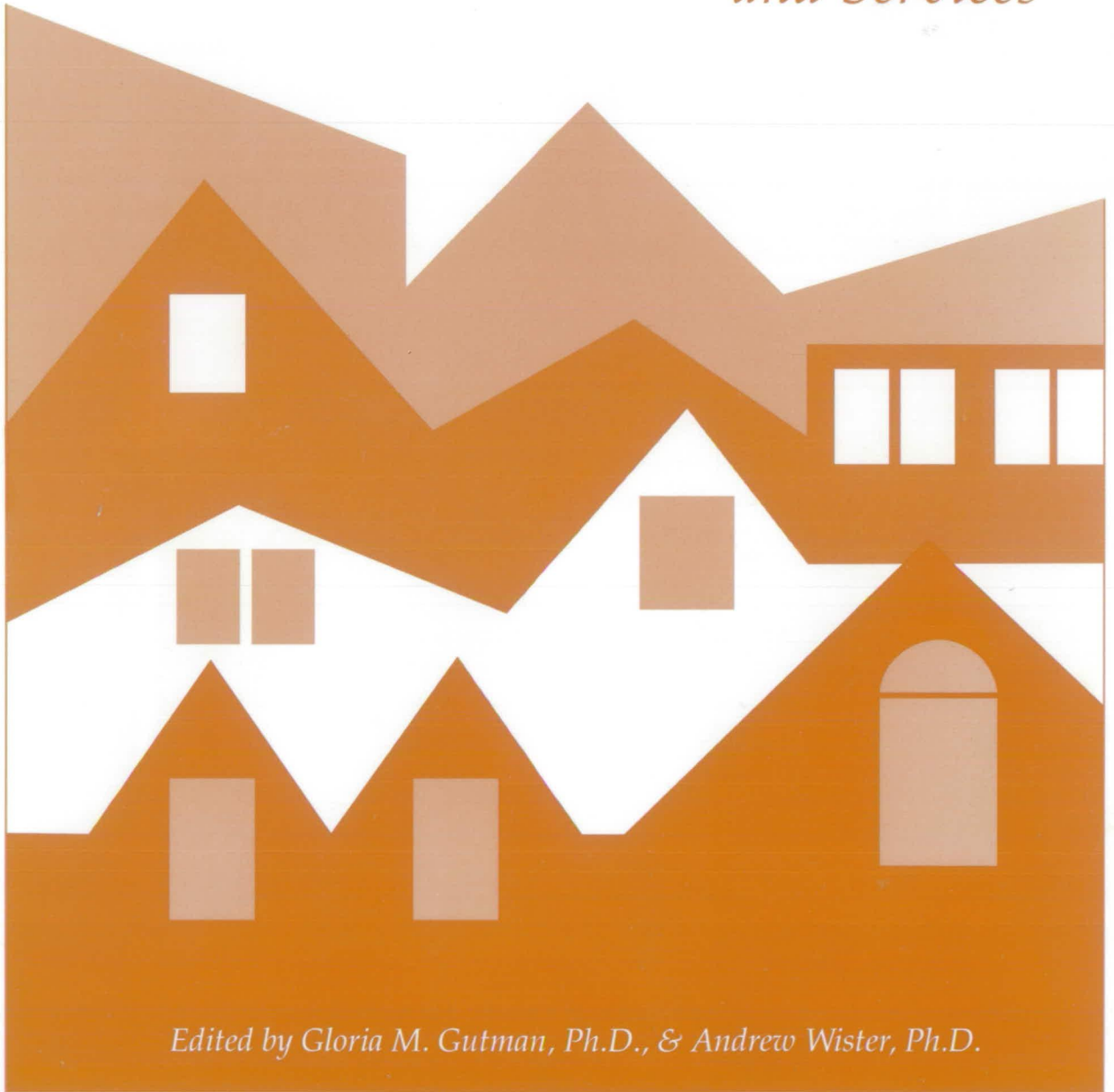


**PROGRESSIVE  
ACCOMMODATION  
FOR SENIORS:**  
*Interfacing Shelter  
and Services*



*Edited by Gloria M. Gutman, Ph.D., & Andrew Wister, Ph.D.*

**PROGRESSIVE ACCOMMODATION FOR SENIORS:  
INTERFACING SHELTER AND SERVICES**

edited by  
Gloria M. Gutman, Ph. D.  
and  
Andrew V. Wister, Ph. D.

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## INTRODUCTION

*Gloria M. Gutman, Ph.D. and Andrew V. Wister, Ph.D.,  
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### BACKGROUND AND PURPOSE OF THIS BOOK

The need for housing options that combine services with shelter has become a major topic of discussion across the country, continent and world because of population aging, changing government policies, changing values, the current economic climate, and the demands of clients, their families, and health care agencies. "Service housing" as it is called in some jurisdictions, most notably Sweden, attempts to provide quality living environments for physically frail elders, special needs groups such as persons with Alzheimer's disease and related disorders, as well as for persons at earlier points in the adult lifespan who live with disabilities.

Housing research and policy in Canada has evolved in a number of significant ways over the last thirty years. Haldemann and Wister (1993) discuss three distinct and successive approaches to environment and aging: 1) *institutionalization and purpose built housing*; 2) *housing alternatives and maximization of choice*; and 3) *aging in place*. It is argued that each of these perspectives has been built on the foundation of the preceding model but with a fundamental shift in resource allocation. During the period dominated by the spread of institutionalization and purpose-built housing (i.e. the 1960s and 1970s), the new welfare state provided nursing homes to the elderly as an alternative for those who could not stay at home for reasons of health, income or social isolation (Haldemann & Wister, 1993). Purpose-built housing, on the other hand, mainly targeted well-elderly with income security problems (Gutman & Wister, 1993). Research in this field tended to explore the effects of relocation, especially to institutional environments, as well as to examine the efficacy of planned environments for older populations.

Around the late 1970s, the housing alternatives and maximization of choice perspective gained popularity. The growth in the numbers of older adults coupled with the recognition of their heterogeneity contributed to the realization that a wider set of housing alternatives were needed that reflect a continuum of care (Haldemann & Wister, 1993). Affordability, adequacy and variety of housing were identified as key attributes of the environment requiring balance with individual need. A variety of special needs groups were the focus of research (e.g. older women living alone, ethnic groups, rural elderly, etc.).

The *aging in place* approach surfaced in the 1980s in response to the view that older people should remain in their environment of choice for as long as possible. It was widely recognized that many older people lived in the same house for many years and that relocation may be a stressful event for some individuals. Still, there was a need for housing options for those seeking to shape their environment in a proactive manner to create a better “fit” between person and environment. Researchers investigated many of the intangible qualities of the home, such as attachment, meaning, privacy, independence, as well as familiarity. They also began to examine the use of technological devices as a means to facilitate aging in place. However, institutionalization was still seen as necessary, given the increasing numbers of seriously cognitively and physically impaired persons. Researchers also turned their attention to environmental design within long term care facilities.

A fourth approach, to be added to the former three, is emerging in Canada, and has been termed *the interface of shelter and care* (Gutman & Wister, 1993). This perspective has developed out of the recognition that there is a need for greater flexibility in housing largely due to more frail elders remaining in the community and increasing flexibility in the ways in which services are blended with environmental design. It is also a logical extension of the Ecological Model in its emphasis on the interrelationships between physical, social and psychological dimensions of the person-environment transaction (Lawton, 1987). However, there are many barriers to the implementation of this approach. Home care and homemaker services tend to be tied to the person rather than the home or housing project. Alternative arrangements, such as allowing shelter-only projects to offer services as part of the rent, may be more efficient and effective in meeting the housing and care needs of older adults. Swedish style group homes for persons with dementia, cooperative housing arrangements with project-based home support services, and the use of technology (e.g. emergency response systems) are specific examples of combining shelter and care in supportive housing arrangements. One of the greatest impediments to this model is the frequent lack of intersectoral government cooperation, especially between ministries of housing, health, and social services. Other key issues include policy and attitudinal barriers imposed by labour unions on generic staffing, the need for development of new licensing and inspection policies for supportive housing, and the need to develop more sensitive instruments for assessing functional performance within an environmental context.

The purpose of this book is to explore the reasons why clients, agencies and governments are considering options that blend shelter and care, the barriers impeding their development and how these have or may be overcome at both the policy and the practice level. New ways of measuring person-environment fit and the potential of maximizing it via enabling technologies are also examined. The target readership includes researchers, architects, policy makers, developers, care providers and operators of existing seniors housing, all of whom can benefit from a better understanding of the multiple issues involved in interfacing shelter and services.

## ORGANIZATION

The book is organized into five parts. The theme of Part I is *Changing Clients, Economics and Expectations in Housing for Seniors*. The two chapters in this section set the stage for the ensuing discussion. Using 1991 census data, in Chapter 1, Statistics Canada's Gordon Priest profiles the housing and living arrangements of today's seniors, highlighting demographic and economic trends that distinguish Canadians aged 75-84 from those ten years younger (i.e. 65-74) and ten or more years older (85+). He also highlights important differences between males and females in each of these age groupings and between seniors living in different geographic areas within Canada. Additionally, he looks backward and forward in time, contrasting the 1991 census data with data from prior eras and with projections to 2021. Veronica Doyle, in Chapter 2, reviews the evolution of Lawton and Nahemow's (1973) Ecological Model. She also contributes material from her own research. In one of the two studies she describes, older adults living in co-ops were compared with condominium owners and renters. Tenure type was found to have a major impact on several subjective measures of well-being, with co-op residents more closely approximating home owners than renters in terms of positive outcomes. In the second study, which was an action research project, older women interviewed a sample of their peers who had chosen to live alone. The key theme to emerge from this study is "it's my turn now". Many respondents stated that they had chosen to live alone after a lifetime of looking after others in order to enjoy the independence this living arrangement allowed.

The theme of Part II is *Problems in Providing Service within Existing Seniors Housing*. In Chapter 3, which begins this section, Lois Borden and Joan McGregor present the Home Care perspective, using policies and programs developed in the province of Alberta to illustrate the most important challenges in meeting the needs of seniors and others with disabilities living in the community. Attention then turns to purpose-built housing for seniors. In Chapter 4, Reg Appleyard describes the characteristics of today's tenants many of whom want to and are aging in place. His main focus, however, is on the difficulties of providing support services in buildings constructed under shelter-only housing policies.

