environment:

- 1) What are the personal and residential characteristics of recent movers to government-subsidized senior housing projects?
- 2) What changes in the personal resources of older adults occur after a move to a government-subsidized senior housing project?
- 3) Are there notable modifications in the local physical, social, and service environment after a move to a government-subsidized senior housing project?
- 4) Are there significant changes in individual social and service behaviour circuits of recent movers to a government-subsidized senior housing project?
- 5) What changes occur in the personal state outcomes of recent movers to government-subsidized senior housing projects?

The final research question focused on the relationship of personal, environmental, and behavioural changes with the personal state outcomes of older movers:

- 6) Do changes in personal resources, environmental content, and behavioural circuits influence the personal outcomes of recent movers to a government-subsidized senior housing project?

In Chapter 1, the conceptual foundations of the study were presented within the context of environmental gerontology and geographical perspectives on housing for the older population. With the aim of contributing to a greater understanding of the relationship between the environment and aging, the study included both a temporal framework and a focus on the macro-environment of the neighbourhood to investigate the personal state outcomes of older movers. Chapter 2 presented literature relevant to the residential mobility of older adults and the implications of moving to a new residential setting. Specifically, the literature review highlighted the need for research to evaluate the effects of a changed local neighbourhood environment on the residential adjustment and personal outcomes of older tenants of low-income housing who are at risk because of declines in social, physical, and economic resources. In Chapter 3, the main characteristics of environmental gerontology were outlined as a background to the presentation of the study's conceptual framework. Specifically, the conceptual framework proposed causal relationships between personal state outcomes and antecedent constructs that relate to change in both the individual and environment. In Chapter 3, six research questions were developed to (a) examine change in the person and environment resulting from a move to low-income senior housing, and (b) determine the relationship between personal state outcomes and this change. Chapter 4 explained the longitudinal survey design utilized in the research and outlined the study area.

The findings of the study were reviewed within the framework of the six research questions. Chapter 5 presented the results of both descriptive and bivariate analyses to address the research questions concerning the characteristics of older movers, and

changes in personal resources, the local neighbourhood environment, individual behavioural circuits, and personal state outcomes during the study period as a result of relocation to government-subsidized senior housing (Research Questions 1-5). Multiple regression models were formulated and tested in Chapter 6 to evaluate the relationships proposed in the final research question concerning the influence of changes in personal, environmental, and behavioural factors on the personal state outcomes of older movers to low-income senior housing (Research Question 6).

The objective of this chapter is to provide an overview of the results of this study. Finally, the implications of the findings for the development of housing policy for the aging population are outlined and directions for future research are suggested. In order to provide a background to these discussions, a summary of the research design is first presented.

## **7.1 Research Design**

The model for the present study proposed that the personal state outcomes of recent movers to a senior housing project are influenced by socio-demographic variables and a set of antecedent constructs that relate to changes in the personal resources of the movers, individual behaviour, and characteristics of the neighbourhood environment. Specifically, the antecedent constructs included personal resource transitions, individual attributes, and both observer-defined and resident-appraised change in the content of, and behaviour circuits in, the functionally relevant environment. As low-income seniors may be particularly dependent on local services, amenities, and social ties because of mobility constraints, the model focused

specifically on the implications of changes in the local neighbourhood environment as a result of the older person's move. The six research questions were developed from this model.

In order to examine the personal state outcomes of older movers, the survey design of the study was longitudinal and involved two interview surveys that yield two waves of data. For the study, older adults who had moved to government-subsidized housing within the year prior to the commencement of the study were selected from 25 projects that were almost equally distributed between the inner city and suburban areas of Winnipeg. The first data wave included information collected from each respondent relating to (a) the residential setting immediately prior to the move, and (b) the current residential setting of the government-subsidized senior housing project. The second wave of data related to the subsequent circumstances of the respondents approximately one year after the first survey. Both interview surveys included a series of structured and open-ended questions relating to the personal characteristics, individual behaviour circuits, environmental context, and the personal state outcomes of the recent movers.

While 435 individuals were initially contacted to participate in the study, only 242 respondents fully completed the first interview questionnaire representing a response rate of 55.6 percent. A total of 149 of the 242 respondents who completed the first survey also completed the second interview, representing a follow-up response rate of 61.6 percent. Those respondents who completed both surveys (N=149) were reasonably representative of the older Canadian population in terms of age and



gender, with only a slight under-representation of persons between the ages of 65 and 74 years of age and a slight over-representation of persons 75 years of age and over.

Descriptive statistical methods and bivariate inferential statistical testing procedures were used in the analysis conducted to address the research questions concerning personal characteristics, changes in personal, environmental, and behavioural factors, and changes in personal state outcomes (Research Questions 1-5). Specifically, analyses were conducted to evaluate the personal characteristics and changes in the antecedent constructs and personal state outcomes at three specific points in time. In addition, associations were evaluated between the antecedent construct variables and the socio-demographic characteristics of age, gender, and urban location.

For Research Question 6, analytical tests were conducted to determine the effects of the socio-demographic characteristics and antecedent constructs on the personal state outcomes of older movers. Two sets of regression models were formulated relating to (a) the entire sample, and (b) a sub-sample comprised of those respondents who reported having at least one child. A preliminary analysis was first conducted to determine those antecedent construct variables that were potentially strong predictors of the five personal state outcomes. The analysis consisted of (i) a zero-order correlation analysis, and (ii) an exploratory regression analysis. Each of the two sets of regression models included (i) a logistic regression model where the dependent variable was the dichotomized personal state outcome of self-rated health, and (ii) four linear regression models with the personal state outcomes measured by continuous data: morale, depression, self-esteem, and control. The following section

discusses the research findings based on results of the analyses that were conducted to address each of the study's research questions.

## **7.2 The Findings**

In this section, the findings relating to each of the research questions are presented in turn and their implications evaluated.

### **7.2.1 Research Question 1: Personal and Residential Characteristics of Recent Movers**

Research Question 1 asks: What are the personal and residential characteristics of recent movers to government-subsidized senior housing projects? Overall, the findings indicate that, consistent with typical resident profiles associated with low-income housing (Beland, 1984; Carter, 1988; Meyer & Speare, 1985; Speare & Meyer, 1988), the sample was composed largely of older, single females. With regard to the age profile of the sample, however, the findings reveal that although residents are typically comprised of the "old-old" age cohort, a large majority of respondents in the sample were less than 75 years of age. This "young" age profile reflects the fact that the sample was limited to newcomers to the projects who previously lived in the community. Also consistent with the typical profile of older residents of subsidized housing (Kanaroglou & Diegel, 1990; Varady, 1984; Winiecke, 1973), the sample was composed largely of low-income seniors, with almost all respondents reporting an income of less than \$20,000 per year and living in households without a car. It is notable that one of the most frequently reported reasons by respondents for moving to a senior housing project was because of

financial difficulties. Interestingly, many respondents disclosed that their financial situation had improved markedly after the move because of the subsidized accommodation provided by the project.

Analysis of the residential characteristics of the movers showed that the sample was comprised of both respondents who lived at their previous residence for many years and highly mobile respondents who reported only brief durations of residential stability. The findings of the analysis also indicated that the majority of the sample had only moved a short distance from the previous residence to the senior housing project, thus suggesting that many respondents had some degree of familiarity with the surrounding neighbourhood of the project prior to relocating. This familiarity may have been of some importance since many members of the sample relied on the local neighbourhood environment as a result of their declining personal resources.

### **7.2.2 Research Question 2: Personal Resource Transitions**

Research Question 2 asks: What changes in the personal resources of older adults occur after a move to a government-subsidized senior housing project? An important factor in the investigation of personal state outcomes is the physical and functional health status of project residents. It is noteworthy that the most common reasons given by the sample for moving to senior housing included declining health and physical difficulties at the previous residence. However, the findings indicated that while transitions in personal resources did occur, most respondents did not experience substantial decrements in their health and functional status after moving to a senior

housing project. For example, most respondents reported virtually no change in the number of chronic conditions after residential relocation.

In contrast, significant differences were found between the mean number of ADL and IADL limitations reported by the entire sample at the previous residence and at the senior housing project. More specifically, modest increases were recorded in both the mean number of reported ADL limitations and the mean number of reported IADL limitations. The increase in these functional limitations can partly be attributed to the effects of improved access to, and dependency on, support services available at the housing project. For example, respondents reported an increased need for several services provided by the provincial homecare program including assistance with bathing, heavy housework, meal preparation, and shopping. In addition, many respondents also utilized the congregate meal program provided at some of the housing projects.

The analysis confirms that older respondents also experienced a greater number of chronic conditions relative to their younger counterparts. Although these older respondents did receive functional supports, they were at greater risk of mobility constraints due to declines in physical and functional health. These constraints may have hindered their access to needed social and service resources available in the local neighbourhood, which ultimately may have impacted negatively on their residential adjustment and personal state outcomes.

### 7.2.3 Research Question 3: Change in The Local Neighbourhood Environment

Research Question 3 asks: Are there notable modifications in the local physical, social, and service environment after a move to a government-subsidized senior housing project? To address this question, several antecedent constructs of the study's conceptual model were examined including *resident-appraised change in the content of the physical environment*, as well as *resident-appraised and observer-defined change in the content of the social and service environments*.

Generally high levels of satisfaction with the attributes of the physical environment were maintained throughout the study period. The respondents rated security from crime as the most salient attribute of the physical environment. It is notable that there was a marked improvement in the perception of security from crime after the move to the senior housing project. Compared to the previous residence, respondents generally reported feeling safer and were more likely to travel by public transportation. This reported increase in satisfaction with safety in the surrounding environment suggests that older movers may also have perceived greater accessibility to resources in the local neighbourhood of the project in comparison to the previous residence. On the other hand, there is also a decrease in levels of satisfaction with sidewalk conditions and traffic safety.

In relation to the content of the social environment, the results disclose that important changes occurred after the move to the senior housing project. Overall, decreases were recorded in distances from the place of residence to the homes of each of the most proximate child, sibling, and friend. However, no significant changes were recorded in the mean distance to the homes of family and friends. Nonetheless,

it is notable that respondents' satisfactions with proximity to family and friends increased significantly after the move to the senior housing project.

It is interesting to note that younger respondents expressed greater satisfaction with proximity to friends and family. This may reflect a higher degree of personal mobility among the young-old elderly, as well as a tendency for younger respondents to live closer to siblings and friends. Given the greater distances that older respondents typically had to travel to the social environment and the greater likelihood that they would also experience decrements in their physical and functional health, it is possible that the social networks of older tenants were less accessible. However, the finding that female respondents expressed greater satisfaction with proximity to family members contradicts assumptions that this vulnerable segment of residents of senior housing will have less access to the social environment.

The results indicated that access to the service environment improved for respondents after the move to the senior housing project. First, decreases in the mean distance to components of the service environment were significant for all salient service sites except small grocery stores. As a result, while generally high levels of satisfaction with proximity to all services were registered throughout the study period, significant increases in satisfaction were registered after the move to the senior housing project, particularly in relation to grocery stores. Some respondents commented that after the move they lived within easy walking distance of needed services in the local neighbourhood or could easily access the bus service. In particular, many respondents remarked on their proximity to large major-chain grocery stores. These open-ended comments were supported by the responses to the

structured questions that disclosed that most respondents experienced increased proximity to all service site categories after the move.

Although the results reveal a trend for increased proximity to the service environment after the move, there are notable exceptions. For example, both females and older respondents rated overall access to services more negatively after the move. Additionally, there was a tendency for major-chain grocery stores to be located in closer proximity to female respondents and those living in suburban projects. Moreover, younger respondents lived in closer proximity to all salient service sites except for small grocery stores. It is also notable that while most respondents indicated that their proximity to services had improved at the senior housing project, others identified functional declines and safety concerns as barriers to accessing services. Clearly, these variations in evaluations of change in the service environment must be taken into account when assessing outcomes of adjustment to a new residential setting.

#### **7.2.4 Research Question 4: Change in Individual Social and Service Behaviour Circuits**

Research Question 4 asks: Are there significant changes in individual social and service behaviour circuits of recent movers to a government-subsidized senior housing project? *Observer-defined change in individual behaviour circuits of the social and service environments* included measurements related to the frequency of visits, as well as the use of automobile transportation for travel to both social and service sites.

According to the results related to the content of the social environment, proximity to both family and friends improved after the move to senior housing. However, although increases were noted in the frequency of visits to the homes of family members and friends, no significant differences were recorded. Overall, respondents reported visiting with children and friends most frequently compared to siblings. In relation to automobile usage, significant decreases were recorded in the proportion of the entire sample travelling by automobile to the homes of friends and family. This decline can partly be explained by the cessation of driving by sample members after the move. However, it is also important to note that barriers to the social environment can be overcome. For instance, female respondents were more likely to travel to the homes of family by car and visit more frequently with their children in comparison to male respondents.

In relation to the individual behaviour circuits in the service environment, change in the frequency of visits to salient service sites after the move was non-significant despite the improved proximity of service resources. Younger respondents traveled more frequently to grocery store, pharmacy, and bank service sites, possibly reflecting the greater mobility constraints on older respondents. In addition, given that respondents enjoyed greater proximity to the service environment after the move, it is not surprising that there was also a significant decrease in the use of automobile transportation recorded by the entire sample. Specifically, findings indicate that respondents utilized automobile transportation less frequently to access the service environment after the move to the senior housing project with the exception of travel to grocery stores. Interestingly, because of their greater proximity to social supports,



some respondents disclosed that family members were now able to provide rides to grocery stores due to the move.

### **7.2.5 Research Question 5: Changes in Personal State Outcomes**

Research Question 5 asks: What changes occur in the personal state outcomes of recent movers to a government-subsidized senior housing project? Overall, several important changes in personal state outcomes were registered by the entire sample after the move (i.e., between Time 2 and Time 3). This research question specifically addressed the level of residential adjustment that occurred after the move to the housing project. For example, there was a significant increase in the number of respondents who considered their health status to be at least “fair”. Additionally, significantly improved mean scores were registered on both the PGC Morale Scale and Bachman’s Revision of Rosenberg’s Self-Esteem Scale. In contrast, the entire sample recorded a significantly higher mean number of depressive symptoms. While levels of desired control slightly decreased during the one-year period of the study (Time 2-Time 3), the differences in the mean scores were non-significant. Overall, while the findings relating to Research Question 5 are complex, they do suggest that those moving to government-subsidized senior housing experienced at least some positive residential adjustment during their first year at the project.

### 7.2.6 Research Question 6: The Effects of Change in Personal Resources, the Local Neighbourhood Environment, and Individual Behaviour on Personal State Outcomes

Research Question 6 states: Do changes in personal resources, environmental content, and behavioural circuits influence the personal state outcomes of recent movers to a government-subsidized senior housing project? Two data sets relating to the entire sample (N=149) and the sub-sample of respondents with children (N=116) were used to address this final research question. However, tests of ten regression models (i.e., five models for each of the sample and sub-sample data sets) achieved only moderate levels of explanation. Nonetheless, it is particularly notable that for all of the regression models, the second block of variables relating to the antecedent constructs registered a significant increase in Multiple  $R^2$  when entered into the equations. Moreover, for both sets of models, the results of the tests of the regression models disclosed significant relationships between personal state outcomes and variables relating to the antecedent constructs of *resident-appraised change in the content of the service environment*, *personal resource transitions*, and *observer-defined change in individual service behaviour circuits*. In contrast, some personal outcomes were related to the construct of *observer-defined change in individual social behaviour circuits* in the models for the entire sample only.

In relation to the impact of changes in the content of the local neighbourhood, the results of the regression models indicated that the older mover's own perception of overall access to services may be relevant to personal state outcomes. For both the entire sample (Models I-V) and the sub-sample with children (Models VI-X), the independent variable providing the greatest explanatory power related to the

antecedent construct of *resident-appraised change in the content of the service environment*: Satisfaction with Proximity to Services 1. More specifically, greater depression, lower morale, and lower self-esteem scores were each related to continued dissatisfaction with proximity to services after the move to government-subsidized senior housing.

These results are consistent with previous research that has found spatial proximity to service resources to be particularly relevant to the well-being of older adults (Bohland & Herbert, 1983; Cutler, 1972; Rutman & Freedman, 1988; Smith, 1991; Smith & Gauthier, 1995). Moreover, the results of the study confirmed the importance of the local neighbourhood setting as part of a broader definition of housing for the aging population (Carp & Carp, 1982; Golant, 1992a; Howell, 1976; Lawton et. al., 1980; Reitzes et. al., 1991). It is also notable that the findings clearly illustrated that subjective individual assessments of service provision locally are particularly relevant in the investigation of outcomes related to the residential moves of older adults. This supports Golant's (1984b, 1986a, 1991, 1998) assertion that the older person's appraisal of the residential setting provides important insights that must be included along with objective assessments. Additionally, the significance of appraisals of service proximity at both the previous and current housing setting provides recognition that a temporal dimension is essential since the past experiences of older individuals influence their assessments of the present residence (Golant, 1998).

The results of the study also revealed that personal state outcomes were related to the antecedent construct of *observer-defined change in individual service behaviour*

*circuits*. For the entire sample, lower self-health ratings were related to either a decline in, or continued unavailability of, automobile transportation to travel to banks. Further, higher levels of desired control among the sub-sample of older movers with children were more likely if there was an increase in access to automobile transportation to travel to pharmacies. Taken together, these findings demonstrated the importance of unrestricted mobility in the service environment and access to automobile transportation for older adults (Rowles, 1986; Wachs, 1988). Moreover, the findings also suggested that automobile transportation is important for travel specifically to banks and pharmacies. In contrast, automobile transportation may not be required to access grocery stores that are typically proximate to senior housing. Further work is required to more fully understand those components of the service environment that contribute to positive outcomes of older movers to government-subsidized senior housing (Joseph & Cloutier, 1990; Smith, 1991).

The results of the analysis also revealed that variables relating to the construct of *personal resource transitions* were significant in both sets of regression models. For the entire sample, more positive self-ratings of health were related to stability in the number of instrumental activities of daily living limitations. Moreover, more positive self-ratings of health and higher morale were related to stability in the number of chronic conditions for the sub-sample of respondents with children. In contrast, lower self-esteem scores for the entire sample, and a greater number of depressive symptoms for the sub-sample of parents were related to an increase in the number of IADL limitations. Overall, the results demonstrated that not only is change in personal resources an important determinant of local moves (Chen & Wilmoth, 2004;

Choi, 1996; Gutman, 1978; Jackson, et al., 1991; Longino, 2001; Lawton, 1986; Williams, 1990), but it is also important in predicting personal state outcomes. The results for the two sets of models disclosed that the stability of the older mover's personal resources contributed to more successful outcomes after a move to government-subsidized senior housing. Conversely, more negative personal state outcomes could partly be attributed to decrements in the functional ability of older movers, which in turn created difficulties in accessing the local neighbourhood environment of the senior housing project. These results highlight the need for strategies to focus on those older movers who are at greater risk due to declines in physical and functional health (Chen & Wilmoth, 2004; Choi, 1996; Longino, et al., 1991; Longino, 2001; Meyer & Cromley, 1989; Speare et. al., 1991).

The results of the tests of the regression models disclosed that individual social behaviour circuits contributed significantly to the explanation of personal state outcomes. However, it is important to note that the antecedent construct variables representing change in social behaviour circuits were only significant for the entire sample. The personal state outcomes of depression and self-esteem recorded by the entire sample were related to variables concerning the construct of *observer-defined change in individual social behaviour circuits*. More specifically, the results indicated that a decrease in depressive symptoms was related to an increase in the number of visits with family and friends, while lower self-esteem scores were related to the continued unavailability of automobile transportation for visits to the homes of family members after the move. Generally, these results provide support for previous research that has highlighted the importance for older movers of informal social

support networks that comprise the social environment (Smith, 1991; Stephens & Bernstein, 1984; Wacker et. al., 1998). More specifically, the results demonstrate the significance of an older person's interaction within the social environment, as well as the value of automobile transportation to access social contacts (Cvitkovich & Wister, 2001; Golant et. al., 1989; Hanson & Hanson, 1993; Herbert & Peace, 1980; Lawton, 1980a).

The entry of the control block of socio-demographic characteristics into the regression equations produced a significant increase in the level of explanation of the personal state outcomes of self-rated health, morale, and desired control in each set of models. Additionally, a significant increase in explanatory power was registered when the control block was entered into the equation concerning the outcome of self-esteem for the sub-sample with children. Overall, these findings revealed that the control variables of Education and Income Adequacy were statistically significant predictors of personal state outcomes. Thus, respondents who reported higher levels of education and greater satisfaction with income were more likely to report more positive self-ratings of health, higher morale, and higher desired control in both sets of models, and greater levels of self-esteem in the models concerning the sub-sample of parents.

The results also provided evidence that the control variable of Gender/Marital Status was related to one personal state outcome: morale. Specifically, single females in the sub-sample with children were more likely to experience lower morale scores. This negative outcome suggests that older single females may be at greater risk in a new residential setting. Moreover, it is possible that the risk of a negative outcome

can be compounded for older female movers as a result of inadequate income and decrements in functional and physical health. Therefore, although the performance of the Gender/Marital Status variable in the models was limited, it is imperative to focus further on the needs of older women as they relate to accessing resources in the local neighbourhood of the senior housing project (Gonyea et. al., 1990; Young, 1998).

Overall, the results of the tests of the regression equations for both sets of models demonstrated that the antecedent constructs of *resident-appraised change in the content of the service environment*, *observer-defined change in individual service behaviour circuits*, and *personal resource transitions* were important in the successful adaptation of seniors to new residential settings. It is also important to note that for the entire sample, variables relating to *observer-defined change in individual social behaviour circuits* contributed to the explanatory power of the regression models, while they were consistently non-significant in the models concerning the sub-sample of respondents with children. One possible explanation of this difference is that neighbourhood environmental constraints have somewhat less impact on the personal state outcomes of residents with children who are more likely to receive greater levels of informal social support than childless tenants.

In addition, the socio-economic characteristics of older movers were statistically significant predictors of personal state outcomes, while there was some evidence that older females were at greater risk of experiencing negative outcomes. Taken together, these results demonstrated that personal characteristics, change in personal resources, change in perceptions of service accessibility, and change in behavioural interactions in the local neighbourhood were important factors that contribute to the

personal outcomes of movers to government-subsidized senior housing. Therefore, in response to Research Question 6, personal state outcomes are positively related to socio-economic status, the stability of personal resources, change in the accessibility of services in the neighbourhood, and change in levels of interaction with social and service environments.

### **7.3 Policy Implications, Theoretical Contributions and Limitations, and Directions for Future Research**

Housing policy plays a major role in the provision of an adequate environmental setting for older adults. In light of the growing aging population, in the future larger numbers of elderly individuals will require environmental supports in order to maintain an acceptable quality of life in urban areas. The explicit focus on government-subsidized accommodation in the present study is warranted given that this type of housing is often the only option for many older adults with lower incomes. It is significant that the present research study was conducted in Winnipeg given that the city has relatively high proportions of elderly with below average incomes (Moore, McGuiness, Pacey, & Rosenberg, 2000). However, the findings of the study not only have particular significance for the development of policy related to specialized housing targeted to the low-income elderly in Winnipeg, but also in metropolitan Canada more generally. This section considers implications of the findings of the present study for both policy and theoretical development, and offers some future directions for related research.

The results of the study demonstrate the complexity of the personal outcomes of older movers to government-subsidized senior housing. The identification of



personal, environmental, and behavioural factors as predictors of personal state outcomes suggests that the development of comprehensive housing policy must address the essential relatedness of older adults and their residential setting. First, the findings support the results of previous research indicating that older movers to low-income senior housing may be at greater risk of experiencing negative outcomes due to their personal characteristics and changes in physical and functional health (Bradsher et al., 1992; Chen & Wilmoth, 2004; Choi, 1996; Speare et. al., 1991). The results affirm that policy related to the relocation of seniors must focus on those at greatest risk when moving to a new residence. Specifically, in order to achieve more positive personal outcomes and the maintenance of independence, intervention should be directed to: (i) older females, (ii) older adults with limited socio-economic resources, and (iii) older adults experiencing significant decrements in physical and functional health. These at-risk seniors may be particularly vulnerable to greater mobility constraints that affect their ability to access the local neighbourhood environment. Restricted mobility is particularly relevant as the findings of the study demonstrate the importance of environmental content and behavioural circuits for positive outcomes.

The results of this study suggest that policies to improve the circumstances of older adults in senior housing projects must address the human consequences of the surrounding neighbourhood environment. More specifically, the disclosed positive relationships between personal state outcomes and satisfaction with proximity to services demonstrate that overall access to services is more relevant than only one key category of sites. Therefore, shelter must be considered as part of a broad

network of housing thoroughly integrated into the total system of community service and housing options (Suggs et. al., 1986). Cromley and Shannon (1986) have effectively demonstrated that locational strategies in relation to services targeted specifically to an independent elderly population segment should ensure that delivery sites are placed within that group's activity space (i.e., areas of the community accessible to, and regularly visited by, group members).

Lawton (1980b) suggests that "rather than asking only questions pertaining to the avoidance of change, it is also equally valid to consider how to maximize positive outcomes and to determine how changes can benefit older persons who represent a very heterogeneous population with varying needs" (p. 175). By understanding the significance of an accessible neighbourhood environment, policies may be developed to respond more effectively to the adjustment process of older adults in a new shelter and care setting. According to the results, policy concerning site selection criteria must ensure the development of future senior housing projects that are proximate to bus routes, service resources, and intergenerational caregivers. In addition, the disclosed importance of transportation for travel to banks and pharmacies suggests an important role for voluntary programs. Transportation programs offering automobile transportation to less proximate, and less frequently patronized, services would contribute to more positive personal outcomes in a new residential setting.

In relation to policy development, it is also important to note that the results of this study indicated that variables concerning changes in perceived service proximity, individual service behaviour circuits, and transitions in personal resources were statistically significant predictors of personal state outcomes for both the entire

sample and sub-sample with children. In contrast, changes in individual social behaviour circuits were found to be predictors of personal outcomes for the entire sample only. In fact, the relatively few antecedent constructs that did predict personal state outcomes for the sub-sample of parents suggested that because these respondents were more likely to benefit from informal social support networks, the constraints imposed by the environment were of less importance. These findings indicate that further research is required to evaluate the personal outcomes of older movers in relation to the role of the social environment and the impact of informal support networks provided to aging parents. Moreover, policy development concerning housing for seniors should recognize informal social supports as an essential component in the maintenance of independence and successful adjustment to a new residential setting.

In relation to the theoretical contributions of the study, the findings offer support for the inclusion of both subjective and temporal dimensions in the investigation of the changing relationship between older adults and their residential environment. More specifically, the importance of resident appraisals of changes in the environment reveal that, as Golant (1984a, 1998) has suggested, subjective assessments should be included with objective measures when evaluating the residential adjustment of older movers to congregate senior housing. Therefore, future research should continue to develop and improve conceptual models such as Golant's (1998) model of residential adjustment that incorporate subjective elements of the local neighbourhood environment of senior housing.

The present study has also benefited from the use of a conceptual model with a temporal dimension. The study extends the scope of previous work on Canadian public housing for seniors by explicitly focusing on the impact of changes in the residential setting when an older adult must seek more supportive and affordable housing. The employment of a longitudinal research design, as prescribed by Golant (1998), has provided the opportunity to monitor adjustment over a period of time.

Despite the importance of resident appraisals and measures of change as predictive components, however, the limited explanatory power of the regression models suggests that further theoretical development is required to address the limitations of the study's model. Moreover, additional elements of the person-environment framework must be explored. Foremost, it is noteworthy that the conceptual model of the study did not include relatively stable psychological attributes such as personality styles. The low levels of explanation provided by the regression models can partly be attributed to the absence of such attributes. Golant states the focus of his model "... is on whether the changes in environmental content attributes or in an individual's behaviour circuits have resulted in the qualities of the setting becoming *closer* or *further away* from an individual's personality style" (Golant, 1998: 52). Therefore, further conceptual modeling must incorporate constructs to evaluate the congruence of stable psychological attributes with changes in the residential environment.

Furthermore, additional conceptualization is needed to extend knowledge of the environmental components associated with the well-being of older adults. Although the results of the regression models provide evidence of the importance of subjective assessments of service accessibility, as well as interactions with the social and service

environments, other findings in relation to Research Questions 1-5 indicate that further theoretical development is necessary to more fully understand the interface of environment and aging. For instance, additional investigation is necessary to more fully identify the relationship between declines in functional health and the increase in use of support services in the senior housing project. In addition, security from crime is often regarded as being an important characteristic of the neighbourhood environment of older adults (Lawton & Yaffe, 1980; Ward et. al., 1986). In the study, sample members rated security as the most salient attribute of the physical environment, and also commented on the importance of improved safety after moving to a senior housing project. Nonetheless, no association was found between the personal state outcomes and security from crime.

Further conceptual development is necessary to obtain a more comprehensive understanding of the qualities of the residential environment that are important in relation to the residential adjustment of older movers to a senior housing project. It is important to note that most of the government-subsidized senior housing projects included in this study were located relatively proximate to service resources that may have ultimately reduced the likelihood of negative personal outcomes. Therefore, theoretical perspectives should be extended to more fully understand the inter-relatedness of the content and behaviour circuits of the residential environment. For example, decreases were typically recorded in distance separation to both service sites and social contacts after the move. As a result of decreases in distance separation, significant increases were recorded in satisfaction with proximity to both the service and social environments. However, further research is necessary to fully understand

why improved proximity did not result in significant increases in the frequency of contact in the neighbourhood environment. Moreover, further research is important to understand the relationship between improved accessibility and a decline in the use of automobile transportation to access the social and service environments.

Alwin and Campbell (2001) consider longitudinal research to be the most productive approach to study the process of aging. However, a further limitation of the study is that the personal state outcomes of older movers were evaluated during only a one-year period *after* the move. In order to extend the present study's focus on personal outcomes measured after the one-year period, future theoretical development should incorporate Golant's (1993) measures of change in both personal and environmental outcomes to more fully investigate the outcomes of older movers to a new residential setting. Therefore, longitudinal studies are required that include an interview survey prior to the move in order to obtain pre-move data and better understand the previous circumstances of new tenants to senior housing. Furthermore, a longer post-move period is needed in order to monitor and evaluate residential adjustment and personal outcomes over a longer period of time. Therefore, while the results of the present study revealed that personal state outcomes improved significantly during the one-year period of the study, it would be valuable to obtain additional information regarding (i) pre-move assessments of the personal state outcomes, and (ii) longitudinal data concerning long-term relationships between environmental, behavioural, and personal factors and the quality of life of older residents.

The results of the present study highlight the importance of resident appraisals of, and interaction with, social and service environments in developing a better understanding of the personal outcomes of movers to specialized senior housing. In relation to further theoretical development, it is notable that while the present study found subjective measures of change in the local neighbourhood environment to be important predictors of personal state outcomes, the antecedent construct variables that were objectively spatial (i.e., based on physical distance measurements) provided little explanatory power in the regression models. These results suggest that rather than indicators of physical distance, it is perceptions of service accessibility and spatial interaction within the neighbourhood environment that are important predictors of the outcomes of residential moves. Therefore, further conceptual development is required to more adequately operationalize subjective assessments of, and interaction with, the environment in the context of the aging population.

To further extend understanding of the interface between aging and environment, other methodologies must also be incorporated. Only a limited amount of qualitative data was elicited in the present study. It is suggested that qualitative techniques would be valuable to probe the issues of relocation that are not captured by structured questions. Moreover, qualitative methods would allow further insights not only into the personal outcomes of the older movers themselves, but also their children and other key informants who are familiar with the circumstances of the mover. With qualitative interviews and focus groups it may be possible to develop a more complete evaluation of the older individual's perceptions of the consequences of relocating to a changed residential setting. Qualitative methodologies could probe

issues such as access to automobile transportation, thus enabling some of the questions raised by the present study to be addressed. For instance, the reasons for the disclosed decline in access to automobile transportation after the move are unclear.

Overall, the results of the present study are relevant to Parmelee and Lawton's (1990) ecological approach that incorporates various elements of both the autonomy of the older person and the security of the environment in models of adjustment. Moreover, the study provides evidence of the importance of treating the local neighbourhood setting as an integrative construct in person-environment relationships. Specifically, a focus on the macro-environment of the neighbourhood in a temporal framework demonstrates the value of "place" as an integrating construct for advancing our knowledge of the relationship between the older person and his/her residential setting (Golant, 2003; Kendig, 2003; Weisman et. al., 2000).

The present study has attempted to provide a fuller understanding of the personal, behavioural, and environmental factors that contribute to the outcomes of moves to specialized senior housing. More generally, it is anticipated that these results will contribute to a wider appreciation of the problems and needs of the aging population. It is hoped that future research will extend the findings of the present study concerning the consequences of residential relocation to specialized senior housing. To conclude, it is anticipated that research-based knowledge and theory in environmental gerontology that recognizes the complexity of person-environment relationships, will provide a foundation for the continued development of housing policy targeted to the aging population.



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**APPENDIX A****Survey 1****CONTENT**

- A.1 Ethical Approval Form
- A.2 Letter to the Director of the Manitoba Housing Authority (MHA)
- A.3 Letter of Introduction to the Housing Project Managers
- A.4 Letter of Introduction to the Respondents and Consent Form
- A.5 Survey 1
- A.6 Letter of Thanks to Participants

**A.1 Ethical Approval Form**

# Research Ethics

Name of principal investigator  
Dr. Geoffrey C. Smith

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This section is to be completed by the institution's committee for the surveillance and monitoring of standards of ethics for research in which human subjects are involved. The term "subject", for purposes of this review, refers to any person who is used as a source of raw or unformulated data in the conduct of research and who is not acting in the capacity of principal investigator or assisting such an individual.

The Social Sciences and Humanities Research Council of Canada supports the principle that, in any research undertaking, the rights and integrity of human subjects take precedence over the need to conduct research. The Council recognizes that it is not itself vested in any authority to decide, on behalf of the public, when an individual's right may be superseded by the need for research. However, as a trustee of public funds, the Council has a responsibility to ensure that the activities it supports respect the rights of the public it serves.

Accordingly, the Council requires that all research involving human subjects be approved by the ethics review committee of the institution by which the principal is employed.

The committee will be expected to monitor the research program in order to ensure that, over its duration, it continues to meet appropriate standards of ethics. Membership of the ethics review committee is expected to be broadly based and should include individuals from both within and without the applicant's department and discipline who have no association with the research.

In the space below, the composition of the committee should be indicated (though not necessarily the names of the members). This information should be dated and signed by 1) the committee chairperson, and 2) the applicant's department head or a representative of the institution.

The Council provides a set of guidelines on ethics for research with human subjects which should form the basis of the ethics review. (See *Guide for applicants*, articles 35-37 and Annex B.)

This form must be submitted to the Council no later than **February 1**. Receipt of this completed form will be interpreted as confirmation that the proposed research meets the necessary standards of ethics. However, the Council reserves the right of final judgment where circumstances warrant.

Classification of Institutional Ethics Review Committee SSHRC File No. (if known) \_\_\_\_\_

This is to certify that the Institutional Ethics Review Committee of

the Faculty of Arts, University of Manitoba (name of institution)

has examined the research proposal by Dr. G. C. Smith, Department of Geography (name of applicant)

entitled Effects of Local Environments upon the Adjustments of Movers to Senior Citizen Housing: A Longitudinal Study

and concludes that, in all respects, the proposed research meets appropriate standards of ethics as outlined by the Social Sciences and Humanities Research Council of Canada.

## Composition of the committee

| Name (Optional)                 | Position held | Department or discipline        |
|---------------------------------|---------------|---------------------------------|
| Chairperson, Karen R. Bauer, J. | Chair         | Associate Dean, Faculty of Arts |
| Member, Lor, K.W.               |               | Psychology                      |
| Member, Bodkiewicz, J.-L.       |               | Sociology                       |
| Member, Mafer, A.               |               | Anthropology                    |
| Member, Ter, R.                 |               | Philosophy                      |
| Member, nson, M.                |               | Geography                       |
| Member, es, J.                  |               | Psychology                      |
|                                 |               | Native Studies                  |

Member 12, 1998

Committee chairperson

Department head or institutional representative



**A.2 Letter to Director of Manitoba Housing Authority (MHA)**



March 9, 1999

Adrian De Porto, Director  
Manitoba Housing Authority  
185 Smith Street  
Winnipeg,  
R3C 3G4

Dear Mr. De Porto:

Over the past several years, I have conducted a number of research projects (funded by the federal government) in collaboration with the Manitoba Housing Authority. Ms. Vanessa Coniglio (A/Manager, Tenant Services) may have already advised you that I am currently organizing a research project which focuses on aspects of the adjustment of senior citizens who have recently moved from the community to senior citizen housing projects owned by either the Manitoba Housing Authority or the non-profit sector. The research is funded by a 3-year grant from the Social Sciences and Humanities Research Council of Canada (SSHRC). The research is based a longitudinal survey design which will involve recent movers being interviewed twice over a one-year period. (The Ph.D. thesis of Ms. Gina Sylvestre, who is the Project Coordinator and a graduate student at the Department of Geography - University of Manitoba, will be based on the research.) I am therefore writing to request your assistance in obtaining access to seniors in the MHA projects. With the assistance of Vanessa, we would like to focus the interviews on approximately seven MHA projects which were originally identified by Ms. Susan Vovchuk (former Coordinator, Marketing and Promotions Branch, MHA). Please note that Ms. Pat Malone (Leasing Officer, SAM Management Inc.) will assist us with those parts of the interview surveys related to the non-profit housing (approximately three projects). Ultimately, I would like to conduct the research associated with the proposed project on a "team basis," involving Gina, Vanessa, Pat, and myself.