In Part III the theme is *Transcending Barriers to Combining Shelter and Services*. In Chapter 5 which begins this section, the focus is on creative funding arrangements. C.W. Lusk provides details about the Canada Mortgage and Housing Corporation's (CMHC) Canadian Centre for Public-Private Partnerships in Housing and the way in which it has facilitated access to mortgage funds among non-traditional lenders. In Chapter 6, Elaine Gallagher describes creative staffing arrangements and other innovations to the group home concept advanced in Sweden in attempting to meet the shelter and service needs of persons with Alzheimer's disease. The two remaining chapters in this section describe the reshaping of housing policies, both in Canada and internationally, to meet the changing needs of seniors and the current economic times. In Chapter 7, Garry Baker describes policy changes in the province of Ontario and how these respond to the issue of intersectoral government cooperation in support of blending shelter and care. In Chapter 8, Satya Brink presents an international perspective in a comparative analysis of a series of models that have been

employed by countries to develop housing policy.

Part IV addresses the theme *Measuring and Maximizing Person-Environment Fit*. In Chapter 9, Andrew Wister and James Watzke describe a new technique for assessing P-E fit in the residential environment using video. In Chapter 10, Anne Carswell presents the theory underlying the Canadian Occupational Performance Measure as well as initial data from field tests of the measure. These chapters respond to the need for more sensitive measurement of the fit between competence and the demands imposed by different environments.

The theme of Part V is *Enabling Technologies in Housing for Seniors*. In Chapter 11, which begins this section, James Watzke presents new data on the characteristics of Canadians using personal emergency response systems and on the average number and type of alarms they place per year. The next two chapters present results from consumer response studies. In Chapter 12, James Watzke and Gary Birch report on a study in which mobility-impaired seniors were exposed to a set of environmental control devices. Assistive devices are the focus of a study described by William Mann in Chapter 13. Chapter 14, by George Abrahamsohn, Gloria Gutman and Andrew Wister, addresses questions of need and demand for enabling technologies among seniors and the elements necessary to establish cost-effectiveness. The section and the book conclude with a discussion by Satya Brink, in Chapter 15, of the reasons product development has tended to lag behind consumer demand and ways in which the technology gap might be bridged for the benefit of both elderly and younger disabled persons.

## ACKNOWLEDGEMENTS

Most of the chapters that make up this book originated as papers presented at a workshop by the same title held in conjunction with the 21st Annual Meeting of the Canadian Association on Gerontology/Association canadienne de gérontologie (CAG/Acg) held in Edmonton, Alberta, October 28-30, 1992. The workshop was organized by the editors of this volume, Dr. Gloria Gutman, Director of the Gerontology Research Centre and Diploma Program at Simon Fraser University (SFU) and Dr. Andrew Wister, Associate Professor and Chair, SFU Gerontology Diploma Program Graduate, Curriculum and Admissions Committees.

It should be noted that this volume builds on four previous joint publications of the SFU Gerontology Research Centre and the CAG/Acg: *Innovations in Housing and Living Arrangements for Seniors* (Gutman & Blackie, 1985); *Aging in Place: Housing Adaptations and Options for Remaining in the Community* (Gutman & Blackie, 1986), *Housing the Very Old* (Gutman & Blackie, 1988) and *Shelter and Care of Persons with Dementia* (Gutman, 1992).

The workshops from which the four earlier volumes originated as well as the one preceding this volume were funded in part by a grant from the Canada Mortgage and Housing

Corporation under Part IX of the National Housing Act. We wish to thank CMHC Project Officer Luis Rodriguez for his assistance with the workshop program organization. We also gratefully acknowledge the financial support of Meadowcroft Housing Limited, Edmonton, Alberta. Thanks also go to the authors of each chapter for substantially expanding and developing their papers to meet the goals of the book. Finally, we wish to extend a special thank you to Jocelyne Laflamme for her dedication and hard work in desktop publishing the manuscript.

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**PART I**

**CHANGING CLIENTS, ECONOMICS AND  
EXPECTATIONS IN HOUSING FOR SENIORS**

## *Chapter 1*

# CURRENT DEMOGRAPHICS AND LIVING ARRANGEMENTS OF CANADA'S ELDERLY

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## INTRODUCTION

Projections of future populations by age and sex are based upon a number of assumptions regarding expected fertility, nuptiality, mortality and net migration rates. The projection of older populations over the short term (20 or 30 years) is the most reliable because fertility and nuptiality have little effect (since tomorrow's elderly have already been born). Mortality rates are relatively predictable so only migration remains as a wild card. Net migration, of course, is very much influenced by economic and political factors which in turn influence migration policies and the determination of target levels.

In 1991, Statistics Canada released revised population projections based on new immigration policies and recent changes in fertility rates (Statistics Canada, 1991). These new projections are used in this chapter and explain differences between this work and that published five years ago (Priest, 1988).

The population projections of 1985 had indicated for 1991 a total population of 1,253,500 persons aged 75 and over. The projection of 1991, based on revised immigration targets, showed a population of 1,273,600. The actual enumeration of the 1991 Census counted 1,270,515. In spite of higher than expected total population levels, the projections of the older population by living arrangements proved to be very close to those actually enumerated in the 1991 Census.

This chapter, using the revised population projection, examines basic demographic trends in the Canadian population aged 75 and over for the period 1971 to 2011. It also examines long term trends in living arrangements. Finally, it provides an insight into the current situation for the provinces and census metropolitan areas

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\*The author gratefully acknowledges the contributions of the following staff of Statistics Canada: Brian Hamm for a particularly complex series of data retrievals, Janet Che-Alford for her helpful suggestions on the analysis and Mario Lisciotta for his innovations in the creation of the graphics.



## DECLINING BIRTH RATES

Fertility is an important determinant of the age distribution of a population. The low fertility rate in Canada in recent years means that there are fewer children relative to other age groups. Conversely, there are more persons in other age groups relative to children, or indeed, the total population. Thus, the growing proportion of elderly has been fuelled by the birth rates which until very recently have been declining since the early 1960's. While the fertility rates of the last decade have been the lowest in our history, the previous low occurred in the 1930's during the depression. Subsequently they began to rise sharply around 1940, peaking in the late 1950's. This was known as "the baby boom". Persons born on the leading edge of that boom are now in their 50s and will soon be joining the ranks of the elderly. The baby boom population will further fuel the rising proportion of elderly relative to other age groups and the total population.

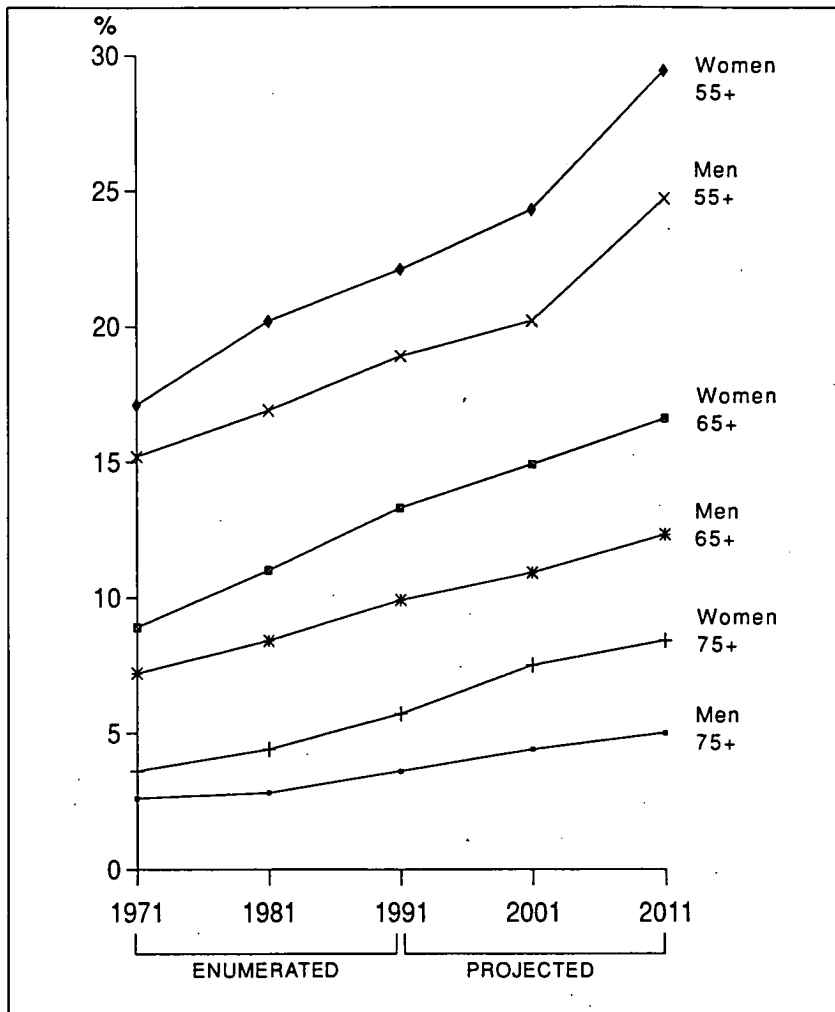
## GENDER-SPECIFIC MORTALITY RATES

As shown in Figure 1, there has been a steady increase in the proportion of both men and women in the broad age groups of 55 and over, 65 and over and 75 and over. In the population aged 55 and over we clearly see the growing effect of the baby boom population. By 2011, close to one quarter of all men and 30% of all women will be in the 55+ age group.

However, another demographic determinant, mortality, plays an important role in the composition of the growing elderly population. There are gender-specific mortality differentials which see men having a lower life expectancy than women. Therefore, the older the age group we examine, the more women we find relative to men. It follows that the family life cycle (and living arrangements) of women is very different from that of men. Men can generally expect to end their life course as a member of a spousal union in which there are benefits of mutual care and support. Many women, on the other hand, will end their life without a spouse. In spite of changes in sexual equality and increased participation of women in the labour force, there remain fundamental differences in the life cycle of women. Women alone bear children, many face periods of raising children alone, many face the burden of caring for and then burying an ailing spouse, many will live alone in their older years, and many will die alone.

Historically, this was not always the case. As shown in Figure 2, men outnumbered women in each of the age groups 55 to 64, 65 to 74, and 75 and over in 1901. While the ratio moved in favour of women 75 and over in 1911, it was not until 1961 that it did so for women aged 65 to 74 and not until 1971 that it did so for women aged 55 to 64. The very significant change in the sex ratio for the population 75 and over in 1971 is worth noting. This represents a generation born between 1886 and 1896. These women would have experienced their first births roughly between 1906 and 1916 and their last births between 1916 and 1926. Their fertility rate was about 4.0 births per ever-married woman. This generation of women would have been among the first to live in an increasingly urban society with better access to much improved pre-natal medical care. Also impacting upon the ratio was the higher than normal mortality rates experienced by men of this generation due to fatalities associated with the First World War.

**Figure 1**  
*Men and Women by Age Group as a Percentage of the Total Male and Female Population, Canada, 1971-2011*

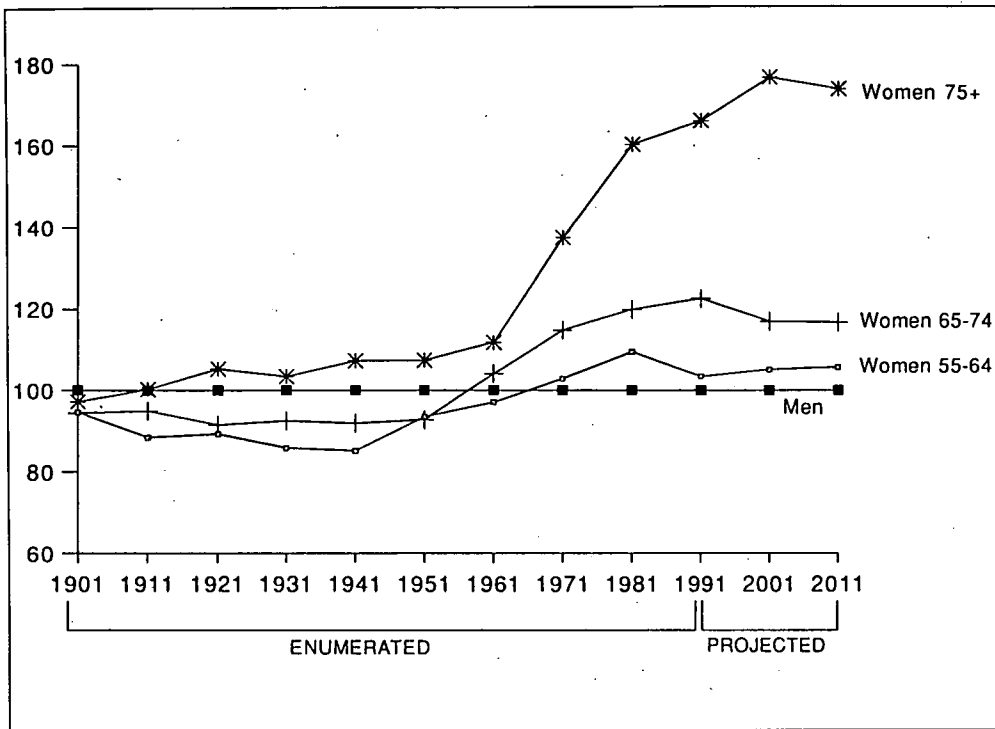


**Sources:**

Enumerated: Table 1, Catalogue No. 93-310

Projected: Population Projection, 1990-2011. Based on recent changes in fertility levels and revised immigration targets

**Figure 2**  
*Ratio of Women Per 100 Men, Selected Age Groups, Canada, 1901-2011*



**Sources:**

Enumerated: 1961 Census of Canada, Table 20, Volume 1, Part 2 Table 1, Catalogue No. 93-310  
 Projected: Population Projection, 1990-2011. Based on recent changes in fertility levels and revised immigration targets

Subsequent generations of women aged 75 and over have benefited from lower fertility rates, ever improving pre- and post-natal medical care, fewer children to care for and the introduction of labour-saving technology in the home. However, there are some indications that the ratio may peak in 2001 at 176.9 women per 100 men. With the recent entry of large numbers of women into the labour force, where they are exposed to labour-related stresses, accidents and habits (such as smoking), we may see the beginning of a convergence in the ratio for future generations of persons aged 75 and over. Furthermore, recent evidence suggests that women in the labour force, both as lone parents and as wives, are burdened much more than men with the stresses of dual careers — one in the labour force and the other as the primary care-giver to children.

## AGE AND GENDER-SPECIFIC PROJECTIONS

While we often refer to older populations in a generic way such as “the population aged 55 and over” or “the population aged 65 and over”, there are dangers in this approach. First, there are significant gender differences and second, there can be significantly different age-based needs for goods and services. For example, the needs of men and women in the age group 55 to 64 can be very different than those of women aged 75 and over.

### The 55 to 64 Population

Figure 3 reflects the age group 55 to 64. This population has been characterized as the “pre-retirement” population even though many of their numbers, in reality, have already retired. In this group there are currently just over 103 women per 100 men. The majority still live with their spouse and many are in the empty nest stage of the family life cycle. They are generally homeowners, free of mortgages, and if still in the labour force, enjoy relatively high incomes (Lindsay & Devereaux, 1991). They are also a rapidly growing population. The number of men in this group rose from 0.85 million in 1971 to 1.18 million in 1991; in the next 20 years the projected population will be 2.05 million. Women have increased from 0.88 million to 1.22 million and are projected to rise 2.19 million over the same period. This population, swelled by the leading edge of the baby boomers, will come close to doubling in the next twenty years, representing an interesting market for age and lifestyle-specific goods and services.

### The 65 to 74 Population

Figure 4 shows the population 65 to 74. This population is characterized by an increasing erosion of the male population where, in 1991, there were just over 122 women per 100 men. With an increase in the number of widows, an increase in demand would be expected for goods and services aimed at single women. For example, smaller packages of food and other groceries and smaller, more secure accommodations.

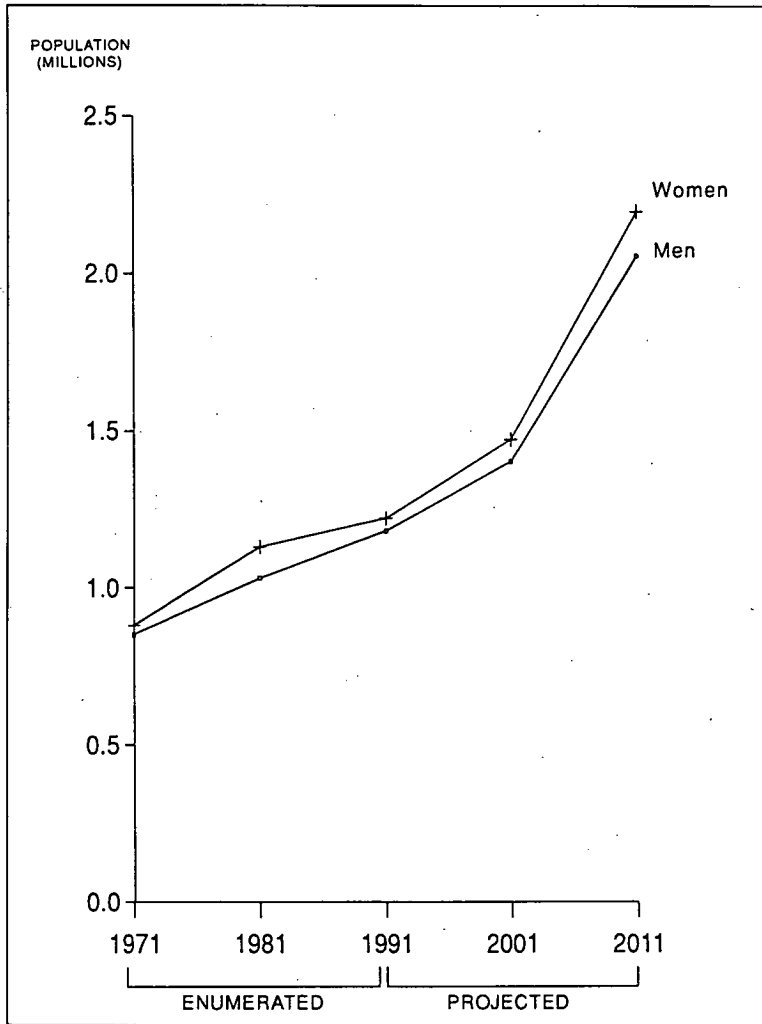
In the past 20 years the male population in this group has grown from 502,000 to 851,000. It is projected to rise to 1.2 million within the next 20 years. The population of women has grown from 576,000 to 1,042,000 and is projected to grow to 1.4 million.

### The 75+ Population

The population 75 and over is shown in Figure 5. Currently women in this age group outnumber men by a ratio of 165 to 100. In 1991, just over 65% of all men in this group were married while just under 65% of all women were widowed. Between 1971 and 1991 the male population has grown from 280,000 to 479,000. In the next 20 years it is projected to grow to 823,200. In the same period, however, the female population has more than doubled from 386,800 to 785,900 and is projected to nearly double again to 1,432,500 in the next 20 years.