The proposed project is essentially the outgrowth of work (also funded by SSHRC) conducted over the past few years on the intergenerational relations and daily travel-activity patterns of seniors in both MHA and community housing. This work was supported by the MHA, specifically involving Ron Hall and Diana McGavin. In fact, Ron and other employees of the MHA attended a panel session at the Annual Spring Symposium of the University of Manitoba in 1994 when I presented some preliminary results. The proposed project was inspired partly by suggestions made by MHA staff.

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March 9, 1999  
Adrian De Porto, Director  
Manitoba Housing Authority

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The proposed interview survey procedures associated with the project have already been approved by The University of Manitoba Faculty of Arts, Ethics Review Committee (see attachment). One major ethical safeguard is that the informed consent of each respondent must be obtained in writing before an interview can take place. If you wish, I shall be pleased to provide you with a complete summary of the ethical procedures would be observed during the surveys.

Under a separate cover, I shall be forwarding you some examples of publications (appearing in national or international scholarly journals) that have resulted from past work which I have conducted in collaboration with the MHA. I shall be pleased to answer any questions that you may have concerning the proposed research. I also look forward to meeting you sometime in the near future.

Thanking you in advance for considering this request.

Sincerely

Dr. Geoffrey C. Smith  
Professor and Head of Department

### A.3 Letter of Introduction to the Housing Project Managers

To Managers of Senior Housing Projects:

As the Principal Investigator for a research program being undertaken within the Department of Geography at the University of Manitoba, I would like to request the assistance of your organization. The research investigates the adjustment of older persons to moves to low-income senior housing. I would like to ask the participation of your tenants who have moved to this senior housing project in the last year.

If the tenant agrees, an interview of approximately one hour will be conducted to discuss their experiences of moving to this senior housing complex. A copy of this interview schedule has been enclosed. The responses of these tenants will be treated in the strictest of confidence. I have enclosed the letter sent to each tenant that explains the research project and includes a consent form to participate.

I would appreciate your cooperation in identifying those people over the age of 55 who have moved to your building in May, 1998, or later. If you should have any questions, please contact the project coordinator, Gina Sylvestre at . Thank you for your assistance.

Sincerely,

Dr. Geoffrey C. Smith  
Principal Investigator  
Professor and Head  
Department of Geography  
University of Manitoba

**A.4 Letter of Introduction &  
Consent Form: Survey 1**

Dear

I am writing to ask for your participation in the research program which is being undertaken within the Department of Geography at the University of Manitoba. Briefly, the research investigates the experiences of seniors like yourself who have recently moved into apartment buildings owned by the Manitoba Housing Authority. We are particularly interested in your views regarding various aspects of apartment living and why seniors move to apartments such as this. We are also interested in your assessment of the different characteristics of the neighbourhood in which this building is located. Our overall goal is to make recommendations to the Manitoba Housing Authority regarding the provision of appropriate supports and resources for people moving to senior housing.

The interview will take approximately one hour to complete. All questions should be answered by yourself. We would also appreciate your participation in a follow-up survey which will be conducted next year. All answers to interview questions will be treated with the strictest confidence. Although some results of the work will be published, the completed questionnaire will not be made available to anyone apart from members of the research team. In the publications, any references to individual participants will be by number only. Please note that participation in this study will in no way affect your residency at this Manitoba Housing Authority building. As you are already aware, the Manitoba Housing Authority is fully supporting this study.

/ 2

Without your cooperation this study would not be possible. We will be calling shortly to arrange a convenient time for the interview. This study has been approved by the University of Manitoba Arts Ethics Review Committee. However if you have any questions, please do not hesitate to call Gina M. Sylvestre (Phone: ) or Dr. Geoffrey C. Smith, Principal Investigator, Department of Geography, University of Manitoba (Phone: 474-7039).

Thank you for your cooperation and assistance. We look forward to talking with you.

Sincerely,

Dr. Geoffrey C. Smith  
Principal Investigator  
Professor and Head  
Department of Geography  
University of Manitoba

GCS/ar

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I, \_\_\_\_\_ do hereby give my

(signature)

consent to participate in the research program titled "Adjustment to Senior Housing in Winnipeg" directed by Dr. Geoffrey C. Smith.

DATE: \_\_\_\_\_

## A.5 Survey 1

**ADJUSTMENT TO SENIOR HOUSING IN WINNIPEG**

University of Manitoba  
Department of Geography

**Senior Housing Project (CHECK APPROPRIATE SPACE)**

- |                       |       |                         |       |
|-----------------------|-------|-------------------------|-------|
| 1. 601 Osborne Street | _____ | 7. 515 Elgin Avenue     | _____ |
| 2. 125 Carriage Road  | _____ | 8. 875 Elizabeth Road   | _____ |
| 3. 101 Marion Street  | _____ | 9. 60 Chesterfield Ave. | _____ |
| 4. 817 Main Street    | _____ | 10. 425 Elgin Avenue    | _____ |
| 5. 444 Kennedy Street | _____ | 11. 533 Greenwood Pl.   | _____ |
| 6. 385 Carlton Street | _____ | 12. Cosmo Place         | _____ |

Apartment Number: \_\_\_\_\_

Questionnaire Number \_\_\_\_\_

Interviewer (Initials) \_\_\_\_\_

Interviewer Number \_\_\_\_\_

|          | Date | Time | Interviewed<br>(check) | Reason for non-contact |
|----------|------|------|------------------------|------------------------|
| 1st call |      |      |                        |                        |
| 2nd call |      |      |                        |                        |
| 3rd call |      |      |                        |                        |

**Result of Interview (CIRCLE APPROPRIATE NUMBER)****A. Interview Obtained**

1. Complete
2. Incomplete

**B. Interview 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) \_\_\_\_\_

**INTRODUCTION**

Hello (Mr/Mrs/Ms) \_\_\_\_\_, my name is \_\_\_\_\_ and I am involved in the seniors' housing survey which is being conducted at the University of Manitoba. I have come to talk to the member of this household who has agreed to be interviewed.

**IF RESPONDENT IS UNAVAILABLE THEN TERMINATE THE INTERVIEW**

I would like to discuss your views concerning various aspects of apartment living and your decision to move to this building. I would also like to talk to you about yourself, and your family and friends. I want to assure you that everything you say is confidential and your name will not be used anywhere. We are only interested in general aspects of apartment living and why seniors move to apartment projects such as this. If, however, there are questions you would rather not answer, then please do not feel obligated to do so. Also, you may stop the interview at any time. Your help with our project is greatly appreciated.



First, may I check a few details with you?

1. How long have you and (if applicable) your spouse lived at this building and in Winnipeg? (COMPLETE THE APPROPRIATE BOXES)

|            | Building |        | Winnipeg |        |
|------------|----------|--------|----------|--------|
|            | Years    | Months | Years    | Months |
| Respondent |          |        |          |        |
| Spouse     |          |        |          |        |

IF RESPONDENT MOVED TO THIS BUILDING PRIOR TO MAY, 1998, THEN TERMINATE THE INTERVIEW.

2. Can you provide me with some information concerning yourself and (if applicable) your spouse? (COMPLETE THE APPROPRIATE BOXES)

| <u>AGE CODE (years)</u> (If exact age is not given) |          | <u>WORKING STATUS CODE</u>        |
|---|----------|-----------------------------------|
| 1. 16-30  | 5. 65-74 | 1. Employed full time > 30 hrs/wk |
| 2. 31-44  | 6. 75-84 | 2. Employed part time < 30 hrs/wk |
| 3. 45-54  | 7. 85+   | 3. Currently unemployed           |
| 4. 55-64  |          | 4. Retired                        |

|            | Sex | Age (years) | Working Status (see code box) | Workplace Name and Address |
|------------|-----|-------------|-------------------------------|----------------------------|
| Respondent |     |             |                               |                            |
| Spouse     |     |             |                               |                            |

IF RESPONDENT IS LESS THAN 55 YEARS OLD, THEN TERMINATE THE INTERVIEW.

3. The next questions are concerned with where you lived before moving to this building.

A) Please state your most recent address immediately before moving to this building.

B) Now state your next most recent address.

**(COMPLETE THE APPROPRIATE BOXES. NOTE: IN EITHER CASE, IF THE RESPONDENT LIVED OUTSIDE WINNIPEG, DO NOT COMPLETE THE STREET ADDRESS BOX)**

|                                     | Street Address | City/Town | Provin/State/Country |
|-------------------------------------|----------------|-----------|----------------------|
| Most recent previous address        |                |           |                      |
| Second most recent previous address |                |           |                      |

**C) How long did you live at your most recent previous address?**

**D) How long did you live at your second most recent previous address?  
(COMPLETE THE APPROPRIATE BOXES)**

|                                     | Length of Residence |       |
|-------------------------------------|---------------------|-------|
|                                     | Years               | Month |
| Most recent previous address        |                     |       |
| Second most recent previous address |                     |       |

**E) At the time of your most recent move, did you prefer to live in: (CIRCLE APPROPRIATE NUMBER)**

1. The same neighbourhood as your previous residence
2. A different neighbourhood  
(Specify, if any are named) \_\_\_\_\_

**F) Do you consider this building to be in the same neighbourhood as your previous residence? (CIRCLE APPROPRIATE NUMBER)**

1. Yes
2. No

**G) How familiar with this neighbourhood were you prior to moving here? (CIRCLE APPROPRIATE NUMBER)**

1. Very familiar
2. Somewhat familiar
3. Somewhat unfamiliar
4. Very unfamiliar

**H) Was your previous residence: (CIRCLE APPROPRIATE NUMBER)**

1. Owned by yourself and/or spouse
2. Rented by yourself and/or spouse
3. Other (specify) \_\_\_\_\_

**I) Were there other people living with you at the time of your move? (CIRCLE APPROPRIATE NUMBER OR NUMBERS)**

1. No one
2. Spouse
3. Sibling (specify number and gender) \_\_\_\_\_
4. Children (specify number and gender) \_\_\_\_\_
5. Other relative (specify) \_\_\_\_\_
6. Friend(s) (specify number) \_\_\_\_\_
7. Lodger(s) (specify number) \_\_\_\_\_
8. Other (specify) \_\_\_\_\_

**J) Why did you move from your previous residence? (CIRCLE APPROPRIATE NUMBER OR NUMBERS)**

1. Declining health
2. Needed more space
3. Needed less space
4. Financial reasons
5. Wished to be closer to family/friends
6. Home difficult to maintain
7. Death or separation of spouse
8. Death of other relative/friend (specify) \_\_\_\_\_
9. Children/relatives left home
10. Wanted more freedom and convenience
11. Shops and services were too far from home
12. Other (specify): \_\_\_\_\_

**K) Who were involved in the decision to move? (CIRCLE APPROPRIATE NUMBER OR NUMBERS)**

1. Yourself
2. Spouse
3. Children or relatives
4. Friends
5. Other (specify) \_\_\_\_\_

**4. Now I would like to ask you some questions about both your previous residence and where you live now.**

**A) How do you rate the following characteristics of your present home and neighbourhood? (READ THE CHARACTERISTICS AND SHOW CARD WITH RESPONSE ALTERNATIVES. CHECK THE APPROPRIATE BOX)**

| Characteristic          | Bad<br>(1) | Poor<br>(2) | Fair<br>(3) | Good<br>(4) | Excellent<br>(5) |
|-------------------------|------------|-------------|-------------|-------------|------------------|
| Privacy                 |            |             |             |             |                  |
| Sidewalk conditions     |            |             |             |             |                  |
| Safety from traffic     |            |             |             |             |                  |
| Security from crime     |            |             |             |             |                  |
| Neighbourhood noise     |            |             |             |             |                  |
| Snow removal            |            |             |             |             |                  |
| Type of neighbours      |            |             |             |             |                  |
| Access to shop/services |            |             |             |             |                  |
| Public transportation   |            |             |             |             |                  |

**B) How do you rate the following characteristics of your former home and neighbourhood? (READ THE CHARACTERISTICS AND SHOW CARD WITH RESPONSE ALTERNATIVES. CHECK THE APPROPRIATE BOX CHARACTERISTIC)**

| Characteristic          | Bad<br>(1) | Poor<br>(2) | Fair<br>(3) | Good<br>(4) | Excellent<br>(5) |
|-------------------------|------------|-------------|-------------|-------------|------------------|
| Privacy                 |            |             |             |             |                  |
| Sidewalk conditions     |            |             |             |             |                  |
| Safety from traffic     |            |             |             |             |                  |
| Security from crime     |            |             |             |             |                  |
| Neighbourhood noise     |            |             |             |             |                  |
| Snow removal            |            |             |             |             |                  |
| Type of neighbours      |            |             |             |             |                  |
| Access to shop/services |            |             |             |             |                  |
| Public transportation   |            |             |             |             |                  |

**C) How important to you are the following characteristics of your present home and neighborhood? (READ THE CHARACTERISTICS AND SHOW CARD WITH RESPONSE ALTERNATIVES. CHECK THE APPROPRIATE BOX CHARACTERISTIC)**

| Characteristic          | Very Unimportant<br>(1) | Unimportant<br>(2) | Neither Important nor Unimportant<br>(3) | Important<br>(4) | Very Important<br>(5) |
|-------------------------|-------------------------|--------------------|--|------------------|-----------------------|
| Privacy                 |                         |                    |  |                  |                       |
| Sidewalk conditions     |                         |                    |  |                  |                       |
| Safety from traffic     |                         |                    |  |                  |                       |
| Security from crime     |                         |                    |  |                  |                       |
| Neighbourhood noise     |                         |                    |  |                  |                       |
| Snow removal            |                         |                    |  |                  |                       |
| Type of neighbours      |                         |                    |  |                  |                       |
| Access to shop/services |                         |                    |  |                  |                       |
| Public transportation   |                         |                    |  |                  |                       |

**D) What type of apartment is this? (CIRCLE APPROPRIATE NUMBER)**

1. Studio/Bachelor
2. One-bedroom
3. Two-bedroom
4. Other (specify) \_\_\_\_\_

**E) What kind of house was your previous residence? (CIRCLE APPROPRIATE NUMBER)**

- 1. Single-family (detached)
- 2. Duplex (semi-detached)
- 3. Row house
- 4. Low-rise apartment (3 storeys or less)
- 5. High-rise apartment
- 6. Other (specify) \_\_\_\_\_

**F) Considering any differences between your former home and this building including their locations, are you satisfied with the outcome of your move? (CIRCLE APPROPRIATE NUMBER)**

- 1. Yes
- 2. No

**G) Why are you satisfied/not satisfied with the outcome of your move? (RECORD RESPONSE)**

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**5. Now I would like to ask some questions about yourself.**

**A) What is your place of birth? (NOTE: RECORD COUNTRY FOR NON-CANADIANS AND NON-AMERICANS ONLY)**

| City/Town | Province/State/Country |
|-----------|------------------------|
|           |                        |

**B) Do you consider yourself to be a member of a particular ethnic group? (CIRCLE APPROPRIATE NUMBER)**

- 1. Yes
- 2. No

(If yes) which ethnic group? \_\_\_\_\_

**C) What is your current marital status? (CIRCLE APPROPRIATE NUMBER)**

1. Single
2. Married
3. Widowed
4. Divorced/Separated

**D) What was your marital status at the time of the move? (CIRCLE APPROPRIATE NUMBER)**

1. Single
2. Married
3. Widowed
4. Divorced/Separated

**E) Does anyone else live at this address? (CIRCLE APPROPRIATE NUMBER)**

1. No, lives alone
2. Yes, lives with spouse
3. Yes, lives with person other than spouse

**F) Please state the present level of education of yourself and (if applicable) your spouse. (CHECK APPROPRIATE BOX OR BOXES)**

|         | 1.No School | 2. Pre-Grade | 3. Grade 1-6 | 4. Grade 7-12 | 5. Grade 13 | 6.College Nondegree | 7.College Degree |
|---------|-------------|--------------|--------------|---------------|-------------|---------------------|------------------|
| Respond |             |              |              |               |             |                     |                  |
| Spouse  |             |              |              |               |             |                     |                  |

**G) What was your main occupation before retirement? (RECORD RESPONSE)**

\_\_\_\_\_



**H) What was your spouse's main occupation before retirement? (RECORD RESPONSE)**

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**I) Immediately before moving to this building, were you: (CIRCLE APPROPRIATE NUMBER)**

1. Employed full time (>30 hrs/wk)
2. Employed part time (<30 hrs/wk)
3. Unemployed
4. Retired

**J) For your age, would you say, in general, your health is: (SHOW CARD WITH RESPONSE ALTERNATIVES AND CIRCLE APPROPRIATE NUMBER)**

1. Excellent (never prevents activities)
2. Good (rarely prevents activities)
3. Fair (occasionally prevents activities)
4. Poor (very often prevents activities)
5. Bad (health troubles of infirmity all the time - prevents most activities, or requires confinement to bed)

**K) At the time of your move to this residence, would you say your health was: (SHOW CARD WITH RESPONSE ALTERNATIVES AND CIRCLE APPROPRIATE NUMBER)**

1. Excellent (never prevents activities)
2. Good (rarely prevents activities)
3. Fair (occasionally prevents activities)
4. Poor (very often prevents activities)
5. Bad (health troubles of infirmity all the time - prevents most activities, or requires confinement to bed)

**L) Do you think your health has changed since you moved to this residence. (IF YES, PROBE BY ASKING "IN WHAT WAYS" AND "WHY". RECORD RESPONSE)**

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**M) I am going to read a list of health problems that people often have. Please tell me if you have had the problem within the last year or otherwise still have after effects from having had it earlier. Also tell me whether you had the problem immediately before moving to this building. (READ EACH HEALTH PROBLEM AND CIRCLE APPROPRIATE NUMBERS FOR CURRENT AND PREVIOUS ADDRESSES)**

|  | CURRENT ADDRESS |    | PREVIOUS ADDRESS |    |
|--|-----------------|----|------------------|----|
|  | YES             | NO | YES              | NO |
| a. Allergies                           | 1               | 2  | 1                | 2  |
| b. Cancer                              | 1               | 2  | 1                | 2  |
| c. Heart Disease                       | 1               | 2  | 1                | 2  |
| d. High Blood Pressure                 | 1               | 2  | 1                | 2  |
| e. Stroke                              | 1               | 2  | 1                | 2  |
| f. Arthritis or Rheumatism             | 1               | 2  | 1                | 2  |
| g. Palsy (Parkinson's)                 | 1               | 2  | 1                | 2  |
| h. Eye Trouble                         | 1               | 2  | 1                | 2  |
| I. Ear Trouble (hearing loss)          | 1               | 2  | 1                | 2  |
| j. Dental Problems                     | 1               | 2  | 1                | 2  |
| k. Respiratory (TB, asthma, emphysema) | 1               | 2  | 1                | 2  |
| l. Stomach Trouble                     | 1               | 2  | 1                | 2  |
| m. Kidney Trouble (bladder problems)   | 1               | 2  | 1                | 2  |
| n. Diabetes                            | 1               | 2  | 1                | 2  |
| o. Foot Trouble                        | 1               | 2  | 1                | 2  |
| p. Nerve Trouble (mental/emotional)    | 1               | 2  | 1                | 2  |
| q. Skin Problems                       | 1               | 2  | 1                | 2  |
| r. Hip Problems                        | 1               | 2  | 1                | 2  |

| CURRENT ADDRESS |    | PREVIOUS ADDRESS |    |
|-----------------|----|------------------|----|
| YES             | NO | YES              | NO |
| 1               | 2  | 1                | 2  |

s. Other (SPECIFY)

6. A) Now I would like to ask you a few questions about activities of daily living, things that we all need to do as part of our daily lives. I would like to know if, today, you can do these activities without any help, or if you need some help to do them, or if you cannot do them at all. (RECORD FOR SECTION (a) OF EACH ADL) I would also like to know if you could or could not do these activities at your previous residence. (RECORD FOR SECTION (b) OF EACH ADL) (SHOW CARD WITH RESPONSE ALTERNATIVES AND CHECK APPROPRIATE BOXES FOR 1,2 OR 5. IF 3 OR 4 IS SELECTED, IN RESPONSE TO "WHO", ASK RESPONDENT TO INDICATE THE PERSON WHO MOST FREQUENTLY ASSISTS AND FILL IN BOX WITH ONE OF THE FOLLOWING CATEGORIES: 1) SON; 2) DAUGHTER; 3) SIBLING; 4) OTHER RELATIVE; 5) FRIEND; 6) FORMAL HOME CARE SERVICE; 7) TENANT STAFF)

| ADL   | 1<br>Without<br>Any<br>Help | 2<br>With<br>Some<br>Help<br>From a<br>Device<br>Only | 3<br>With<br>Some<br>Help<br>Using a<br>Person<br>Only<br>(WHO) | 4<br>With Some<br>Help From<br>Both a<br>Person and<br>Device<br>(WHO) | 5<br>Unabl<br>e To<br>Do It |
|---|-----------------------------|---|---|--|-----------------------------|
| 1. (a) Can you eat                          |                             |   |   |  |                             |
| 1. (b) Could you eat                        |                             |   |   |  |                             |
| 2. (a) Can you dress and undress yourself   |                             |   |   |  |                             |
| 2. (b) Could you dress and undress yourself |                             |   |   |  |                             |
| 3. (a) Can you walk                         |                             |   |   |  |                             |
| 3. (b) Could you walk                       |                             |   |   |  |                             |
| 4. (a) Can you get about the house          |                             |   |   |  |                             |
|   |                             |   |   |  |                             |

| ADL  | 1<br>Without<br>Any<br>Help | 2<br>With<br>Some<br>Help<br>From a<br>Device<br>Only | 3<br>With<br>Some<br>Help<br>Using a<br>Person<br>Only<br>(WHO) | 4<br>With Some<br>Help From<br>Both a<br>Person and<br>Device<br>(WHO) | 5<br>Unabl<br>e To<br>Do It |
|--|-----------------------------|---|---|--|-----------------------------|
| 4. (b) could you get about the house                   |                             |   |   |  |                             |
| 5. (a) Can you go up and down stairs                   |                             |   |   |  |                             |
| 5. (b) Could you go up and down stairs                 |                             |   |   |  |                             |
| 6. (a) Can you get in and out of bed                   |                             |   |   |  |                             |
| 6. (b) Could you get in and out of bed                 |                             |   |   |  |                             |
| 7. (a) Can you take a bath or shower                   |                             |   |   |  |                             |
| 7. (b) Could you take a bath or shower                 |                             |   |   |  |                             |
| 8. (a) Can you go to the bathroom                      |                             |   |   |  |                             |
| 8. (b) Could you go to the bathroom                    |                             |   |   |  |                             |
| 9. (a) Can you use the telephone                       |                             |   |   |  |                             |
| 9. (b) Could you use the telephone                     |                             |   |   |  |                             |
| 10. (a) Can you go to places out of walking distance   |                             |   |   |  |                             |
| 10. (b) Could you go to places out of walking distance |                             |   |   |  |                             |

| ADL   | 1<br>Without<br>Any<br>Help | 2<br>With<br>Some<br>Help<br>From a<br>Device<br>Only | 3<br>With<br>Some<br>Help<br>Using a<br>Person<br>(WHO) | 4<br>With Some<br>Help From<br>Both a<br>Person and<br>Device<br>(WHO) | 5<br>Unabl<br>e To<br>Do It |
|---|-----------------------------|---|---|--|-----------------------------|
| 11. (a) Can you go out of doors in good weather   |                             |   |   |  |                             |
| 11. (b) Could you go out of doors in good weather |                             |   |   |  |                             |
| 12. (a) Can you go out of doors in any weather    |                             |   |   |  |                             |
| 12. (b) Could you go out of doors in any weather  |                             |   |   |  |                             |
| 13. (a) Can you shop for groceries or clothes     |                             |   |   |  |                             |
| 13. (b) Could you shop for groceries or clothes   |                             |   |   |  |                             |
| 14. (a) Can you prepare your own meals            |                             |   |   |  |                             |
| 14. (b) Could you prepare your own meals          |                             |   |   |  |                             |
| 15. (a) Can you do heavy housework (vacuum etc.)  |                             |   |   |  |                             |
| 15. (b) Could you do heavy housework              |                             |   |   |  |                             |
| 16. (a) Can you do light housework (dusting etc.) |                             |   |   |  |                             |
| 16. (b) Could you do light housework              |                             |   |   |  |                             |
| 17. (a) Can you take your own medicine            |                             |   |   |  |                             |
| 17. (b) Could you take your own medicine          |                             |   |   |  |                             |
|   |                             |   |   |  |                             |

| ADL  | 1<br>Without<br>Any<br>Help | 2<br>With<br>Some<br>Help<br>From a<br>Device<br>Only | 3<br>With<br>Some<br>Help<br>Using a<br>Person<br>Only<br>(WHO) | 4<br>With Some<br>Help From<br>Both a<br>Person and<br>Device<br>(WHO) | 5<br>Unabl<br>e To<br>Do It |
|--|-----------------------------|---|---|--|-----------------------------|
| 18. (a) Can you care for your feet/ cut your toenails  |                             |   |   |  |                             |
| 18. (b) Could you care for your feet/cut your toenails |                             |   |   |  |                             |
| 19. (b) Can you handle your own money                  |                             |   |   |  |                             |
| 19. (b) Could you handle your own money                |                             |   |   |  |                             |

**B) Since moving to this building, have you received more help with your activities of daily living? (CIRCLE APPROPRIATE NUMBER)**

1. Yes, more help
2. No, less help
3. Stayed the same

**C) IF YES, who is the additional help provided by? (CIRCLE APPROPRIATE NUMBER)**

1. Tenant Staff
2. Staff who visit the building
3. Family
4. Friends from outside the building
5. Friends living in building
9. Not applicable

**D) IF NO, why is less help received? (RECORD RESPONSE)**

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**7. I would like to ask you a few questions about your income. What you tell me is confidential information.**

**A) How well do you think your income and assets currently satisfy your needs?  
(SHOW CARD WITH RESPONSE ALTERNATIVES AND CIRCLE APPROPRIATE  
NUMBER)**

1. Very well
2. Fairly well
3. Only just adequately
4. With some difficulty
5. Totally inadequate

**B) What is the approximate yearly income of your household? (SHOW CARD WITH  
RESPONSE ALTERNATIVES AND CIRCLE APPROPRIATE NUMBER)**

- |                      |                      |
|----------------------|----------------------|
| 1. <\$10,000         | 6. \$50,000-\$59,999 |
| 2. \$10,000-\$19,999 | 7. \$60,000-\$69,999 |
| 3. \$20,000-\$29,999 | 8. \$70,000-\$79,999 |
| 4. \$30,000-\$39,999 | 9. >\$79,999         |
| 5. \$40,000-\$49,999 |                      |

8. Do you have children living in Winnipeg? If yes, would you please provide the following information? (COMPLETE APPROPRIATE BOXES)

| Gender<br>1=Son<br>2=Daug<br>hter | Present Street Address<br>or Neighbourhood | *Previous Street<br>Address or<br>Neighbourhood | Marital<br>Status<br>1=single<br>2=married | Age |
|-----------------------------------|--|---|--|-----|
|                                   |  |   |  |     |
|                                   |  |   |  |     |
|                                   |  |   |  |     |
|                                   |  |   |  |     |
|                                   |  |   |  |     |
|                                   |  |   |  |     |

(\*RECORD PREVIOUS ADDRESS ONLY IF ADDRESS WAS DIFFERENT AT DATE OF RESPONDENT'S MOVE TO SENIOR HOUSING PROJECT)

ADD THE FOLLOWING INFORMATION

| Gender<br><br>1=Son<br><br>2=Daug<br>hter | Average Number of Visits To/From Relative |              |             |                  |              |             |
|---|---|--------------|-------------|------------------|--------------|-------------|
|   | Present Address                           |              |             | Previous Address |              |             |
|   | Per<br>Week                               | Per<br>Month | Per<br>Year | Per<br>Week      | Per<br>Month | Per<br>Year |
|   |   |              |             |                  |              |             |
|   |   |              |             |                  |              |             |
|   |   |              |             |                  |              |             |
|   |   |              |             |                  |              |             |
|   |   |              |             |                  |              |             |
|   |   |              |             |                  |              |             |

IF THE FREQUENCY OF VISITS WITH CHILDREN HAS CHANGED FROM PREVIOUS TO PRESENT ADDRESS, ASK RESPONDENT WHY AND RECORD REASON(S).



9. Do you have other family members (i.e. siblings, parents) living in Winnipeg? If yes, would you please provide the following information? (COMPLETE APPROPRIATE BOXES)

| Relation-ship | Present Street Address or Neighbourhood | *Previous Street Address or Neighbourhood | Marital Status<br>1=single<br>2=married | Age |
|---------------|---|---|---|-----|
|               |   |   |   |     |
|               |   |   |   |     |
|               |   |   |   |     |
|               |   |   |   |     |
|               |   |   |   |     |
|               |   |   |   |     |

(\*RECORD PREVIOUS ADDRESS ONLY IF ADDRESS WAS DIFFERENT AT DATE OF RESPONDENT'S MOVE TO SENIOR HOUSING PROJECT)

ADD THE FOLLOWING INFORMATION

| Relation-ship | Average Number of Visits To/From Relative |           |          |                  |           |          |
|---------------|---|-----------|----------|------------------|-----------|----------|
|               | Present Address                           |           |          | Previous Address |           |          |
|               | Per Week                                  | Per Month | Per Year | Per Week         | Per Month | Per Year |
|               |   |           |          |                  |           |          |
|               |   |           |          |                  |           |          |
|               |   |           |          |                  |           |          |
|               |   |           |          |                  |           |          |
|               |   |           |          |                  |           |          |
|               |   |           |          |                  |           |          |

IF THE FREQUENCY OF VISITS WITH FAMILY HAS CHANGED FROM PREVIOUS TO PRESENT ADDRESS, ASK RESPONDENT WHY AND RECORD REASON(S).

10. Do you have close friends living in Winnipeg? If yes, would you please provide the following information? (COMPLETE APPROPRIATE BOXES)

| Gender<br>1=Male<br>2=Female | Present Street Address<br>or Neighbourhood | *Previous<br>Street Address or<br>Neighbourhood | Marital<br>Status<br>1=single<br>2=married | Age |
|------------------------------|--|---|--|-----|
|                              |  |   |  |     |
|                              |  |   |  |     |
|                              |  |   |  |     |
|                              |  |   |  |     |
|                              |  |   |  |     |
|                              |  |   |  |     |

(\*RECORD PREVIOUS ADDRESS ONLY IF ADDRESS WAS DIFFERENT AT DATE OF RESPONDENT'S MOVE TO SENIOR HOUSING PROJECT)

ADD THE FOLLOWING INFORMATION

| Gender<br>1=Male<br>2=Female | Average Number of Visits To/From Friend |              |             |                  |              |             |
|------------------------------|---|--------------|-------------|------------------|--------------|-------------|
|                              | Present Address                         |              |             | Previous Address |              |             |
|                              | Per<br>Week                             | Per<br>Month | Per<br>Year | Per<br>Week      | Per<br>Month | Per<br>Year |
|                              |   |              |             |                  |              |             |
|                              |   |              |             |                  |              |             |
|                              |   |              |             |                  |              |             |
|                              |   |              |             |                  |              |             |
|                              |   |              |             |                  |              |             |
|                              |   |              |             |                  |              |             |

IF THE FREQUENCY OF VISITS WITH FRIENDS HAS CHANGED FROM PREVIOUS TO PRESENT ADDRESS, ASK RESPONDENT WHY AND RECORD REASON(S).

**11. Do you have children or other immediate family (i.e. siblings or parents) living outside of Winnipeg? If yes, would you please provide the following information?**

| Relationship | City/Town/Province/<br>State/Country | Marital Status<br>1=single<br>2=married | Age |
|--------------|--------------------------------------|---|-----|
|              |                                      |   |     |
|              |                                      |   |     |
|              |                                      |   |     |
|              |                                      |   |     |
|              |                                      |   |     |
|              |                                      |   |     |
|              |                                      |   |     |

**ADD THE FOLLOWING INFORMATION**

| Relation<br>-ship | Average Number of Visits To/From Relative |              |             |                  |              |             |
|-------------------|---|--------------|-------------|------------------|--------------|-------------|
|                   | Present Address                           |              |             | Previous Address |              |             |
|                   | Per<br>Week                               | Per<br>Month | Per<br>Year | Per<br>Week      | Per<br>Month | Per<br>Year |
|                   |   |              |             |                  |              |             |
|                   |   |              |             |                  |              |             |
|                   |   |              |             |                  |              |             |
|                   |   |              |             |                  |              |             |
|                   |   |              |             |                  |              |             |
|                   |   |              |             |                  |              |             |
|                   |   |              |             |                  |              |             |

**IF THE FREQUENCY OF VISITS WITH FAMILY HAS CHANGED FROM PREVIOUS TO PRESENT ADDRESS, ASK RESPONDENT WHY AND RECORD REASON(S) BELOW.**

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12. I would like to ask you about various places you visit now, and I shall also ask you about places that you used to visit when you lived at your previous residence.

A) How often do you typically make trips outside this building? (RECORD RESPONSE IN APPROPRIATE SPACE)

| Number of Trips |          |
|-----------------|----------|
| Per Day         | Per Week |
|                 |          |

Which are the two destinations that you most frequently visit on these trips? (RECORD RESPONSES IN APPROPRIATE SPACES) (IF THE STREET LOCATION IS GIVEN ASK FOR NEAREST CROSS-STREET AND ENTER IN THE SAME COLUMN. IN ALL CASES, RECORD AREA OF WINNIPEG)

|   | Name of Destination | Street Location | Area of Winnipeg |
|---|---------------------|-----------------|------------------|
| Most frequently visited destination     |                     |                 |                  |
| 2nd most frequently visited destination |                     |                 |                  |

B) How often did you typically make trips outside your previous residence? (RECORD RESPONSE IN APPROPRIATE SPACE)

| Number of Trips |          |
|-----------------|----------|
| Per Day         | Per Week |
|                 |          |

Which were the two destinations that you most frequently visited on these trips? (RECORD RESPONSES IN APPROPRIATE SPACES) (IF THE STREET LOCATION IS GIVEN ASK FOR NEAREST CROSS-STREET AND ENTER IN THE SAME COLUMN. IN ALL CASES, RECORD AREA OF WINNIPEG)

|   | Name of Destination | Street Location | Area of Winnipeg |
|---|---------------------|-----------------|------------------|
| Most frequently visited destination     |                     |                 |                  |
| 2nd most frequently visited destination |                     |                 |                  |

C) How satisfied are you with the closeness of the following places to your apartment block? (READ OUT THE NAMES OF PLACES AND SHOW CARD WITH RESPONSE ALTERNATIVES. CHECK APPROPRIATE BOXES.)