Another way of viewing the remarkable growth of older senior women is to note that in 1971, one woman in 28 was over the age of 75. In 1991, a mere twenty years later, the ratio had fallen to one woman in 18. By 2011, it is projected that the ratio will be one woman in

**Figure 3**  
*Population Aged 55-64, Canada, 1971-2011*

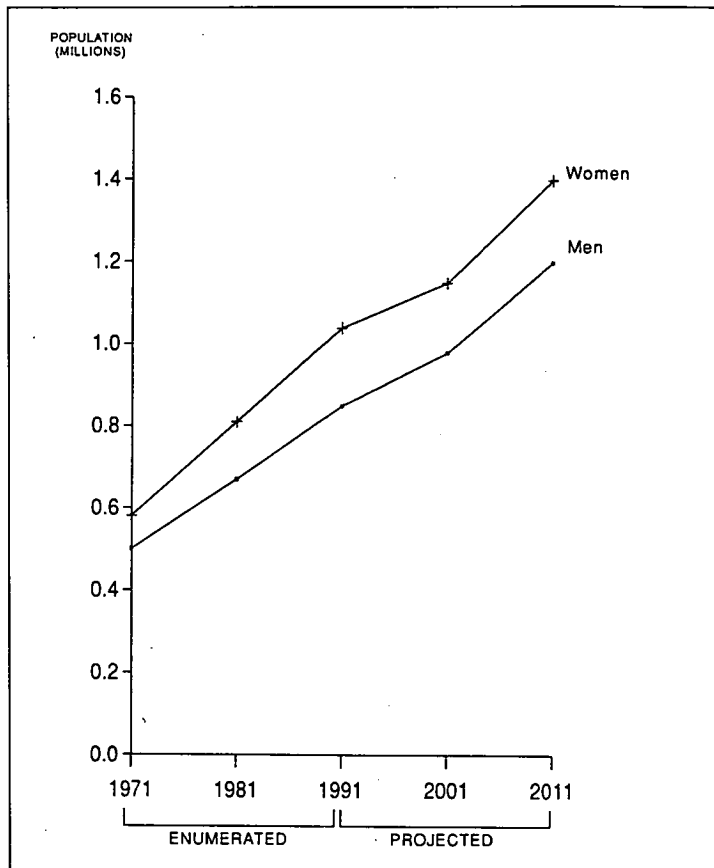


**Sources:**

Enumerated: Table 1, Catalogue No. 93-310

Projected: Population Projection, 1990-2011. Based on recent changes in fertility levels and revised immigration targets

**Figure 4**  
*Population Aged 65-74, Canada, 1971-2011*

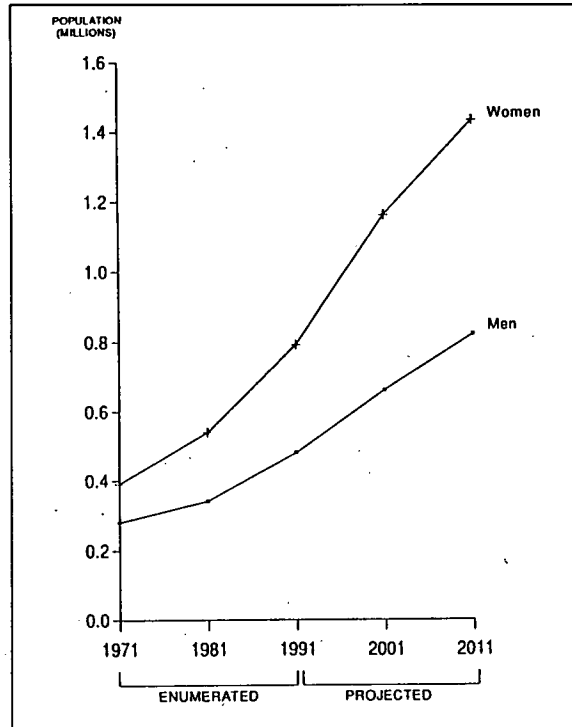


**Sources:**

Enumerated: Table 1, Catalogue No. 93-310

Projected: Population Projection, 1990-2011. Based on recent changes in fertility levels and revised immigration target

**Figure 5**  
*Population Aged 75+, Canada, 1971-2011*



**Sources:**

Enumerated: Table 1, Catalogue No. 93-310

Projected: Population Projection, 1990-2011. Based on recent changes in fertility levels and revised immigration targets

twelve aged 75 and over. This will have a significant impact upon the demand for a broad range of goods and services, ranging from personal care to food, clothing and shelter.

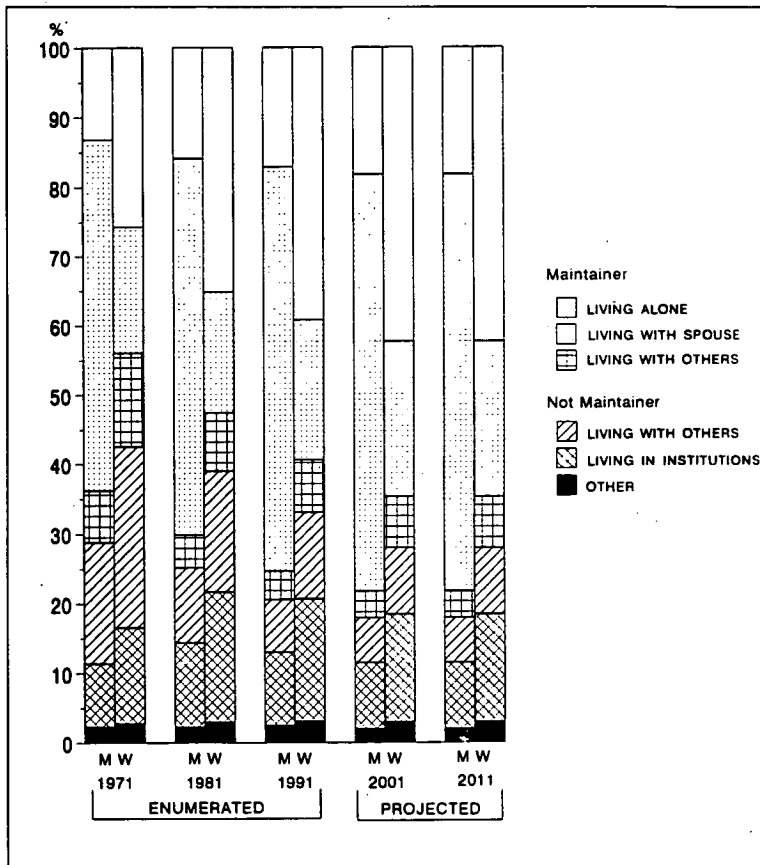
**TRENDS IN LIVING ARRANGEMENTS**

The remainder of this chapter concentrates on trends in living arrangements of the older senior population, particularly women.

**Proportion Maintainers**

Figure 6 shows the population aged 75 and over as enumerated from 1971 to 1991 and as projected from 1991 to 2011, separated into “maintainers” and “not maintainers”. A maintainer is defined as a person living in a household in which he or she (or his/her spouse) is primarily responsible for paying the rent, mortgage, taxes, utilities and the general upkeep of the dwelling in which the household resides. A person who is not a maintainer is a person

**Figure 6**  
*Percentage Distribution of Population Aged 75+ by Living Arrangements,  
 Canada, 1971-2011*



**Sources:**

Enumerated: Special tabulation Census of 1971, 1981, and 1991.

Projected: Population Projection, 1990-2011. Based on recent changes in fertility levels and revised immigration targets.

living in a household in which some other person (other than the spouse) is primarily responsible for maintaining the dwelling. Examples include those who are living in someone else's residence (e.g. with their daughter), in institutions (e.g. personal care home, nursing home), in rooming houses, hotels or other "collective" type settings.

In examining Figure 6, it must be noted that there has been an increase in the proportion of both men and women aged 75+ who are maintainers. This, in part, is due to income improvements for this population, particularly between 1971 and 1981. A second important point to note is that an increasing majority of men live with their spouse in a dwelling they



maintain. This proportion rose from just over 50% in 1971 to 58% in 1991. It is projected that a further slight rise, to about 60%, will be seen in 2001. This trend is coincident with the gender-based mortality trends discussed earlier. In effect, due to the longer life expectancy of women, men are more likely to benefit from the care and support of a spouse in their older senior years.

### **Proportion Women 75+ Living With a Spouse**

Women are more likely to be predeceased by their spouse and faced with significant adjustment in their living arrangements. The proportion of women aged 75 and over living with a spouse was quite stable between 1971 (18.2%) and 1991 (18.5%). Our projections show the proportion rising slightly in the future on the assumption that there will be a modest convergence of the mortality rates. For those women, however, who are faced with making an adjustment in living arrangement due to the death of a spouse, we have seen very significant trends in a relatively short time period.

### **Proportion Women 75+ Living Alone**

In 1971, just over one quarter (25.7%) of all women aged 75 and over lived alone. By 1981, the proportion had risen to just over 35% and by 1991, to over 39% or close to two in five persons. We project a further modest increase, to 42%, by 2001. Over the same time period there was an increase in the proportion living in institutions but with an important difference. Between 1971 and 1981 there was a sharp increase (from 13.8% to 18.7%) but the proportion remained stable between 1981 and 1991 (actually a very slight decline to 18.6%). This may be due to substantial improvements in home care or, alternatively, to tighter restrictions on access to institutions. It has previously been noted (Priest, 1988), that the average age of persons in institutions increased between 1981 and 1986.

Conversely, we have seen quite remarkable erosions in the proportion of senior women who are living with others. In 1971, over one quarter (26.0%) of women aged 75 and over lived in someone else's home (usually an offspring and often a daughter). By 1981, this proportion had fallen to 17.3% and by 1991, to 12.5%. We predict a further modest decline, to 9.5%, by 2001. There are a number of probable factors at play here and it is difficult to ascribe weights to them. Certainly, improvements in income as well as an increase in home care services have provided women with an option of living alone in their own dwelling after the death of a spouse. On the other hand, falling fertility rates have led to fewer children and fewer daughters available to take an aged parent into their home. Furthermore, those fewer daughters are increasingly in the labour force and concerned with dual careers (paid worker and homemaker) and with setting aside funds for their own retirement.