- 1 = very dissatisfied                      5 = slightly satisfied  
 2 = dissatisfied                            6 = satisfied  
 3 = slightly dissatisfied                7 = very satisfied  
 4 = neither satisfied nor dissatisfied

|                       | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|
| Grocery stores        |     |     |     |     |     |     |     |
| Pharmacies            |     |     |     |     |     |     |     |
| Bank/Credit Union/ATM |     |     |     |     |     |     |     |
| Doctor's office       |     |     |     |     |     |     |     |
| Hospital              |     |     |     |     |     |     |     |
| Major shopping ctr    |     |     |     |     |     |     |     |
| Public transit        |     |     |     |     |     |     |     |
| Homes of friends      |     |     |     |     |     |     |     |
| Homes of relatives    |     |     |     |     |     |     |     |
| Places of entertainme |     |     |     |     |     |     |     |
| Eating places         |     |     |     |     |     |     |     |

**D) How satisfied were you with the closeness of the following places to your previous residence? (READ OUT THE NAMES OF PLACES AND SHOW CARD WITH RESPONSE ALTERNATIVES. CHECK APPROPRIATE BOXES.)**

**1 = very dissatisfied**

**2 = dissatisfied**

**3 = slightly dissatisfied**

**4 = neither satisfied nor dissatisfied**

**5 = slightly satisfied**

**6 = satisfied**

**7 = very satisfied**

|                       | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|
| Grocery stores        |     |     |     |     |     |     |     |
| Pharmacies            |     |     |     |     |     |     |     |
| Bank/Credit Union/ATM |     |     |     |     |     |     |     |
| Doctor's office       |     |     |     |     |     |     |     |
| Hospital              |     |     |     |     |     |     |     |
| Major shopping ctr    |     |     |     |     |     |     |     |
| Public transit        |     |     |     |     |     |     |     |
| Homes of friends      |     |     |     |     |     |     |     |
| Homes of relatives    |     |     |     |     |     |     |     |
| Places of entertainme |     |     |     |     |     |     |     |
| Eating places         |     |     |     |     |     |     |     |

**E) How important to you is the closeness of the following places from your home?  
 (READ THE CHARACTERISTICS AND SHOW CARD WITH RESPONSE  
 ALTERNATIVES. CHECK THE APPROPRIATE BOX CHARACTERISTIC)**

| Characteristic          | Very Unimportant<br>(1) | Unimpor-<br>-tant<br>(2) | Neither Important<br>nor Unimportant<br>(3) | Important<br>(4) | Very Im-<br>portant<br>(5) |
|-------------------------|-------------------------|--------------------------|---|------------------|----------------------------|
| All Grocery Stores      |                         |                          |   |                  |                            |
| Bank/Credit Union/ATM   |                         |                          |   |                  |                            |
| Doctor's Office         |                         |                          |   |                  |                            |
| Hospital                |                         |                          |   |                  |                            |
| Pharmacies              |                         |                          |   |                  |                            |
| Shopping Centre (major) |                         |                          |   |                  |                            |
| Public Transit          |                         |                          |   |                  |                            |
| Homes of Relatives      |                         |                          |   |                  |                            |
| Homes of Friends        |                         |                          |   |                  |                            |
| Places of Entertainment |                         |                          |   |                  |                            |
| Eating Places           |                         |                          |   |                  |                            |

F) Since moving to your present residence, would you say that your satisfaction with the closeness of services and social contacts has: (CIRCLE APPROPRIATE NUMBER)

1. Increased
2. Stayed the same
3. Decreased

G) Why? (RECORD RESPONSE)

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13. Please state the name of the outlet that you most frequently patronize in each of the following categories. (IF THE STREET LOCATION IS GIVEN ASK FOR THE NEAREST CROSS STREET AND ENTER IN THE SAME COLUMN. IN ALL CASES, RECORD AREA OF WINNIPEG)

| Outlet Type                  | Outlet Name | Street Location | Shopping Centre | Area of Winnipeg |
|------------------------------|-------------|-----------------|-----------------|------------------|
| Doctor's Office              |             |                 |                 |                  |
| Hospital                     |             |                 |                 |                  |
| Other medical service        |             |                 |                 |                  |
| Church                       |             |                 |                 |                  |
| Grocery Store (Safeway etc.) |             |                 |                 |                  |
| Other Grocery Store          |             |                 |                 |                  |
| Pharmacy                     |             |                 |                 |                  |
| Bank/Credit Union/ATM        |             |                 |                 |                  |
|                              |             |                 |                 |                  |



| Outlet Type                   | Outlet Name | Street Location | Shopping Centre | Area of Winnipeg |
|-------------------------------|-------------|-----------------|-----------------|------------------|
| Senior Centre                 |             |                 |                 |                  |
| Bar                           |             |                 |                 |                  |
| Other meeting place           |             |                 |                 |                  |
| Library                       |             |                 |                 |                  |
| Participatory sports facility |             |                 |                 |                  |
| Other leisure facility        |             |                 |                 |                  |
| Eating place                  |             |                 |                 |                  |

**14. Please state the name of the outlet that you most frequently patronized when you lived at your previous residence. (IF PREVIOUS RESIDENCE WAS OUTSIDE WINNIPEG, DO NOT ASK THIS QUESTION AND GO TO QUESTION 15) (IF THE STREET LOCATION IS GIVEN ASK FOR THE NEAREST CROSS STREET AND ENTER IN THE SAME COLUMN. IN ALL CASES, RECORD AREA OF WINNIPEG)**

| Outlet Type           | Outlet Name | Street Location | Shopping Centre | Area of Winnipeg |
|-----------------------|-------------|-----------------|-----------------|------------------|
| Doctor's Office       |             |                 |                 |                  |
| Hospital              |             |                 |                 |                  |
| Other medical service |             |                 |                 |                  |
| Church                |             |                 |                 |                  |

| Outlet Type                     | Outlet Name | Street Location | Shopping Centre | Area of Winnipeg |
|---------------------------------|-------------|-----------------|-----------------|------------------|
| Grocery Store<br>(Safeway etc.) |             |                 |                 |                  |
| Other Grocery Store             |             |                 |                 |                  |
| Pharmacy                        |             |                 |                 |                  |
| Bank/Credit Union/ATM           |             |                 |                 |                  |
| Place of entertainmen           |             |                 |                 |                  |
| Senior Centre                   |             |                 |                 |                  |
| Bar                             |             |                 |                 |                  |
| Other meeting place             |             |                 |                 |                  |
| Library                         |             |                 |                 |                  |
| Participatory sports facility   |             |                 |                 |                  |
| Other leisure facility          |             |                 |                 |                  |
| Eating place                    |             |                 |                 |                  |

15. Now I would like to ask you how often you go to the destinations we have been discussing.

A) Would you please state how often you visit the following destination types outside the apartment block. (FIRST READ OUT THE FREQUENCY CATEGORIES. NEXT STATE THE NAME OF THE DESTINATION TYPE IN TURN AND INDICATE FREQUENCY EITHER PER WEEK, PER MONTH, OR PER YEAR) Which of these destinations do you usually visit with at least one companion? (CIRCLE THE DESTINATION TYPE(S) VISITED WITH AT LEAST ONE COMPANION)

| Destination Type              | Per Week | Per Month | Per Year | Never |
|-------------------------------|----------|-----------|----------|-------|
| Doctor's office               |          |           |          |       |
| Hospital                      |          |           |          |       |
| Other medical service         |          |           |          |       |
| Church                        |          |           |          |       |
| All grocery stores            |          |           |          |       |
| Safeway/Supervalu/IGA only    |          |           |          |       |
| Pharmacy                      |          |           |          |       |
| Senior centre                 |          |           |          |       |
| Bar                           |          |           |          |       |
| Other meeting place           |          |           |          |       |
| Place of entertainment        |          |           |          |       |
| Library                       |          |           |          |       |
| Participatory sports facility |          |           |          |       |
| Other leisure facility        |          |           |          |       |
| Bank/Credit Union/ATM         |          |           |          |       |
| Eating place                  |          |           |          |       |

**B) Now would you please state how often you visit the same destination types when you lived at your previous residence. (FIRST READ OUT THE FREQUENCY CATEGORIES. NEXT STATE THE NAME OF THE DESTINATION TYPE IN TURN AND INDICATE FREQUENCY EITHER PER WEEK, PER MONTH, OR PER YEAR)**

**Which of these destination types did you usually visit with at least one companion? (CIRCLE THE DESTINATION TYPE(S) VISITED WITH AT LEAST ONE COMPANION)**

| Destination Type              | Per Week | Per Month | Per Year | Never |
|-------------------------------|----------|-----------|----------|-------|
| Doctor's office               |          |           |          |       |
| Hospital                      |          |           |          |       |
| Other medical service         |          |           |          |       |
| Church                        |          |           |          |       |
| All grocery stores            |          |           |          |       |
| Safeway/Supervalu/IGA only    |          |           |          |       |
| Pharmacy                      |          |           |          |       |
| Senior centre                 |          |           |          |       |
| Bar                           |          |           |          |       |
| Other meeting place           |          |           |          |       |
| Place of entertainment        |          |           |          |       |
| Library                       |          |           |          |       |
| Participatory sports facility |          |           |          |       |
| Other leisure facility        |          |           |          |       |
| Bank/Credit Union/ATM         |          |           |          |       |
| Eating place                  |          |           |          |       |

C) Since you moved, do you think that the frequency of trips to these services and social outlets has: (CIRCLE APPROPRIATE NUMBER)

1. Increased
2. Stayed the same
3. Decreased

D) Why? (RECORD RESPONSE)

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16. I would like to ask you some questions about the services that are available in your apartment block.

A) Which services do you use in your building? How often do you use them?  
(PROMPT: FIRST STATE LISTED SERVICES. THEN ASK RESPONDENT TO NAME ANY ADDITIONAL ON-SITE SERVICES THAT HE/SHE USES. IN ALL CASES, READ OUT THE FREQUENCY CATEGORIES AND ENTER APPROPRIATE FREQUENCY)

| On-Site Service         | Per Week | Per Month | Per Year | Never | Not Avail able |
|-------------------------|----------|-----------|----------|-------|----------------|
| Congregate Meal Program |          |           |          |       |                |
| Recreation Activities   |          |           |          |       |                |
| Grocery Van             |          |           |          |       |                |
| Medical Services        |          |           |          |       |                |
| Tenant Resource Worker  |          |           |          |       |                |
|                         |          |           |          |       |                |

**B) Do you think these services at your present residence help you to remain independent? (RECORD RESPONSE)**

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**C) Do you think these services help you meet people? (RECORD RESPONSE)**

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**D) Did you use any services at your previous residence? (eg. Meals-on-Wheels)**

- 1. Yes
- 2. No

**E) If yes, which ones? (RECORD RESPONSE)**

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**F) How many people in this building do you consider to be your friends? (RECORD NUMBER IN SPACE)**

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**F) Since moving to this building, has the number of your social contacts/relationships increased? (CIRCLE APPROPRIATE NUMBER)**

- 1. Yes, increased
- 2. No, decreased
- 3. Stayed the same

**17. Now I am going to ask you some questions about transportation.**

**A) How many cars are there in your household? \_\_\_\_\_**

**B) Do you experience any problems with your usual means of transportation?  
(CIRCLE APPROPRIATE NUMBER)**

1. Yes
2. No

**C) How far can you walk outdoors with OR without assistance? (CIRCLE APPROPRIATE NUMBER)**

1. Less than one block
2. One block
3. Two blocks
4. Three blocks
5. Four blocks
6. Five blocks
7. Six blocks
8. ½ mile to 1 mile
9. 1 mile or more

**D) I will read a list of common problems that people have. Please tell me if any of these cause problems for you? (FOR EACH REASON LISTED BELOW, CIRCLE 1 IF IT CAUSES PROBLEMS AND 2 IF IT DOES NOT)**

|   | <u>Yes</u> <u>No</u> |   |
|---|----------------------|---|
| a) Can no longer drive and have no one available to drive me. | 1                    | 2 |
| b) Cannot find a volunteer driver.                            | 1                    | 2 |
| c) Bus stop too far to walk to.                               | 1                    | 2 |
| d) Bus routes not suitable.                                   | 1                    | 2 |
| e) Bus routes not scheduled at suitable times.                | 1                    | 2 |
| f) Cannot use Handi-Transit.                                  | 1                    | 2 |
| g) Costs too much.  | 1                    | 2 |
| h) Other, specify:  | 1                    | 2 |

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E) For each of the following trip purposes, how frequently do you use each of the following travel modes? (READ OUT THE NAME OF THE TRIP PURPOSE. THEN READ OUT THE NAMES OF THE TRAVEL MODES. SHOW CARD WITH THE TRIP FREQUENCY ALTERNATIVES AND RECORD APPROPRIATE NUMBER)

- |   |                     |   |                       |
|---|---------------------|---|-----------------------|
| 1 | Never               | 5 | 2-3 times per month   |
| 2 | Once a year         | 6 | Once per week         |
| 3 | 2-11 times per year | 7 | 2-6 times per week    |
| 4 | Once a month        | 8 | At least once per day |

| Trip Purpose         | Car - Driver | Car - Passenger | Bus | Handi Transit | Walk | Bike | Taxi |
|----------------------|--------------|-----------------|-----|---------------|------|------|------|
| Grocery Shopping     |              |                 |     |               |      |      |      |
| Pharmacy             |              |                 |     |               |      |      |      |
| Physician/ Hospital  |              |                 |     |               |      |      |      |
| Bank/Credit/ATM      |              |                 |     |               |      |      |      |
| Visiting Friends     |              |                 |     |               |      |      |      |
| Visiting Relatives   |              |                 |     |               |      |      |      |
| Recreatio Activities |              |                 |     |               |      |      |      |
| Eating Place         |              |                 |     |               |      |      |      |



**F) For the same trip purposes, how frequently did you use each of the travel modes when you lived at your previous residence? (READ OUT THE NAME OF THE TRIP PURPOSE. THEN READ OUT THE NAMES OF THE TRAVEL MODES. SHOW CARD WITH THE TRIP FREQUENCY ALTERNATIVES AND RECORD APPROPRIATE NUMBER)**

- |   |                     |   |                       |
|---|---------------------|---|-----------------------|
| 1 | Never               | 5 | 2-3 times per month   |
| 2 | Once a year         | 6 | Once per week         |
| 3 | 2-11 times per year | 7 | 2-6 times per week    |
| 4 | Once a month        | 8 | At least once per day |

| Trip Purpose          | Car - Driver | Car - Passenger | Bus | Handi-Transit | Walk | Bike | Taxi |
|-----------------------|--------------|-----------------|-----|---------------|------|------|------|
| Grocery Shopping      |              |                 |     |               |      |      |      |
| Pharmacy              |              |                 |     |               |      |      |      |
| Physician/Hospital    |              |                 |     |               |      |      |      |
| Bank/Credit/ATM       |              |                 |     |               |      |      |      |
| Visiting Friends      |              |                 |     |               |      |      |      |
| Visiting Relatives    |              |                 |     |               |      |      |      |
| Recreation Activities |              |                 |     |               |      |      |      |
| Eating Place          |              |                 |     |               |      |      |      |

**G) Since you moved to your present residence, do you think your access to transportation has: (CIRCLE APPROPRIATE NUMBER)**

1. Improved
2. Stayed the same
3. Become worse



19. Now I am going to read you a list of ways you might have felt or behaved during the past week. Please tell me how often you have felt this way during the week.

**(USE THE FOLLOWING SCALE FOR RESPONDENT'S ANSWERS. SHOW CARD WITH RESPONSE ALTERNATIVES AND RECORD APPROPRIATE NUMBER)**

- 1 Rarely or none of the time (less than 1 day)
- 2 Some or a little of the time (1-2 days)
- 3 Occasionally or a moderate amount of time (3-4 days)
- 4 Most or all of the time (5-6 days)

**During the past week:**

- a) I was bothered by things that usually don't bother me. \_\_\_\_\_
- b) I did not feel like eating; my appetite was poor. \_\_\_\_\_
- c) I felt that I could not shake off the blues even with help from my family or friends. \_\_\_\_\_
- d) I felt that I was just as good as other people. \_\_\_\_\_
- e) I had trouble keeping my mind on what I was doing. \_\_\_\_\_
- f) I felt depressed. \_\_\_\_\_
- g) I felt that everything I did was an effort. \_\_\_\_\_
- h) I felt hopeful about the future. \_\_\_\_\_
- i) I thought my life had been a failure. \_\_\_\_\_
- j) I felt fearful. \_\_\_\_\_
- k) My sleep was restless. \_\_\_\_\_
- l) I was happy. \_\_\_\_\_
- m) I talked less than usual. \_\_\_\_\_
- n) I felt lonely. \_\_\_\_\_
- o) People were unfriendly. \_\_\_\_\_



21) There are many activities or events that happen to us in everyday living. Some of these events are more important or desirable to you than others. Listed below are statements mentioning some of these activities or events. Please rate the extent to which each event described is important or not important to you. I am interested with the events' importance to you, not to others.

**(FIRST READ OUT EACH STATEMENT. USE THE FOLLOWING SCALE FOR RESPONDENT'S ANSWERS. SHOW CARD WITH RESPONSE ALTERNATIVES AND RECORD APPROPRIATE NUMBER)**

- 1 Very undesirable
- 2 Undesirable
- 3 Undecided
- 4 Desirable
- 5 Very desirable

- a) How desirable is it to you that people ask you for advice and suggestions? \_\_\_\_\_
- b) How important is it to you that you maintain your health? \_\_\_\_\_
- c) Is being able to get along with people you meet important to you? \_\_\_\_\_
- d) Is being able to arrange for outings important to you? \_\_\_\_\_
- e) Is being able to contact your family whenever you wish desirable to you? \_\_\_\_\_
- f) How important is being able to spend your time doing whatever you want? \_\_\_\_\_
- g) How important is it that you do chores yourself without any help? \_\_\_\_\_
- h) Is having your friends and family visit when you invite them important to you? \_\_\_\_\_
- I) How desirable is it to you that you can be active whenever you wish? \_\_\_\_\_
- j) How important is it that you find people who are interested in hearing what you have to say? \_\_\_\_\_
- k) How desirable is it to you to get away from your home? \_\_\_\_\_
- l) How desirable to you is having your family visit you? \_\_\_\_\_
- m) How desirable is it to you to be able to help others? \_\_\_\_\_

- 1 Very undesirable
- 2 Undesirable
- 3 Undecided
- 4 Desirable
- 5 Very desirable

- n) How important is it to you that you can have your friends over whenever you want? \_\_\_\_\_
- o) Is keeping in contact with interesting ideas desirable to you? \_\_\_\_\_
- p) Is being able to find privacy important to you? \_\_\_\_\_

22. The following are statements that may describe either yourself or the beliefs you have. Would you please respond to each statement by designating the degree to which you agree or disagree. Once again, I am interested in your own opinion, not the judgement of what others think.

**(FIRST READ OUT EACH STATEMENT. USE THE FOLLOWING SCALE FOR RESPONDENT'S ANSWERS. SHOW CARD WITH RESPONSE ALTERNATIVES AND RECORD APPROPRIATE NUMBER)**

- 1 Strongly disagree
- 2 Disagree
- 3 Undecided
- 4 Agree
- 5 Strongly agree

- a) People tend to ignore my advice and suggestions. \_\_\_\_\_
- b) Maintaining my level of health strongly depends on my own efforts. \_\_\_\_\_
- c) It is difficult for me to get to know people. \_\_\_\_\_
- d) I can usually arrange to go on outings that I'm interested in. \_\_\_\_\_
- e) The situation in which I live prevents me from contacting my family as much as I wish. \_\_\_\_\_
- f) I spend my time usually doing what I want to do. \_\_\_\_\_
- g) Although it is sometimes strenuous, I try to do the chores by myself. \_\_\_\_\_
- h) I find that if I ask my family (or friends) to visit me, they come. \_\_\_\_\_

- 1 Strongly disagree
- 2 Disagree
- 3 Undecided
- 4 Agree
- 5 Strongly agree

- i) I have quite a bit of influence on the degree to which I can be involved in activities. \_\_\_\_\_
- j) I can rarely find people who will listen closely to me. \_\_\_\_\_
- k) My getting away from the house generally depends on someone else making the decisions. \_\_\_\_\_
- l) Visits from my family (or friends) seem to be due to their own decisions and not my influence. \_\_\_\_\_
- m) People generally do not allow me to help them. \_\_\_\_\_
- n) I can entertain friends when I want. \_\_\_\_\_
- o) Keeping in contact with interesting ideas is easy for me to do. \_\_\_\_\_
- p) I am able to find privacy when I want it. \_\_\_\_\_

**23) Before we finish, I would like to ask you some questions about your general impressions about moving to this senior housing project.**

**A) What are the advantages of living in a senior citizen apartment building?  
(RECORD RESPONSE)**

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**B) What are the disadvantages of living in a senior citizen apartment building?  
(RECORD RESPONSE)**

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**C) What did you anticipate would happen when you moved to your present residence?  
What actually did happen? (RECORD RESPONSES)**

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**D) Do you plan to move in the near future? (CIRCLE APPROPRIATE NUMBER)**

- 1. Yes
- 2. No

**E) If yes, why? (RECORD RESPONSE)**

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**F) Do you have any other comments? (RECORD RESPONSE)**

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**I WOULD LIKE TO THANK YOU FOR PARTICIPATING IN THIS INTERVIEW.**

**Interviewer's comments about interview:**



**A.6 Letter of Thanks to Participants:  
Survey 1**

Dear

Recently you took time to talk to us about your experiences of moving into (insert name of building). As the principal investigator, I would like to thank you for your participation in this research program conducted by the Department of Geography at the University of Manitoba. Your contribution to the survey will provide us with a better understanding of how older people can be assisted in adjusting to moves to senior housing.

A second survey will be conducted next year as a follow-up. We would greatly appreciate your assistance once again. In the coming year a letter will be sent to request your participation in meeting with one of our interviewers.

I look forward to further contact with you and, once again, I would like to extend my gratitude for your contribution to this research program.

Sincerely,

Dr. G.C. Smith  
Principal Investigator  
Professor and Head  
Department of Geography  
University of Manitoba

**APPENDIX B**

**SURVEY 2**

**CONTENT**

- B.1 Letter to request participation in Survey 2
- B.2 Consent Form
- B.3 Survey 2
- B.4 Final Thank You Letter to Participants

**B.1 Letter to Request Participation  
in Survey 2**

June 16, 2000

Dear

We are writing to you once again to ask for your participation in a continuation of the study being conducted at the Department of Geography, University of Manitoba. The research investigates the experiences of older persons who move to senior housing. We are interested in your views about apartment living and your assessment of the neighbourhood in which the building is located.

As you recall, you completed a survey with one of our interviewers last year. We would like to ask you some further questions about living in this apartment and any changes you have experienced. The interview will take approximately one hour to complete.

We assure you once again that all your answers to the interview questions will be treated with the strictest of confidence. Although some of the results of the work will be published, the completed questionnaire will not be available to anyone apart from members of the research team. In the publications, any references to individual participants will be by number only. This study was granted approval by the University of Manitoba Ethics Review Committee. Also note that participation in this study will in no way affect your residency at this apartment building.

Your assistance is greatly appreciated. We will be calling shortly to arrange a convenient time for the interview. If you have any questions, please do not hesitate to contact Gina M. Sylvestre, Project Coordinator (275-8927), or Dr. Geoffrey C. Smith, Principal Investigator, Department of Geography, University of Manitoba (Phone: 474-7039).

Thank you for your cooperation. We look forward to talking with you again.

Sincerely,

Gina Sylvestre  
Project Coordinator  
Department of Geography

**B.2 Consent Form, Survey 2**Adjustment to Moves to Senior Housing in Winnipeg, MB.  
Survey 2000

ID Number: \_\_\_\_\_

Date: \_\_\_\_\_

I, \_\_\_\_\_ do hereby give my consent to  
(print name)

participate in the research program titled "Adjustment to Moves to Senior Housing in Winnipeg, MB." This research is directed by Dr. Geoffrey C. Smith in the Department of Geography, University of Manitoba.

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(signature)

**B.3 Survey 2**

**ADJUSTMENT TO SENIOR HOUSING IN WINNIPEG**

University of Manitoba  
Department of Geography

**Senior Housing Project (CHECK APPROPRIATE SPACE)**

- |                         |       |                    |       |
|-------------------------|-------|--------------------|-------|
| 1. 601 Osborne Street   | _____ | 14. 505 Munroe     | _____ |
| 2. 125 Carriage Road    | _____ | 15. 595 Mountain   | _____ |
| 3. 101 Marion Street    | _____ | 16. 400 Stradbrook | _____ |
| 4. 817 Main Street      | _____ | 17. 880 Arlington  | _____ |
| 5. 444 Kennedy Street   | _____ | 18. 145 Powers     | _____ |
| 6. 385 Carlton Street   | _____ | 19. 470 Pacific    | _____ |
| 7. 515 Elgin Avenue     | _____ | 20. 53 Stadacona   | _____ |
| 8. 875 Elizabeth Road   | _____ | 21. 114 McGregor   | _____ |
| 9. 60 Chesterfield Ave. | _____ | 22. 97 Keewatin    | _____ |
| 10. 425 Elgin Avenue    | _____ | 23. 253 Edgeland   | _____ |
| 11. 533 Greenwood Pl.   | _____ | 24. 865 Sinclair   | _____ |
| 12. Cosmo Place         | _____ | 25. 303 Goulet     | _____ |
| 13. 269 Dufferin        | _____ | 26. 525 Cathcart   | _____ |

Respondent Identification: \_\_\_\_\_  
 Date of Previous Interview: \_\_\_\_\_  
 Apartment #: \_\_\_\_\_  
 Apartment # of Previous Interview: \_\_\_\_\_  
 Interviewer (Initials): \_\_\_\_\_  
 Previous Interview Conducted By (Initials): \_\_\_\_\_

|          | Date | Time | Interviewed<br>(check) | Reason for non-contact |
|----------|------|------|------------------------|------------------------|
| 1st call |      |      |                        |                        |
| 2nd call |      |      |                        |                        |
| 3rd call |      |      |                        |                        |
| 4th call |      |      |                        |                        |

**Result of Interview (CIRCLE APPROPRIATE NUMBER)**

**A. Interview Obtained**

1. Complete
2. Incomplete

**B. Interview Not Obtained**

3. Refusal
4. No reply (after 4 calls)
5. Not available for health reasons
6. Deceased
7. Not available for other reasons  
(specify) \_\_\_\_\_

**INTRODUCTION**

Hello (Mr/Mrs/Ms) \_\_\_\_\_, my name is \_\_\_\_\_ and I am involved in the seniors' housing survey which is being conducted at the University of Manitoba. We visited you last year and have returned to re-interview you. This time I would like to discuss your experiences living in this building during the past year. I would also like to talk to you about yourself, and your family and friends. I want to assure you that everything you say is again confidential and your name will not be used anywhere. We are only interested in general aspects of apartment living. If, however, there are questions you would rather not answer, then please do not feel obligated to do so. Also, you may stop the interview at any time. Your help with our project is greatly appreciated.

**First, may I check a few details with you?**

**1. How long have you and (if applicable) your spouse lived at this building and in Winnipeg? (COMPLETE THE APPROPRIATE BOXES)**

|            | Building |        | Winnipeg |        |
|------------|----------|--------|----------|--------|
|            | Years    | Months | Years    | Months |
| Respondent |          |        |          |        |
| Spouse     |          |        |          |        |

**2. Can you provide me with some information concerning yourself and (if applicable) your spouse? (COMPLETE THE APPROPRIATE BOXES)**

| <u>AGE CODE (years)</u> (If exact age is not given) | <u>WORKING STATUS CODE</u>        |
|---|-----------------------------------|
| 1. 16-30  | 1. Employed full time > 30 hrs/wk |
| 2. 31-44  | 2. Employed part time < 30 hrs/wk |
| 3. 45-54  | 3. Currently Unemployed           |
| 4. 55-64  | 4. Retired                        |
| 5. 65-74  | 5. Disability Pension             |
| 6. 75-84  | 6. Social Assistance              |
| 7. 85+  |                                   |

|            | Sex | Age (years) | Working Status (see code box) | Workplace Name and Address |
|------------|-----|-------------|-------------------------------|----------------------------|
| Respondent |     |             |                               |                            |
| Spouse     |     |             |                               |                            |

**3. Now I would like to ask you some questions about where you live.**

**A) How do you rate the following characteristics of your present home and neighbourhood? (READ THE CHARACTERISTICS AND SHOW CARD WITH RESPONSE ALTERNATIVES. CHECK THE APPROPRIATE BOX) (CARD 1)**

| Characteristic          | Bad<br>(1) | Poor<br>(2) | Fair<br>(3) | Good<br>(4) | Excellent<br>(5) |
|-------------------------|------------|-------------|-------------|-------------|------------------|
| Privacy                 |            |             |             |             |                  |
| Sidewalk condition      |            |             |             |             |                  |
| Safety – traffic        |            |             |             |             |                  |
| Security – crime        |            |             |             |             |                  |
| Neighbourhood noise     |            |             |             |             |                  |
| Snow removal            |            |             |             |             |                  |
| Type of neighbour       |            |             |             |             |                  |
| Access to shop/services |            |             |             |             |                  |
| Public transportation   |            |             |             |             |                  |



**B) How important to you are the following characteristics of your present home and neighborhood? (READ THE CHARACTERISTICS AND SHOW CARD WITH RESPONSE ALTERNATIVES. CHECK THE APPROPRIATE BOX CHARACTERISTIC)**

| Characteristic          | Very Unimportant (1) | Unimportant (2) | Neither Important nor Unimportant (3) | Important (4) | Very Important (5) |
|-------------------------|----------------------|-----------------|---------------------------------------|---------------|--------------------|
| Privacy                 |                      |                 |                                       |               |                    |
| Sidewalk conditions     |                      |                 |                                       |               |                    |
| Safety from traffic     |                      |                 |                                       |               |                    |
| Security from crime     |                      |                 |                                       |               |                    |
| Neighbourhood noise     |                      |                 |                                       |               |                    |
| Snow removal            |                      |                 |                                       |               |                    |
| Type of neighbours      |                      |                 |                                       |               |                    |
| Access to shop/services |                      |                 |                                       |               |                    |
| Public transportation   |                      |                 |                                       |               |                    |

**C) What type of apartment is this? (CIRCLE APPROPRIATE NUMBER)**

1. Studio/Bachelor
2. One-bedroom
3. Two-bedroom
4. Other (specify) \_\_\_\_\_

**D) How familiar with this neighbourhood are you? (CIRCLE APPROPRIATE NUMBER)**

1. Very familiar
2. Somewhat familiar
3. Somewhat unfamiliar
4. Very unfamiliar

**E) Since our previous interview, would you say that your familiarity with the neighbourhood has: (CIRCLE APPROPRIATE NUMBER)**

1. Increased (EXPLAIN BELOW)
2. Decreased (EXPLAIN BELOW)
3. Remained the same

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**F) Considering any differences between your former home and this building including their locations, are you satisfied with the outcome of your move? (CIRCLE APPROPRIATE NUMBER)**

1. Yes (EXPLAIN BELOW)
2. No (EXPLAIN BELOW)

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**G) Since our previous interview, have you been satisfied with living in this building. (CIRCLE APPROPRIATE NUMBER)**

1. Yes (EXPLAIN BELOW)
2. No (EXPLAIN BELOW)

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**H) Since our previous interview, has your satisfaction with living in this building changed? (CIRCLE APPROPRIATE NUMBER)**

1. Increased (**EXPLAIN BELOW**)
2. Decreased (**EXPLAIN BELOW**)
3. Remained the same

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**I) Why did you move from your previous residence? (CIRCLE APPROPRIATE NUMBER OR NUMBERS)**

1. Declining health
2. Needed more space
3. Needed less space
4. Financial reasons
5. Wished to be closer to family/friends
6. Home difficult to maintain
7. Death or separation of spouse
8. Death of other relative/friend (specify) \_\_\_\_\_
9. Children/relatives left home
10. Wanted more freedom and convenience
11. Shops and services were too far from home
12. Other (specify): \_\_\_\_\_

**J) Since you moved here, have these concerns changed? (CIRCLE APPROPRIATE NUMBER)**

1. Improved (**EXPLAIN BELOW**)
2. Become worse (**EXPLAIN BELOW**)
3. Remained the same

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**4. Now I would like to ask some questions about yourself.****A) What is your current marital status? (CIRCLE APPROPRIATE NUMBER)**

1. Single
2. Married
3. Widowed
4. Divorced/Separated

**B) Has your marital status changed since our previous interview? (CIRCLE APPROPRIATE NUMBER)**

1. Yes (EXPLAIN BELOW)
2. No

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**C) Does anyone else live at this address? (CIRCLE APPROPRIATE NUMBER)**

1. No, lives alone
2. Yes, lives with spouse
3. Yes, lives with person other than spouse

**D) Has any change in your living arrangements occurred since our previous interview? (CIRCLE APPROPRIATE NUMBER)**

1. Yes (EXPLAIN BELOW)
2. No

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**E) Please state the present level of education of yourself and (if applicable) your spouse. (CHECK APPROPRIATE BOX OR BOXES)**

|         | 1.No School | 2. Pre-Grade | 3. Grade 1-6 | 4. Grade 7-12 | 5. Grade 13 | 6.College Nondegree | 7.College Degree |
|---------|-------------|--------------|--------------|---------------|-------------|---------------------|------------------|
| Respond |             |              |              |               |             |                     |                  |
| Spouse  |             |              |              |               |             |                     |                  |

**F) For your age, would you say, in general, your health is: (SHOW CARD WITH RESPONSE ALTERNATIVES AND CIRCLE APPROPRIATE NUMBER) (CARD 2)**

1. Excellent (never prevents activities)
2. Good (rarely prevents activities)
3. Fair (occasionally prevents activities)
4. Poor (very often prevents activities)
5. Bad (health troubles of infirmity all the time - prevents most activities, or requires confinement to bed)

**G) Do you think your health has changed since our previous interview?**

1. Yes (EXPLAIN BELOW)
2. No

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H) I am going to read a list of health problems that people often have. Please tell me if you have had the problem within the last year or otherwise still have after effects from having had it earlier. (READ EACH HEALTH PROBLEM AND CIRCLE APPROPRIATE NUMBER)

|  | CURRENT ADDRESS |    |
|--|-----------------|----|
|  | YES             | NO |
| a. Allergies                           | 1               | 2  |
| b. Cancer                              | 1               | 2  |
| c. Heart Disease                       | 1               | 2  |
| d. High Blood Pressure                 | 1               | 2  |
| e. Stroke                              | 1               | 2  |
| f. Arthritis or Rheumatism             | 1               | 2  |
| g. Palsy (Parkinson's)                 | 1               | 2  |
| h. Eye Trouble (cataracts, glaucoma)   | 1               | 2  |
| l. Ear Trouble (hearing loss)          | 1               | 2  |
| j. Dental Problems                     | 1               | 2  |
| k. Respiratory (TB, asthma, emphysema) | 1               | 2  |
| l. Stomach Trouble                     | 1               | 2  |
| m. Kidney Trouble (bladder problems)   | 1               | 2  |
| n. Diabetes                            | 1               | 2  |
| o. Foot Trouble                        | 1               | 2  |
| p. Nerve Trouble (mental/emotional)    | 1               | 2  |
| q. Skin Problems                       | 1               | 2  |

r. Hip Problems

|   |   |
|---|---|
| 1 | 2 |
| 1 | 2 |

s. Other (SPECIFY)

**I) Have you experienced any of these problems for the first time since our previous interview? (CIRCLE APPROPRIATE NUMBER)**

1. Yes (EXPLAIN BELOW)
2. No

**J) Have any of the health problems you told us about in our previous interview changed? (CIRCLE APPROPRIATE NUMBER)**

1. Improved (EXPLAIN BELOW)
2. Become worse (EXPLAIN BELOW)
3. Remained the same

**5. A) Now I would like to ask you a few questions about activities of daily living, things that we all need to do as part of our daily lives. I would like to know if, today, you can do these activities without any help, or if you need some help to do them, or if you cannot do them at all. (SHOW CARD WITH RESPONSE ALTERNATIVES AND CHECK APPROPRIATE BOXES FOR 1, 2 OR 5. IF 3 OR 4 IS SELECTED, IN RESPONSE TO "WHO", ASK RESPONDENT TO INDICATE THE PERSON WHO MOST FREQUENTLY ASSISTS AND FILL IN BOX WITH ONE OF THE FOLLOWING CATEGORIES: 1) SON; 2) DAUGHTER; 3) SIBLING; 4) OTHER RELATIVE; 5) FRIEND LIVING IN APARTMENT BLOCK; 6) FRIEND LIVING OUTSIDE OF APARTMENT BLOCK; 7) FORMAL HOME CARE SERVICE; 8) STAFF AT APARTMENT BLOCK) (CARD 3)**

| ADL  | 1<br>Without<br>Any<br>Help | 2<br>With<br>Some<br>Help<br>From a<br>Device<br>Only | 3<br>With<br>Some<br>Help<br>Using a<br>Person<br>Only<br>(WHO) | 4<br>With Some<br>Help From<br>Both a<br>Person and<br>Device<br>(WHO) | 5<br>Unable<br>To Do<br>It |
|--|-----------------------------|---|---|--|----------------------------|
| 1. Can you eat                                   |                             |   |   |  |                            |
| 2. Can you dress and undress yourself            |                             |   |   |  |                            |
| 3. Can you walk                                  |                             |   |   |  |                            |
| 4. Can you get about the house                   |                             |   |   |  |                            |
| 5. Can you go up and down stairs                 |                             |   |   |  |                            |
| 6. Can you get in and out of bed                 |                             |   |   |  |                            |
| 7. Can you take a bath or shower                 |                             |   |   |  |                            |
| 8. Can you go to the bathroom                    |                             |   |   |  |                            |
| 9. Can you use the telephone                     |                             |   |   |  |                            |
| 10. Can you go to places out of walking distance |                             |   |   |  |                            |
| 11. Can you go out of doors in good weather      |                             |   |   |  |                            |
| 12. Can you go out of doors in any weather       |                             |   |   |  |                            |
| 13. Can you shop for groceries or clothes        |                             |   |   |  |                            |
| 14. Can you prepare your own meals               |                             |   |   |  |                            |



| ADL  | 1<br>Without<br>Any<br>Help | 2<br>With<br>Some<br>Help<br>From a<br>Device<br>Only | 3<br>With<br>Some<br>Help<br>Using a<br>Person<br>Only<br>(WHO) | 4<br>With Some<br>Help From<br>Both a<br>Person and<br>Device<br>(WHO) | 5<br>Unable<br>To Do<br>It |
|--|-----------------------------|---|---|--|----------------------------|
| 15. Can you do heavy housework (vacuum etc.)     |                             |   |   |  |                            |
| 16. Can you do light housework (dusting etc.)    |                             |   |   |  |                            |
| 17. Can you take your own medicine               |                             |   |   |  |                            |
| 18. Can you care for your feet/cut your toenails |                             |   |   |  |                            |
| 19. Can you handle your own money                |                             |   |   |  |                            |

**B) Since our previous interview, have you received more help with your activities of daily living? (CIRCLE APPROPRIATE NUMBER)**

1. Yes, more help
2. No, less help
3. Remained the same

**C) IF YES, who is the additional help provided by? (CIRCLE APPROPRIATE NUMBER)**

1. Tenant Staff
2. Staff who visit the building
3. Family
4. Friends from outside the building
5. Friends living in building
9. Not applicable

**D) IF NO, why is less help received? (RECORD RESPONSE)**


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**6. I would like to ask you a few questions about your income. What you tell me is confidential information.**

**A) How well do you think your income and assets currently satisfy your needs? (SHOW CARD WITH RESPONSE ALTERNATIVES AND CIRCLE APPROPRIATE NUMBER) (CARD 4)**

1. Very well
2. Fairly well
3. Only just adequately
4. With some difficulty
5. Totally inadequate

**B) What is the approximate yearly income of your household? (SHOW CARD WITH RESPONSE ALTERNATIVES AND CIRCLE APPROPRIATE NUMBER) (CARD 5)**

- |                      |                      |
|----------------------|----------------------|
| 1. <\$10,000         | 6. \$50,000-\$59,999 |
| 2. \$10,000-\$19,999 | 7. \$60,000-\$69,999 |
| 3. \$20,000-\$29,999 | 8. \$70,000-\$79,999 |
| 4. \$30,000-\$39,999 | 9. >\$79,999         |
| 5. \$40,000-\$49,999 |                      |

**C) Since our previous interview, has your income changed? (CIRCLE APPROPRIATE NUMBER)**

1. Increased (**EXPLAIN BELOW**)
2. Decreased (**EXPLAIN BELOW**)
3. Remained the same

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7. A) Do you have children living in Winnipeg? If yes, would you please provide the following information? (COMPLETE APPROPRIATE BOXES)

| Gender<br>1=son<br>2=daughter | Average Number of<br>Visits to/from Children<br>in Winnipeg<br>Per Week/Month/Year | Street Address or<br>Neighbourhood | Marital<br>Status<br>1=single<br>2=married | Age |
|-------------------------------|--|------------------------------------|--|-----|
|                               |  |                                    |  |     |
|                               |  |                                    |  |     |
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|                               |  |                                    |  |     |
|                               |  |                                    |  |     |
|                               |  |                                    |  |     |

B) Has the number of your children living in Winnipeg changed since our previous interview? (CIRCLE APPROPRIATE NUMBER)

1. Yes (EXPLAIN BELOW)
2. No

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**B) Has the number of family members, excluding children living in Winnipeg, changed since our previous interview? (CIRCLE APPROPRIATE NUMBER)**

- 1. Yes (EXPLAIN BELOW)
- 2. No

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**C) Has the average number of visits to/from relatives in Winnipeg, excluding children living in Winnipeg, changed since our previous interview? (CIRCLE APPROPRIATE NUMBER)**

- 1. Yes (EXPLAIN BELOW)
- 2. No

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**9. A) Do you have close friends living in Winnipeg? If yes, would you please provide the following information? (COMPLETE APPROPRIATE BOXES)**

| Gender<br>1=Male<br>2=Female | Average Number of<br>Visits to/from Friends in<br>Winnipeg<br>Per Week/Month/Year | Street Address or<br>Neighbourhood | Marital<br>Status<br>1=single<br>2=married | Age |
|------------------------------|---|------------------------------------|--|-----|
|                              |   |                                    |  |     |
|                              |   |                                    |  |     |
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|                              |   |                                    |  |     |
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|                              |   |                                    |  |     |

**B) Has the number of your close friends living in Winnipeg changed since our previous interview? (CIRCLE APPROPRIATE NUMBER)**

- 1. Yes (EXPLAIN BELOW)
- 2. No

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**B) Has the number of your close relatives living outside Winnipeg changed since our previous interview? (CIRCLE APPROPRIATE NUMBER)**

- 1. Yes (EXPLAIN BELOW)
- 2. No

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**C) Has the average number of visits to/from your close relatives living outside Winnipeg changed since our previous interview? (CIRCLE APPROPRIATE NUMBER)**

- 1. Yes (EXPLAIN BELOW)
- 2. No

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11. I would like to ask you about various places you visit now.