### **Number of Men and Women 75+ Living Alone**

In terms of real numbers, Table 1 shows that men living alone increased from about 37,000 in 1971 to over 53,000 in 1981 to close to 82,000 in 1991. We project these numbers to rise to close to 120,000 in 2001 and to just under 150,000 in 2011. More dramatically, the

**Table 1**  
**Population 75 Years and Over by Sex and Living Arrangements, Canada,**  
**1971-1991 Enumerated, 1996-2011 Projected**

Population	Enumerated									
	1971	%	1976	%	1981	%	1986	%	1991	%
<b>Men 75 and Over</b>	281,145	100.0%	292,625	100.0%	336,905	100.0%	391,345	100.0%	477,215	100.0%
Maintainer	200,085	71.2%	216,710	74.1%	252,045	74.8%	304,665	77.9%	379,010	79.4%
Living Alone	37,035	13.2%	43,055	14.7%	53,450	15.9%	65,790	16.8%	81,815	17.1%
Living With Spouse	142,360	50.6%	155,105	53.0%	182,700	54.2%	221,860	56.7%	277,655	58.2%
Living With Spouse Only	108,895	38.7%	125,175	42.8%	155,110	46.0%	191,600	49.0%	240,325	50.4%
Living With Others	20,690	7.4%	18,550	6.3%	15,895	4.7%	16,995	4.3%	19,540	4.1%
Not Maintainer	81,045	28.8%	75,915	25.9%	84,860	25.2%	86,685	22.2%	98,210	20.6%
Living with Others	48,805	17.4%	38,270	13.1%	36,545	10.8%	34,680	8.9%	36,165	7.6%
Living in Institution	25,685	9.1%	33,225	11.4%	40,500	12.0%	45,345	11.6%	50,095	10.5%
Other	6,580	2.3%	4,415	1.5%	7,840	2.3%	6,660	1.7%	11,950	2.5%
<b>Women 75 and Over</b>	386,685	100.0%	449,030	100.0%	540,420	100.0%	648,165	100.0%	793,300	100.0%
Maintainer	222,005	57.4%	276,065	61.5%	329,550	61.0%	414,415	63.9%	531,010	66.9%
Living Alone	99,320	25.7%	139,965	31.2%	189,795	35.1%	245,580	37.9%	311,510	39.3%
Living With Spouse	70,345	18.2%	79,155	17.6%	94,030	17.4%	119,760	18.5%	160,325	20.2%
Living With Spouse Only	55,820	14.4%	65,760	14.6%	82,275	15.2%	106,815	16.5%	143,540	18.1%
Living With Others	52,340	13.5%	56,945	12.7%	45,725	8.5%	49,065	7.6%	59,185	7.5%
Not Maintainer	164,685	42.6%	172,965	38.5%	210,860	39.0%	233,750	36.1%	262,288	33.1%
Living with Others	100,500	26.0%	85,395	19.0%	93,325	17.3%	97,135	15.0%	98,925	12.5%
Living in Institution	53,240	13.8%	79,415	17.7%	101,085	18.7%	120,870	18.6%	140,300	17.7%
Other	10,950	2.8%	8,160	1.8%	16,460	3.0%	15,750	2.4%	25,070	3.2%

Population	Projected							
	1996	%	2001	%	2006	%	2011	%
<b>Men 75 and Over</b>	555,600	100.0%	657,900	100.0%	751,900	100.0%	823,200	100.0%
Maintainer	450,036	81.0%	539,478	82.0%	616,558	82.0%	675,024	82.0%
Living Alone	96,674	17.4%	119,738	18.2%	136,846	18.2%	149,822	18.2%
Living With Spouse	331,693	59.7%	394,740	60.0%	451,140	60.0%	493,920	60.0%
Living With Spouse Only	283,356	51.0%	342,108	52.0%	390,988	52.0%	428,064	52.0%
Living With Others	21,668	3.9%	25,000	3.8%	28,572	3.8%	31,282	3.8%
Not Maintainer	105,564	19.0%	118,422	18.0%	135,342	18.0%	148,176	18.0%
Living with Others	38,892	7.0%	42,764	6.5%	48,874	6.5%	53,508	6.5%
Living in Institution	55,560	10.0%	62,501	9.5%	71,431	9.5%	78,204	9.5%
Other	11,112	2.0%	13,158	2.0%	15,038	2.0%	16,464	2.0%
<b>Women 75 and Over</b>	971,200	100.0%	1,163,800	100.0%	1,317,300	100.0%	1,432,500	100.0%
Maintainer	670,128	69.0%	837,936	72.0%	948,456	72.0%	1,031,400	72.0%
Living Alone	390,422	40.2%	492,287	42.3%	557,218	42.3%	605,948	42.3%
Living With Spouse	207,837	21.4%	260,691	22.4%	295,075	22.4%	320,880	22.4%
Living With Spouse Only	191,326	19.7%	244,398	21.0%	276,633	21.0%	300,825	21.0%
Living With Others	71,869	7.4%	84,957	7.3%	96,163	7.3%	104,573	7.3%
Not Maintainer	301,072	31.0%	325,864	28.0%	368,844	28.0%	401,100	28.0%
Living with Others	106,832	11.0%	110,561	9.5%	125,144	9.5%	136,088	9.5%
Living in Institution	165,104	17.0%	180,389	15.5%	204,182	15.5%	222,038	15.5%
Other	29,136	3.0%	34,914	3.0%	39,519	3.0%	42,975	3.0%

Source: 1991 Census, Special Tabulation

number of women living alone rose from 99,000 in 1971 to nearly 190,000 in 1981 and to well over 311,000 in 1991. We project these numbers to rise to over 492,000 by 2001 and to close to 606,000 by 2011. Between 1991 to 2011 it is unlikely that we will see a significant shift from the projected gender-based mortality differences. It is further unlikely that we will see a return of elderly senior women to living with their offspring. That means that they are left with few alternatives: living alone, living in institutions or perhaps living in some new emerging arrangement such as in small groups of other seniors. The latter, where seniors would provide mutual support to each other, may be a necessary alternative when we reconsider a figure noted earlier. That is, that by 2011 it is projected that one woman in twelve will be aged 75 and over. Where, then, is the pool of younger women (as the traditional care-givers) to staff the nursing homes and other institutions or to provide home care services?<sup>1</sup>

## PROVINCIAL AND REGIONAL DIFFERENCES

Recognizing that the potential caregiver question is a matter of national importance it is also recognized that there are substantial provincial and regional differences in the distribution and characteristics of the elderly senior population.

Table 2 provides detailed data on living arrangements of the population aged 75 and over by gender as enumerated for the years 1971 through 1991 and as projected from 1991 to 2011 for each of the ten provinces. The territories have been excluded because the numbers are too small for meaningful analysis.

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### <sup>1</sup> EDITORS' NOTE:

It is recognized in the literature that the dramatic rise in older persons living alone, especially older women, is partly the result of a general pattern of decreasing fertility (see Thomas and Wister, 1984). These two trends have far-reaching implications for both informal and formal support systems, and the interrelationships between the two. With regards to informal support, it is expected that future cohorts of older women will have fewer children from whom they might access instrumental and affective types of social support. Pertaining to formal support, the reduction in potential avenues of support across generations will likely increase the demand on home care systems and on long term care facilities. Furthermore, increasing the availability of formal support may unintentionally reinforce the social norm that care for older persons should be primarily the responsibility of the government rather than the family. These issues are complex and require careful attention in policy development. For example, in the context of an upcoming conference (sponsored by the European Centre for Social Welfare Policy and Research, and held at Helsinki, Finland, September, 1994), European, and in particular Nordic, countries will be examining the effects and side effects of care allowances, attendants allowances, and similar non-traditional forms of remunerating non-professional care-givers.

**Table 2**  
*Population 75 Years and Over by Sex and Age and Living Arrangements, Provinces, 1991*

Population	Newfoundland		P.E.I.		Nova Scotia		New Brunswick		Quebec	
	No.	%	No.	%	No.	%	No.	%	No.	%
<b>Men 75 and Over</b>	8,890	100.0%	3,040	100.0%	18,205	100.0%	14,125	100.0%	104,895	100.0%
Maintainer	6,645	74.7%	2,350	77.3%	14,765	81.1%	11,230	79.5%	78,405	74.7%
Living Alone	1,060	11.9%	500	16.4%	3,220	17.7%	2,155	15.3%	16,025	15.3%
Living With Spouse	4,990	56.1%	1,715	56.4%	10,410	57.2%	8,320	58.9%	57,535	54.9%
Living With Spouse Only	3,735	42.0%	1,400	46.1%	8,535	46.9%	6,625	46.9%	48,010	45.8%
Living With Others	600	6.7%	145	4.8%	1,130	6.2%	755	5.3%	4,860	4.6%
Not Maintainer	2,240	25.2%	685	22.5%	3,440	18.9%	2,900	20.5%	26,480	25.2%
Living with Others	1,205	13.6%	240	7.9%	1,585	8.7%	1,265	9.0%	9,240	8.8%
Living in Institution	835	9.4%	340	11.2%	1,530	8.4%	1,285	9.1%	8,310	7.9%
Other	200	2.2%	110	3.6%	320	1.8%	350	2.5%	3,930	3.7%
<b>Women 75 and Over</b>	12,985	100.0%	4,755	100.0%	29,755	100.0%	22,690	100.0%	191,950	100.0%
Maintainer	7,590	58.5%	3,140	66.0%	20,860	70.1%	15,425	68.0%	116,035	60.5%
Living Alone	3,340	25.7%	1,705	35.9%	11,405	38.3%	8,255	36.4%	65,910	34.3%
Living With Spouse	2,710	20.9%	985	20.7%	5,960	20.0%	4,705	20.7%	33,090	17.2%
Living With Spouse Only	2,480	19.1%	850	17.9%	5,085	17.1%	3,960	17.5%	28,590	14.9%
Living With Others	1,530	11.8%	450	9.5%	3,500	11.8%	2,470	10.9%	17,035	8.9%
Not Maintainer	5,390	41.5%	1,615	34.0%	8,900	29.9%	7,270	32.0%	75,910	39.5%
Living with Others	3,065	23.6%	600	12.6%	4,115	13.8%	3,210	14.1%	27,105	14.1%
Living in Institution	1,955	15.1%	825	17.4%	3,935	13.2%	3,270	14.4%	37,645	19.6%
Other	375	2.9%	195	4.1%	845	2.8%	790	3.5%	11,165	5.8%

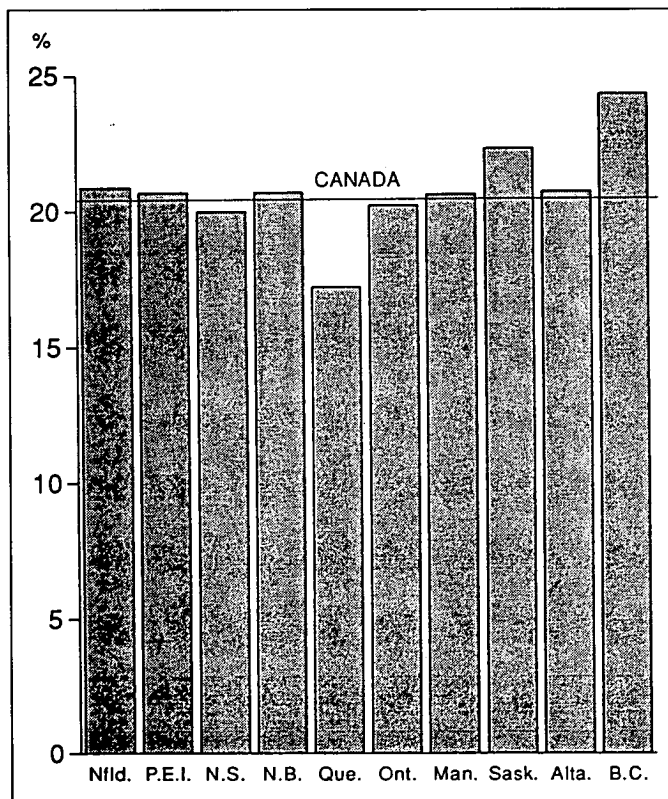
Population	Ontario		Manitoba		Saskatchewan		Alberta		British Columbia	
	No.	%	No.	%	No.	%	No.	%	No.	%
<b>Men 75 and Over</b>	172,740	100.0%	24,475	100.0%	25,650	100.0%	36,800	100.0%	67,940	100.0%
Maintainer	138,090	79.9%	20,520	83.8%	21,475	83.7%	28,700	78.0%	56,485	83.1%
Living Alone	29,580	17.1%	5,300	21.7%	5,145	20.1%	6,230	16.9%	12,525	18.4%
Living With Spouse	101,795	58.9%	14,300	58.4%	15,420	60.1%	21,155	57.5%	41,845	61.6%
Living With Spouse Only	88,660	51.3%	12,715	52.0%	14,015	54.6%	18,740	50.9%	37,790	55.6%
Living With Others	6,715	3.9%	920	3.8%	920	3.6%	1,320	3.6%	2,130	3.1%
Not Maintainer	34,660	20.1%	3,955	16.2%	4,175	16.3%	8,100	22.0%	11,450	16.9%
Living with Others	14,160	8.2%	1,105	4.5%	965	3.8%	1,970	5.4%	4,360	6.4%
Living in Institution	17,135	9.9%	2,090	8.5%	2,600	10.1%	5,135	14.0%	5,785	8.5%
Other	3,345	1.9%	760	3.1%	610	2.4%	990	2.7%	1,320	1.9%
<b>Women 75 and Over</b>	295,710	100.0%	39,295	100.0%	36,770	100.0%	55,965	100.0%	102,940	100.0%
Maintainer	198,810	67.2%	29,490	75.0%	27,315	74.3%	38,035	68.0%	73,995	71.9%
Living Alone	118,440	40.1%	19,010	48.4%	17,230	46.9%	22,970	41.0%	43,135	41.9%
Living With Spouse	59,880	20.2%	8,110	20.6%	8,190	22.3%	11,600	20.7%	24,985	24.3%
Living With Spouse Only	53,885	18.2%	7,465	19.0%	7,640	20.8%	10,610	19.0%	23,215	22.6%
Living With Others	20,490	6.9%	2,370	6.0%	1,885	5.1%	3,460	6.2%	5,880	5.7%
Not Maintainer	96,895	32.8%	9,805	25.0%	9,460	25.7%	17,935	32.0%	28,945	28.1%
Living with Others	38,060	12.9%	2,855	7.3%	2,240	6.1%	4,795	8.6%	10,780	10.5%
Living in Institution	52,725	17.8%	5,760	14.7%	6,150	16.7%	11,655	20.8%	16,325	15.9%
Other	6,105	2.1%	1,195	3.0%	1,060	2.9%	1,485	2.7%	1,830	1.8%

Source: 1991 Census, Special Tabulation

### Proportion of Women 75+ Living With a Spouse, by Province

As shown in Figure 7, most provinces are close to the national average of 20.2% in terms of the proportion of women 75 and over who are living with a spouse in a dwelling they maintain. Only Saskatchewan and British Columbia have significantly higher proportions (22.3% and 24.3%, respectively), while Quebec has a lower proportion (17.2%). The higher Saskatchewan rate might be explained by its more rural character and somewhat higher rates of home ownership and maintainers. The higher British Columbia rate might be explained by the in-migration of seniors who tend to move as couples (Gutman, 1986). The situation in Quebec, on the other hand, might be explained by the fact that it has the highest proportion of women aged 75 or over who have never married (15.4% compared to the national average of 9.3%).

**Figure 7**  
*Percentage of Women 75+ Maintaining a Dwelling with a Spouse,  
Canada and Provinces, 1991*

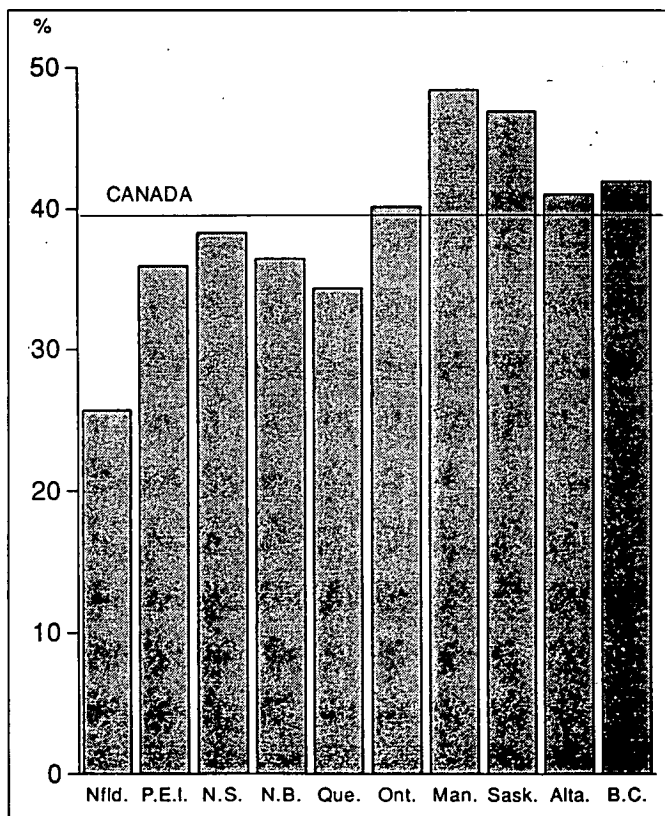


Source: 1991 Census, Special Tabulation

## Proportion of Women 75+ Living Alone, by Province

Figure 8 shows the provincial distribution of women aged 75 and over living alone. Proportions in Ontario and the western provinces lie above the national average of 39.3% while those for the eastern provinces generally fall below. Newfoundland has the lowest proportion at 25.7% followed by Quebec with the second lowest at 34.3%. The finding for Quebec is consistent with research by Thomas and Wister (1984) demonstrating that rates of living alone are lower among Francophone than among Anglophone women aged 65 and over. The difference is attributed to the tighter kin networks of French Canadians.

**Figure 8**  
*Percentage of Women 75+ Living Alone,  
Canada and Provinces, 1991*

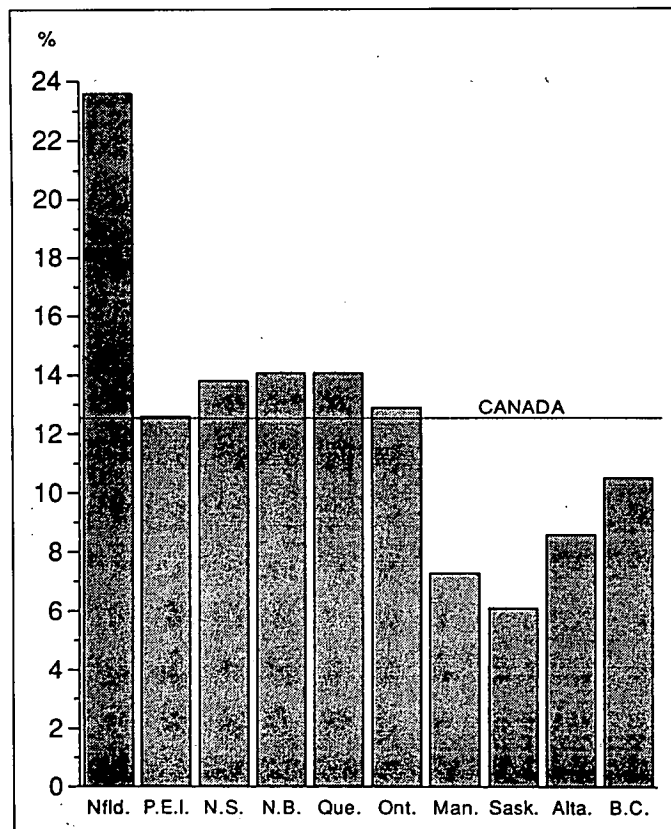


Source: 1991 Census, Special Tabulation

## Proportion of Women 75+ Living With Others, by Province

Significant regional variations are seen in Figure 9 where the western provinces are well below the national average of 12.5% with respect to women who are not maintaining households and who are living with others. Ontario and the provinces to the east are slightly above the national average except for Newfoundland which, at 23.6% has a rate close to double the national average. This suggests that this province still maintains a much more traditional provision of care for seniors by offspring in multigenerational households. In fact, the situation in Newfoundland in 1991 was not unlike that in the country as a whole in 1971.