A) How often do you typically make trips outside this building? (RECORD RESPONSE IN APPROPRIATE SPACE)

| Number of Trips |          |
|-----------------|----------|
| Per Day         | Per Week |
|                 |          |

B) Which are the two destinations that you most frequently visit on these trips? (RECORD RESPONSES IN APPROPRIATE SPACES) (IF THE STREET LOCATION IS GIVEN ASK FOR NEAREST CROSS-STREET AND ENTER IN THE SAME COLUMN. IN ALL CASES, RECORD AREA OF WINNIPEG)

|   | Name of Destination | Street Location | Area of Winnipeg |
|---|---------------------|-----------------|------------------|
| Most frequently visited destination     |                     |                 |                  |
| 2nd most frequently visited destination |                     |                 |                  |

C) Since our previous interview, do you think that your frequency of trips has: (CIRCLE APPROPRIATE NUMBER)

1. Increased (EXPLAIN BELOW)
2. Decreased (EXPLAIN BELOW)
3. Remained the same

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**D) How satisfied are you with the closeness of the following places to your apartment block? (READ OUT THE NAMES OF PLACES AND SHOW CARD WITH RESPONSE ALTERNATIVES. CHECK APPROPRIATE BOXES) (CARD 6)**

**1 = very dissatisfied**

**5 = slightly satisfied**

**2 = dissatisfied**

**6 = satisfied**

**3 = slightly dissatisfied**

**7 = very satisfied**

**4 = neither satisfied nor dissatisfied**

|                         | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|-------------------------|-----|-----|-----|-----|-----|-----|-----|
| Grocery stores          |     |     |     |     |     |     |     |
| Pharmacies              |     |     |     |     |     |     |     |
| Bank/Credit Union/ATM   |     |     |     |     |     |     |     |
| Doctor's office         |     |     |     |     |     |     |     |
| Hospital                |     |     |     |     |     |     |     |
| Major shopping centre   |     |     |     |     |     |     |     |
| Public transit service  |     |     |     |     |     |     |     |
| Homes of friends        |     |     |     |     |     |     |     |
| Homes of relatives      |     |     |     |     |     |     |     |
| Places of entertainment |     |     |     |     |     |     |     |
| Eating places           |     |     |     |     |     |     |     |

**E) How important to you is the closeness of the following places from your home?  
 (READ THE CHARACTERISTICS AND SHOW CARD WITH RESPONSE  
 ALTERNATIVES. CHECK THE APPROPRIATE BOX CHARACTERISTIC)**

| Characteristic          | Very Unimportant<br>(1) | Unimpor-<br>-tant<br>(2) | Neither Important<br>nor<br>Unimportant<br>(3) | Important<br>(4) | Very Im-<br>portant<br>(5) |
|-------------------------|-------------------------|--------------------------|--|------------------|----------------------------|
| All Grocery Stores      |                         |                          |  |                  |                            |
| Bank/Credit Union/ATM   |                         |                          |  |                  |                            |
| Doctor's Office         |                         |                          |  |                  |                            |
| Hospital                |                         |                          |  |                  |                            |
| Pharmacies              |                         |                          |  |                  |                            |
| Shopping Centre (major) |                         |                          |  |                  |                            |
| Public Transit          |                         |                          |  |                  |                            |
| Homes of Relatives      |                         |                          |  |                  |                            |
| Homes of Friends        |                         |                          |  |                  |                            |
| Places of Entertainment |                         |                          |  |                  |                            |
| Eating Places           |                         |                          |  |                  |                            |

F) Since our previous interview, would you say that your satisfaction with the closeness of services and social contacts has: (CIRCLE APPROPRIATE NUMBER)

1. Increased (EXPLAIN BELOW)
2. Decreased (EXPLAIN BELOW)
3. Remained the same

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12. A) Please state the name of the outlet that you most frequently patronize in each of the following categories. (IF THE STREET LOCATION IS GIVEN ASK FOR THE NEAREST CROSS STREET AND ENTER IN THE SAME COLUMN. IN ALL CASES, RECORD AREA OF WINNIPEG)

| Outlet Type                  | Outlet Name | Street Location | Shopping Centre | Area of Winnipeg |
|------------------------------|-------------|-----------------|-----------------|------------------|
| Doctor's Office              |             |                 |                 |                  |
| Hospital                     |             |                 |                 |                  |
| Other medical service        |             |                 |                 |                  |
| Church                       |             |                 |                 |                  |
| Grocery Store (Safeway etc.) |             |                 |                 |                  |
| Other Grocery Store          |             |                 |                 |                  |
| Pharmacy                     |             |                 |                 |                  |
|                              |             |                 |                 |                  |

|                               |  |  |  |  |
|-------------------------------|--|--|--|--|
| Bank/Credit Union/ATM         |  |  |  |  |
| Place of entertainmen         |  |  |  |  |
| Senior Centre                 |  |  |  |  |
| Bar                           |  |  |  |  |
| Other meeting place           |  |  |  |  |
| Library                       |  |  |  |  |
| Participatory sports facility |  |  |  |  |
| Other leisure facility        |  |  |  |  |
| Eating place                  |  |  |  |  |

**B) Have any of the outlets (in these categories) that you most frequently patronize changed since our previous interview? (CIRCLE APPROPRIATE NUMBER)**

1. Yes (**EXPLAIN BELOW**)
2. No

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13. Now I would like to ask you how often you go to any destinations in the categories we have been discussing.

A) Would you please state how often you visit the following destination types outside the apartment block. (FIRST READ OUT THE FREQUENCY CATEGORIES. NEXT STATE THE NAME OF THE DESTINATION TYPE IN TURN AND INDICATE FREQUENCY EITHER PER WEEK, PER MONTH, OR PER YEAR) Which of these destinations do you usually visit with at least one companion? (CIRCLE THE DESTINATION TYPE(S) VISITED WITH AT LEAST ONE COMPANION)

| Destination Type              | Per Week | Per Month | Per Year | Never |
|-------------------------------|----------|-----------|----------|-------|
| Doctor's office               |          |           |          |       |
| Hospital                      |          |           |          |       |
| Other medical service         |          |           |          |       |
| Church                        |          |           |          |       |
| All grocery stores            |          |           |          |       |
| Safeway/Supervalu/IGA only    |          |           |          |       |
| Pharmacy                      |          |           |          |       |
| Senior centre                 |          |           |          |       |
| Bar                           |          |           |          |       |
| Other meeting place           |          |           |          |       |
| Place of entertainment        |          |           |          |       |
| Library                       |          |           |          |       |
| Participatory sports facility |          |           |          |       |
| Other leisure facility        |          |           |          |       |
| Bank/Credit Union/ATM         |          |           |          |       |
| Eating place                  |          |           |          |       |

**B) Since our previous interview, do you think that the frequency of trips to these services and social outlets has: (CIRCLE APPROPRIATE NUMBER)**

1. Increased (EXPLAIN BELOW)
2. Decreased (EXPLAIN BELOW)
3. Remained the same

**14. Now I am going to ask you some questions about transportation.**

**A) For each of the following trip purposes, how frequently do you use each of the following travel modes? (READ OUT THE NAME OF THE TRIP PURPOSE. THEN READ OUT THE NAMES OF THE TRAVEL MODES. SHOW CARD WITH THE TRIP FREQUENCY ALTERNATIVES AND RECORD APPROPRIATE NUMBER) (CARD 7)**

- |                       |                         |
|-----------------------|-------------------------|
| 1 Never               | 5 2-3 times per month   |
| 2 Once a year         | 6 Once per week         |
| 3 2-11 times per year | 7 2-6 times per week    |
| 4 Once a month        | 8 At least once per day |

| Trip Purpose       | Car - Driver | Car - Passeng | Bus | Handi-Transit | Walk | Bike | Taxi |
|--------------------|--------------|---------------|-----|---------------|------|------|------|
| Grocery Shopping   |              |               |     |               |      |      |      |
| Pharmacy           |              |               |     |               |      |      |      |
| Physician/Hospital |              |               |     |               |      |      |      |
| Bank/Credit/ATM    |              |               |     |               |      |      |      |
| Visiting Friends   |              |               |     |               |      |      |      |
| Visiting Relative  |              |               |     |               |      |      |      |

|                          |  |  |  |  |  |  |  |
|--------------------------|--|--|--|--|--|--|--|
|                          |  |  |  |  |  |  |  |
| Recreation<br>Activities |  |  |  |  |  |  |  |
| Eating<br>Place          |  |  |  |  |  |  |  |

B) How many cars are there in your household? \_\_\_\_\_

C) Do you experience any problems with your usual means of transportation?  
(CIRCLE APPROPRIATE NUMBER)

1. Yes
2. No

D) How far can you walk outdoors with OR without assistance? (CIRCLE  
APPROPRIATE NUMBER)

1. Less than one block
2. One block
3. Two blocks
4. Three blocks
5. Four blocks
6. Five blocks
7. Six blocks
8. ½ mile to 1 mile
9. 1 mile or more

E) I will read a list of common problems that people have. Please tell me if any of these  
cause problems for you? (FOR EACH REASON LISTED BELOW, CIRCLE 1 IF IT  
CAUSES PROBLEMS AND 2 IF IT DOES NOT)

- |  | <u>Yes</u> | <u>No</u> |
|--|------------|-----------|
| a) Can no longer drive and have no one<br>available to drive me. | 1          | 2         |
| b) Cannot find a volunteer driver.                               | 1          | 2         |
| c) Bus stop too far to walk to.                                  | 1          | 2         |
| d) Bus routes not suitable.                                      | 1          | 2         |



- |  |   |   |
|--|---|---|
| e) Bus routes not scheduled at suitable times. | 1 | 2 |
| f) Cannot use Handi-Transit.                   | 1 | 2 |
| g) Costs too much.                             | 1 | 2 |
| h) Other, specify:                             | 1 | 2 |
- 
- 

**F) Since our previous interview, has your access to transportation changed? (CIRCLE APPROPRIATE NUMBER)**

1. Improved **(EXPLAIN BELOW)**
2. Become worse **(EXPLAIN BELOW)**
3. Remained the same

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**15. I would like to ask you some questions about the services that are available in your apartment block.**

**A) Which services do you now use in or at your building? How often do you use them? (PROMPT: FIRST STATE LISTED SERVICES. THEN ASK RESPONDENT TO NAME ANY ADDITIONAL ON-SITE SERVICES THAT HE/SHE USES. IN ALL CASES, READ OUT THE FREQUENCY CATEGORIES AND ENTER APPROPRIATE FREQUENCY)**

| On-Site Service         | Per Week | Per Month | Per Year | Never | Not Available |
|-------------------------|----------|-----------|----------|-------|---------------|
| Congregate Meal Program |          |           |          |       |               |
| Recreation Activities   |          |           |          |       |               |
| Grocery Van             |          |           |          |       |               |
| Medical Services        |          |           |          |       |               |
| Tenant Resource Worker  |          |           |          |       |               |
| Laundry Services        |          |           |          |       |               |

|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

**B) Since our previous interview, has your use of these on-site services changed? (CIRCLE APPROPRIATE NUMBER)**

- 1. Yes, increased (EXPLAIN BELOW)
- 2. No, decreased (EXPLAIN BELOW)
- 3. Remained the same

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**C) Do you think these services at your present residence help you to remain independent? (RECORD RESPONSE)**

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**D) Do you think these services help you meet people? (RECORD RESPONSE)**

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**E) How many people in this building do you consider to be your friends? (RECORD NUMBER IN SPACE)**

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**F) Since our previous interview, has the number of your social contacts/relationships changed? (CIRCLE APPROPRIATE NUMBER)**





17. Now I am going to read you a list of ways you might have felt or behaved during the past week. Please tell me how often you have felt this way during the week.

**(USE THE FOLLOWING SCALE FOR RESPONDENT'S ANSWERS. SHOW CARD WITH RESPONSE ALTERNATIVES AND RECORD APPROPRIATE NUMBER)  
(CARD 8)**

- 1 Rarely or none of the time (less than 1 day)
- 2 Some or a little of the time (1-2 days)
- 3 Occasionally or a moderate amount of time (3-4 days)
- 4 Most or all of the time (5-6 days)

**During the past week:**

- |  |       |
|--|-------|
| a) I was bothered by things that usually don't bother me.                                | _____ |
| b) I did not feel like eating; my appetite was poor.                                     | _____ |
| c) I felt that I could not shake off the blues even with help from my family or friends. | _____ |
| d) I felt that I was just as good as other people.                                       | _____ |
| e) I had trouble keeping my mind on what I was doing.                                    | _____ |
| f) I felt depressed.   | _____ |
| g) I felt that everything I did was an effort.   | _____ |
| h) I felt hopeful about the future.  | _____ |
| I) I thought my life had been a failure.   | _____ |
| j) I felt fearful.   | _____ |
| k) My sleep was restless.  | _____ |
| l) I was happy.  | _____ |
| m) I talked less than usual.   | _____ |
| n) I felt lonely.  | _____ |
| o) People were unfriendly.   | _____ |



19) There are many activities or events that happen to us in everyday living. Some of these events are more important or desirable to you than others. Listed below are statements mentioning some of these activities or events. Please rate the extent to which each event described is important or not important to you. I am interested with the events' importance to you, not to others.

**(FIRST READ OUT EACH STATEMENT. USE THE FOLLOWING SCALE FOR RESPONDENT'S ANSWERS. SHOW CARD WITH RESPONSE ALTERNATIVES AND RECORD APPROPRIATE NUMBER) (CARD 9)**

- 1 Very undesirable
- 2 Undesirable
- 3 Undecided
- 4 Desirable
- 5 Very desirable

- a) How desirable is it to you that people ask you for advice and suggestions? \_\_\_\_\_
- b) How important is it to you that you maintain your health? \_\_\_\_\_
- c) Is being able to get along with people you meet important to you? \_\_\_\_\_
- d) Is being able to arrange for outings important to you? \_\_\_\_\_
- e) Is being able to contact your family whenever you wish desirable to you? \_\_\_\_\_
- f) How important is being able to spend your time doing whatever you want? \_\_\_\_\_
- g) How important is it that you do chores yourself without any help? \_\_\_\_\_
- h) Is having your friends and family visit when you invite them important to you? \_\_\_\_\_
- I) How desirable is it to you that you can be active whenever you wish? \_\_\_\_\_
- j) How important is it that you find people who are interested in hearing what you have to say? \_\_\_\_\_
- k) How desirable is it to you to get away from your home? \_\_\_\_\_
- l) How desirable to you is having your family visit you? \_\_\_\_\_
- m) How desirable is it to you to be able to help others? \_\_\_\_\_

- 1 Very undesirable
- 2 Undesirable
- 3 Undecided
- 4 Desirable
- 5 Very desirable

- n) How important is it to you that you can have your friends over whenever you want? \_\_\_\_\_
- o) Is keeping in contact with interesting ideas desirable to you? \_\_\_\_\_
- p) Is being able to find privacy important to you? \_\_\_\_\_

**20. The following are statements that may describe either yourself or the beliefs you have. Would you please respond to each statement by designating the degree to which you agree or disagree. Once again, I am interested in your own opinion, not the judgement of what others think.**

**(FIRST READ OUT EACH STATEMENT. USE THE FOLLOWING SCALE FOR RESPONDENT'S ANSWERS. SHOW CARD WITH RESPONSE ALTERNATIVES AND RECORD APPROPRIATE NUMBER) (CARD 10)**

- 1 Strongly disagree
- 2 Disagree
- 3 Undecided
- 4 Agree
- 5 Strongly agree

- a) People tend to ignore my advice and suggestions. \_\_\_\_\_
- b) Maintaining my level of health strongly depends on my own efforts. \_\_\_\_\_
- c) It is difficult for me to get to know people. \_\_\_\_\_
- d) I can usually arrange to go on outings that I'm interested in. \_\_\_\_\_
- e) The situation in which I live prevents me from contacting my family as much as I wish. \_\_\_\_\_
- f) I spend my time usually doing what I want to do. \_\_\_\_\_
- g) Although it is sometimes strenuous, I try to do the chores by myself. \_\_\_\_\_
- h) I find that if I ask my family (or friends) to visit me, they come. \_\_\_\_\_



- 1 Strongly disagree
- 2 Disagree
- 3 Undecided
- 4 Agree
- 5 Strongly agree

- i) I have quite a bit of influence on the degree to which I can be involved in activities. \_\_\_\_\_
- j) I can rarely find people who will listen closely to me. \_\_\_\_\_
- k) My getting away from the house generally depends on someone else making the decisions. \_\_\_\_\_
- l) Visits from my family (or friends) seem to be due to their own decisions and not my influence. \_\_\_\_\_
- m) People generally do not allow me to help them. \_\_\_\_\_
- n) I can entertain friends when I want. \_\_\_\_\_
- o) Keeping in contact with interesting ideas is easy for me to do. \_\_\_\_\_
- p) I am able to find privacy when I want it. \_\_\_\_\_

**21) Before we finish, I would like to ask you some questions about your general impressions about living in this senior housing project.**

**A) What are the advantages of living in this building? (RECORD RESPONSE)**

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**B) What are the disadvantages of living in this building? (RECORD RESPONSE)**

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**C) What did you anticipate would happen when you moved to your present residence?  
What actually did happen? (RECORD RESPONSES)**

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**D) Do you plan to move in the near future? (CIRCLE APPROPRIATE NUMBER)**

- 1. Yes
- 2. No

**E) If yes, why? (RECORD RESPONSE)**

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**F) Do you have any other comments? (RECORD RESPONSE)**

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**I WOULD LIKE TO THANK YOU FOR PARTICIPATING IN THIS INTERVIEW.**

**Interviewer's comments about interview:**

**B.4: Final Thank-You Letter to Participants -  
Survey 2**

DATE

Dear

I would like to thank you for participating once again in our survey on housing for seniors. The research project being conducted in the Department of Geography at the University of Manitoba looks at how older adults adjust when they move to a new apartment building. You have provided us with important information about your experiences of moving to and living in a seniors housing block. We appreciate that you took the time to meet with the interviewer on two occasions.

We have included some of the preliminary results of the study. On the following pages you will find a description of the sample of 242 respondents who have participated in the survey. In addition, there is a map of Winnipeg that illustrates where public and non-profit senior housing is located in the city.

A large amount of data has been collected and, consequently, the research project is on-going. If you are interested in receiving further results of the study when they become available, please contact Gina Sylvestre at 275-8927.

Once again, I would like to express my appreciation for your assistance.

Sincerely,

Dr. G.C. Smith  
Principal Investigator  
Professor  
Department of Geography  
University of Manitoba

## Preliminary Results of the Study of Residential Adjustment

- A total of 242 participants completed the first survey on residential adjustment to a senior housing project in the summer of 1999.
- In addition, 149 participants who completed the first survey also completed the second survey in the summer of 2000.
- The most frequently reported reasons for moving to a senior housing project were:
  - Declining Health
  - Physical Difficulties at the Previous Residence
  - Financial Reasons
- Almost one-half of the sample lived less than 3 kilometers from the previous residence after the move.
- The average age of participants was 69 years old, while the ages of respondents range from 55 to 97 years old.
- The age distribution of the sample is as follows:
  - 42%      55-64
  - 25%      65-74
  - 23%      75-84
  - 10%      85 +
- 60% of the sample is female.
- 90% of respondents are single.

## Appendix C

### Tests of Change in Antecedent Construct Variables and Personal State Outcomes: Times 1-2, 1-3, 2-3

#### *C.1. Number of Friends in Senior Housing Project*

Times 2-3  $t=-0.733$ , d.f.=148,  $p<0.000$

#### *C.2. Activities of Daily Living*

Times 1-2  $t=-4.802$ , d.f.=148,  $p<0.000$

Times 1-3  $t=-2.916$ , d.f.=148,  $p<0.000$

Times 2-3  $t=-1.312$ , d.f.=148,  $p<0.000$

#### *C.3. Instrumental Activities of Daily Living*

Times 1-2  $t=-3.952$ , d.f.=148,  $p<0.000$

Times 1-3  $t=-4.321$ , d.f.=148,  $p<0.000$

Times 2-3  $t=-1.782$ , d.f.=148,  $p<0.000$

#### *C.4. Chronic Conditions*

Times 1-2  $t=-0.213$ , d.f.=148,  $p<0.000$

Times 1-3  $t=-0.420$ , d.f.=148,  $p<0.000$

Times 2-3  $t=-0.370$ , d.f.=148,  $p<0.000$

#### *C.5. Security from Crime*

Times 1-2  $\chi^2=39.749$ , d.f.=16,  $p<0.001$

Times 1-3  $\chi^2=4.383$ , d.f.=16,  $p<0.998$

Times 2-3  $\chi^2=37.557$ , d.f.=16,  $p<0.002$

#### *C.6. Sidewalk Conditions*

Times 1-2  $\chi^2=55.941$ , d.f.=16,  $p<0.000$

Times 1-3  $\chi^2=16.697$ , d.f.=16,  $p<0.405$

Times 2-3  $\chi^2=58.528$ , d.f.=16,  $p<0.000$

#### *C.7. Traffic Safety*

Times 1-2  $\chi^2=34.625$ , d.f.=16,  $p<0.004$

Times 1-3  $\chi^2=23.535$ , d.f.=16,  $p<0.100$

Times 2-3  $\chi^2=54.036$ , d.f.=16,  $p<0.000$

#### *C.8. Snow Removal*

Times 1-2  $\chi^2=23.286$ , d.f.=12,  $p<0.025$

Times 1-3  $\chi^2=9.970$ , d.f.=12,  $p<0.619$

Times 2-3  $\chi^2=20.613$ , d.f.=9,  $p<0.014$

*C.9. Satisfaction with Proximity to Family Members*

|           |                                       |
|-----------|---------------------------------------|
| Times 1-2 | $\chi^2=273.375$ , d.f.=36, $p<0.000$ |
| Times 1-3 | $\chi^2=70.244$ , d.f.=30, $p<0.000$  |
| Times 2-3 | $\chi^2=87.005$ , d.f.=30, $p<0.000$  |

*C.10. Satisfaction with Proximity to Friends*

|           |                                       |
|-----------|---------------------------------------|
| Times 1-2 | $\chi^2=199.968$ , d.f.=30, $p<0.000$ |
| Times 1-3 | $\chi^2=73.782$ , d.f.=30, $p<0.000$  |
| Times 2-3 | $\chi^2=103.055$ , d.f.=25, $p<0.000$ |

*C.11. Distance of Closest Child*

|           |                                 |
|-----------|---------------------------------|
| Times 1-3 | $t=0.895$ , d.f.=147, $p<0.000$ |
|-----------|---------------------------------|

*C.12. Distance to Closest Sibling*

|           |                                  |
|-----------|----------------------------------|
| Times 1-3 | $t=-0.885$ , d.f.=121, $p<0.000$ |
|-----------|----------------------------------|

*C.13. Distance to Closest Friend*

|           |                                 |
|-----------|---------------------------------|
| Times 1-3 | $t=1.071$ , d.f.=105, $p<0.776$ |
|-----------|---------------------------------|

*C.14. Minutes to Bus Stop*

|           |                                 |
|-----------|---------------------------------|
| Times 1-3 | $t=6.389$ , d.f.=148, $p<0.696$ |
|-----------|---------------------------------|

*C.15. Distance to Most Proximate Shopping Centre*

|           |                                  |
|-----------|----------------------------------|
| Times 1-3 | $t=10.905$ , d.f.=148, $p<0.001$ |
|-----------|----------------------------------|

*C.16. Distance to Most Proximate Major-Chain Grocery Store*

|           |                                 |
|-----------|---------------------------------|
| Times 1-3 | $t=3.678$ , d.f.=148, $p<0.858$ |
|-----------|---------------------------------|

*C.17. Satisfaction with Proximity to Services*

|           |                                       |
|-----------|---------------------------------------|
| Times 1-2 | $\chi^2=35.710$ , d.f.=16, $p<0.003$  |
| Times 1-3 | $\chi^2=29.884$ , d.f.=16, $p<0.019$  |
| Times 2-3 | $\chi^2=111.020$ , d.f.=16, $p<0.000$ |

*C.18. Satisfaction with Proximity to Grocery Store*

|           |                                       |
|-----------|---------------------------------------|
| Times 1-2 | $\chi^2=117.549$ , d.f.=36, $p<0.000$ |
| Times 1-3 | $\chi^2=84.426$ , d.f.=36, $p<0.000$  |
| Times 2-3 | $\chi^2=209.361$ , d.f.=36, $p<0.000$ |

*C.19. Satisfaction with Proximity to Pharmacy*

|           |                                       |
|-----------|---------------------------------------|
| Times 1-2 | $\chi^2=120.536$ , d.f.=36, $p<0.000$ |
| Times 1-3 | $\chi^2=67.027$ , d.f.=36, $p<0.001$  |
| Times 2-3 | $\chi^2=122.404$ , d.f.=36, $p<0.000$ |

*C.20. Satisfaction with Proximity to Bank*

|           |                                       |
|-----------|---------------------------------------|
| Times 1-2 | $\chi^2=122.301$ , d.f.=36, $p<0.000$ |
| Times 1-3 | $\chi^2=112.193$ , d.f.=36, $p<0.000$ |
| Times 2-3 | $\chi^2=282.584$ d.f.=36, $p<0.000$   |

*C.21. Satisfaction with Proximity to Physician's Office*

|           |                                       |
|-----------|---------------------------------------|
| Times 1-2 | $\chi^2=136.186$ , d.f.=30, $p<0.000$ |
| Times 1-3 | $\chi^2=60.018$ , d.f.=36, $p<0.007$  |
| Times 2-3 | $\chi^2=96.850$ , d.f.=30, $p<0.000$  |

*C.22. Distance to Most-Frequently Patronized Major-Chain Grocery Store*

|           |                                |
|-----------|--------------------------------|
| Times 1-3 | $t=2.440$ , d.f.=93, $p<0.536$ |
|-----------|--------------------------------|

*C.23. Distance to Most-Frequently Patronized Pharmacy*

|           |                                 |
|-----------|---------------------------------|
| Times 1-3 | $t=2.063$ , d.f.=126, $p<0.597$ |
|-----------|---------------------------------|

*C.24. Distance to Most-Frequently Patronized Bank*

|           |                                 |
|-----------|---------------------------------|
| Times 1-3 | $t=2.076$ , d.f.=135, $p<0.067$ |
|-----------|---------------------------------|

*C.25. Distance to Most-Frequently Patronized Physician's Office*

|           |                                 |
|-----------|---------------------------------|
| Times 1-3 | $t=2.691$ , d.f.=140, $p<0.536$ |
|-----------|---------------------------------|

*C.26. Distance to Most-Frequently Patronized Small Grocery Store*

|           |                                |
|-----------|--------------------------------|
| Times 1-3 | $t=0.761$ , d.f.=94, $p<0.000$ |
|-----------|--------------------------------|

*C.27. Frequency of Visits with Children*

|           |                                  |
|-----------|----------------------------------|
| Times 1-2 | $t=-0.062$ , d.f.=115, $p<0.000$ |
| Times 1-3 | $t=0.529$ , d.f.=121, $p<0.000$  |
| Times 2-3 | $t=-0.607$ , d.f.=115, $p<0.000$ |

*C.28. Frequency of Visits with Siblings*

|           |                                  |
|-----------|----------------------------------|
| Times 1-2 | $t=1.011$ , d.f.=121, $p<0.000$  |
| Times 1-3 | $t=0.105$ , d.f.=121, $p<0.000$  |
| Times 2-3 | $t=-1.095$ , d.f.=121, $p<0.000$ |

*C.29. Frequency of Visits with Friends*

|           |                                  |
|-----------|----------------------------------|
| Times 1-2 | $t=-0.535$ , d.f.=105, $p<0.000$ |
| Times 1-3 | $t=-1.806$ , d.f.=105, $p<0.037$ |
| Times 2-3 | $t=-1.902$ , d.f.=105, $p<0.000$ |

*C.30. Travel Mode to Friends*

|           |                                 |
|-----------|---------------------------------|
| Times 1-2 | $t=3.528$ , d.f.=148, $p<0.000$ |
| Times 1-3 | $t=4.107$ , d.f.=148, $p<0.000$ |
| Times 2-3 | $t=0.717$ , d.f.=148, $p<0.000$ |

*C.31. Travel Mode to Family*

Times 1-2  $t=2.327$ , d.f.=148,  $p<0.000$   
 Times 1-3  $t=3.049$ , d.f.=148,  $p<0.000$   
 Times 2-3  $t=1.267$ , d.f.=148,  $p<0.000$

*C.32. Frequency of Visits to a Small Grocery Store*

Times 1-2  $t=0.936$ , d.f.=148,  $p<0.000$   
 Times 1-3  $t=-0.520$ , d.f.=148,  $p<0.000$   
 Times 2-3  $t=-1.333$ , d.f.=148,  $p<0.000$

*C.33. Frequency of Visits to a Major-Chain Grocery Store*

Times 1-2  $t=-1.737$ , d.f.=148,  $p<0.000$   
 Times 1-3  $t=-1.301$ , d.f.=148,  $p<0.000$   
 Times 2-3  $t=-1.737$ , d.f.=148,  $p<0.000$

*C.34. Frequency of Visits to a Pharmacy*

Times 1-2  $t=-1.341$ , d.f.=148,  $p<0.000$   
 Times 1-3  $t=-0.879$ , d.f.=148,  $p<0.068$   
 Times 2-3  $t=0.028$ , d.f.=148,  $p<0.081$

*C.35. Frequency of Visits to a Bank*

Times 1-2  $t=-1.114$ , d.f.=148,  $p<0.000$   
 Times 1-3  $t=0.033$ , d.f.=148,  $p<0.000$   
 Times 2-3  $t=0.666$ , d.f.=148,  $p<0.000$

*C.36. Frequency of Visits to a Physician's Office*

Times 1-2  $t=-1.672$ , d.f.=148,  $p<0.000$   
 Times 1-3  $t=-1.189$ , d.f.=148,  $p<0.000$   
 Times 2-3  $t=-2.012$ , d.f.=148,  $p<0.016$

*C.37. Transport Mode to Grocery Store*

Times 1-2  $t=-0.729$ , d.f.=148,  $p<0.000$   
 Times 1-3  $t=2.379$ , d.f.=148,  $p<0.000$   
 Times 2-3  $t=3.049$ , d.f.=148,  $p<0.000$

*C.38. Transport Mode to Pharmacy*

Times 1-2  $t=1.215$ , d.f.=148,  $p<0.000$   
 Times 1-3  $t=3.180$ , d.f.=148,  $p<0.000$   
 Times 2-3  $t=2.771$ , d.f.=148,  $p<0.000$

*C.39. Transport Mode to Bank*

Times 1-2  $t=1.642$ , d.f.=147,  $p<0.000$   
 Times 1-3  $t=2.300$ , d.f.=148,  $p<0.000$   
 Times 2-3  $t=0.942$ , d.f.=147,  $p<0.000$



*C.40. Transport Mode to Physician's Office*

Times 1-2  $t=-0.942$ , d.f.=143,  $p<0.000$   
Times 1-3  $t=0.407$ , d.f.=148,  $p<0.050$   
Times 2-3  $t=0.446$ , d.f.=143,  $p<0.000$

*C.41. Self-Rated Health*

Times 1-2  $\chi^2=439.310$ , d.f.=16,  $p<0.000$   
Times 1-3  $\chi^2=115.312$ , d.f.=16,  $p<0.000$   
Times 2-3  $\chi^2=125.502$ , d.f.=16,  $p<0.000$

*C.42. PGC Morale Score*

Times 2-3  $t=-5.001$ , d.f.=148,  $p<0.000$

*C.43. CES-D Score*

Times 2-3  $t=-3.398$ , d.f. = 148,  $p<0.000$

*C.44. Self-Esteem Score*

Times 2-3  $t=-2.654$ , d.f.=148,  $p<0.000$

*C.45. Desired Control Score*

Times 2-3  $t=0.546$ , d.f.=148,  $p<0.000$

## Appendix D

### Significant Associations ( $p < 0.05$ ) Between Age, Gender, and Urban Location at Time 1, 2, 3<sup>26</sup>

#### D.1. Marital Status/Gender

|        |                                       |
|--------|---------------------------------------|
| Time 1 | $\chi^2=25.708$ , d.f.=3, $p < 0.000$ |
| Time 2 | $\chi^2=29.412$ , d.f.=3, $p < 0.000$ |
| Time 3 | $\chi^2=20.101$ , d.f.=3, $p < 0.000$ |

#### Marital Status by Gender (N=149), Time 3: Percentage Frequencies

| Marital Status | Male<br>% (n) | Female<br>% (n) |
|----------------|---------------|-----------------|
| Single         | 36.9 (55)     | 55.7 (83)       |
| Married        | 2.7 (4)       | 4.7 (7)         |

#### D.2. Gender by Age

|        |                                     |
|--------|-------------------------------------|
| Time 3 | $t=-15.582$ , d.f.=148, $p < 0.000$ |
|--------|-------------------------------------|

#### Gender by Age (N=149), Time 3: Percentage Frequencies

| Gender | 55-74<br>% (n) | 75 +<br>% (n) |
|--------|----------------|---------------|
| Male   | 33.6 (50)      | 6.09 (9)      |
| Female | 33.6 (50)      | 26.8 (40)     |

#### D.3. Marital Status/Age

|        |                                       |
|--------|---------------------------------------|
| Time 1 | $\chi^2=27.083$ , d.f.=3, $p < 0.000$ |
| Time 2 | $\chi^2=28.547$ , d.f.=3, $p < 0.000$ |
| Time 3 | $\chi^2=29.652$ , d.f.=3, $p < 0.000$ |

#### Marital Status by Age (N=149), Time 3: Percentage Frequencies

| Marital Status | 55-74<br>% (n) | 75+<br>% (n) |
|----------------|----------------|--------------|
| Single         | 60.4 (90)      | 32.2 (48)    |
| Married        | 6.7 (10)       | 0.7 (1)      |

<sup>26</sup> This appendix includes (a) the significant tests of association for each of Times 1, 2, and 3, and (b) the cross-tabulations between the dichotomous socio-demographic/residential variables and the antecedent construct variables and personal state outcomes at Time 3 (or other specified time where appropriate).

*D.4. Education/ Urban Location*Time 1-3  $\chi^2=13.435$ , d.f.=2,  $p<0.001$ Education by Urban Location (N=149),  
Time 3: Percentage Frequencies

| Education              | Inner City<br>% (n) | Suburbs<br>% (n) |
|------------------------|---------------------|------------------|
| Pre-Grade/No Education | 16.8 (25)           | 4.0 (6)          |
| Gr. 7-12               | 28.9 (43)           | 32.2 (48)        |
| College Education      | 6.7 (10)            | 11.4 (17)        |

*D.5. Income/Age*Time 2  $\chi^2=13.156$ , d.f.=2,  $p<0.001$ Time 3  $\chi^2=12.487$ , d.f.=2,  $p<0.002$ Household Income by Age (N=149),  
Time 3: Percentage Frequencies

| Household<br>Income | 55-74<br>% (n) | 75+<br>% (n) |
|---------------------|----------------|--------------|
| < \$10,000          | 40.9 (61)      | 10.1 (15)    |
| \$10,001 +          | 26.2 (39)      | 22.8 (34)    |

*D.6. Income Satisfaction/Age*Time 2  $\chi^2=15.187$ , d.f.=4,  $p<0.002$ Time 3  $\chi^2=28.336$ , d.f.=4,  $p<0.004$ Income Satisfaction by Age (N=149),  
Time 3: Percentage Frequencies

| Income<br>Satisfaction           | 55-74<br>% (n) | 75+<br>% (n) |
|----------------------------------|----------------|--------------|
| Very/Fairly Well                 | 32.2 (48)      | 26.2 (39)    |
| Just Adequate/Totally Inadequate | 34.9 (52)      | 6.7 (10)     |

*D.7. Income Satisfaction/Gender*Time 3  $\chi^2=10.216$ , d.f.=4,  $p<0.037$ Income Satisfaction by Gender (N=149),  
Time 3: Percentage Frequencies

| Income<br>Satisfaction           | Male<br>% (n) | Female<br>% (n) |
|----------------------------------|---------------|-----------------|
| Very/Fairly Well                 | 18.8 (28)     | 39.6 (59)       |
| Just Adequate/Totally Inadequate | 20.8 (31)     | 20.8 (31)       |

*D.8. Income Satisfaction/ Urban Location*Time 3  $\chi^2=10.693$ , d.f.=4,  $p<0.030$ Income Satisfaction by Urban Location (N=149),  
Time 3: Percentage Frequencies

| Income Satisfaction              | Inner City<br>% (n) | Suburbs<br>% (n) |
|----------------------------------|---------------------|------------------|
| Very/Fairly Well                 | 32.9 (49)           | 25.5 (38)        |
| Just Adequate/Totally Inadequate | 19.5 (29)           | 22.1 (33)        |

*D.9. Length of Residence in Senior Housing Project/ Urban Location*Time 2  $t=22.201$ , d.f.=148,  $p<0.002$ Length of Residence in Senior Housing Project by  
Urban Location (N=149), Time 2: Percentage Frequencies

| Length in Senior Housing Project | Inner City<br>% (n) | Suburbs<br>% (n) |
|----------------------------------|---------------------|------------------|
| 1-12 Months                      | 52.4 (78)           | 47.7 (71)        |

*D.10. Length of Residence at Most Recent Previous Address/ Urban Location*Time 1  $t=-8.679$ , d.f.=148,  $p<0.037$ Length of Residence at Previous Residence by Urban  
Location (N=149), Time 1/2: Percentage Frequencies

| Length at Previous Residence | Inner City<br>% (n) | Suburbs<br>% (n) |
|------------------------------|---------------------|------------------|
| Up to 5 Years                | 30.2 (45)           | 20.1 (30)        |
| Over 5 Years                 | 22.1 (33)           | 27.5 (41)        |

*D.11. Length of Residence at Most Recent Previous Residence/Age*Time 1  $t=46.540$ , d.f.=148,  $p<0.050$ Length of Residence at Previous Address by  
Age (N=149), Time 1/2: Percentage Frequencies

| Length at Previous Residence | 55-74<br>% (n) | 75+<br>% (n) |
|------------------------------|----------------|--------------|
| Up to 5 Years                | 30.2 (45)      | 20.1 (30)    |
| Over 5 Years                 | 22.1 (33)      | 27.5 (41)    |

*D.12. Length of Residence at Second Most Recent Previous Residence/Age*  
Time 1  $t=60.171$ , d.f.=148,  $p<0.000$

Length of Residence at Second Most Recent Address  
Residence by Age (N=149), Time 1/2: Percentage Frequencies

| Second Most Recent Residence | 55-74     | 75+       |
|------------------------------|-----------|-----------|
|                              | % (n)     | % (n)     |
| Up to 5 Years                | 40.9 (61) | 13.4 (20) |
| Over 5 Years                 | 26.2 (39) | 19.5 (29) |

*D.13. Length of Residence in Winnipeg/Age*  
Time 2  $t=-14.876$ , d.f.=148,  $p<0.000$

Length of Residence in Winnipeg by Age  
(N=149), Time 2: Percentage Frequencies

| Length in Winnipeg | 55-74     | 75+       |
|--------------------|-----------|-----------|
|                    | % (n)     | % (n)     |
| Up to 30 Years     | 28.2 (42) | 7.4 (11)  |
| Over 30 Years      | 38.9 (58) | 25.5 (38) |

*D.14. Length of Residence at Second Most Recent Previous Address/Gender*  
Time 1  $t=-10.630$ , d.f.=148,  $p<0.007$

Length of Residence at Second Most Recent Address  
Residence by Gender (N=149), Time 1/2: Percentage Frequencies

| Length at Second Most Recent Residence | Male      | Female    |
|--|-----------|-----------|
|  | % (n)     | % (n)     |
| Up to 5 Years                          | 26.2 (39) | 28.2 (42) |
| Over 5 Years                           | 13.4 (20) | 32.2 (48) |

*D.15. ADL Limitations/Age*  
Time 1  $t=-77.383$ , d.f.=148,  $p<0.000$   
Time 2  $t=-77.869$ , d.f.=148,  $p<0.000$   
Time 3  $t=-78.177$ , d.f.=148,  $p<0.000$

Number of ADL Limitations by Age (N=149),  
Time 3: Percentage Frequencies

| Number of ADL Limitations | 55-74     | 75+       |
|---------------------------|-----------|-----------|
|                           | % (n)     | % (n)     |
| 0-2                       | 45.0 (67) | 11.4 (17) |
| 3 +                       | 22.1 (33) | 21.5 (32) |

*D.16. IADL Limitations/Age*

|        |                                   |
|--------|-----------------------------------|
| Time 1 | $t=-77.201$ , d.f.=148, $p<0.000$ |
| Time 2 | $t=-78.557$ , d.f.=148, $p<0.000$ |
| Time 3 | $t=-78.847$ , d.f.=148, $p<0.000$ |

Number of IADL Limitations by Age (N=149),  
Time 3: Percentage Frequencies

| Number of IADL Limitations | 55-74<br>% (n) | 75+<br>% (n) |
|----------------------------|----------------|--------------|
| 0-2                        | 51.7 (77)      | 13.4 (20)    |
| 3 +                        | 15.4 (23)      | 19.5 (29)    |

*D.17. Chronic Conditions/Age*

|        |                                  |
|--------|----------------------------------|
| Time 1 | $t=16.606$ , d.f.=148, $p<0.040$ |
| Time 2 | $t=16.500$ , d.f.=148, $p<0.050$ |

Number of Chronic Conditions Age (N=149),  
Time 3: Percentage Frequencies

| Number of Chronic Conditions | 55-74<br>% (n) | 75+<br>% (n) |
|------------------------------|----------------|--------------|
| 0-4                          | 38.3 (57)      | 12.8 (19)    |
| 5 +                          | 28.9 (43)      | 20.1 (30)    |

*D.18. Security from Crime/Age*

|        |                                    |
|--------|------------------------------------|
| Time 1 | $\chi^2=4.473$ , d.f.=1, $p<0.034$ |
| Time 2 | $\chi^2=4.593$ , d.f.=1, $p<0.032$ |

Neighbourhood Ratings of Security from Crime  
by Age (N=149), Time 2: Percentage Frequencies

| Security from Crime | 55-74<br>% (n) | 75+<br>% (n) |
|---------------------|----------------|--------------|
| Excellent/Good      | 50.3 (75)      | 29.5 (44)    |
| Fair/Poor/Bad       | 16.8 (25)      | 3.4 (5)      |

*D.19. Traffic Safety/Age*

|        |                                     |
|--------|-------------------------------------|
| Time 1 | $\chi^2=11.707$ , d.f.=1, $p<0.001$ |
| Time 2 | $\chi^2=9.309$ , d.f.=1, $p<0.002$  |

Neighbourhood Ratings of Traffic Safety by  
Age (N=149), Time 2: Percentage Frequencies

| Traffic Safety | 55-74<br>% (n) | 75+<br>% (n) |
|----------------|----------------|--------------|
| Excellent/Good | 43.0 (64)      | 29.5 (44)    |
| Fair/Poor/Bad  | 24.2 (36)      | 3.4 (5)      |

*D.20. Snow Removal/Age*Time 3  $\chi^2=4.410$ , d.f.=1,  $p<0.036$ 

Neighbourhood Ratings of Snow Removal by Age (N=149), Time 3: Percentage Frequencies

| Snow Removal   | 55-74     | 75+       |
|----------------|-----------|-----------|
|                | % (n)     | % (n)     |
| Excellent/Good | 61.1 (91) | 32.9 (49) |
| Fair/Poor/Bad  | 6.0 (9)   | 0         |

*D.21. Sidewalk Conditions/Age*Time 1  $\chi^2=9.128$ , d.f.=1,  $p<0.003$ 

Neighbourhood Ratings of Sidewalk Conditions by Age (N=149), Time 1: Percentage Frequencies

| Sidewalk Conditions | 55-74     | 75+       |
|---------------------|-----------|-----------|
|                     | % (n)     | % (n)     |
| Excellent/Good      | 42.3 (63) | 28.9 (43) |
| Fair/Poor/Bad       | 24.8 (37) | 4.0 (6)   |

*D.22. Sidewalk Conditions/Gender*Time 1  $\chi^2=8.131$ , d.f.=1,  $p<0.004$ 

Neighbourhood Ratings of Sidewalk Conditions by Gender (N=149), Time 1: Percentage Frequencies

| Sidewalk Conditions | Male      | Female    |
|---------------------|-----------|-----------|
|                     | % (n)     | % (n)     |
| Excellent/Good      | 22.8 (34) | 48.3 (72) |
| Fair/Poor/Bad       | 16.8 (25) | 12.1 (18) |

*D.23. Traffic Safety/Gender*Time 1  $\chi^2=4.038$ , d.f.=1,  $p<0.044$ 

Neighbourhood Ratings of Traffic Safety by Gender (N=149), Time 1: Percentage Frequencies

| Traffic Safety | Male      | Female    |
|----------------|-----------|-----------|
|                | % (n)     | % (n)     |
| Excellent/Good | 23.5 (35) | 45.6 (68) |
| Fair/Poor/Bad  | 16.1 (24) | 14.8 (22) |

*D.24. Snow Removal/Urban Location*

Time 2  $\chi^2=5.603$ , d.f.=1,  $p<0.018$

Neighbourhood Ratings of Snow Removal by Urban Location (N=149), Time 2: Percentage Frequencies

| Snow Removal   | Inner City<br>% (n) | Suburb<br>% (n) |
|----------------|---------------------|-----------------|
| Excellent/Good | 48.3 (72)           | 47.0 (70)       |
| Fair/Poor/Bad  | 4.0 (6)             | 0.7 (1)         |

*D.25. Distance to Closest Sibling/Age*

Time 1  $t=-3.904$ , d.f.121,  $p<0.025$

Time 3  $t=-4.009$ , d.f.121,  $p<0.042$

Distance to Closest Sibling by Age (N=122), Time 3: Percentage Frequencies

| Distance to<br>Closest Sibling | 55-74<br>% (n) | 75+<br>% (n) |
|--------------------------------|----------------|--------------|
| 0-1.99 kms                     | 16.4 (20)      | 4.1 (5)      |
| 2.0 kms +                      | 53.3 (65)      | 26.2 (32)    |

*D.26. Distance to Closest Friend/Age*

Time 3  $t=63.998$ , d.f.105,  $p<0.005$

Distance to Closest Friend by Age (N=106), Time 3: Percentage Frequencies

| Distance to<br>Closest Friend | 55-74<br>% (n) | 75+<br>% (n) |
|-------------------------------|----------------|--------------|
| 0-1.99 kms                    | 37.7 (40)      | 10.4 (11)    |
| 2.0 kms +                     | 27.4 (29)      | 24.5 (26)    |

*D.27. Satisfaction with Proximity to Friends/Age*

Time 2  $\chi^2=9.984$ , d.f.=2,  $p<0.007$

Time 3  $\chi^2=10.688$ , d.f.=2,  $p<0.005$

Satisfaction with Proximity to Friends by Age (N=149), Time 3: Percentage Frequencies

| Satisfaction with<br>Proximity to Friends | 55-74<br>% (n) | 75+<br>% (n) |
|---|----------------|--------------|
| Satisfied/Very Satisfied                  | 49.7 (74)      | 16.1 (24)    |
| Slightly Satisfied – Very Dissatisfied    | 17.4 (26)      | 16.8 (28)    |



*D.28. Satisfaction with Proximity to Family Members/Gender*Time 1  $\chi^2=22.838$ , d.f.=2,  $p<0.000$ Time 2  $\chi^2=13.501$ , d.f.=2,  $p<0.001$ Time 3  $\chi^2=9.669$ , d.f.=2,  $p<0.008$ Satisfaction with Proximity to Family Members  
by Gender(N=149), Time 3: Percentage Frequencies

| Satisfaction with Proximity to Family  | Male<br>% (n) | Female<br>% (n) |
|--|---------------|-----------------|
| Satisfied/Very Satisfied               | 26.2 (39)     | 48.3 (72)       |
| Slightly Satisfied – Very Dissatisfied | 13.4 (20)     | 12.1 (18)       |

*D.29. Distance to Most Proximate Shopping Centre/Age*Time 3  $t=59.407$ , d.f.=148,  $p<0.001$ Distance to Most Proximate Shopping Centre  
by Age (N=149), Time 3: Percentage Frequencies

| Distance to Most Proximate Shopping Centre | 55-74<br>% (n) | 75+<br>% (n) |
|--|----------------|--------------|
| 0 – 0.99 kms                               | 35.6 (53)      | 12.1 (18)    |
| 1.0 – 1.99 kms                             | 31.5 (47)      | 20.8 (31)    |

*D30. Distance to Most Proximate Shopping Centre/ Urban Location*Time 1  $t=-14.243$ , d.f.=148,  $p<0.012$ Time 3  $t=-16.749$ , d.f.=148,  $p<0.000$ Distance to Most Proximate Shopping Centre by  
Urban Location (N=149), Time 3: Percentage Frequencies

| Distance to Most Proximate Shopping Centre | Inner City<br>% (n) | Suburbs<br>% (n) |
|--|---------------------|------------------|
| 0 – 0.99 kms                               | 29.5 (44)           | 18.1 (27)        |
| 1.0 – 1.99 kms                             | 22.8 (34)           | 29.5 (44)        |

*D.31. Minutes to Walk to Bus Stop/ Urban Location*Time 1  $t=-10.835$ , d.f.=148,  $p<0.035$ Minutes to Walk to Bus Stop by Urban Location  
(N=149), Time 1: Percentage Frequencies

| Minutes to Walk to Bus Stop | Inner City<br>% (n) | Suburbs<br>% (n) |
|-----------------------------|---------------------|------------------|
| 1-3 minutes                 | 38.9 (58)           | 26.8 (40)        |
| 4-5 minutes                 | 13.4 (20)           | 20.8 (31)        |

*D.32. Distance to Most Proximate Major-Chain Grocery Store/ Urban Location*  
Time 3  $t=-3.985$ , d.f.=148,  $p<0.000$

Distance to Most Proximate Major-Chain Grocery Store  
by Urban Location (N=149), Time 3: Percentage Frequencies

| Distance to Most Proximate Major-Chain Grocery Store | Inner City<br>%(n) | Suburbs<br>%(n) |
|--|--------------------|-----------------|
| 0 – 0.99 kms   | 27.5 (41)          | 45.6 (68)       |
| 1.0 – 1.99 kms                                       | 24.8 (37)          | 2.0 (3)         |

*D.33. Distance to Most Proximate Major-Chain Grocery Store/Gender*  
Time 3  $t=-3.843$ , d.f.=148,  $p<0.022$

Distance to Most Proximate Major-Chain Grocery Store  
by Gender (N=149), Time 3: Percentage Frequencies

| Distance to Most Proximate Major-Chain Grocery Store | Male<br>% (n) | Female<br>% (n) |
|--|---------------|-----------------|
| 0 – 0.99 kms   | 25.5 (38)     | 47.7 (71)       |
| 1.0 – 1.99 kms                                       | 14.1 (21)     | 12.8 (19)       |

*D.34. Distance to Most-Frequently Patronized Physician's Office/ Urban Location*  
Time 3  $t=-10.633$ , d.f.=147,  $p<0.0310$

Distance to Most-Frequently Patronized Physician's Office  
by Urban Location (N=148), Time 3: Percentage Frequencies

| Distance to Most Frequently Patronized Physician's Office | Inner City<br>% (n) | Suburbs<br>% (n) |
|---|---------------------|------------------|
| 0 – 0.99 kms  | 27.7 (41)           | 19.6 (29)        |
| 1.0 – 1.99 kms  | 24.3 (36)           | 28.4 (42)        |

*D.35. Distance to Most-Frequently Patronized Small Grocery Store/ Urban Location*  
Time 3  $t=-4.637$ , d.f.=113,  $p<0.006$

Distance to Most-Frequently Patronized Small Grocery Store  
by Urban Location (N=114), Time 3: Percentage Frequencies

| Distance to Most Frequently Patronized Small Grocery Store | Inner City<br>% (n) | Suburbs<br>% (n) |
|--|---------------------|------------------|
| 0 – 0.99 kms   | 27.7 (33)           | 39.5 (47)        |
| 1.0 – 1.99 kms   | 16.8 (20)           | 16.0 (19)        |

*D.36. Distance to Most-Frequently Patronized Major-Chain Grocery Store/ Urban Location*

Time 3  $t=-6.603$ , d.f.=118,  $p<0.012$

Distance to Most-Frequently Patronized Major-Chain Grocery Store by Urban Location (N=119), Time 3: Percentage Frequencies

| Distance to Most Frequently Patronized Major-Chain Grocery Store | Inner City<br>% (n) | Suburbs<br>% (n) |
|--|---------------------|------------------|
| 0 – 0.99 kms   | 50.0 (57)           | 28.9 (33)        |
| 1.0 – 1.99 kms   | 7.9 (9)             | 13.2 (15)        |

*D.37. Distance to Most-Frequently Patronized Major-Chain Grocery Store/Age*

Time 3  $t=67.145$ , d.f.=118,  $p<0.051$

Distance to Most Frequently Patronized Major-Chain Grocery Store by Age (N=119), Time 3: Percentage Frequencies

| Distance to Most Frequently Visited Grocery Store | 55-74<br>% (n) | 75+<br>% (n) |
|---|----------------|--------------|
| 0 – 0.99 kms                                      | 46.2 (55)      | 21.0 (25)    |
| 1.0 – 1.99 kms                                    | 19.3 (23)      | 13.4 (16)    |

*D.38. Distance to Most-Frequently Patronized Pharmacy/Age*

Time 3  $t=72.516$ , d.f.=140,  $p<0.006$

Distance to Most-Frequently Patronized Pharmacy by Age (N=141), Time 3: Percentage Frequencies

| Distance to Most Frequently Patronized Pharmacy | 55-74<br>% (n) | 75+<br>% (n) |
|---|----------------|--------------|
| 0 – 0.99 kms                                    | 52.5 (70)      | 22.7 (32)    |
| 1.0 – 1.99 kms                                  | 16.3 (23)      | 8.5 (12)     |

*D.39. Distance to Most-Frequently Patronized Bank/Age*

Time 3  $t=73.305$ , d.f.=139,  $p<0.000$

Distance to Most-Frequently Patronized Bank by Age (N=140), Time 3: Percentage Frequencies

| Distance to Most Frequently Patronized Bank | 55-74<br>% (n) | 75+<br>% (n) |
|---|----------------|--------------|
| 0 – 0.99 kms                                | 50.0 (70)      | 20.0 (28)    |
| 1.0 – 1.99 kms                              | 17.9 (25)      | 12.1 (17)    |

*D.40. Distance to Most-Frequently Patronized Physician's Office/Age*  
Time 3  $t=71.905$ , d.f.=147,  $p<0.004$

Distance to Most-Frequently Patronized Physician's  
Office by Age (N=148), Time 3: Percentage Frequencies

| Distance to Most Frequently<br>Patronized Physician's Office | 55-74     | 75+       |
|--|-----------|-----------|
|  | % (n)     | % (n)     |
| 0 – 0.99 kms   | 33.8 (50) | 13.5 (20) |
| 1.0 – 1.99 kms   | 33.1 (49) | 19.6 (29) |

*D.41. Proximity to Services/Gender*

Time 1  $\chi^2=4.633$ , d.f.=1,  $p<0.031$

Neighbourhood Ratings of Proximity to Services by  
Gender (N=149), Time 1: Percentage Frequencies

| Proximity to Services | Male      | Female    |
|-----------------------|-----------|-----------|
|                       | % (n)     | % (n)     |
| Excellent/Good        | 31.5 (47) | 38.3 (57) |
| Fair/Poor/Bad         | 8.1 (12)  | 22.1 (33) |

*D.42. Satisfaction with Proximity to Grocery Stores/Age*  
Time 1  $\chi^2=6.841$ , d.f.=2,  $p<0.033$

Satisfaction with Proximity to Grocery Store by  
Age (N=149), Time 1: Percentage Frequencies

| Satisfaction with Proximity<br>to Grocery Stores | 55-74     | 75 +      |
|--|-----------|-----------|
|  | % (n)     | % (n)     |
| Satisfied/Very Satisfied                         | 50.3 (75) | 24.8 (37) |
| Very Dissatisfied/Slightly Satisfied             | 16.8 (25) | 8.1 (12)  |

*D.43. Satisfaction with Proximity to Pharmacy/Age*

Time 1  $\chi^2=6.850$ , d.f.=2,  $p<0.033$

Time 3  $\chi^2=9.814$ , d.f.=2,  $p<0.007$

Satisfaction with Proximity to Pharmacy  
by Age (N=149), Time 3: Percentage Frequencies

| Satisfaction with Proximity<br>to Pharmacy | 55-74     | 75 +      |
|--|-----------|-----------|
|  | % (n)     | % (n)     |
| Satisfied/Very Satisfied                   | 61.1 (91) | 27.5 (41) |
| Very Dissatisfied/Slightly Satisfied       | 6.0 (9)   | 5.4 (8)   |

*D.44. Satisfaction with Proximity to Bank/Age*Time 3  $\chi^2=14.558, d.f.=2, p<0.001$ 

## Satisfaction with Proximity to Bank by Age

(N=149), Time 3: Percentage Frequencies

| Satisfaction with Proximity to Bank  | 55-74<br>% (n) | 75 +<br>% (n) |
|--------------------------------------|----------------|---------------|
| Satisfied/Very Satisfied             | 56.4 (84)      | 26.2 (39)     |
| Very Dissatisfied/Slightly Satisfied | 10.7 (16)      | 6.7 (10)      |

*D.45. Frequency of Visits with Friends/Age*Time 1  $t=-3.385, d.f.=105, p<0.038$ Time 2  $t=-4.281, d.f.=105, p<0.020$ 

## Frequency of Visits with Friends by Age

(N=106), Time 2: Percentage Frequencies

| Frequency of<br>Visits with Friends | 55-74<br>% (n) | 75+<br>% (n) |
|-------------------------------------|----------------|--------------|
| More than Once per Week             | 38.7 (41)      | 13.2 (14)    |
| Once per Week or Less               | 26.4 (28)      | 21.7 (23)    |

*D.46. Frequency of Visits with Friends/ Urban Location*Time 2  $t=-8.029, d.f.=105, p<0.002$ 

## Frequency of Visits with Friends by Urban

Location (N=106), Time 2: Percentage Frequencies

| Frequency of<br>Visits with Friends | Inner City<br>% (n) | Suburbs<br>% (n) |
|-------------------------------------|---------------------|------------------|
| More than Once per Week             | 33.0 (35)           | 18.9 (20)        |
| Once per Week or Less               | 22.6 (24)           | 25.5 (27)        |

*D.47. Frequency of Visits with Children/Gender*Time 1  $t=-8.557, d.f.=115, p<0.052$ Time 2  $t=-7.817, d.f.=115, p<0.019$ 

## Frequency of Visits with Children by Gender

(N=116), Time 2: Percentage Frequencies

| Frequency of<br>Visits with Friends | Male<br>% (n) | Female<br>% (n) |
|-------------------------------------|---------------|-----------------|
| More than Once per Week             | 12.9 (15)     | 39.7 (46)       |
| Once per Week or Less               | 22.4 (26)     | 25.0 (29)       |

*D.48. Automobile Transportation to Family/Gender*  
Time 3  $\chi^2=6.900$ , d.f.=2,  $p<0.032$

Automobile Transportation to Family by Gender  
(N=149), Time 3: Percentage Frequencies

| Automobile Transportation<br>To Family | Male<br>% (n) | Female<br>% (n) |
|--|---------------|-----------------|
| No Transport                           | 33.6 (50)     | 39.6 (59)       |
| Transport > Once per Month             | 6.0 (9)       | 20.8 (31)       |

*D.49. Frequency of Visits to Small Grocery Store/Age*  
Time 1  $t=3.299$ , d.f.=148,  $p<0.014$   
Time 2  $t=4.266$ , d.f.=148,  $p<0.006$   
Time 3  $t=2.922$ , d.f.=148,  $p<0.005$

Frequency of Visits to Small Grocery Store by  
Age (N=149), Time 3: Percentage Frequencies

| Frequency of Visits to<br>Small Grocery Store | 55-74<br>% (n) | 75 +<br>% (n) |
|---|----------------|---------------|
| More than Once per Week                       | 18.1 (27)      | 6.7 (10)      |
| Once per Week or Less                         | 49.0 (73)      | 26.2 (39)     |

*D.50. Frequency of Visits to Major-Chain Grocery Store/Age*  
Time 1  $t=3.466$ , d.f.=148,  $p<0.035$

Frequency of Visits to Major-Chain Grocery Store  
by Age (N=149), Time 1: Percentage Frequencies

| Frequency of Visits to<br>Major-Chain Grocery Store | 55-74<br>% (n) | 75 +<br>% (n) |
|---|----------------|---------------|
| More than Once per Week                             | 13.4 (20)      | 6.0 (9)       |
| Once per Week or Less                               | 53.7 (80)      | 26.8 (40)     |

*D.51. Frequency of Visits to Major-Chain Grocery Store/ Urban Location*  
Time 1  $t=-8.487$ , d.f.=148,  $p<0.001$   
Time 2  $t=-9.166$ , d.f.=148,  $p<0.001$   
Time 3  $t=-9.415$ , d.f.=148,  $p<0.001$

Frequency of Visits to Major-Chain Grocery Store by  
Urban Location (N=149), Time 1: Percentage Frequencies

| Frequency of Visits to<br>Major-Chain Grocery Store | Inner City<br>% (n) | Suburbs<br>% (n) |
|---|---------------------|------------------|
| More than Once per Week                             | 4.0 (6)             | 15.4 (23)        |
| Once per Week or Less                               | 48.3 (72)           | 32.2 (48)        |

*D.52. Frequency of Visits to Pharmacy/Age*Time 1  $t=22.844$ , d.f.=148,  $p<0.029$ Time 3  $t=17.439$ , d.f.=148,  $p<0.001$ Frequency of Visits to Pharmacy by Age  
(N=149), Time 3: Percentage Frequencies

| Frequency of Visits<br>to Pharmacy | 55-74<br>% (n) | 75 +<br>% (n) |
|------------------------------------|----------------|---------------|
| Once a Month or More               | 41.6 (62)      | 12.8 (19)     |
| Less Than Once a Month             | 25.5 (38)      | 20.1 (30)     |

*D. 53. Frequency of Visits to Pharmacy/ Urban Location*Time 1  $t=-9.435$ , d.f.=148,  $p<0.029$ Frequency of Visits to Pharmacy by Urban  
Location (N=149), Time 1: Percentage Frequencies

| Frequency of Visits<br>to Pharmacy | Inner City<br>% (n) | Suburbs<br>% (n) |
|------------------------------------|---------------------|------------------|
| Once a Month or More               | 31.5 (47)           | 30.2 (45)        |
| Less Than Once a Month             | 20.8 (31)           | 17.4 (26)        |

*D.54. Frequency of Visits to Bank/Age*Time 1  $t=15.159$ , d.f.=148,  $p<0.017$ Time 2  $t=12.675$ , d.f.=148,  $p<0.003$ Time 3  $t=12.512$ , d.f.=148,  $p<0.002$ Frequency of Visits to Bank by Age  
(N=149), Time 3: Percentage Frequencies

| Frequency of Visits<br>to Bank | 55-74<br>% (n) | 75 +<br>% (n) |
|--------------------------------|----------------|---------------|
| Once a Month or More           | 60.4 (90)      | 21.5 (32)     |
| Less Than Once a Month         | 6.7 (10)       | 11.4 (17)     |

*D.55. Frequency of Visits to Physician's Office/ Urban Location*Time 1  $t=-10.446$ , d.f.=148,  $p<0.022$ Frequency of Visits to Physician's Office by Urban  
Location (N=149), Time 1: Percentage Frequencies

| Frequency of Visits<br>to Physician's Office | Inner City<br>% (n) | Suburbs<br>% (n) |
|--|---------------------|------------------|
| Once a Month or More                         | 24.8 (37)           | 13.4 (20)        |
| Less Than Once a Month                       | 27.5 (41)           | 34.2 (51)        |

*D.56. Desired Control/Gender*Time 3  $t=-76.561$ , d.f.=148,  $p<0.002$ Desired Control by Gender (N=149),  
Time 3: Percentage Frequencies

| Desired Control | Male<br>% (n) | Female<br>% (n) |
|-----------------|---------------|-----------------|
| 100-199         | 20.8 (31)     | 16.1 (24)       |
| 200 +           | 18.8 (28)     | 44.3 (66)       |



## Appendix E

**Socio-Demographic and Residential Characteristics of the  
Entire Sample (N=149) and the Sub-Sample with Children (N=116)**

| <b>Time 3</b>                          | <b>Entire Sample<br/>% (n)</b> | <b>Sub-Sample with<br/>Children<br/>% (n)</b> |
|--|--------------------------------|---|
| <i>Age (years)</i>                     |                                |   |
| 55-64                                  | 42.28 (63)                     | 40.52 (47)                                    |
| 65-74                                  | 24.83 (37)                     | 25.86 (30)                                    |
| 75-84                                  | 22.82 (34)                     | 22.41 (26)                                    |
| 85 or more                             | 10.07 (15)                     | 11.21 (13)                                    |
| <i>Gender</i>                          |                                |   |
| Male                                   | 39.60 (59)                     | 35.34 (41)                                    |
| Female                                 | 60.40 (90)                     | 64.66 (90)                                    |
| <i>Marital Status</i>                  |                                |   |
| Single                                 | 15.44 (23)                     | 3.45 (4)                                      |
| Married                                | 7.38 (11)                      | 6.90 (8)                                      |
| Widowed                                | 41.61 (62)                     | 47.41 (55)                                    |
| Separated/Divorced                     | 35.57 (53)                     | 42.24 (49)                                    |
| <i>Income Level</i>                    |                                |   |
| < \$10,000                             | 51.01 (76)                     | 51.72 (60)                                    |
| \$10,000-19,999                        | 43.62 (65)                     | 42.24 (49)                                    |
| > \$20,000                             | 5.37 (8)                       | 6.03 (7)                                      |
| <i>Number of Cars in<br/>Household</i> |                                |   |
| No cars                                | 83.22 (124)                    | 83.62 (97)                                    |
| One car or more                        | 16.78 (25)                     | 16.38 (19)                                    |
| <i>Urban Location</i>                  |                                |   |
| Inner city                             | 52.35 (78)                     | 51.72 (60)                                    |
| Suburbs                                | 47.65 (71)                     | 48.28 (56)                                    |

## Appendix F

**Change in Antecedent Construct Variables and Personal State Outcomes:  
Time 1-2, Time 1-3, and Time 2-3**

**F.1. Change in Activities of Daily Living (ADLs), Time 1-2, Time 1-3 and Time 2-3 (N=149)**

| <b>Change in Number of ADL Limitations</b> | <b>Time 1-2<br/>% (n)</b> | <b>Time 1-3<br/>% (n)</b> | <b>Time 2-3<br/>% (n)</b> |
|--|---------------------------|---------------------------|---------------------------|
| Decrease of 3+                             | 0                         | 3.36 (5)                  | 3.36 (5)                  |
| Decrease of 1-2                            | 0                         | 12.08 (18)                | 15.44 (23)                |
| No Change                                  | 82.55 (123)               | 49.66 (74)                | 54.36 (81)                |
| Increase of 1-2                            | 16.12 (24)                | 25.50 (38)                | 20.13 (30)                |
| Increase of 3+                             | 1.34 (2)                  | 9.40 (14)                 | 6.71 (10)                 |

**F.2. Change in Instrumental Activities of Daily Living (IADLs), Time 1-2, Time 1-3 and Time 2-3 (N=149)**

| <b>Change in Number of IADL Limitations</b> | <b>Time 1-2<br/>% (n)</b> | <b>Time 1-3<br/>% (n)</b> | <b>Time 2-3<br/>% (n)</b> |
|---|---------------------------|---------------------------|---------------------------|
| Decrease of 3+                              | 0                         | 2.01 (3)                  | 2.68 (4)                  |
| Decrease of 1-2                             | 0                         | 10.74 (16)                | 10.74 (16)                |
| No Change                                   | 87.92 (131)               | 53.02 (79)                | 59.06 (88)                |
| Increase of 1-2                             | 9.40 (14)                 | 23.49 (35)                | 20.13 (30)                |
| Increase of 3+                              | 2.68 (4)                  | 10.74 (16)                | 7.38 (11)                 |

**F.3. Change in Number of Chronic Conditions, Time 1-2, Time 1-3 and Time 2-3 (N=149)**

| <b>Change in # of Chronic Conditions</b> | <b>Time 1-2<br/>% (n)</b> | <b>Time 1-3<br/>% (n)</b> | <b>Time 2-3<br/>% (n)</b> |
|--|---------------------------|---------------------------|---------------------------|
| Decrease of 3+                           | 0                         | 10.74 (16)                | 10.07 (15)                |
| Decrease of 1-2                          | 15.44 (23)                | 30.20 (45)                | 26.85 (40)                |
| No Change                                | 70.47 (105)               | 18.79 (28)                | 25.50 (38)                |
| Increase of 1-2                          | 12.75 (19)                | 28.19 (42)                | 26.85 (40)                |
| Increase of 3+                           | 1.34 (2)                  | 12.08 (18)                | 10.74 (16)                |

**F.4. Change in Satisfaction with Security from Crime, Time 1-2, Time 1-3 and Time 2-3 (N=149)**

| <b>Change in Level of Satisfaction</b> | <b>Time 1-2<br/>% (n)</b> | <b>Time 1-3<br/>% (n)</b> | <b>Time 2-3<br/>% (n)</b> |
|--|---------------------------|---------------------------|---------------------------|
| Stable, Non-Satisfaction*              | 7.38 (11)                 | 6.04 (9)                  | 6.04 (9)                  |
| Decreased Satisfaction                 | 11.41 (17)                | 18.79 (28)                | 24.83 (37)                |
| Increased Satisfaction                 | 42.95 (64)                | 42.28 (63)                | 18.12 (27)                |
| Stable, Satisfaction**                 | 38.26 (57)                | 32.89 (49)                | 51.01 (76)                |

\*Refers to categories "bad" (1), "poor" (2), and "fair" (3).

\*\*Refers to categories "good" (4) and "excellent" (5).