**Figure 9**  
*Percentage of Women 75+ Not Maintaining and Living with Others,  
Canada and Provinces, 1991*

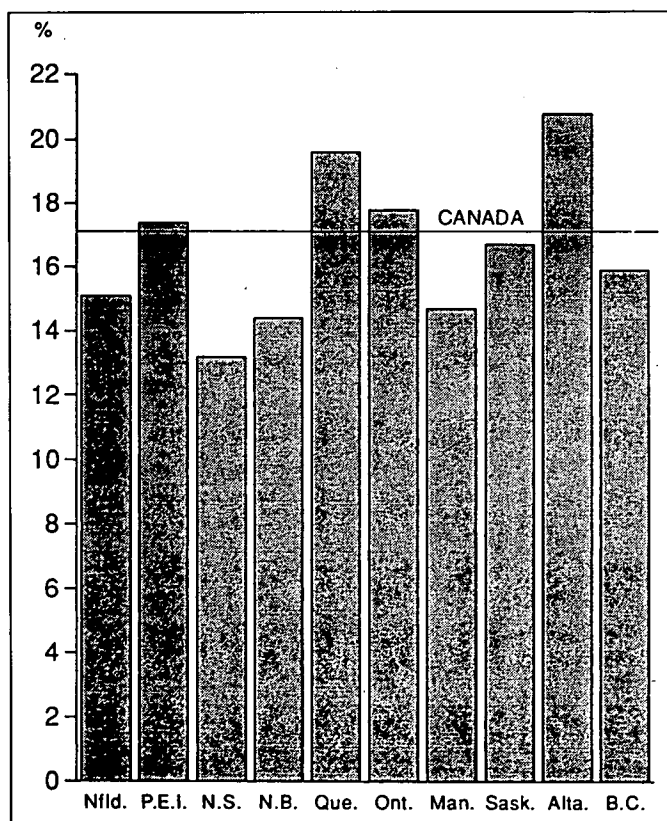


Source: 1991 Census, Special Tabulation

## Proportion of Women 75+ in Institutions by Province

The lower proportion of women living alone in Quebec seen in Figure 8 may be explained in part by the distribution of women living in institutions. As shown in Figure 10, in Quebec, close to 20% (19.6%) of women 75 and over live in institutions compared with a national rate of 17.7%. This suggests a stronger collective or community-based support system and perhaps a higher proportion of women who have spent their lives in celibate religious service. In fact, more than one third (38.5%) of special care residences for the elderly and chronically ill and one half of religious residences in Canada are located in Quebec (Statistics Canada, 1992). In Alberta, 20.8% of women aged 75+ live in institutional settings which might reflect the availability of institutional care. Alberta has a relatively high proportion of institutional dwellings in relation to the size of its population.

**Figure 10**  
*Percentage of Women 75+ Living in Institutions,  
Canada and Provinces, 1991*



Source: 1991 Census, Special Tabulation



## CENSUS METROPOLITAN AREA VARIATIONS

No data are shown for men and data shown for women are restricted to a truncated list of living arrangements because the small size of the population limits meaningful analysis.

### Proportion of Women 75+ Living With a Spouse, by CMA

Recalling that the national average for women 75 and over living with a spouse in a dwelling they maintain was 20.2% and recalling that there were no significant provincial variations other than for Quebec, Saskatchewan and British Columbia, it is interesting to find significant variations at the level of the census metropolitan areas. As seen in Table 3, percentages range from a low of 15.2% in Sherbrooke and the city of Quebec to a high of 25.2% in Victoria. Although Victoria is a notable exception, most CMAs show proportions lower than the province in which they are located suggesting that there are higher proportions of older senior women living with a spouse in smaller urban and rural areas than in CMAs.

**Table 3**  
*Women Aged 75 and Over, Central Metropolitan Areas, 1991*

Census Metropolitan Area	Total		Alone		Institution		Spouse	
	No.	%	No.	%	No.	%	No.	%
St. John's	4,475	100.0%	1,235	27.6%	825	18.4%	770	17.2%
Halifax	8,000	100.0%	2,990	37.4%	1,145	14.3%	1,460	18.3%
Saint John	4,370	100.0%	1,815	41.5%	560	12.8%	810	18.5%
Chicoutimi-Jonquière	3,030	100.0%	830	27.4%	580	19.1%	545	18.0%
Quebec	18,440	100.0%	6,660	36.1%	3,385	18.4%	2,800	15.2%
Sherbrooke	4,535	100.0%	1,385	30.5%	1,235	27.2%	690	15.2%
Trois-Rivières	4,195	100.0%	1,420	33.8%	590	14.1%	665	15.9%
Montreal	91,855	100.0%	34,760	37.8%	15,920	17.3%	15,155	16.5%
Ottawa-Hull	22,385	100.0%	8,730	39.0%	4,400	19.7%	4,030	18.0%
Oshawa	5,170	100.0%	2,090	40.4%	950	18.4%	1,045	20.2%
Toronto	101,695	100.0%	37,615	37.0%	16,180	15.9%	18,875	18.6%
Hamilton	18,975	100.0%	7,955	41.9%	3,040	16.0%	4,075	21.5%
St. Catharines-Niagara	13,180	100.0%	5,240	39.8%	2,620	19.9%	2,835	21.5%
Kitchener	9,570	100.0%	4,010	41.9%	1,750	18.3%	2,005	21.0%
London	12,155	100.0%	5,375	44.2%	2,270	18.7%	2,545	20.9%
Windsor	8,595	100.0%	3,790	44.1%	1,425	16.6%	1,570	18.3%
Sudbury	3,465	100.0%	1,490	43.0%	670	19.3%	630	18.2%
Thunder Bay	3,950	100.0%	1,860	47.1%	605	15.3%	750	19.0%
Winnipeg	23,260	100.0%	11,480	49.4%	3,315	14.3%	4,405	18.9%
Regina	5,750	100.0%	2,640	45.9%	1,100	19.1%	1,100	19.1%
Saskatoon	6,095	100.0%	2,900	47.6%	1,020	16.7%	1,260	20.7%
Calgary	14,440	100.0%	6,000	41.6%	2,865	19.8%	2,690	18.6%
Edmonton	17,340	100.0%	7,225	41.7%	3,280	18.9%	3,390	19.6%
Vancouver	51,375	100.0%	21,140	41.1%	8,720	17.0%	10,710	20.8%
Victoria	15,090	100.0%	6,930	45.9%	2,405	15.9%	3,810	25.2%

Source: 1991 Census, Special Tabulation

### **Proportion of Women 75+ Living Alone, by CMA**

The CMAs of Quebec, such as Chicoutimi-Jonquière (at 27.4%), Sherbrooke (at 30.5%) and Trois-Rivières (33.8%) show relatively low proportions of women living alone. In fact, all have rates below even the provincial distribution of 34.3%. On the other hand, in western Canada, cities such as Winnipeg (at 49.4%), Saskatoon (at 47.6%) and Victoria (at 45.9%) have rates above their respective provincial distributions.

### **Proportion of Women 75+ Living in Institutions, by CMA**

Table 3 shows significant differences between CMAs in the same province in the proportion of women 75+ living in institutions which may be explained only by significant regional and local autonomy in the provision of institutional care. For example, Sherbrooke has the highest institutionalization rate of any CMA (27.2%) while Trois-Rivieres has one of the lowest rates (14.1%).

## **SUMMARY AND CONCLUSIONS**

This chapter has described some quite noticeable differences in living arrangements of the older senior population on a local and regional basis. Some of these differences can be explained by historical precedent such as the higher proportion of never-married senior women in Quebec. Some are explained by different rates of demographic and social evolution such as the higher rates of senior women living in the homes of others in Newfoundland. Still others may be explained by inter-regional and inter-provincial migration or by urban-rural differences. Nevertheless, the low fertility rates of recent years, together with the gender-based mortality differences will inevitably impact heavily on all regions of the country in terms of an ever-growing proportion of women aged 75 and over and the ever-decreasing proportion of younger women (and men) from whom they can expect care and support in the future.

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## Chapter 2

# CHOICE, CONTROL AND THE RIGHT TO AGE IN PLACE

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## INTRODUCTION

To the degree that there is a developed theoretical base for research in seniors housing, the literature relies on the Ecological Model posited by Lawton and Nahemow (1973) which holds that wellbeing in old age depends on the balance or interaction between an individual's competence and the "press" or demand level of the surrounding environment. The environment presses upon the individual, eliciting a response which is a function of *both* the individual's competence and the nature of the press.

The model implies that behaviour (i.e. actions and affect) and ultimately wellbeing can be influenced by adjusting levels of competence or press. It includes the earlier tenet of the Environmental Docility Hypothesis (Lawton & Simon, 1968) that persons of less competence are more vulnerable than others to environmental conditions. For example, a person whose competence was reduced by ill health would be more likely than a well person to respond with maladaptive behaviour or negative affect in the face of an environmental press such as noise.

While at first both competence and press were rather narrowly defined in terms of the interaction between an individual of given physical and mental health and the physical environment, the concept was later expanded to take wider social forces into account:

Ageism, social isolation, forced retirement, lowered income, personal losses, and so on are, first, social deprivations whose occurrence may tell us nothing about the competence of the person who experiences them. Yet the person often experiences them as reductions in competence.... The results of such deprivations are called "secondary incompetence." This term suggests that although the deprivation originates outside the person, its net effect is a limitation on the person's ability to deal with the environmental press. To the extent that an older person has experienced no such decreases of competence, that person is not selectively vulnerable (Eckert & Murrey, 1984).

Later refinements of the Ecological Model (Lawton, 1982) take a more phenomenological approach to person-environment interaction which moves the model from a normative, fairly deterministic description of behaviour into the symbolic interactionist theoretical framework: individuals respond selectively to objective stimuli according to their definition of the situation. This theoretical development provides the basis for exploring subjective aspects of the relationship between older people and their housing environment in addition to the variables more traditionally examined (e.g. age mix, state of repair, physical accessibility, availability of services).