**F.5. Change in Satisfaction with Sidewalk Conditions, Time 1-2, Time 1-3 and Time 2-3 (N=149)**

| <b>Change in Level of Satisfaction</b> | <b>Time 1-2<br/>% (n)</b> | <b>Time 1-3<br/>% (n)</b> | <b>Time 2-3<br/>% (n)</b> |
|--|---------------------------|---------------------------|---------------------------|
| Stable, Non-Satisfaction*              | 5.37 (8)                  | 7.38 (11)                 | 4.03 (6)                  |
| Decreased Satisfaction                 | 10.74 (16)                | 24.16 (36)                | 36.24 (54)                |
| Increased Satisfaction                 | 32.21 (48)                | 25.50 (38)                | 12.08 (18)                |
| Stable, Satisfaction**                 | 51.68 (77)                | 42.95 (64)                | 47.65 (71)                |

\*Refers to categories "bad" (1), "poor" (2), and "fair" (3).

\*\*Refers to categories "good" (4) and "excellent" (5).

**F.6. Change in Satisfaction with Traffic Safety, Time 1-2, Time 1-3 and Time 2-3 (N=149)**

| <b>Change in Level of Satisfaction</b> | <b>Time 1-2<br/>% (n)</b> | <b>Time 1-3<br/>% (n)</b> | <b>Time 2-3<br/>% (n)</b> |
|--|---------------------------|---------------------------|---------------------------|
| Stable, Non-Satisfaction*              | 9.40 (14)                 | 10.74 (16)                | 11.41 (17)                |
| Decreased Satisfaction                 | 20.81 (31)                | 32.89 (49)                | 36.24 (54)                |
| Increased Satisfaction                 | 26.17 (39)                | 22.15 (33)                | 15.44 (23)                |
| Stable, Satisfaction**                 | 43.62 (65)                | 34.23 (51)                | 36.91 (55)                |

\*Refers to categories "bad" (1), "poor" (2), and "fair" (3).

\*\*Refers to categories "good" (4) and "excellent" (5).

**F.7. Change in Satisfaction with Snow Removal, Time 1-2, Time 1-3 and Time 2-3 (N=149)**

| <b>Change in Level of Satisfaction</b> | <b>Time 1-2<br/>% (n)</b> | <b>Time 1-3<br/>% (n)</b> | <b>Time 2-3<br/>% (n)</b> |
|--|---------------------------|---------------------------|---------------------------|
| Stable, Non-Satisfaction*              | 1.34 (2)                  | 0.67 (1)                  | 0.67 (1)                  |
| Decreased Satisfaction                 | 9.40 (14)                 | 11.41 (17)                | 13.42 (20)                |
| Increased Satisfaction                 | 29.53 (44)                | 31.54 (47)                | 12.08 (18)                |
| Stable, Satisfaction**                 | 59.73 (89)                | 56.38 (84)                | 73.83 (110)               |

\*Refers to categories "bad" (1), "poor" (2), and "fair" (3).

\*\*Refers to categories "good" (4) and "excellent" (5).

**F.8. Change in Satisfaction with Proximity to Family Members, Time 1-2, Time 1-3 and Time 2-3 (N=149)**

| <b>Change in Level of Satisfaction</b> | <b>Time 1-2<br/>% (n)</b> | <b>Time 1-3<br/>% (n)</b> | <b>Time 2-3<br/>% (n)</b> |
|--|---------------------------|---------------------------|---------------------------|
| Stable, Non-Satisfaction*              | 16.78 (25)                | 6.04 (9)                  | 8.72 (13)                 |
| Decreased Dissatisfaction              | 9.40 (14)                 | 15.44 (23)                | 16.78 (25)                |
| Increased Satisfaction                 | 21.48 (32)                | 35.57 (53)                | 26.85 (40)                |
| Stable, Satisfaction**                 | 52.35 (78)                | 42.95 (64)                | 47.65 (71)                |

\*Refers to categories ranging from "very dissatisfied" (1) to "Neither dissatisfied nor satisfied" (4).

\*\*Refers to categories ranging from "slightly satisfied" (5) to "very satisfied" (7).

**F.9. Change in Satisfaction with Proximity to Friends, Time 1-2, Time 1-3 and Time 2-3 (N=149)**

| <b>Change in Level of Satisfaction</b> | <b>Time 1-2<br/>% (n)</b> | <b>Time 1-3<br/>% (n)</b> | <b>Time 2-3<br/>% (n)</b> |
|--|---------------------------|---------------------------|---------------------------|
| Stable, Non-Satisfaction*              | 15.44 (23)                | 11.41 (17)                | 14.77 (22)                |
| Decreased Dissatisfaction              | 14.09 (21)                | 22.82 (34)                | 18.79 (28)                |
| Increased Satisfaction                 | 16.12 (24)                | 28.86 (43)                | 24.16 (36)                |
| Stable, Satisfaction**                 | 54.36 (81)                | 36.91 (55)                | 42.28 (63)                |

\*Refers to categories ranging from "very dissatisfied" (1) to "Neither dissatisfied nor satisfied" (4).

\*\*Refers to categories ranging from "slightly satisfied" (5) to "very satisfied" (7).

**F.10. Change in Distance to Closest Child, Time 1-3 (N=116)**

| <b>Change in Distance<br/>(kilometres)</b> | <b>Time 1-3<br/>% (n)</b> |
|--|---------------------------|
| Decrease, 100 kms or more                  | 3.45 (4)                  |
| Decrease, 25.00-99.99 kms                  | 8.62 (10)                 |
| Decrease, 10.00-24.99 kms                  | 4.31 (5)                  |
| Decrease, 5.00-9.99 kms                    | 5.17 (6)                  |
| Decrease, 2.00-4.99 kms                    | 10.34 (12)                |
| Decrease, 0.10-1.99 kms                    | 17.24 (20)                |
| No Change                                  | 13.79 (16)*               |
| Increase, 0.10-1.99 kms                    | 18.10 (21)                |
| Increase, 2.00-4.99 kms                    | 8.62 (10)                 |
| Increase, 5.00-9.99 kms                    | 5.17 (6)                  |
| Increase, 10.00-24.99 kms                  | 0.86 (1)                  |
| Increase, 25.00-99.99 kms                  | 1.72 (2)                  |
| Increase, 100.00 kms or more               | 2.59 (3)                  |

\* No change in distance refers to those children who did not live in Winnipeg, and, as a result, the distance separation recorded was the same highway distance from Winnipeg before and after the move.

**F.11. Change in Distance to Closest Sibling, Time 1-3 (N=122)<sup>1</sup>**

| <b>Change in Distance<br/>(kilometres)</b> | <b>Time 1-3<br/>% (n)</b> |
|--|---------------------------|
| Decrease, 100 kms or more                  | 0.82 (1)                  |
| Decrease, 25.00-99.99 kms                  | 2.46 (3)                  |
| Decrease, 10.00-24.99 kms                  | 0.82 (1)                  |
| Decrease, 5.00-9.99 kms                    | 4.10 (5)                  |
| Decrease, 2.00-4.99 kms                    | 9.02 (11)                 |
| Decrease, 0.10-1.99 kms                    | 22.13 (27)                |
| No Change                                  | 33.61 (41)*               |
| Increase, 0.10-1.99 kms                    | 13.11 (16)                |
| Increase, 2.00-4.99 kms                    | 4.92 (6)                  |
| Increase, 5.00-9.99 kms                    | 4.92 (6)                  |
| Increase, 10.00-24.99 kms                  | 1.64 (2)                  |
| Increase, 25.00-99.99 kms                  | 0.82 (1)                  |
| Increase, 100 kms or more                  | 1.64 (2)                  |

\* No change in distance refers to those siblings who did not live in Winnipeg, and, as a result, the distance separation recorded was the same highway distance from Winnipeg before and after the move.

**F.12. Change in Distance to Closest Friend, Time 1-3 (N=94)**

| <b>Change in Distance<br/>(kilometres)</b> | <b>Time 1-3<br/>% (n)</b> |
|--|---------------------------|
| Decrease, 25.00-99.99 kms                  | 1.06 (1)                  |
| Decrease, 10.00-24.99 kms                  | 1.06 (1)                  |
| Decrease, 5.00-9.99 kms                    | 8.51 (8)                  |
| Decrease, 2.00-4.99 kms                    | 12.77 (12)                |
| Decrease, 0.10-1.99 kms                    | 40.43 (38)                |
| Increase, 0.10-1.99 kms                    | 24.47 (23)                |
| Increase, 2.00-4.99 kms                    | 5.32 (5)                  |
| Increase, 5.00-9.99 kms                    | 6.38 (6)                  |

**F.13. Change in Minutes to Walk to Bus Stop, Time 1-3 (N=149)**

| <b>Change in Number of Minutes</b> | <b>Time 1-3<br/>% (n)</b> |
|------------------------------------|---------------------------|
| Decrease of 10 minutes or more     | 11.41 (17)                |
| Decrease 5-9 minutes               | 10.74 (16)                |
| Decrease 3-4 minutes               | 13.42 (20)                |
| Decrease 1-2 minutes               | 24.16 (36)                |
| No Change                          | 12.75 (19)                |
| Increase 1-2 minutes               | 21.48 (32)                |
| Increase 3-4 minutes               | 6.04 (9)                  |

<sup>1</sup> The n value varies because some variables are not applicable for all sample members.

**F.14. Change in Distance to Major Shopping Centre, Time 1-3 (N=149)**

| <b>Change in Distance<br/>(kilometres)</b> | <b>Time 1-3<br/>% (n)</b> |
|--|---------------------------|
| Decrease 10.0-24.99 kms.                   | 15.44 (23)                |
| Decrease 5.0-9.99 kms.                     | 18.12 (27)                |
| Decrease 2.00-4.99 kms.                    | 38.26 (57)                |
| Decrease 0.10-1.99 kms.                    | 19.46 (29)                |
| No Change                                  | 0                         |
| Increase 0.10-1.99 kms.                    | 6.71 (10)                 |
| Increase 2.0-4.99 kms.                     | 2.01 (3)                  |

**F.15. Change in Distance to Major Chain Grocery Store\*, Time 1-3 (N=149)**

| <b>Change in Distance<br/>(kilometres)</b> | <b>Time 1-3<br/>% (n)</b> |
|--|---------------------------|
| Decrease 25.0-99.99 kms.                   | 3.36 (5)                  |
| Decrease 10.0-24.99 kms.                   | 0.67 (1)                  |
| Decrease 5.0-9.99 kms.                     | 5.37 (8)                  |
| Decrease 2.0-4.99 kms.                     | 21.48 (32)                |
| Decrease 0.10-1.99 kms.                    | 50.34 (75)                |
| No Change                                  | 3.36 (5)                  |
| Increase 0.10-1.99 kms.                    | 15.44 (23)                |

\*Most proximate major chain grocery store from the respondent's residence.

**F.16. Change in Satisfaction with Proximity to Services, Time 1-2, Time 1-3 and Time 2-3 (N=149)**

| <b>Change in<br/>Level of Satisfaction</b> | <b>Time 1-2<br/>% (n)</b> | <b>Time 1-3<br/>% (n)</b> | <b>Time 2-3<br/>% (n)</b> |
|--|---------------------------|---------------------------|---------------------------|
| Stable, Non-Satisfaction*                  | 4.03 (6)                  | 2.68 (4)                  | 2.68 (4)                  |
| Decreased Satisfaction                     | 10.07 (15)                | 12.75 (19)                | 19.46 (29)                |
| Increased Satisfaction                     | 36.91 (55)                | 35.57 (53)                | 15.44 (23)                |
| Stable, Satisfaction**                     | 48.99 (73)                | 48.99 (73)                | 62.42 (93)                |

\*Refers to categories "bad" (1), "poor" (2), and "fair" (3).

\*\*Refers to categories "good" (4) and "excellent" (5).

**F.17. Change in Satisfaction with Proximity to Grocery Store, Time 1-2, Time 1-3 and Time 2-3 (N=149)**

| <b>Change in Satisfaction</b> | <b>Time 1-2<br/>% (n)</b> | <b>Time 1-3<br/>% (n)</b> | <b>Time 2-3<br/>% (n)</b> |
|-------------------------------|---------------------------|---------------------------|---------------------------|
| Stable, Non-Satisfaction*     | 3.36 (5)                  | 2.01 (3)                  | 3.36 (5)                  |
| Decreased Satisfaction        | 16.78 (25)                | 16.78 (25)                | 20.81 (31)                |
| Increased Satisfaction        | 28.86 (43)                | 33.56 (50)                | 24.16 (36)                |
| Stable, Satisfaction**        | 51.01 (76)                | 47.65 (71)                | 51.68 (77)                |

\*Refers to categories ranging from "very dissatisfied" (1) to "Neither dissatisfied nor satisfied" (4).

\*\*Refers to categories ranging from "slightly satisfied" (5) to "very satisfied" (7).

**F.18. Change in Satisfaction with Proximity to Pharmacy, Time 1-2, Time 1-3 and Time 2-3 (N=149)**

| <b>Change in Satisfaction</b> | <b>Time 1-2<br/>% (n)</b> | <b>Time 1-3<br/>% (n)</b> | <b>Time 2-3<br/>% (n)</b> |
|-------------------------------|---------------------------|---------------------------|---------------------------|
| Stable, Non-Satisfaction*     | 4.70 (7)                  | 2.01 (3)                  | 4.70 (7)                  |
| Decreased Satisfaction        | 16.12 (24)                | 15.44 (23)                | 18.12 (27)                |
| Increased Satisfaction        | 26.17 (39)                | 33.56 (50)                | 26.85 (40)                |
| Stable, Satisfaction**        | 52.35 (78)                | 48.99 (73)                | 50.34 (75)                |

\*Refers to categories ranging from "very dissatisfied" (1) to "Neither dissatisfied nor satisfied" (4).

\*\*Refers to categories ranging from "slightly satisfied" (5) to "very satisfied" (7).

**F.19. Change in Satisfaction with Proximity to Bank, Time 1-2, Time 1-3 and Time 2-3 (N=149)**

| <b>Change in Satisfaction</b> | <b>Time 1-2<br/>% (n)</b> | <b>Time 1-3<br/>% (n)</b> | <b>Time 2-3<br/>% (n)</b> |
|-------------------------------|---------------------------|---------------------------|---------------------------|
| Stable, Non-Satisfaction*     | 3.36 (5)                  | 2.68 (4)                  | 7.38 (11)                 |
| Decreased Satisfaction        | 18.12 (27)                | 17.45 (26)                | 19.46 (29)                |
| Increased Satisfaction        | 22.15 (33)                | 28.19 (42)                | 22.15 (33)                |
| Stable, Satisfaction**        | 56.38 (84)                | 51.68 (77)                | 51.01 (76)                |

\*Refers to categories ranging from "very dissatisfied" (1) to "Neither dissatisfied nor satisfied" (4).

\*\*Refers to categories ranging from "slightly satisfied" (5) to "very satisfied" (7).

**F.20. Change in Satisfaction with Proximity to Physician's Office, Time 1-2, Time 1-3 and Time 2-3 (N=149)**

| <b>Change in Satisfaction</b> | <b>Time 1-2<br/>% (n)</b> | <b>Time 1-3<br/>% (n)</b> | <b>Time 2-3<br/>% (n)</b> |
|-------------------------------|---------------------------|---------------------------|---------------------------|
| Stable, Non-Satisfaction*     | 8.05 (12)                 | 3.36 (5)                  | 5.37 (8)                  |
| Decreased Satisfaction        | 13.42 (20)                | 15.44 (23)                | 19.46 (29)                |
| Increased Satisfaction        | 24.83 (37)                | 30.87 (46)                | 26.17 (39)                |
| Stable, Satisfaction**        | 53.69 (80)                | 50.34 (75)                | 48.99 (73)                |

\*Refers to categories ranging from "very dissatisfied" (1) to "Neither dissatisfied nor satisfied" (4).

\*\*Refers to categories ranging from "slightly satisfied" (5) to "very satisfied" (7).

**F.21. Change in Distance to Small Grocery Store, Time 1-3 (N=95)**

| <b>Change in Distance<br/>(kilometres)</b> | <b>Time1-3<br/>% (n)</b> |
|--|--------------------------|
| Decrease 2.0-4.99 kms.                     | 9.47 (9)                 |
| Decrease 1.00-1.99 kms.                    | 17.89 (17)               |
| Decrease 0.10-0.99 kms.                    | 32.63 (31)               |
| No Change                                  | 6.32 (6)                 |
| Increase 0.10-0.99 kms.                    | 20.0 (19)                |
| Increase 1.00-1.99 kms.                    | 6.32 (6)                 |
| Increase 2.0-4.99 kms.                     | 5.26 (5)                 |
| Increase 5.0-9.99 kms.                     | 1.05 (1)                 |
| Increase 10.0-24.99 kms.                   | 1.05 (1)                 |

**F.22. Change in Distance to Major-Chain Grocery Store\* Time 1-3 (N=94)**

| <b>Change in Distance<br/>(kilometres)</b> | <b>Time 1-3<br/>% (n)</b> |
|--|---------------------------|
| Decrease 25.0-99.99 kms.                   | 5.32 (5)                  |
| Decrease 10.0-24.99 kms.                   | 1.06 (1)                  |
| Decrease 5.0-9.99 kms.                     | 4.26 (4)                  |
| Decrease 2.0-4.99 kms.                     | 13.83 (13)                |
| Decrease 1.00-1.99 kms.                    | 5.32 (5)                  |
| Decrease 0.10-0.99 kms.                    | 23.40 (22)                |
| No Change                                  | 7.45 (7)                  |
| Increase 0.10-0.99 kms.                    | 21.28 (20)                |
| Increase 1.00-1.99 kms.                    | 8.51 (8)                  |
| Increase 2.0-4.99 kms.                     | 7.45 (7)                  |
| Increase 5.0-9.99 kms.                     | 2.13 (2)                  |

\*Most frequently visited major chain grocery store.

**F.23. Change in Distance to Pharmacy, Time 1-3 (N=127)**

| <b>Change in Distance<br/>(kilometres)</b> | <b>Time 1-3<br/>% (n)</b> |
|--|---------------------------|
| Decrease 25.0-99.99 kms.                   | 1.57 (2)                  |
| Decrease 10.0-24.99 kms.                   | 1.57 (2)                  |
| Decrease 5.0-9.99 kms.                     | 3.15 (4)                  |
| Decrease 2.0-4.99 kms.                     | 14.96 (19)                |
| Decrease 1.00-1.99 kms.                    | 9.45 (12)                 |
| Decrease 0.10-0.99 kms.                    | 32.28 (41)                |
| No Change                                  | 3.15 (4)                  |
| Increase 0.10-0.99 kms.                    | 18.90 (24)                |
| Increase 1.00-1.99 kms.                    | 5.51 (7)                  |
| Increase 2.0-4.99 kms.                     | 7.09 (9)                  |
| Increase 5.0-9.99 kms.                     | 2.36 (3)                  |

**F.24. Change in Distance to Bank, Time 1-3 (N=136)**

| <b>Change in Distance<br/>(kilometres)</b> | <b>Time 1-3<br/>% (n)</b> |
|--|---------------------------|
| Decrease 25.0-99.99 kms.                   | 0.74 (1)                  |
| Decrease 10.0-24.99 kms.                   | 1.47 (2)                  |
| Decrease 5.0-9.99 kms.                     | 2.21 (3)                  |
| Decrease 2.0-4.99 kms.                     | 16.91 (23)                |
| Decrease 1.00-1.99 kms.                    | 14.71 (20)                |
| Decrease 0.10-0.99 kms.                    | 26.47 (36)                |
| No Change                                  | 2.94 (4)                  |
| Increase 0.10-0.99 kms.                    | 13.97 (19)                |
| Increase 1.00-1.99 kms.                    | 8.09 (11)                 |
| Increase 2.0-4.99 kms.                     | 8.82 (12)                 |
| Increase 5.0-9.99 kms.                     | 2.94 (4)                  |
| Increase 10.0-24.99 kms.                   | 0.74 (1)                  |



**F.25. Change in Distance to Physician's Office, Time 1-3 (N=141)**

| <b>Change in Distance<br/>(kilometres)</b> | <b>Time 1-3<br/>% (n)</b> |
|--|---------------------------|
| Decrease 25.0-99.99 kms.                   | 3.55 (5)                  |
| Decrease 10.0-24.99 kms.                   | 4.25 (6)                  |
| Decrease 5.0-9.99 kms.                     | 7.09 (10)                 |
| Decrease 2.0-4.99 kms.                     | 16.31 (23)                |
| Decrease 1.00-1.99 kms.                    | 10.64 (15)                |
| Decrease 0.10-0.99 kms.                    | 18.44 (26)                |
| No Change                                  | 2.84 (4)                  |
| Increase 0.10-0.99 kms.                    | 9.93 (14)                 |
| Increase 1.00-1.99 kms.                    | 6.38 (9)                  |
| Increase 2.0-4.99 kms.                     | 12.77 (18)                |
| Increase 5.0-9.99 kms.                     | 7.09 (10)                 |
| Increase 10.0-24.99 kms.                   | 0.71 (1)                  |

**F.26. Change in Frequency of Visits with all Children, Time 1-2, Time 1-3 and Time 2-3 (N=116)**

| <b>Change in Number of<br/>Visits Per Year</b> | <b>Time 1-2<br/>% (n)</b> | <b>Time 1-3<br/>% (n)</b> | <b>Time 2-3<br/>% (n)</b> |
|--|---------------------------|---------------------------|---------------------------|
| Decrease <1 x per Month                        | 0.86 (1)                  | 8.62 (10)                 | 9.48 (11)                 |
| Decrease 1-3 x per Month                       | 4.31 (5)                  | 8.62 (10)                 | 8.62 (10)                 |
| Decrease 1-7x per Week                         | 14.66 (17)                | 21.55 (25)                | 20.69 (24)                |
| No Change                                      | 57.76 (67)                | 19.83 (23)                | 20.69 (24)                |
| Increase 1-7x per Week                         | 15.52 (18)                | 19.83 (23)                | 16.38 (19)                |
| Increase 1-3x per Month                        | 4.31 (5)                  | 9.48 (11)                 | 10.34 (12)                |
| Increase <1 x per Month                        | 2.59 (3)                  | 12.07 (14)                | 13.79 (16)                |

**F.27. Change in Number of Visits with all Friends, Time 1-2, Time 1-3 and Time 2-3 (N=106)**

| <b>Change in Number of<br/>Visits Per Year</b> | <b>Time 1-2<br/>% (n)</b> | <b>Time 1-3<br/>% (n)</b> | <b>Time 2-3<br/>% (n)</b> |
|--|---------------------------|---------------------------|---------------------------|
| Decrease <1 x per Month                        | 4.72 (5)                  | 6.60 (7)                  | 7.55 (8)                  |
| Decrease 1-3 x per Month                       | 6.60 (7)                  | 12.26 (13)                | 16.04 (17)                |
| Decrease 1-7x per Week                         | 13.21 (14)                | 26.42 (28)                | 23.58 (25)                |
| No Change                                      | 50.0 (53)                 | 16.04 (17)                | 16.04 (17)                |
| Increase 1-7x per Week                         | 16.98 (18)                | 32.08 (34)                | 26.42 (28)                |
| Increase 1-3x per Month                        | 4.72 (5)                  | 4.72 (5)                  | 4.72 (5)                  |
| Increase <1 x per Month                        | 3.77 (4)                  | 1.89 (2)                  | 5.66 (6)                  |

**F.28. Change in Frequency of Visits with all Siblings, Time 1-2, Time 1-3 and Time 2-3 (N=122)**

| <b>Change in Number of Visits Per Year</b> | <b>Time 1-2<br/>% (n)</b> | <b>Time 1-3<br/>% (n)</b> | <b>Time 2-3<br/>% (n)</b> |
|--|---------------------------|---------------------------|---------------------------|
| Decrease <1 x per Month                    | 2.46 (3)                  | 12.30 (15)                | 11.48 (14)                |
| Decrease 1-3 x per Month                   | 3.28 (4)                  | 10.66 (13)                | 12.30 (15)                |
| Decrease 1-7x per Week                     | 6.56 (8)                  | 8.20 (10)                 | 4.92 (6)                  |
| No Change                                  | 71.31 (87)                | 36.89 (45)                | 38.52 (47)                |
| Increase 1-7x per Week                     | 4.92 (6)                  | 11.48 (14)                | 14.75 (18)                |
| Increase 1-3x per Month                    | 4.92 (6)                  | 6.56 (8)                  | 3.28 (4)                  |
| Increase <1 x per Month                    | 6.56 (8)                  | 13.93 (17)                | 14.75 (18)                |

**F.29. Change in Use of Automobile Transportation to Visit Friends, Time 1-2, Time 1-3 and Time 2-3 (N=149)**

| <b>Change in Transport as Car Driver/Passenger</b> | <b>Time 1-2<br/>% (n)</b> | <b>Time 1-3<br/>% (n)</b> | <b>Time 2-3<br/>% (n)</b> |
|--|---------------------------|---------------------------|---------------------------|
| Stable, No Car Transport                           | 72.48 (108)               | 71.81 (107)               | 79.19 (118)               |
| Decrease in Car Transport                          | 12.75 (19)                | 16.78 (25)                | 9.40 (14)                 |
| Increase in Car Transport                          | 2.01 (3)                  | 2.68 (4)                  | 4.70 (7)                  |
| Stable, Car Transport                              | 12.75 (19)                | 8.72 (13)                 | 6.71 (10)                 |

**F.30. Change in Use of Automobile Transportation to Visit Family Members, Time 1-2, Time 1-3 and Time 2-3 (N=149)**

| <b>Change in Transport as Car Driver/Passenger</b> | <b>Time 1-2<br/>% (n)</b> | <b>Time 1-3<br/>% (n)</b> | <b>Time 2-3<br/>% (n)</b> |
|--|---------------------------|---------------------------|---------------------------|
| Stable, No Car Transport                           | 58.39 (87)                | 55.70 (83)                | 57.05 (85)                |
| Decrease in Car Transport                          | 10.07 (15)                | 20.13 (30)                | 16.11 (24)                |
| Increase in Car Transport                          | 3.36 (5)                  | 7.38 (11)                 | 10.74 (16)                |
| Stable, Car Transport                              | 28.19 (42)                | 16.78 (25)                | 16.11 (24)                |

**F.31. Change in Frequency to a Small Grocery Store, Time 1-2, Time 1-3 and Time 2-3 (N=149)**

| <b>Change in Number of Visits Per Year</b> | <b>Time 1-2<br/>% (n)</b> | <b>Time 1-3<br/>% (n)</b> | <b>Time 2-3<br/>% (n)</b> |
|--|---------------------------|---------------------------|---------------------------|
| Decrease <1 x per Month                    | 0                         | 0                         | 0                         |
| Decrease 1-3 x per Month                   | 6.04 (9)                  | 12.75 (19)                | 12.75 (19)                |
| Decrease 1-7x per Week                     | 15.44 (23)                | 18.12 (27)                | 12.75 (19)                |
| No Change                                  | 59.06 (88)                | 32.21 (48)                | 38.26 (57)                |
| Increase 1-7x per Week                     | 13.42 (20)                | 22.15 (33)                | 22.82 (34)                |
| Increase 1-3x per Month                    | 6.04 (9)                  | 13.42 (20)                | 11.41 (17)                |
| Increase <1 x per Month                    | 0                         | 1.34 (2)                  | 2.01 (3)                  |

**F.32. Change in Frequency to a Major Chain Grocery Store, Time 1-2, Time 1-3 and Time 2-3 (N=149)**

| Change in Number of Visits Per Year | Time 1-2<br>% (n) | Time 1-3<br>% (n) | Time 2-3<br>% (n) |
|-------------------------------------|-------------------|-------------------|-------------------|
| Decrease <1 x per Month             | 0.67 (1)          | 0.67 (1)          | 2.01 (3)          |
| Decrease 1-3 x per Month            | 10.74 (16)        | 12.75 (19)        | 10.74 (16)        |
| Decrease 1-7x per Week              | 6.04 (9)          | 14.77 (22)        | 15.44 (23)        |
| No Change                           | 61.07 (91)        | 40.94 (61)        | 43.62 (65)        |
| Increase 1-7x per Week              | 13.42 (20)        | 19.46 (29)        | 14.77 (22)        |
| Increase 1-3x per Month             | 7.38 (11)         | 10.07 (15)        | 10.74 (16)        |
| Increase <1 x per Month             | 0.67 (1)          | 1.34 (2)          | 2.68 (4)          |

**F.33. Change in Frequency to a Pharmacy, Time 1-2, Time 1-3 and Time 2-3 (N=149)**

| Change in Number of Visits Per Year | Time 1-2<br>% (n) | Time 1-3<br>% (n) | Time 2-3<br>% (n) |
|-------------------------------------|-------------------|-------------------|-------------------|
| Decrease <1 x per Month             | 6.71 (10)         | 16.12 (24)        | 14.77 (22)        |
| Decrease 1-3 x per Month            | 4.70 (7)          | 11.41 (17)        | 12.75 (19)        |
| Decrease 1-7x per Week              | 1.34 (2)          | 2.68 (4)          | 4.03 (6)          |
| No Change                           | 75.17 (112)       | 40.94 (61)        | 40.27 (60)        |
| Increase 1-7x per Week              | 3.36 (5)          | 3.36 (5)          | 3.36 (5)          |
| Increase 1-3x per Month             | 5.37 (8)          | 10.07 (15)        | 8.05 (12)         |
| Increase <1 x per Month             | 3.36 (5)          | 15.44 (23)        | 16.78 (25)        |

**F.34. Change in Frequency to a Bank, Time 1-2, Time 1-3 and Time 2-3 (N=149)**

| Change in Number of Visits Per Year | Time 1-2<br>% (n) | Time 1-3<br>% (n) | Time 2-3<br>% (n) |
|-------------------------------------|-------------------|-------------------|-------------------|
| Decrease <1 x per Month             | 1.34 (2)          | 2.68 (4)          | 2.01 (3)          |
| Decrease 1-3 x per Month            | 12.08 (18)        | 27.52 (41)        | 24.16 (36)        |
| Decrease 1-7x per Week              | 0                 | 4.70 (7)          | 6.04 (9)          |
| No Change                           | 75.17 (112)       | 40.27 (60)        | 41.61 (62)        |
| Increase 1-7x per Week              | 2.01 (3)          | 2.68 (4)          | 3.36 (5)          |
| Increase 1-3x per Month             | 9.40 (14)         | 22.15 (33)        | 20.13 (30)        |
| Increase <1 x per Month             | 0                 | 0                 | 2.68 (4)          |

**F.35. Change in Frequency to the Physician's Office, Time 1-2, Time 1-3 and Time 2-3 (N=149)**

| Change in Number of Visits Per Year | Time 1-2<br>% (n) | Time 1-3<br>% (n) | Time 2-3<br>% (n) |
|-------------------------------------|-------------------|-------------------|-------------------|
| Decrease <1 x per Month             | 4.70 (7)          | 26.17 (39)        | 29.53 (44)        |
| Decrease 1-3 x per Month            | 3.36 (5)          | 5.37 (8)          | 4.03 (6)          |
| Decrease 1-7x per Week              | 0                 | 0                 | 0.67 (1)          |
| No Change                           | 73.83 (110)       | 26.85 (40)        | 31.54 (47)        |
| Increase 1-7x per Week              | 0.67 (1)          | 1.34 (2)          | 1.34 (2)          |
| Increase 1-3x per Month             | 4.70 (7)          | 10.07 (15)        | 8.72 (13)         |
| Increase <1 x per Month             | 12.75 (19)        | 30.20 (45)        | 24.16 (36)        |

**F.36. Change in Use of Automobile Transportation to Grocery Store, Time 1-2, Time 1-3 and Time 2-3 (N=149)**

| <b>Change in Transport as Car Driver/Passenger</b> | <b>Time 1-2<br/>% (n)</b> | <b>Time 1-3<br/>% (n)</b> | <b>Time 2-3<br/>% (n)</b> |
|--|---------------------------|---------------------------|---------------------------|
| Stable, No Car Transport                           | 51.68 (77)                | 53.02 (79)                | 51.68 (77)                |
| Decrease in Car Transport                          | 7.38 (11)                 | 17.45 (26)                | 18.79 (28)                |
| Increase in Car Transport                          | 10.74 (16)                | 8.05 (12)                 | 6.71 (10)                 |
| Stable, Car Transport                              | 30.20 (45)                | 21.48 (32)                | 22.82 (34)                |

**F.37. Change in Use of Automobile Transportation to Pharmacy, Time 1-2, Time 1-3 and Time 2-3 (N=149)**

| <b>Change in Transport as Car Driver/Passenger</b> | <b>Time 1-2<br/>% (n)</b> | <b>Time 1-3<br/>% (n)</b> | <b>Time 2-3<br/>% (n)</b> |
|--|---------------------------|---------------------------|---------------------------|
| Stable, No Car Transport                           | 75.84 (113)               | 75.15 (112)               | 79.19 (118)               |
| Decrease in Car Transport                          | 7.38 (11)                 | 14.77 (22)                | 10.74 (16)                |
| Increase in Car Transport                          | 4.03 (6)                  | 4.03 (6)                  | 2.68 (4)                  |
| Stable, Car Transport                              | 12.75 (19)                | 6.04 (9)                  | 7.38 (11)                 |

**F.38. Change in Use of Automobile Transportation to Bank, Time 1-2, Time 1-3 and Time 2-3 (N=149)**

| <b>Change in Transport as Car Driver/Passenger</b> | <b>Time 1-2<br/>% (n)</b> | <b>Time 1-3<br/>% (n)</b> | <b>Time 2-3<br/>% (n)</b> |
|--|---------------------------|---------------------------|---------------------------|
| Stable, No Car Transport                           | 65.77 (98)                | 65.77 (98)                | 70.47 (105)               |
| Decrease in Car Transport                          | 10.74 (16)                | 13.42 (20)                | 7.38 (11)                 |
| Increase in Car Transport                          | 5.37 (8)                  | 5.37 (8)                  | 4.70 (7)                  |
| Stable, Car Transport                              | 18.12 (27)                | 15.44 (23)                | 17.45 (26)                |

**F.39. Change in Use of Automobile Transportation to Physician's Office, Time 1-2, Time 1-3 and Time 2-3 (N=149)**

| <b>Change in Transport as Car Driver/Passenger</b> | <b>Time 1-2<br/>% (n)</b> | <b>Time 1-3<br/>% (n)</b> | <b>Time 2-3<br/>% (n)</b> |
|--|---------------------------|---------------------------|---------------------------|
| Stable, No Car Transport                           | 83.89 (125)               | 81.21 (121)               | 81.88 (122)               |
| Decrease in Car Transport                          | 4.03 (6)                  | 7.38 (11)                 | 7.38 (11)                 |
| Increase in Car Transport                          | 6.04 (9)                  | 8.72 (13)                 | 6.04 (9)                  |
| Stable, Car Transport                              | 6.04 (9)                  | 2.68 (4)                  | 4.70 (7)                  |

**F.40. Change in Self-Rated Health, Time 1-2, Time 1-3 and Time 2-3 (N=149)**

| <b>Change in Self-Rated Health</b> | <b>Time 1-2<br/>% (n)</b> | <b>Time 1-3<br/>% (n)</b> | <b>Time 2-3<br/>% (n)</b> |
|------------------------------------|---------------------------|---------------------------|---------------------------|
| Stable, negative rating (1-3)*     | 51.01 (76)                | 30.20 (45)                | 28.86 (43)                |
| Decrease in Rating                 | 4.03 (6)                  | 12.75 (19)                | 15.44 (23)                |
| Increase in Rating                 | 10.07 (15)                | 29.53 (44)                | 24.83 (37)                |
| Stable, positive rating (4-5)**    | 34.90 (52)                | 27.52 (41)                | 30.87 (46)                |

\*Refers to categories "poor", "bad", and "fair".

\*\*Refers to categories "good" and "excellent".

**F.41. Change in PGC Morale Scores, Time 2-3 (N=149)**

| <b>Change in PGC Morale Scale</b> | <b>Time 2-3<br/>% (n)</b> |
|-----------------------------------|---------------------------|
| Decrease 5 or More Points         | 4.03 (6)                  |
| Decrease 3-4 Points               | 7.38 (11)                 |
| Decrease 1-2 Points               | 14.80 (22)                |
| No Change                         | 14.09 (21)                |
| Increase 1-2 Points               | 27.52 (41)                |
| Increase 3-4 Points               | 17.45 (26)                |
| Increase 5 or More Points         | 14.77 (22)                |

**F.42. Change in CES-D Scores, Time 2-3 (N=149)**

| <b>Change in CES-D Scores</b> | <b>Time 2-3<br/>% (n)</b> |
|-------------------------------|---------------------------|
| Decrease 11 or More Points    | 0                         |
| Decrease 6-10 Points          | 18.12 (27)                |
| Decrease 1-5 Points           | 28.19 (42)                |
| No Change                     | 5.37 (8)                  |
| Increase 1-5 Points           | 16.12 (24)                |
| Increase 6-10 Points          | 12.75 (19)                |
| Increase 11 or More Points    | 19.46 (29)                |

**F.43. Change in Self-Esteem Scores, Time 2-3 (N=149)**

| <b>Change in Self-Esteem Scores</b> | <b>Time 2-3<br/>% (n)</b> |
|-------------------------------------|---------------------------|
| Decrease 3-7 Points                 | 2.01 (3)                  |
| Decrease 1-2 Points                 | 18.12 (27)                |
| No Change                           | 44.30 (66)                |
| Increase 1-2 Points                 | 26.85 (40)                |
| Increase 3-7 Points                 | 8.72 (13)                 |

**F.44. Change in Desired Control Scores, Time 2-3 (N=149)**

| Change in Desired Control Score | Time 2-3<br>% (n) |
|---------------------------------|-------------------|
| Decrease 100 or More Points     | 0.67 (1)          |
| Decrease 50-99 Points           | 5.37 (8)          |
| Decrease 30-49 Points           | 8.05 (12)         |
| Decrease 20-29 Points           | 9.40 (14)         |
| Decrease 10-19 Points           | 13.42 (20)        |
| Decrease 1-9 Points             | 12.75 (19)        |
| No Change                       | 3.36 (5)          |
| Increase 1-9 Points             | 15.44 (23)        |
| Increase 10-19 Points           | 9.40 (14)         |
| Increase 20-29 Points           | 8.05 (12)         |
| Increase 30-49 Points           | 9.40 (14)         |
| Increase 50-99 Points           | 4.70 (7)          |
| Increase 100 or More Points     | 0                 |

## Appendix G

### Other Family Members – Distance Separation and Frequency of Interaction (n=25)

The number of other family members is small, however, this data sub-set is included in the analysis as some of the individuals represented an important source of social interaction for respondents in the study. This analysis does not include those respondents who reported living with a spouse, or who were in a common-law relationship. Other family members include parents, aunts, uncles, cousins, in-laws, and nieces and nephews.

Although only a small number of other family members are included in the analysis, it is important to investigate their contribution to the social environment as some respondents reported frequent contact with them. As Table G.1 demonstrates, in some cases, respondents had lived with some of these family members prior to moving to the senior housing project, while others moved into the same senior housing project as family members.

In this small group, the distance to the closest family member decreased for 72.0 percent of the sample after moving, compared to an increase recorded for 24.0 percent of respondents (Table G.3). Similarly, the average distance to another family member decreased from 5.85 to 3.91 kilometres (Table G.2). Table G.1 illustrates, for example, that 72.0 percent of the other family members lived less than 5 kilometres from the respondents at the senior housing project (compared to 48.0 percent at the previous address). No significant difference between the previous address and current residence was ascertained for distance to the closest other family member, nor were any relationships found with age, gender, or urban location.

**G.1. Distance to Closest Other Family Member, Times 1-2/3 (n=25)**

| Distance<br>(kms.) | Time 1<br>% (n) | Times 2/3<br>% (n) |
|--------------------|-----------------|--------------------|
| 0.00               | 12.00 (3)       | 16.00 (4)          |
| 0.01 - 1.99        | 4.00 (1)        | 20.00 (5)          |
| 2.0 - 4.99         | 32.00 (8)       | 36.00 (9)          |
| 5.0 - 9.99         | 28.00 (7)       | 20.00 (5)          |
| 10.0 - 24.99       | 16.00 (4)       | 8.00 (2)           |
| 25.0 - 99.99       | 0.00 (0)        | 0.00 (0)           |
| 100.0 +            | 8.00 (2)        | 0.00 (0)           |

**G.2. Distance to Closest Other Family Member - Means and Standard Deviation, In Winnipeg (< 25 kms) and Entire Sample (n=25)**

|                        | Time 1<br>Mean/S.D. | Times 2/3<br>Mean/S.D. |
|------------------------|---------------------|------------------------|
| In Winnipeg (< 25 kms) | 5.85/4.458          | 3.91/3.688             |
| All Distances          | 117.82/477.549      | 3.91/3.688*            |

\*The same values are registered as all other family members resided within the city at Time 3.

**G.3. Change in Distance to Closet Other Family Member (n=25)**

| Change in Distance<br>(kilometres) | Times 1-2/3<br>% (n) |
|------------------------------------|----------------------|
| Decrease, 100 kms or more          | 8.00 (2)             |
| Decrease, 25.00-99.99 kms          | 0                    |
| Decrease, 10.00-24.99 kms          | 0                    |
| Decrease, 5.00-9.99 kms            | 20.00 (5)            |
| Decrease, 2.00-4.99 kms            | 20.00 (5)            |
| Decrease, 0.10-1.99 kms            | 24.00 (6)            |
| No Change                          | 4.00 (1)             |
| Increase, 0.10-1.99 kms            | 16.00 (4)            |
| Increase, 2.00-4.99 kms            | 4.00 (1)             |
| Increase, 5.00-9.99 kms            | 0                    |
| Increase, 10.00-24.99 kms          | 4.00 (1)             |

When frequency of visits is considered, Table G.4 illustrates that the proportion of respondents visiting with another family member at least once a month increased from 66.7 percent at the previous address to 77.8 percent by the time of the first survey. However, this proportion decreased substantially to 48.1 percent by Survey 2. Correspondingly, the proportion of respondents who visited with other family



members less than once a month increased from 33.3 percent at Time 1 to 51.9 percent at Time 3. A decrease in visits with other family members was reported by 59.3 percent of the respondents, while only 18.5 percent recorded an increase (Table G.5). No differences were found in the frequency of visits reported for other family members at the previous residence, as well as after the move. In addition, frequency of visits with other family members was not related to age, gender, or urban location.

#### G.4. Frequency of Visits to Other Family Members, Times 1-3 (n=27)

|                 | Time 1<br>% (n) | Time 2<br>% (n) | Time 3<br>% (n) |
|-----------------|-----------------|-----------------|-----------------|
| Once a day      | 22.22 (6)       | 25.93 (7)       | 22.22 (6)       |
| 1-6 x per week  | 29.63 (8)       | 37.04 (10)      | 14.81 (4)       |
| 1-3 x per month | 14.81 (4)       | 14.81 (4)       | 11.11 (3)       |
| < 1 x per month | 22.22 (6)       | 18.53 (5)       | 0               |
| 0/year          | 11.11 (3)       | 3.70 (3)        | 51.85 (14)      |

#### G.5. Change in Frequency of Visits with all Other Family Members, Time 1-2, Time 1-3, and Time 2-3 (N=27)

| Change in Number<br>of Visits Per Year | Time 1-2<br>% (n) | Time 1-3<br>% (n) | Time 2-3<br>% (n) |
|--|-------------------|-------------------|-------------------|
| Decrease <1 x per Month                | 0                 | 14.81 (4)         | 18.52 (5)         |
| Decrease 1-3 x per Mth                 | 0                 | 11.11 (3)         | 11.11 (3)         |
| Decrease 1-7x per Week                 | 11.11 (3)         | 33.33 (9)         | 37.04 (10)        |
| No Change                              | 70.37 (19)        | 22.22 (6)         | 25.93 (7)         |
| Increase 1-7x per Week                 | 18.52 (5)         | 14.81 (4)         | 3.70 (1)          |
| Increase 1-3x per Month                | 0                 | 3.70 (1)          | 3.70 (1)          |
| Increase <1 x per Month                | 0                 | 0                 | 0                 |

## Appendix H

### Antecedent Constructs and Personal State Outcomes: Coding of the Variables

#### H.1. Socio-Demographic and Residential Characteristics

| Variable Labels  | Variable Coding<br>Description   |
|--|--|
| ◆ <i>Age (Age3)</i>  | Age of Respondent based on year of birth   |
| ◆ <i>Income Adequacy (Incomesa)</i>                            | Meets needs at least "fairly well" = 1;<br>lower assessment of adequacy = 0                                |
| ◆ <i>Education Level (Educati1)</i>                            | Grade 6 or less = 1; Grades 7-13 = 2;<br>College/University = 3  |
| ◆ <i>Gender/Marital Status (Genmar3)</i>                       | Single Female = 0;<br>Other (married male/female or single male) = 1                                       |
| ◆ <i>Number of Children (Numchild)</i>                         | Total number of children   |
| ◆ <i>Marital Status of Closest Child* (Marclch)</i>            | Single = 0; Married = 1  |
| ◆ <i>Gender of Closest Child* (Genclch)</i>                    | Female = 0; Male = 1   |
| ◆ <i>Distance to Previous Residence (Disprev)</i>              | Street Distance Separation (km) of senior housing project from previous residence (natural log)            |
| ◆ <i>Distance to Closest Family/Friend at Time3 (Distsoc3)</i> | Street distance separation (km) of senior housing project to closest family member or friend (natural log) |

\* Variable for sub-sample of those with children (N=116)

() Labels in brackets refer to variables reported in the statistical results of Appendices I-L.

#### H.2. Personal Resource Transitions

| Variable Labels                          | Dummy Coded Change<br>Variable Description   |
|--|--|
| ◆ <i>ADL 1 (ADL1)</i>                    | Increase in number of ADLs = 1; Other = 0    |
| ◆ <i>ADL 2 (ADL2)</i>                    | Stable number of ADLs = 1; Other = 0         |
| ◆ <i>ADL 3* (ADL3)</i>                   | Decrease in number of ADLs = 1; Other = 0    |
| ◆ <i>IADL 1 (IADL1)</i>                  | Increase in number of IADLs = 1; Other = 0   |
| ◆ <i>IADL 2 (IADL2)</i>                  | Stable number of IADLs = 1; Other = 0        |
| ◆ <i>IADL 3* (IADL3)</i>                 | Decrease in number of IADLs = 1; Other = 0   |
| ◆ <i>Chronic Conditions1 (Chronic1)</i>  | Increase in number of Chronic = 1; Other = 0 |
| ◆ <i>Chronic Conditions2 (Chronic 2)</i> | Stable number of Chronic = 1; Other = 0      |
| ◆ <i>Chronic Conditions3* (Chronic3)</i> | Decrease in number of Chronic = 1; Other = 0 |

\*Reference dummy variable not included in regression models.

### H.3. Observer-Defined Change in the Content of the Social and Service Environments

| Antecedent Construct /<br>Variable Labels                                | Change Variable<br>Description  |
|--|---|
| <b>Observer-Defined Change in the Content of the Social Environment</b>  |   |
| ◆ <i>Change in Proximity to Closest Family Member/Friend (Soccon21)</i>  | Change in distance (in kilometres) to closest family member or friend   |
| ◆ <i>Change in Proximity to Closest Child* (Socchil21)</i>               | Change in distance (in kilometres) to closest child                     |
| ◆ <i>Change in Number of Friends at Project (Frblgd32)</i>               | Change in total number of friends in the senior housing project         |
| <b>Observer-Defined Change in the Content of the Service Environment</b> |   |
| ◆ <i>Change in Proximity to Closest Bus Stop (Busser31)</i>              | Change in number of minutes to closest bus stop                         |
| ◆ <i>Change in Proximity to Closest Shopping Centre (Shopsr31)</i>       | Change in distance (in kilometres) to closest major shopping centre     |
| ◆ <i>Change in Proximity to Closest Grocery Store (Grocser31)</i>        | Change in distance (in kilometres) to closest major grocery chain store |

\* Variable for sub-sample of those with children (N=116)

### H.4. Resident-Appraised Change in the Social Environment

| Variable Labels  | Dummy Coded Change<br>Variable Description |
|--|--|
| <b>Satisfaction with Proximity to Family Members</b>         |  |
| ◆ <i>Satisfaction with Proximity to Family 1 (Satrel1)</i>   | Stable, non-satisfaction = 1; Other = 0    |
| ◆ <i>Satisfaction with Proximity to Family 2 (Satrel2)</i>   | Decreased satisfaction = 1; Other = 0      |
| ◆ <i>Satisfaction with Proximity to Family 3 (Satrel3)</i>   | Stable, satisfaction = 1; Other = 0        |
| ◆ <i>Satisfaction with Proximity to Family 4* (Satrel4)</i>  | Increased satisfaction = 1; Other = 0      |
| <b>Satisfaction with Proximity to Friends</b>                |  |
| ◆ <i>Satisfaction with Proximity to Friends 1 (Satfri1)</i>  | Stable, non-satisfaction = 1; Other = 0    |
| ◆ <i>Satisfaction with Proximity to Friends 2 (Satfri2)</i>  | Decreased satisfaction = 1; Other = 0      |
| ◆ <i>Satisfaction with Proximity to Friends 3 (Satfri3)</i>  | Stable, satisfaction = 1; Other = 0        |
| ◆ <i>Satisfaction with Proximity to Friends 4* (Satfri4)</i> | Increased satisfaction = 1; Other = 0      |

\*Reference dummy variable not included in regression models.

### H.5. Resident-Appraised Change in Proximity to Salient Service Sites

| Variable Labels   | Dummy Coded Change<br>Variable Description |
|---|--|
| <b>Satisfaction with Proximity to Grocery Store</b>                 |  |
| ◆ <i>Satisfaction with Proximity to Grocery Store 1 (Satgroc1)</i>  | Stable, non-satisfaction = 1; Other = 0    |
| ◆ <i>Satisfaction with Proximity to Grocery Store 2 (Satgroc2)</i>  | Decreased satisfaction = 1; Other = 0      |
| ◆ <i>Satisfaction with Proximity to Grocery Store 3 (Satgroc3)</i>  | Stable, satisfaction = 1; Other = 0        |
| ◆ <i>Satisfaction with Proximity to Grocery Store 4* (Satgroc4)</i> | Increased satisfaction = 1; Other = 0      |
| <b>Satisfaction with Proximity to Pharmacy</b>                      |  |
| ◆ <i>Satisfaction with Proximity to Pharmacy 1 (Satphar1)</i>       | Stable, non-satisfaction = 1; Other = 0    |
| ◆ <i>Satisfaction with Proximity to Pharmacy 2 (Satphar2)</i>       | Decreased satisfaction = 1; Other = 0      |
| ◆ <i>Satisfaction with Proximity to Pharmacy 3 (Satphar3)</i>       | Stable, satisfaction = 1; Other = 0        |
| ◆ <i>Satisfaction with Proximity to Pharmacy 4* (Satphar4)</i>      | Increased satisfaction = 1; Other = 0      |
| <b>Satisfaction with Proximity to Bank</b>                          |  |
| ◆ <i>Satisfaction with Proximity to Bank 1 (Satbank1)</i>           | Stable, non-satisfaction = 1; Other = 0    |
| ◆ <i>Satisfaction with Proximity to Bank 2 (Satbank2)</i>           | Decreased satisfaction = 1; Other = 0      |
| ◆ <i>Satisfaction with Proximity to Bank 3 (Satbank3)</i>           | Stable, satisfaction = 1; Other = 0        |
| ◆ <i>Satisfaction with Proximity to Bank 4* (Satbank4)</i>          | Increased satisfaction = 1; Other = 0      |
| <b>Satisfaction with Proximity to Physician's Office</b>            |  |
| ◆ <i>Satisfaction with Proximity to Physician 1 (Satdoc1)</i>       | Stable, non-satisfaction = 1; Other = 0    |
| ◆ <i>Satisfaction with Proximity to Physician 2 (Satdoc2)</i>       | Decreased satisfaction = 1; Other = 0      |
| ◆ <i>Satisfaction with Proximity to Physician 3 (Satdoc3)</i>       | Stable, satisfaction = 1; Other = 0        |
| ◆ <i>Satisfaction with Proximity to Physician 4* (Satdoc4)</i>      | Increased satisfaction = 1; Other = 0      |

\*Reference dummy variable not included in regression models.

### H.6. Resident-Appraised Change in Proximity to the Service Environment

| Variable Labels   | Dummy Coded Change<br>Variable Description |
|---|--|
| <b>Satisfaction with Access to Services</b>                   |  |
| ◆ <i>Satisfaction with Proximity to Services 1 (Access1)</i>  | Stable, non-satisfaction = 1; Other = 0    |
| ◆ <i>Satisfaction with Proximity to Services 2 (Access2)</i>  | Decreased satisfaction = 1; Other = 0      |
| ◆ <i>Satisfaction with Proximity to Services 3 (Access3)</i>  | Stable, satisfaction = 1; Other = 0        |
| ◆ <i>Satisfaction with Proximity to Services 4* (Access4)</i> | Increased satisfaction = 1; Other = 0      |

\*Reference dummy variable not included in regression models.

### H.7. Resident-Appraised Change in the Physical Environment

| Variable Labels   | Dummy Coded Change<br>Variable Description |
|---|--|
| <b>Satisfaction with Sidewalk Conditions</b>              |  |
| ◆ <i>Satisfaction with Sidewalk Conditions 1 (Sdwk1)</i>  | Stable, non-satisfaction = 1; Other = 0    |
| ◆ <i>Satisfaction with Sidewalk Conditions 2 (Sdwk2)</i>  | Decreased satisfaction = 1; Other = 0      |
| ◆ <i>Satisfaction with Sidewalk Conditions 3 (Sdwk3)</i>  | Stable, satisfaction = 1; Other = 0        |
| ◆ <i>Satisfaction with Sidewalk Conditions 4* (Sdwk4)</i> | Increased satisfaction = 1; Other = 0      |
| <b>Satisfaction with Security from Crime</b>              |  |
| ◆ <i>Satisfaction with Security from Crime 1 (Secu1)</i>  | Stable, non-satisfaction = 1; Other = 0    |
| ◆ <i>Satisfaction with Security from Crime 2 (Secu2)</i>  | Decreased satisfaction = 1; Other = 0      |
| ◆ <i>Satisfaction with Security from Crime 3 (Secu3)</i>  | Stable, satisfaction = 1; Other = 0        |
| ◆ <i>Satisfaction with Security from Crime 4* (Secu4)</i> | Increased satisfaction = 1; Other = 0      |
| <b>Satisfaction with Safety from Traffic</b>              |  |
| ◆ <i>Satisfaction with Traffic Safety 1 (Traffic1)</i>    | Stable, non-satisfaction = 1; Other = 0    |
| ◆ <i>Satisfaction with Traffic Safety 2 (Traffic2)</i>    | Decreased satisfaction = 1; Other = 0      |
| ◆ <i>Satisfaction with Traffic Safety 3 (Traffic3)</i>    | Stable, satisfaction = 1; Other = 0        |
| ◆ <i>Satisfaction with Traffic Safety 4* (Traffic4)</i>   | Increased satisfaction = 1; Other = 0      |
| <b>Satisfaction with Snow Removal</b>                     |  |
| ◆ <i>Satisfaction with Snow Removal 1 (Snow1)</i>         | Stable, non-satisfaction = 1; Other = 0    |
| ◆ <i>Satisfaction with Snow Removal 2 (Snow2)</i>         | Decreased satisfaction = 1; Other = 0      |
| ◆ <i>Satisfaction with Snow Removal 3 (Snow3)</i>         | Stable, satisfaction = 1; Other = 0        |
| ◆ <i>Satisfaction with Snow Removal 4* (Snow4)</i>        | Increased satisfaction = 1; Other = 0      |

\*Reference dummy variable not included in regression models.

### H.8. Change in Individual Behaviour Circuits: Travel to the Social and Service Environments

| Antecedent Construct/<br>Variable Labels  | Change Variable<br>Description  |
|---|---|
| <b>Change in Individual Social Behaviour Circuits</b>                           |   |
| ◆ <i>Change in Number of Visits to Family/Friends (Visoc31)</i>                 | Change in total number of annual trips to family members and friends  |
| ◆ <i>Change in Distance to Most Frequently Visited Family/Friend (Socbeh21)</i> | Change in distance to most frequently visited family member or friend |
| ◆ <i>Change in Number of Visits to Children* (Vichld31)</i>                     | Change in total number of annual trips to all children                |
| ◆ <i>Change in Distance to Most Frequently Visited Child* (Dichld21)</i>        | Change in distance to most frequently visited child                   |
| <b>Change in Individual Service Behaviour Circuits</b>                          |   |
| ◆ <i>Change in Number of Service Visits (Viser31)</i>                           | Change in total number of annual trips to salient service categories  |
| ◆ <i>Change in Distance to Service Sites (Serbeh31)</i>                         | Change in distance to salient service categories                      |

\* Variable for sub-sample of those with children (N=116)

### H.9. Change in Individual Behaviour Circuits: Automobile Travel Scores to Family and Friends

| Variable Labels                                      | Dummy Coded Change<br>Variable Description |
|--|--|
| <b>Change in Automobile Travel Scores to Family</b>  |  |
| ◆ <i>Auto Transport to Family 1 (Trfam1)</i>         | Stable, no auto transport = 1; Other = 0   |
| ◆ <i>Auto Transport to Family 2 (Trfam2)</i>         | Decreased auto transport = 1; Other = 0    |
| ◆ <i>Auto Transport to Family 3 (Trfam3)</i>         | Stable, auto transport = 1; Other = 0      |
| ◆ <i>Auto Transport to Family 4* (Trfam4)</i>        | Increased auto transport = 1; Other = 0    |
| <b>Change in Automobile Travel Scores to Friends</b> |  |
| ◆ <i>Auto Transport to Friends 1 (Trfr1)</i>         | Stable, no auto transport = 1; Other = 0   |
| ◆ <i>Auto Transport to Friends 2 (Trfr2)</i>         | Decreased auto transport = 1; Other = 0    |
| ◆ <i>Auto Transport to Friends 3 (Trfr3)</i>         | Stable, auto transport = 1; Other = 0      |
| ◆ <i>Auto Transport to Friends 4* (Trfr4)</i>        | Increased auto transport = 1; Other = 0    |

\*Reference dummy variable not included in regression models.

### H.10. Individual Behaviour Circuits: Automobile Travel Scores to Salient Service Sites

| Variable Labels   | Dummy Coded Change Variable Description  |
|---|--|
| <b>Change in Automobile Travel Scores to Grocery Store</b>      |  |
| ◆ <i>Auto Transport to Grocery Store 1 (Groctr1)</i>            | Stable, no auto transport = 1; Other = 0 |
| ◆ <i>Auto Transport to Grocery Store 2 (Groctr2)</i>            | Decreased auto transport = 1; Other = 0  |
| ◆ <i>Auto Transport to Grocery Store 3 (Groctr3)</i>            | Stable, auto transport = 1; Other = 0    |
| ◆ <i>Auto Transport to Grocery Store 4* (Groctr4)</i>           | Increased auto transport = 1; Other = 0  |
| <b>Change in Automobile Travel Scores to Pharmacy</b>           |  |
| ◆ <i>Auto Transport to Pharmacy 1 (Phartr1)</i>                 | Stable, no auto transport = 1; Other = 0 |
| ◆ <i>Auto Transport to Pharmacy 2 (Phartr2)</i>                 | Decreased auto transport = 1; Other = 0  |
| ◆ <i>Auto Transport to Pharmacy 3 (Phartr3)</i>                 | Stable, auto transport = 1; Other = 0    |
| ◆ <i>Auto Transport to Pharmacy 4* (Phartr4)</i>                | Increased auto transport = 1; Other = 0  |
| <b>Change in Automobile Travel Scores to Bank</b>               |  |
| ◆ <i>Auto Transport to Bank 1 (Banktr1)</i>                     | Stable, no auto transport = 1; Other = 0 |
| ◆ <i>Auto Transport to Bank 2 (Banktr2)</i>                     | Decreased auto transport = 1; Other = 0  |
| ◆ <i>Auto Transport to Bank 3 (Banktr3)</i>                     | Stable, auto transport = 1; Other = 0    |
| ◆ <i>Auto Transport to Bank 4* (Banktr4)</i>                    | Increased auto transport = 1; Other = 0  |
| <b>Change in Automobile Travel Scores to Physician's Office</b> |  |
| ◆ <i>Auto Transport to Physician 1 (Medtr1)</i>                 | Stable, no auto transport = 1; Other = 0 |
| ◆ <i>Auto Transport to Physician 2 (Medtr2)</i>                 | Decreased auto transport = 1; Other = 0  |
| ◆ <i>Auto Transport to Physician 3 (Medtr3)</i>                 | Stable, auto transport = 1; Other = 0    |
| ◆ <i>Auto Transport to Physician 4* (Medtr4)</i>                | Increased auto transport = 1; Other = 0  |

\*Reference dummy variable not included in regression models.



**H.11. Personal State Outcomes**

| <b>Personal State Outcomes</b> | <b>Variable Coding Description</b>                                     |
|--------------------------------|--|
| <i>Self-Rated Health</i>       | Bad/Poor/Fair = 0; Good/Excellent = 1                                  |
| <i>PGC Morale Scale</i>        | Range of possible scores: 0 (low morale) to 14 (high morale)           |
| <i>CES Depression Scale</i>    | Range of possible scores: 0 (low depression) to 60 (high depression)   |
| <i>Self-Esteem</i>             | Range of possible scores: 0 (low self-esteem) to 10 (high self-esteem) |
| <i>Desired Control</i>         | Range of possible scores: 16 (low control) to 400 (high control)       |

## Appendix I

### Zero-Order Correlation Matrix for the Entire Sample (N=149)

**Table I. Zero-Order Correlation Matrix for the Entire Sample (N=149): Significant Associations of the Antecedent Construct Variables**

|           | Genmar3 | Age3    | Incomesa3 | Educati1 | ADL1   | ADL2    | ADL3    | IADL1   | IADL2   | IADL3   |
|-----------|---------|---------|-----------|----------|--------|---------|---------|---------|---------|---------|
| Genmar3   |         | -.275** |           |          |        |         |         |         |         |         |
| Age3      |         |         | .351**    |          | .226** | -.179*  |         | .283**  | -.326** |         |
| Incomesa3 |         |         |           |          |        |         |         |         | -.167*  |         |
| ADL1      |         |         |           |          |        | -.727** | -.313** | .421**  | -.270** | -.195*  |
| ADL2      |         |         |           |          |        |         | -.424** | -.320** | .316**  |         |
| ADL3      |         |         |           |          |        | -.424** |         |         |         | .282**  |
| IADL1     |         |         |           |          |        |         |         |         | -.766** | -.276** |
| IADL2     |         |         |           |          |        |         |         |         |         | -.406** |
| Sdwk1     |         |         |           |          |        |         | .164*   |         |         |         |
| Sdwk3     | .253**  | -.281** |           |          |        |         | -.165*  |         |         |         |
| Sdwk4     | -.228** | .231**  |           |          |        |         |         |         | -.161*  |         |
| Secu1     |         |         |           |          |        | -.196*  | .204*   |         |         |         |
| Secu3     |         |         |           |          |        |         |         |         |         | -.164*  |
| Traffic1  |         | -.234** |           |          |        |         | .212**  |         |         |         |
| Traffic2  |         | .219**  |           |          | .207*  | -.181*  |         |         |         |         |
| Snow2     |         |         |           |          | .180*  |         |         |         |         |         |
| Snow3     |         |         |           | .168*    |        |         |         |         |         |         |
| Snow4     |         |         |           | -.190*   |        |         |         |         |         |         |
| Satfri2   |         | .187*   |           |          |        |         |         |         | -.193*  |         |
| Satrel1   | .171*   |         |           |          |        |         |         |         |         |         |
| Satrel3   |         |         |           |          |        | .187*   |         |         |         |         |
| Satrel4   |         |         |           |          |        | -.184*  |         |         |         |         |
| Satgrocl  |         | .217**  |           |          |        |         |         |         |         |         |



|           |       |       |        |        |        |        |         |        |        |         |
|-----------|-------|-------|--------|--------|--------|--------|---------|--------|--------|---------|
| Traffic1  |       |       |        |        |        |        |         | .276** |        |         |
| Traffic2  |       |       |        |        | .306** | -.180* |         |        | .285** | -.194*  |
| Traffic3  |       |       |        |        |        | .281** | -.234** |        |        | .329**  |
| Traffic4  |       |       |        |        | -.209* |        | .288**  | -.183* | -.166* |         |
| Snow1     |       |       |        |        |        |        |         |        | .171*  |         |
| Snow2     |       |       |        |        | .340** |        | -.183*  |        | .206*  |         |
| Snow3     |       |       |        | .195*  |        | .232** | -.210*  |        |        |         |
| Snow4     |       |       |        | -.166* |        |        | .326**  |        |        |         |
| Frbldg32  |       |       |        | -.204* |        | .196*  |         |        |        |         |
| Numchild  |       |       |        |        |        |        |         |        |        | -.180*  |
| Satfri2   |       |       |        |        |        | -.171* |         |        |        |         |
| Satfri3   |       |       |        |        |        | .205*  |         |        |        |         |
| Satrel1   |       |       |        |        |        |        |         |        |        | .182*   |
| Satrel2   |       |       |        | .164*  |        |        |         |        |        |         |
| Satrel4   |       |       |        |        |        |        |         |        |        | -.221** |
| Satgrocl  |       |       |        |        | .254** |        |         |        |        |         |
| Satgrocl3 |       |       |        |        |        | .171*  |         |        |        |         |
| Satphar1  |       |       |        |        | .254** |        |         |        |        |         |
| Satdoc1   |       |       |        |        | .243** |        |         |        |        |         |
| Access2   |       |       |        |        | .254** |        |         |        |        |         |
| Access3   |       |       |        |        |        | .176*  |         |        |        |         |
| Socbeh21  |       |       |        |        |        | -.198* |         |        |        |         |
| Trfr1     |       |       | .218** |        |        |        |         |        |        | .174**  |
| Trfam1    |       |       |        |        |        |        |         |        |        | .216**  |
| Trfam2    |       |       |        | .178*  |        |        |         |        |        |         |
| Trfam3    |       |       |        |        |        | -.165* | .222**  |        |        |         |
| Groctr1   |       | .182* |        |        |        |        |         |        |        | .234**  |
| Groctr2   |       |       |        |        |        |        |         |        |        | -.215** |
| Groctr3   |       | .173* |        |        |        |        |         |        |        |         |
| Groctr4   | .170* |       |        |        |        |        |         |        |        |         |

|         |        |  |        |  |  |  |  |       |        |         |
|---------|--------|--|--------|--|--|--|--|-------|--------|---------|
| Phartr1 |        |  | .163*  |  |  |  |  |       |        |         |
| Banktr1 |        |  | .255** |  |  |  |  |       |        |         |
| Banktr2 |        |  | -.168* |  |  |  |  |       | .163*  | -.217** |
| Banktr3 |        |  |        |  |  |  |  | .190* |        |         |
| Banktr4 |        |  | -.167* |  |  |  |  |       |        |         |
| Medtr1  | -.166* |  | .191*  |  |  |  |  |       | -.166* |         |
| Medtr3  | .183*  |  |        |  |  |  |  |       |        |         |

|           |        |          |          |          |          |       |        |         |         |         |
|-----------|--------|----------|----------|----------|----------|-------|--------|---------|---------|---------|
|           | Secu4  | Traffic1 | Traffic2 | Traffic3 | Traffic4 | Snow1 | Snow2  | Snow3   | Snow4   | Disprev |
| Secu4     |        |          |          | -.270**  | .338**   |       | -.161* |         | .184*   |         |
| Traffic1  |        |          | -.243**  | -.185*   | -.250**  |       |        | -.189*  | .174*   |         |
| Traffic2  |        |          |          | -.373**  | -.505**  |       | .288** |         | -.162*  |         |
| Traffic3  |        |          |          |          | -.385**  |       |        | .194*   |         |         |
| Traffic4  |        |          |          |          |          |       | -.170* |         |         |         |
| Snow2     |        |          |          |          |          |       |        | -.244** | -.408** |         |
| Snow3     |        |          |          |          |          |       |        |         | -.772** |         |
| Numchild  | .168*  |          |          |          |          |       |        |         |         |         |
| Shopser31 |        |          |          |          |          |       |        |         |         | -.164*  |
| Satfri3   |        |          |          | .195*    |          |       |        |         |         |         |
| Satfri4   |        | .184*    |          |          |          |       |        |         |         |         |
| Satrel1   | -.177* |          |          |          |          |       |        |         |         |         |
| Satrel3   |        |          | -.222**  | .178*    |          |       |        |         |         |         |
| Satrel4   |        |          |          | -.169*   |          |       |        |         | -.166*  |         |
| Satgroc1  |        |          |          |          |          |       | .249** |         | -.163*  |         |
| Satgroc3  |        |          |          | .203*    |          |       | -.166* |         |         |         |
| Satgroc4  |        |          | .162*    |          |          |       |        |         |         |         |
| Satphar1  |        |          |          |          |          |       | .249** |         | -.163*  |         |
| Satphar3  |        |          |          | .237**   |          |       | -.166* |         |         |         |

|          |        |        |         |         |        |       |        |       |  |         |
|----------|--------|--------|---------|---------|--------|-------|--------|-------|--|---------|
| Satphar4 |        |        |         |         |        |       |        |       |  |         |
| Satbank2 |        |        | .167*   |         |        | .179* |        |       |  |         |
| Satdoc1  | .187*  | .176*  |         |         |        |       |        |       |  |         |
| Satdoc2  |        |        |         |         |        |       | .197*  |       |  |         |
| Satdoc3  |        | -.185* |         | .203*   |        |       |        |       |  |         |
| Access1  |        | .211** |         |         |        |       |        |       |  |         |
| Access2  |        |        |         |         |        |       | .243** |       |  | .178*   |
| Access3  |        | -.167* | -.222** | .346**  |        |       |        | .190* |  |         |
| Access4  |        |        | .171*   | -.232** |        |       |        |       |  |         |
| Socbeh21 |        |        | .164*   |         |        |       |        |       |  | -.482** |
| Trfr1    |        |        |         | .190*   |        |       |        |       |  |         |
| Trfr2    |        |        | .221**  |         |        |       |        |       |  |         |
| Trfr3    |        |        |         |         | .230** |       |        |       |  |         |
| Trfr4    |        |        |         |         | .178*  |       |        |       |  |         |
| Trfam2   |        |        | .183*   |         |        | .164* |        |       |  |         |
| Trfam3   |        | .234** |         |         |        |       |        |       |  |         |
| Trfam4   |        |        |         |         |        |       | .178*  |       |  | -.221** |
| Viserv31 |        |        |         |         |        | .162* |        |       |  | .175*   |
| Groctr1  | -.171* |        |         |         |        |       |        |       |  |         |
| Groctr2  |        |        |         |         |        | .179* |        |       |  |         |
| Phatr2   |        |        |         |         |        | .197* |        |       |  |         |
| Phattr3  |        |        |         |         |        |       |        |       |  | .376**  |
| Banktr2  |        |        | .185*   |         |        | .209* |        |       |  |         |
| Banktr4  |        |        |         |         |        |       |        |       |  | .189*   |

|           | Soccon21 | Frblgd32 | Numchild | Busser31 | Shopser31 | Grocse31 | Satfri1 | Satfri2 | Satfri3 | Satfri4 |
|-----------|----------|----------|----------|----------|-----------|----------|---------|---------|---------|---------|
| Soccon21  |          |          |          |          | -.164*    |          |         |         |         |         |
| Numchild  |          | .179*    |          |          | -.233**   |          |         |         |         |         |
| Busser31  |          |          |          |          | .557**    | .389**   |         |         |         |         |
| Shopser31 |          |          |          |          |           | .415**   |         |         |         |         |
| Satfri1   |          |          |          |          |           |          |         | -.195*  | -.229** |         |
| Satfri2   |          |          |          |          |           |          |         |         | -.346** |         |
| Satfri3   |          |          |          |          |           |          |         |         | -.487** |         |
| Satfri4   |          |          |          |          |           |          | -.275** | -.416** |         |         |
| Satrel1   |          |          |          |          |           |          | .263**  |         | -.161*  |         |
| Satrel2   |          | -.161*   |          |          |           |          |         | .432**  |         | -.173*  |
| Satrel3   |          |          |          |          |           |          | .174*   |         | .362**  | -.423** |
| Satrel4   |          |          |          |          |           |          | -.183*  | -.246** | -.194*  | .516**  |
| Satgroc1  |          |          |          |          |           |          | .399**  |         |         |         |
| Satgroc2  |          |          |          |          |           |          |         | .269**  |         |         |
| Satgroc3  |          |          |          | -.203*   | -.199*    |          |         | -.183*  | .394**  | -.249** |
| Satgroc4  |          |          |          |          | .265**    | .185*    |         |         | -.252** | .328**  |
| Satphar1  |          |          |          |          |           |          | .399**  |         |         |         |
| Satphar2  |          |          |          |          |           |          |         | .343**  |         |         |
| Satphar3  |          |          |          | -.197*   | -.186*    |          |         | -.183*  | .332**  | -.220** |
| Satphar4  |          |          |          | .204*    | .262*     |          |         |         | -.239** | .335**  |
| Satbank1  |          |          |          |          |           |          | .202*   |         |         |         |
| Satbank2  |          |          |          |          |           |          |         | .340**  | -.176*  |         |
| Satbank3  |          |          |          |          |           |          |         | -.163*  | .226**  | -.170*  |
| Satbank4  |          |          |          |          | .188*     |          | -.202*  |         |         | .267**  |
| Satdoc1   |          |          |          |          |           |          | .402**  |         |         |         |
| Satdoc2   |          |          |          |          |           |          |         | .299**  | -.231** |         |
| Satdoc3   |          |          |          |          |           |          |         |         | .344**  | -.270** |
| Satdoc4   |          |          |          |          |           |          |         | -.164*  |         | .343**  |
| Access3   |          | -.196*   |          | -.256**  | -.238**   | -.233**  |         |         | .207*   | -.191*  |

|          |  |        |        |        |        |        |        |  |        |         |
|----------|--|--------|--------|--------|--------|--------|--------|--|--------|---------|
| Access4  |  | .169*  |        | .182*  |        | .163*  |        |  |        |         |
| Visoc31  |  |        | .229** |        |        |        |        |  |        |         |
| Trfr1    |  |        |        |        |        |        |        |  |        | -.263** |
| Trfr4    |  |        |        |        |        |        |        |  |        | .256**  |
| Trfam1   |  |        |        |        | .182*  |        |        |  |        | -.298** |
| Trfam2   |  |        | .162*  |        | -.171* |        |        |  |        |         |
| Trfam3   |  |        |        |        | -.177* |        |        |  |        |         |
| Trfam4   |  |        |        |        |        |        |        |  |        | .252**  |
| Viserv31 |  |        |        |        |        | -.172* |        |  |        |         |
| Serbeh31 |  |        |        | .403** | .459** | .775** |        |  | -.180* |         |
| Groctr1  |  |        |        |        |        |        | .211** |  |        | -.200*  |
| Groctr2  |  |        | .181*  |        |        |        | -.165* |  |        |         |
| Groctr4  |  |        |        |        |        |        |        |  |        | .210*   |
| Phatrl   |  | -.195* |        |        |        |        |        |  |        |         |
| Phatr2   |  |        | .225** |        | -.167* |        |        |  |        |         |
| Banktr1  |  |        |        |        |        |        |        |  |        | -.181*  |
| Banktr3  |  | .163*  |        |        |        |        |        |  |        |         |
| Banktr4  |  |        |        |        |        |        |        |  |        | .212**  |
| Medtr1   |  |        |        |        |        |        |        |  |        | -.202*  |

|          | Satrel1 | Satrel2 | Satrel3 | Satrel4 | Satgroc1 | Satgroc2 | Satgroc3 | Satgroc4 | Satphar1 | Satphar2 |
|----------|---------|---------|---------|---------|----------|----------|----------|----------|----------|----------|
| Satrel1  |         |         | -.188*  | -.220** | .164*    |          |          |          | .164*    |          |
| Satrel2  |         |         | -.317** | -.371** |          |          |          |          |          | .177*    |
| Satrel3  |         |         |         | -.645** |          |          | .303**   | -.288**  |          |          |
| Satrel4  |         |         |         |         |          |          |          | .204*    |          |          |
| Satgroc1 |         |         |         |         |          |          |          |          | 1.00**   |          |
| Satgroc2 |         |         |         |         |          |          | -.319**  | -.428**  |          | .653**   |
| Satgroc3 |         |         |         |         |          |          |          |          |          | -.304**  |





|          | Satphar3 | Satphar4 | Satbank1 | Satbank2 | Satbank3 | Satbank4 | Satdoc1 | Satdoc2 | Satdoc3 | Satdoc4 |
|----------|----------|----------|----------|----------|----------|----------|---------|---------|---------|---------|
| Satphar3 |          | -.697**  |          | -.214**  | .597**   | -.394**  |         | -.225** | .510**  | -.289** |
| Satphar4 |          |          | -.163*   | -.238**  | -.345**  | .545**   |         |         | -.335** | .383**  |
| Satbank1 |          |          |          |          |          | -.172*   | .430**  |         |         | -.167*  |
| Satbank2 |          |          |          |          | -.288**  | -.475**  |         | .538**  | -.192** | -.180*  |
| Satbank3 |          |          |          |          |          | -.648**  |         | -.185*  | .485**  | -.332** |
| Satbank4 |          |          |          |          |          |          |         | -.219** | -.313** | .490**  |
| Satdoc1  |          |          |          |          |          |          |         |         |         | -.188*  |
| Satdoc2  |          |          |          |          |          |          |         |         | -.286** | -.430** |
| Satdoc3  |          |          |          |          |          |          |         |         |         | -.673** |
| Access1  |          | -.163*   |          |          |          |          |         |         |         |         |
| Access3  | .333**   | -.195*   |          |          | .282**   |          |         |         |         |         |
| Access4  | -.298**  | .275**   |          |          | -.316**  | .222**   |         |         | -.161*  |         |
| Socbeh21 | -.162*   |          |          |          |          |          |         |         | -.184*  |         |
| Trfr4    | -.205*   |          |          |          |          |          |         |         |         |         |
| Trfam4   | -.205*   |          |          |          | -.241**  | .290**   |         |         | -.222** | .195*   |
| Viserv31 |          |          |          |          | .246**   | -.169*   |         |         |         |         |
| Banktr2  |          |          |          |          |          |          |         |         | .163*   |         |
| Banktr4  | -.186*   |          |          |          | -.185*   | .190*    |         |         | -.205*  |         |
| Medtr4   |          |          | .229**   |          |          |          | .200*   |         |         |         |

|         | Access1 | Access2 | Access3 | Access4 | Visco31 | Socbeh31 | Trfr1   | Trfr2   | Trfr3   | Trfr4   |
|---------|---------|---------|---------|---------|---------|----------|---------|---------|---------|---------|
| Access1 |         |         |         | -.163*  |         |          |         |         |         |         |
| Access2 |         |         | -.284** | -.375** |         |          |         |         |         |         |
| Access3 |         |         |         | -.728** |         | -.175*   |         |         |         |         |
| Trfr1   |         |         |         |         |         |          |         | -.717** | -.265** | -.493** |
| Trfam1  |         |         |         |         |         |          | .462**  | -.359** |         | -.251** |
| Trfam2  |         |         |         |         |         |          | -.355** | .446**  |         |         |



|         |         |         |  |         |  |        |         |         |        |         |
|---------|---------|---------|--|---------|--|--------|---------|---------|--------|---------|
| Banktr1 | .439**  | -.273** |  | -.282** |  |        | .738**  | -.414** |        | -.553** |
| Banktr2 | -.323** | .391**  |  |         |  |        | -.418*  | .545**  |        |         |
| Banktr3 |         |         |  |         |  |        | -.253** |         | .258** |         |
| Banktr4 | -.217** |         |  | .405**  |  |        | -.417** |         |        | .591**  |
| Medtr1  | .228**  |         |  |         |  |        | .339**  | -.231** |        | -.167*  |
| Medtr2  |         |         |  |         |  | -.177* | -.249** | .208*   |        | .165*   |
| Medtr3  |         |         |  |         |  |        | -.233** | .171*   |        |         |

|         |         |         |         |         |         |         |         |         |         |        |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
|         | Phatr1  | Phatr2  | Phatr3  | Phatr4  | Banktr1 | Banktr2 | Banktr3 | Banktr4 | Medtr1  | Medtr2 |
| Phatr1  |         | -.724** | -.356** | -.441** | .666**  | -.412** | -.346** | -.270** | .400**  |        |
| Phatr2  |         |         |         |         | -.457** | .613**  |         |         | -.284** |        |
| Phatr3  |         |         |         |         | -.212** |         | .557**  |         | -.164*  |        |
| Phatr4  |         |         |         |         | -.351** |         | .190*   | .437**  | -.166*  |        |
| Banktr1 |         |         |         |         |         | -.546** | -.330** | -.592** | .413**  |        |
| Banktr2 |         |         |         |         | -.546** |         |         | -.168*  | -.163*  |        |
| Banktr3 |         |         |         |         |         |         |         |         | -.267** |        |
| Banktr4 |         |         |         |         |         |         |         |         | -.222** |        |
| Medtr2  | -.313** | .389**  |         |         | -.229** | .190*   |         |         | -.587** |        |
| Medtr3  | -.208*  |         | .179*   |         | -.278** |         |         | .197*   | -.643** |        |
| Medtr4  |         |         |         | .306**  |         |         | .329**  |         | -.345** |        |

## Appendix J

### Zero-Order Correlation Matrix for the Sub-Sample with Children (N=116)

**Table J. Zero-Order Correlation Matrix for the Sub-Sample with Children (N=116):  
Significant Associations of the Antecedent Construct Variables**

|          | Genmar3 | Age3    | Incomesa3 | Educati1 | Genclch | Marclch | ADL1    | ADL2    | ADL3    | IADL1   |
|----------|---------|---------|-----------|----------|---------|---------|---------|---------|---------|---------|
| Genmar3  |         | -.260** |           |          |         |         |         |         |         |         |
| Age3     |         |         | .430**    |          |         |         |         |         |         |         |
| Marclch  |         | .187*   |           |          |         |         |         |         |         |         |
| ADL1     |         | .233*   |           |          |         |         |         | -.724** | -.305** | .447**  |
| ADL2     | .198*   |         |           |          | .211*   |         |         |         | -.436** | -.331** |
| IADL1    |         | .337**  | .220*     |          | -.242** |         |         |         |         |         |
| IADL2    | .221*   | -.336** | -.265**   |          | .330**  |         | -.252** | .276**  |         | -.742** |
| IADL3    |         |         |           |          |         |         | -.232*  |         | .243**  | -.263** |
| Sdwk3    | .243**  | -.322** |           |          |         |         |         |         | -.186*  |         |
| Sdwk4    | -.270** | .251**  |           |          |         |         |         |         |         |         |
| Secu1    |         |         |           |          |         | -.279** |         | -.185*  |         |         |
| Traffic1 |         | .248*   |           |          |         |         |         |         |         |         |
| Traffic2 |         | .250**  |           |          |         |         | .266**  |         |         |         |
| Snow2    |         |         |           |          |         |         | .297**  | -.271** |         |         |
| Snow4    |         |         |           | -.207*   |         |         |         |         |         |         |
| Busser31 | .205*   |         |           |          |         |         |         |         |         |         |
| Satfri4  |         |         |           |          |         |         |         | -.191*  |         |         |
| Satrel1  |         |         |           | -.206*   |         |         |         | .186*   |         |         |
| Satrel3  |         |         |           |          |         |         | -.209*  | .241**  |         |         |
| Satrel4  |         |         |           |          |         |         |         | -.224*  |         |         |
| Satgroc1 |         | .246**  |           |          |         |         |         |         |         |         |
| Satgroc3 |         |         |           |          |         |         | -.194*  | .202*   |         |         |
| Satgroc4 |         |         |           |          |         |         | .190*   |         |         |         |

|          |  |        |        |         |       |         |         |        |  |        |
|----------|--|--------|--------|---------|-------|---------|---------|--------|--|--------|
| Satphar1 |  | .246** |        |         |       |         |         |        |  |        |
| Satphar3 |  |        |        |         |       |         | -.183*  | .258** |  |        |
| Satbank3 |  |        |        |         |       | -.214*  | -.317** | .259** |  |        |
| Satbank4 |  |        | .202*  |         |       |         |         |        |  |        |
| Access1  |  |        | -.221* |         |       |         |         |        |  |        |
| Access3  |  |        |        |         |       |         | -.282** | .255** |  | -.193* |
| Access4  |  |        |        |         |       |         | .263**  |        |  | -.202* |
| Dichld21 |  |        |        |         | .193* |         |         |        |  |        |
| Trfam1   |  |        |        | -.241** |       |         |         |        |  |        |
| Viserv31 |  |        |        |         |       | -.352** |         |        |  |        |
| Serbeh31 |  | .202*  |        |         |       | .196*   |         |        |  |        |
| Groctr1  |  |        |        |         |       |         |         |        |  | -.216* |
| Banktr4  |  |        |        |         |       | .192*   |         |        |  |        |
| Medtr1   |  |        |        |         |       |         |         | .203*  |  | -.205* |
| Medtr2   |  |        |        |         |       |         |         |        |  | -.208* |
| Medtr4   |  | .300** |        |         |       |         |         |        |  |        |

|          | IADL2 | IADL3   | Chronic1 | Chronic2 | Chronic3 | Sdwk1   | Sdwk2   | Sdwk3   | Sdwk4  | Secu1  |
|----------|-------|---------|----------|----------|----------|---------|---------|---------|--------|--------|
| IADL2    |       | -.452** |          |          |          |         |         |         |        |        |
| Chronic1 |       |         |          | -.437**  |          |         |         |         |        |        |
| Chronic3 |       |         | -.656**  | -.392**  |          |         |         |         |        |        |
| Sdwk2    |       |         |          | -.189*   |          |         |         |         |        |        |
| Sdwk4    |       |         |          |          |          | -.245** | -.508** | -.318** |        |        |
| Secu1    |       |         |          |          |          | .217*   |         | -.508** |        | -.228* |
| Secu2    |       |         |          |          |          |         | .310**  |         |        |        |
| Secu3    |       |         |          |          |          |         | -.210*  | .325**  |        | -.205* |
| Secu4    |       |         |          |          |          |         |         | -.299** | .331** | -.191* |
| Traffic2 |       |         |          |          |          |         | .366**  | -.188** |        |        |

|           |        |  |  |  |  |  |  |        |  |  |
|-----------|--------|--|--|--|--|--|--|--------|--|--|
| Traffic3  |        |  |  |  |  |  |  | .292** |  |  |
| Traffic4  |        |  |  |  |  |  |  |        |  |  |
| Snow2     |        |  |  |  |  |  |  |        |  |  |
| Snow3     |        |  |  |  |  |  |  |        |  |  |
| Snow4     |        |  |  |  |  |  |  |        |  |  |
| Frldg32   |        |  |  |  |  |  |  |        |  |  |
| Shopser31 |        |  |  |  |  |  |  |        |  |  |
| Satfri1   |        |  |  |  |  |  |  |        |  |  |
| Satfri2   |        |  |  |  |  |  |  |        |  |  |
| Satfri3   |        |  |  |  |  |  |  |        |  |  |
| Satrel1   |        |  |  |  |  |  |  |        |  |  |
| Satrel3   |        |  |  |  |  |  |  |        |  |  |
| Satgroc1  |        |  |  |  |  |  |  |        |  |  |
| Satgroc4  |        |  |  |  |  |  |  |        |  |  |
| Satphar1  |        |  |  |  |  |  |  |        |  |  |
| Satdoc1   |        |  |  |  |  |  |  |        |  |  |
| Access2   |        |  |  |  |  |  |  |        |  |  |
| Access3   |        |  |  |  |  |  |  |        |  |  |
| Visoc31   |        |  |  |  |  |  |  |        |  |  |
| Trfr1     |        |  |  |  |  |  |  |        |  |  |
| Trfam2    |        |  |  |  |  |  |  |        |  |  |
| Trfam4    |        |  |  |  |  |  |  |        |  |  |
| Phattr3   |        |  |  |  |  |  |  |        |  |  |
| Banktr1   |        |  |  |  |  |  |  |        |  |  |
| Medtr1    | .213*  |  |  |  |  |  |  |        |  |  |
| Medtr3    | -.198* |  |  |  |  |  |  |        |  |  |

|          | Secu2   | Secu3   | Secu4   | Traffic1 | Traffic2 | Traffic3 | Traffic4 | Snow1 | Snow2   | Snow3   |
|----------|---------|---------|---------|----------|----------|----------|----------|-------|---------|---------|
| Secu2    |         | -.381** | -.354** |          |          |          |          |       |         |         |
| Secu3    |         |         | -.611** |          |          |          |          |       |         |         |
| Secu4    |         |         |         |          |          | -.264**  |          |       |         |         |
| Traffic1 |         |         |         |          | -.242**  |          |          |       |         |         |
| Traffic2 | .281**  | -.204** |         |          |          | -.373**  |          |       | .353**  |         |
| Traffic3 |         | .304**  |         |          |          |          |          |       | -.194*  | .238*   |
| Traffic4 |         |         | .321**  | -.246**  | -.516**  | -.380**  |          |       | -.213*  |         |
| Snow1    | .198*   |         |         |          |          |          |          |       |         |         |
| Snow2    | .238*   |         |         |          | .353**   | -.194*   | -.213*   |       |         | -.249** |
| Snow3    |         |         |         |          |          | .238*    |          |       |         |         |
| Snow4    |         |         | .198*   |          |          |          |          |       | -.418** | -.757** |
| Soccon21 | -.286** |         |         |          |          |          |          |       |         |         |
| Busser31 |         |         |         |          |          |          | -.215**  |       |         |         |
| Satfri3  |         |         |         |          |          | .249**   |          |       |         |         |
| Satfri4  |         |         |         | .201*    |          |          |          |       |         |         |
| Satrel2  |         |         |         |          | .192*    |          |          |       |         |         |
| Satrel3  |         |         |         |          | -.248**  | .193*    |          |       |         |         |
| Satgroc1 |         |         |         |          |          |          |          |       | .273**  |         |
| Satgroc2 |         |         |         |          |          | -.225*   |          |       |         |         |
| Satgroc3 |         |         |         |          |          | .216*    |          |       |         |         |
| Satphar1 |         |         |         |          |          |          |          |       | .273**  |         |
| Satphar3 |         |         |         |          |          | .226*    |          |       |         |         |
| Satbank2 |         |         |         |          |          |          |          | .211* |         |         |
| Satbank3 |         |         |         |          | -.194*   | -.239**  |          |       |         |         |
| Satbank4 |         |         |         |          |          |          |          |       |         |         |
| Satdoc1  |         |         | .193*   | .207*    |          |          |          |       |         |         |
| Satdoc2  |         | .187*   |         |          |          |          |          |       | .236*   |         |
| Access1  |         |         |         | .246**   |          |          |          |       |         |         |
| Access2  |         |         |         | .192*    |          |          |          |       | .312**  |         |



|          |         |        |       |         |        |        |        |        |       |  |
|----------|---------|--------|-------|---------|--------|--------|--------|--------|-------|--|
| Access3  |         |        |       |         | -.206* | .379** |        |        |       |  |
| Access4  |         |        | .209* |         | .190*  | -.228  |        |        |       |  |
| Visoc31  |         | -.186* | .215* |         |        |        |        | -.186* |       |  |
| Socbeh21 | -.299** |        |       |         |        |        |        |        |       |  |
| Trfr2    |         |        |       |         | .214*  |        |        |        |       |  |
| Trfr3    |         |        |       |         |        |        | .260** |        |       |  |
| Trfr4    | .230*   |        |       |         |        |        |        |        |       |  |
| Trfam1   | -.210*  | .233*  |       |         |        |        |        |        |       |  |
| Trfam2   |         | -.210* |       |         | .196*  |        |        |        |       |  |
| Groctr1  |         | .218*  |       |         |        |        |        |        |       |  |
| Groctr2  | .202*   | -.197* |       |         |        |        |        |        | .183* |  |
| Phartr1  |         |        |       | -.241** |        |        |        |        |       |  |
| Phatr2   |         |        |       | .212*   |        |        |        | .198   |       |  |
| Banktr2  | .215*   | -.216* |       |         |        |        |        | .211*  |       |  |
| Banktr3  |         |        |       | .217*   | .197*  |        |        |        |       |  |
| Medtr2   |         |        |       |         | -.219* |        |        |        |       |  |
| Medtr3   |         |        |       |         | .203*  |        |        |        |       |  |

|           | Snow4 | Disprev | Dichcl31 | Frbldg32 | Numchild | Busser31 | Shopser31 | Grocse31 | Satfri1 | Satfri2 |
|-----------|-------|---------|----------|----------|----------|----------|-----------|----------|---------|---------|
| Dichcl31  |       | -.297*  |          |          |          |          |           |          |         |         |
| Numchild  |       |         |          | .312**   |          |          |           |          |         |         |
| Shopser31 |       |         |          | .611**   |          | .380**   | -.187*    |          |         |         |
| Grocser31 |       |         |          | .340**   |          |          |           |          |         |         |
| Satfri3   |       |         |          |          |          |          | -.234*    | -.336**  |         | -.514** |
| Satfri4   |       |         |          |          |          |          | -.278**   | -.399**  |         |         |
| Satrel1   |       |         |          |          |          |          | .382**    |          |         |         |
| Satrel2   |       |         |          |          |          |          |           | .413**   |         | -.210*  |
| Satrel3   |       |         |          | -.190*   | -.247**  |          | .202*     |          | .313**  | -.418** |

|          |         |         |        |         |        |        |         |         |         |         |
|----------|---------|---------|--------|---------|--------|--------|---------|---------|---------|---------|
| Satrel4  | -.187*  |         | -.184* |         |        |        | -.234*  | -.280** | -.222*  | .596**  |
| Satgroc1 | -.184*  |         |        |         |        |        | .459**  |         |         |         |
| Satgroc2 |         |         |        |         |        |        |         | .193*   |         |         |
| Satgroc3 |         |         |        | -.262** | -.222* | -.216* |         |         | .365**  | -.256** |
| Satgroc4 |         |         |        |         | .249** |        | -.216*  |         | -.226*  | .317**  |
| Satphar1 | -.184*  |         |        |         |        |        | .459**  |         |         |         |
| Satphar2 |         |         |        |         |        |        |         | .310**  |         |         |
| Satphar3 |         |         |        | -.255** | -.224* |        |         |         | .300**  | -.243** |
| Satphar4 |         |         |        | .186*   | .255** |        |         |         | -.199*  | .339**  |
| Satbank1 |         |         |        |         |        |        | .232*   |         |         |         |
| Satbank2 |         |         |        |         |        |        |         | .234*   | -.189*  |         |
| Satbank3 |         |         |        | -.205*  |        |        | .209*   |         | .267**  | -.244** |
| Satbank4 |         |         |        |         | .206*  |        | -.319** |         |         | .280**  |
| Satdoc1  |         |         |        |         |        |        | .463**  |         |         |         |
| Satdoc2  |         |         |        |         |        |        |         | .351**  | -.263** |         |
| Satdoc3  |         |         |        |         |        |        |         |         | .356**  | -.268** |
| Satdoc4  |         |         |        |         |        |        | -.246** |         |         | .355**  |
| Access2  |         | .191*   |        |         |        |        |         |         |         |         |
| Access3  |         |         |        | -.235*  | -.210* |        |         |         | .273**  | -.232*  |
| Access4  |         |         |        | .208*   |        |        |         |         | -.188*  |         |
| Visoc31  |         |         | -.197* |         | .263** |        |         |         |         |         |
| Socbeh21 |         | -.245** | .766** |         |        |        |         |         |         |         |
| Trfr1    |         |         |        |         |        |        |         |         |         | -.266** |
| Trfr4    |         |         | -.211* |         |        |        |         |         |         | .293**  |
| Trfam1   |         |         |        |         |        |        |         |         | .233*   | -.333** |
| Trfam2   |         |         |        | -.186*  |        |        |         |         |         |         |
| Trfam3   |         |         |        |         | -.198* |        |         |         |         |         |
| Trfam4   | -.215** |         |        |         |        |        |         |         |         | .232*   |
| Viserv31 |         | .193*   |        | .420**  |        | -.195* |         |         |         |         |
| Serbeh31 |         |         |        |         | .471** | .903** |         |         | -.210*  |         |



|          |       |        |         |         |  |        |         |         |        |        |
|----------|-------|--------|---------|---------|--|--------|---------|---------|--------|--------|
| Satdoc3  |       |        | .399**  | -.328** |  |        | .447**  | -.331** |        | -.191* |
| Satdoc4  |       | -.200* | -.326** | .483**  |  |        | -.251** | .329**  |        |        |
| Access1  |       |        |         |         |  | .310** |         |         |        |        |
| Access3  |       |        | .232*   |         |  | -.230* | .425**  | -.202*  |        |        |
| Access4  |       |        |         |         |  |        | -.295** | .270**  |        |        |
| Visoc31  |       |        |         | .206*   |  |        |         |         |        |        |
| Socbeh21 |       |        |         | -.187*  |  |        |         |         |        |        |
| Trfr1    |       |        | .263**  | -.264** |  |        |         |         |        |        |
| Trfr2    |       |        | -.212*  | .237*   |  |        |         |         |        |        |
| Trfam1   |       | .243** |         | -.362** |  |        |         |         |        |        |
| Trfam4   |       | -.188* | -.200*  | .352**  |  |        | -.214*  |         |        |        |
| Viserv31 |       |        |         |         |  |        | .217*   |         |        |        |
| Serbeh31 |       |        |         |         |  |        | -.267** |         |        |        |
| Groctr4  |       |        |         |         |  | .203*  |         |         |        |        |
| Phartr4  |       |        | -.184*  | .190*   |  |        | -.191*  |         |        |        |
| Banktr4  |       |        |         | .218*   |  |        | -.214*  |         |        |        |
| Medtr1   |       |        |         | -.212*  |  |        |         |         |        |        |
| Medtr3   |       |        |         |         |  |        |         | .187*   |        |        |
| Medtr4   | .223* |        |         |         |  | .267** |         |         | .267** |        |

|          | Satphar1 | Satphar2 | Satphar3 | Satphar4 | Satbank1 | Satbank2 | Satbank3 | Satbank4 | Satdoc1 | Satdoc2 |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|---------|---------|
| Satphar3 |          |          |          | -.690**  |          |          |          |          |         |         |
| Satphar4 |          |          |          |          |          | -.226*   |          |          |         |         |
| Satbank3 |          |          | .673**   | -.421**  |          | -.273**  |          | -.650**  |         | -.191*  |
| Satbank4 |          |          | -.490**  | .609**   | -.199*   | -.466**  |          |          |         | -.221*  |
| Satdoc1  |          |          |          |          | .425**   |          |          |          |         |         |
| Satdoc2  |          |          | -.191*   |          |          | .566**   |          |          |         |         |
| Satdoc3  |          |          | .539**   | -.342**  |          | -.203*   | .529**   | -.350**  |         | -.274** |

|          |  |  |         |        |        |        |         |        |        |         |
|----------|--|--|---------|--------|--------|--------|---------|--------|--------|---------|
| Satdoc4  |  |  | -.343** | .415** | -.189* |        | -.386** | .535** | -.212* | -.400** |
| Access2  |  |  |         |        |        |        |         |        |        | .202*   |
| Access3  |  |  | .329**  |        |        | -.195* | .365**  |        |        |         |
| Access4  |  |  | -.244** | .220*  |        |        | -.373** | .247** |        |         |
| Visoc31  |  |  |         | .222*  |        |        |         | .245** |        |         |
| Trfr1    |  |  |         |        |        |        |         |        |        | -.263** |
| Trfr4    |  |  |         | .229*  |        |        |         | .189*  |        | .212*   |
| Trfam4   |  |  | -.301** |        |        |        | -.290** | .312** |        |         |
| Viserv31 |  |  |         |        |        |        | .266**  | -.214* |        |         |
| Serbeh31 |  |  |         |        |        |        | -.187   |        |        |         |
| Groctr2  |  |  |         |        |        |        |         | .187*  |        |         |
| Phartr4  |  |  | -.187*  | .199*  |        |        |         |        |        |         |
| Banktr3  |  |  |         |        | .193*  |        |         |        |        |         |
| Banktr4  |  |  | -.254** |        |        |        | -.240** | .222*  |        |         |
| Medtr1   |  |  | .187*   |        |        |        |         |        |        |         |
| Medtr4   |  |  |         |        | .223*  |        |         |        | .193*  |         |

|         |         |         |         |         |         |         |        |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|--------|---------|---------|---------|
|         | Satdoc3 | Satdoc4 | Access1 | Access2 | Access3 | Access4 | Vich31 | Chbeh21 | Trfr1   | Trfr2   |
| Satdoc3 |         | -.684** |         |         |         |         |        |         |         |         |
| Access3 |         |         |         | -.307** |         | -.704** |        |         |         |         |
| Access4 |         | .190*   |         | -.367** |         |         |        |         |         |         |
| Visoc31 |         | .204*   |         |         |         |         |        |         |         |         |
| Trfr1   |         |         |         |         |         |         |        |         |         | -.707** |
| Trfr3   |         |         |         |         |         |         | .210*  |         | -.276** | -.473** |
| Trfr4   | -.222*  | -.222*  |         |         |         |         |        |         |         |         |
| Trfam1  |         |         |         |         |         |         |        | .193*   | .511**  | -.404** |
| Trfam2  |         |         |         |         |         |         |        |         | -.392** | .498**  |
| Trfam4  | -.274** | -.201*  |         |         |         |         |        |         | -.303** |         |

|          |         |       |  |  |  |  |  |  |         |         |
|----------|---------|-------|--|--|--|--|--|--|---------|---------|
| Viserv31 | .242**  |       |  |  |  |  |  |  |         |         |
| Serbeh31 |         |       |  |  |  |  |  |  |         |         |
| Groctr1  |         |       |  |  |  |  |  |  | .428**  | -.283** |
| Groctr2  |         |       |  |  |  |  |  |  | -.257** | -.198*  |
| Groctr3  |         |       |  |  |  |  |  |  |         | .351**  |
| Groctr4  |         |       |  |  |  |  |  |  |         | -.262** |
| Phartr1  |         |       |  |  |  |  |  |  |         | .381**  |
| Phatr2   |         |       |  |  |  |  |  |  |         | -.351** |
| Phartr4  |         |       |  |  |  |  |  |  |         | -.215*  |
| Banktr1  |         |       |  |  |  |  |  |  |         | .404**  |
| Banktr2  | .197*   |       |  |  |  |  |  |  |         | -.247** |
| Banktr4  | -.274** |       |  |  |  |  |  |  |         | -.303** |
| Medtr1   |         |       |  |  |  |  |  |  |         | .309**  |
| Medtr2   |         |       |  |  |  |  |  |  |         | -.251** |
| Medtr3   | -.198*  | .226* |  |  |  |  |  |  |         | -.198*  |
| Medtr4   |         |       |  |  |  |  |  |  |         | .198*   |

|          | Trfr3 | Trfr4   | Trfam1  | Trfam2  | Trfam3  | Trfam4  | Viserv31 | Serbeh31 | Groctr1 | Groctr2 |
|----------|-------|---------|---------|---------|---------|---------|----------|----------|---------|---------|
| Trfam1   |       | -.270** |         | -.574** | -.277** | -.478** |          |          |         |         |
| Trfam2   |       |         | -.574** |         |         | -.265** |          |          |         |         |
| Trfam3   |       |         | -.277** |         |         |         |          |          |         |         |
| Trfam4   |       | .306**  |         |         |         |         |          |          |         |         |
| Viserv31 |       |         |         |         |         |         |          | -.193*   |         |         |
| Groctr1  |       | -.248** | .415*   | -.294** |         |         |          |          |         |         |
| Groctr2  |       |         |         | .259**  |         |         |          |          |         | -.485** |
| Groctr3  |       |         |         |         |         |         |          |          |         | -.275** |
| Groctr4  |       |         | -.332** |         |         | .310**  |          |          |         | -.536** |
| Phartr1  |       |         | .303**  | -.342** |         |         |          |          |         | -.317** |



Appendix K

Results of Exploratory Logistic and Linear Regression Analyses for the Entire Sample (N=149)

Table K. Results of Exploratory Logistic and Linear Regression Analyses for the Entire Sample (N=149):  
Significant ( $p < 0.10$ ) Antecedent Construct Variables

| Antecedent Categories  | Model I<br>Self-Rated Health   | Model II<br>PGC                 | Model III<br>CESD                                     | Model IV<br>Self-Esteem                               | Model V<br>Desired Control                            |
|--|--|---------------------------------|---|---|---|
|  | Variable/<br>Significance Level  | Variable/<br>Significance Level | Variable/<br>Significance Level                       | Variable/<br>Significance Level                       | Variable/<br>Significance Level                       |
| Socio-demographic Characteristics  |  | Income Sat ( $p < .039$ )       | Income Sat ( $p < .059$ )                             | Education ( $p < .094$ )                              | Gender/Mar ( $p < .031$ )<br>Education ( $p < .017$ ) |
| Socio-demographics & Personal Resource Transitions                         | ADL (4.663; $p < .097$ )<br>IADL (15.033; $p < .001$ )<br>Chronic (5.304; $p < .068$ ) |                                 | ADL (2.650; $p < .074$ )<br>IADL (2.611; $p < .077$ ) | ADL (3.492; $p < .033$ )<br>IADL (6.020; $p < .003$ ) | IADL (3.498; $p < .033$ )                             |
| Socio-demographics & Resident-Appraised Change in the Physical Environment |  | Traffic (8.585; $p < .035$ )    |   |   |   |



| Antecedent Categories   | Self-Rated Health               | PGC                             | CESD                            | Self-Esteem                     | Desired Control                 |
|---|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
|   | Variable/<br>Significance Level | Variable/<br>Significance Level | Variable/<br>Significance Level | Variable/<br>Significance Level | Variable/<br>Significance Level |
| Socio-demographics & Observer-Defined Change in the Social Environment  |                                 |                                 |                                 |                                 | Frbdg 32(p<.079)                |
| Socio-demographics & Observer-Defined Change in the Service Environment |                                 |                                 |                                 |                                 |                                 |
| Socio-demographics Resident-Appraised Change in the Social Environment  |                                 |                                 | SatFam (2.403; p<.070)          |                                 |                                 |

| Antecedent Categories  | Self-Rated Health                                | PGC                             | CESD                            | Self-Esteem                                    | Desired Control                 |
|--|--|---------------------------------|---------------------------------|--|---------------------------------|
|  | Variable/<br>Significance Level                  | Variable/<br>Significance Level | Variable/<br>Significance Level | Variable/<br>Significance Level                | Variable/<br>Significance Level |
| Socio-demographics<br>Resident-<br>Appraised Change<br>in the Service<br>Environment | SatGroc (9.678; p<.022)                          | Access (3.070; p<.030)          | Access (3.113, p<.028)          | Access (6.906; p<.000)                         | Access (2.115; p<.101)          |
|  |  |                                 | SatDoc (2.691; p<.049)          | SatGroc (2.769; p<.044)                        | SatBank (2.313; p<.079)         |
| Socio-demographics<br>&<br>Change Individual<br>Social Behaviour<br>Circuits         |  | Total Visits (p<.008)           | Total Visits (p<.008)           | Total Visits (p<.010)<br>FamTr (2.125; p<.100) |                                 |
| Socio-demographics<br>&<br>Change Individual<br>Service Behaviour<br>Circuits        | GrocTr (9.511; p<.023)<br>BankTr (8.777; p<.032) |                                 |                                 |  |                                 |

Appendix L

Results of Exploratory Logistic and Linear Regression Analyses for the Sub-Sample with Children (N=116)

Table L. Results of Exploratory Logistic and Linear Regression Analyses for the Sub-Sample with Children (N=116): Significant ( $p < 0.10$ ) Antecedent Construct Variables

| Antecedent Categories  | Model VI<br>Self-Rated Health                             | Model VII<br>PGC                | Model VIII<br>CESD  | Model IX<br>Self-Esteem                               | Model X<br>Desired Control   |
|--|---|---------------------------------|---|---|--|
|  | Variable/<br>Significance Level                           | Variable/<br>Significance Level | Variable/<br>Significance Level   | Variable/<br>Significance Level                       | Variable/<br>Significance Level  |
| Socio-demographic Characteristics  | Income Sat ( $p < .075$ )                                 | Gender/Mar ( $p < .062$ )       |   | Education ( $p < .065$ )                              | Gender/Mar ( $p < .060$ )<br>Income Sat ( $p < .034$ )<br>Education (.091) |
| Socio-demographics & Personal Resource Transitions                         | IADL (5.107; $p < .078$ )<br>Chronic (9.534; $P < .009$ ) | Chronic (3.245; $p < .043$ )    | ADL (2.539; $p < .084$ )<br>IADL (3.368; $p < .038$ )<br>Chronic (2.953; $p < .057$ ) | ADL (4.231; $p < .017$ )<br>IADL (5.598; $p < .005$ ) | IADL (2.556; $p < .083$ )  |
| Socio-demographics & Resident-Appraised Change in the Physical Environment |   | Security (2.489; $p < .065$ )   | Security (2.142; $p < .100$ )   |   | Sdwalk (2.189; $p < .094$ )  |

| Antecedent Categories   | Self-Rated Health3              | PGC3                            | CESD3                           | Self-Esteem3                    | Desired Control3                                |
|---|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---|
|   | Variable/<br>Significance Level | Variable/<br>Significance Level | Variable/<br>Significance Level | Variable/<br>Significance Level | Variable/<br>Significance Level                 |
| Socio-demographics & Observer-Defined Change in the Social Environment  |                                 |                                 |                                 |                                 |   |
| Socio-demographics & Observer-Defined Change in the Service Environment |                                 |                                 |                                 |                                 |   |
| Socio-demographics Resident-Appraised Change in the Social Environment  |                                 |                                 |                                 |                                 | SatFr (2.207; p<.092)<br>SatFam (2.519; p<.062) |

|   | <b>Self-Rated Health3</b>   | <b>PGC3</b>                             | <b>CESD3</b>                                     | <b>Self-Esteem3</b>                             | <b>Desired Control3</b>  |
|---|---|---|--|---|--|
| <b>Antecedent Categories</b>  | <b>Variable/<br/>Significance Level</b>                                     | <b>Variable/<br/>Significance Level</b> | <b>Variable/<br/>Significance Level</b>          | <b>Variable/<br/>Significance Level</b>         | <b>Variable/<br/>Significance Level</b>                                    |
| <b>Socio-demographics<br/>Resident-<br/>Appraised Change<br/>in the Service<br/>Environment</b> |   | Access (2.500; p<.064)                  | Access (2.813; p<.043)<br>SatDoc (2.545; p<.060) | Access (6.048; p<.001)<br>Satgr (2.311; p<.081) | Access (4.295; p<.007)<br>SatGr (2.402; p<.072)<br>SatBank (2.339; p<.078) |
| <b>Socio-demographics<br/>&amp;<br/>Change Individual<br/>Social Behaviour<br/>Circuits</b>     |   | Total Visits (p<.076)                   | Total Visits (p<.043)                            | Total Visits (p<.057)<br>TrFam (2.201; p<.093)  |  |
| <b>Socio-demographics<br/>&amp;<br/>Change Individual<br/>Service Behaviour<br/>Circuits</b>    | GrocTr (6.875; p<.076)<br>PharTr (6.331; p<.097)<br>Banktr (16.733; p<.001) |   |  |   | TrPhar (3.140; p<.029)   |