Work by various researchers identified subjective factors such as “attachment to home” (O’Bryant, 1983; O’Bryant & Wolf, 1983), which includes traditional family orientation, cost versus comfort trade-off, status value of homeownership and competence in a familiar environment. Gnaedinger’s (1986) findings from more qualitative research were similar: “pride of ownership and the satisfaction of being able to look after one’s own home.... Familiarity and comfort with the housing and neighbours....(and) emotional attachment to the place” (p. 108).

This examination of subjective factors led to research by this author which attempted to understand the impact of social-structural differences between different types of housing on the wellbeing of elderly residents. The research (Doyle, 1990) focused, among other things, on several subjective indicators which varied markedly among housing settings characterized by different social structures, and showed significant relationships with wellbeing.

Before describing these studies, however, it is important to briefly summarize the research linking social-structural variables, health and wellbeing. Much of this is to be found in the epidemiological literature on the determinants of health status.<sup>1</sup>

It has long been known by public health epidemiologists that socio-economic status is the major predictor of health status (for a review see Lindheim & Syme, 1983). Social class differences in health have traditionally been explained in terms of individual deficit, such as genetic inadequacy or the lack of proper nutrition and medical care. However, during the past two decades, a number of longitudinal, large population studies conducted in North America and Europe have established that social network ties are the strongest determinant of mortality and morbidity, even controlling for known risk factors, such as socio-economic status.

In reviewing the evidence linking social and environmental circumstances to health, Lindheim and Syme (1983) noted that increased rates of disease are found under the following circumstances:

- a) when supportive ties between people are interrupted, such as when a spouse of many years dies

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<sup>1</sup> I am indebted to Sharon Martin of the Vancouver Health Department and Dr. Beverly Burnside, Research Associate with the Department of Administrative, Adult and Higher Education at the University of British Columbia for introducing me to this literature.

b) when people occupy low positions in a hierarchy, resulting in feelings of low self esteem, less opportunity for meaningful participation, and less control over the conditions affecting their lives

c) when people are disconnected from their biological, personal and historical past (p. 353).

It is clear from this large body of research that health is related to social identity, which is created and reinforced by wide social networks. But the concept of social identity must be understood as transcending the simple availability of emotional support. Rather, social identity is a person's place in the social scheme of things. Health, the research shows, is related to having a respected place in the social world, receiving feedback which tells us that we are a contributing actor, that we belong. Conversely, powerlessness and/or social marginalization are by definition factors which undermine health in a very fundamental way. It has been pointed out that the evidence for this relationship between health and social identity is currently about as strong as evidence linking smoking to cancer was in the 1950's (Tiger, 1992).

This association is supported also by research in *psychoneuroimmunology*, which has begun to demonstrate that there are in fact true biological pathways through which psychosocial events, such as one's experience of social identity, are connected by the central nervous system to the immune system. Social and behavioural events cause changes in the body. The experience of power, for instance, appears to lead to the secretion of the neurotransmitter *serotonin*, which leads to pleasurable feelings, and the lack of which is associated with depression.

This literature has several implications for seniors housing. It suggests that we should provide opportunities for people to improve their sense of social identity, to develop supportive ties which are not interrupted by forced moves, or undermined by isolation as people get older or become frail. It suggests that we should attempt to mitigate the effect of low positions in the hierarchy, which result in feelings of low self-esteem, and that we should provide people with opportunities for meaningful participation and control over conditions affecting their lives. From this perspective, accommodation for seniors should be directed to providing resources, including the resource of adequate health care, that enable one to maintain and to continue to develop one's social identity. A focus on simply providing services carries the danger of reinforcing the message that recipients are inadequate, powerless and socially marginal.

This chapter presents data from two studies that examined the relationship between socio-environmental factors and wellbeing which support this much broader perspective on the person-environment interaction.

## THE CO-OP, RENTAL AND CONDOMINIUM COMPARATIVE STUDY

This study (Doyle, 1990) was carried out in Spring, 1989 in small towns just outside Vancouver. The data collection instrument was a self-administered questionnaire filled out by

165 people , 71 living in housing cooperatives, 49 in rental buildings and 45 in condominium developments. Table 1 shows the socio-demographic characteristics of respondents, by tenure type.

**Table 1**  
*Socio-demographic Characteristics of Respondents by Tenure Type, Seniors Housing Study*

	<b>Co-op (n=71)</b>	<b>Rental (n=49)</b>	<b>Condo (n=45)</b>
Mean Age (in yrs.)	73.4	71.0	70.8
% Female	62.0	57.1	66.7
Marital Status (%)**			
married	57.7	20.4	51.1
widowed	36.6	40.8	42.2
separated/divorced	2.8	28.6	0.0
% Living Alone**	43.7	75.5	46.7
% No Paid Work	97.1	97.5	95.6
% No Volunteer Work**	53.7	80.0	57.8
% Household Income <\$12,000**	39.4	71.7	17.0
% No Income Problem	94.3	87.5	95.5
% >High School Education	33.3	35.5	50.0
% English Can. Ethnic Background.*	82.9	63.0	55.8
Self-Reported Health			
excellent/good	62.0	42.9	62.3
fair	33.8	36.7	31.1
poor/very poor	4.2	20.4	6.7
% No Disability	77.1	67.3	84.1
% Getting No Service With			
- housework	74.6	77.6	81.4
- meal/bath/nursing	98.6	95.9	95.3
<b>Note:</b> * = chi-square $p < .05$ ; ** = $p < .01$			

The three types of housing tenure differ on an important social-structural variable, that of *ownership*. While condominiums are owned individually by the occupants and rental buildings by a landlord who may or may not be known to the tenants, co-operatives are owned by the residents as an incorporated entity (individual units are leased to member-residents). Condominium owners administer their common property through an elected strata council; co-operatives manage their collective asset through an elected board and committee system. Structurally, these three housing tenures offer very different degrees of control over the individual's immediate environment. Renters have little control outside their immediate unit, and can be evicted from it under certain circumstances, the most common of which is inability to pay the rent. Condominium owners, on the other hand, have full ownership and security in their unit, and need only negotiate issues arising from the management of the common property. Co-operative members enjoy a high degree of security of tenure as joint owners, but must work through an established board/committee system to influence events outside their immediate dwelling.

While the degree of control varies among these housing tenure types, so does the requirement for participation, and thus the possibility of developing or sustaining a social identity based on undertaking active social roles. Renters are not normally called on to participate in any housing-related activities (unless recreational opportunities are provided, which was not the case for any of the buildings surveyed in this research). Condominium owners typically attend an annual meeting of the strata corporation, with elected council members attending business meetings monthly. Members of co-operatives, on the other hand, tend to meet monthly as a whole, and to have an active network of both functional and recreational committees which residents are encouraged to join.

Given these structural differences, one would expect differences in wellbeing by housing type. Wellbeing, in this study, was measured by an augmented version of the Bradburn Affect Balance Scale (Bradburn, 1969). This scale indexes current wellbeing by means of two five-item subscales which measure positive affect and negative affect. Following the stem: "*In the past few weeks, did you ever feel...*" are items such as: "*pleased about having accomplished something?*" and "*depressed or very unhappy?*" The two aspects of wellbeing have been shown to be generally independent of each other. Positive affect has been found to be related to social relationships and activity, while negative affect is associated with anxiety and worry (Bradburn, 1969).<sup>2</sup>

### Positive and Negative Affect

Table 2 shows mean positive and negative affect scores by tenure type. Although respondents in the co-op sample were more similar in socio-economic status to renters than to condominium owners, their average level of positive affect was much closer to that of the condominium owners who had higher income and the status and security of conventional

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<sup>2</sup> See Doyle (1990) for a discussion of the augmented version of Bradburn's Positive Affect Scale used in this study.



home ownership. In the case of negative affect, the results for co-op, rental and condominium samples are what would be expected, given actual socio-economic status (i.e. highest negative affect for renters and lowest for owners).

*Table 2*  
*Mean Positive and Negative Affect Scores by Tenure Type, Seniors Housing Study.*

	Co-op	Rental	Condo	P
Positive Affect (max=11 points)	8.3	7.3	8.6	<.019
Negative Affect (max=5 points)	0.57	1.00	0.35	<.024

### Control and Belonging

The study used several subjective measures in an attempt to understand the relationship of social-structural factors in the housing environment to wellbeing. Questions of interest were: Does having a sense of control over one's personal environment make a difference to wellbeing? Does a sense of belonging make a difference to wellbeing? To address these questions, an index (CONTEFF) was constructed from a series of questions about people's experience of participating in their housing environment. Generally, the questions asked whether, if the respondent offered an opinion, asked for something, or made a recommendation about regulations, management policy, or something they thought should be done in their housing development, their recommendation would be taken into account. A second index, examining the sense of belonging (BELONG), was constructed from items which reflected the degree to which respondents felt their dwelling was their "real home," a place they "really belong" or "just a place you live."

The four items in CONTEFF formed a reliable index (Alpha=.824), and showed a main effect for tenure type, with mean scores highest for respondents living in condominiums and lowest for renters (see Table 3). People living in condominiums have a home that they own, usually they own it mortgage free, so almost by definition they have a strong sense of control. But Table 3 reveals a notable difference between people living in co-op housing and renters. The data may be interpreted as showing that the co-operative housing experience brings residents closer to a sense of controlling their housing environment that is experienced by people who own their own homes than is the case for renters. The data in Table 3 also suggest that respondents living in co-ops had an even higher sense of belonging than condominium owners and certainly much higher than renters. The data were checked for a length of tenure effect which was not found. The findings from this study, then, clearly suggest that socio-structural variables such as the perceived sense of control and the sense of

belonging in the housing setting have predictive value with regard to the wellbeing of older people.

**Table 3**  
*Mean CONTEFF and BELONG Scores by Tenure Type, Seniors Housing Study*

	Co-op	Rental	Condo	P
CONTEFF (max=10)	6.6	4.2	7.7	<.000
BELONG (max=10)	8.5	4.5	7.7	<.000

### Inter-relationships among variables

Examination of interrelations between perceived control and belonging and other variables examined in the study showed a clustering of variables. As shown in the correlation matrix in Table 4, the variables that formed a cluster were the sense that the building was well maintained, a sense of safety in the building, control and belonging, and also a sense that life was “being fair” to the respondent as far as housing was concerned. Table 4 also shows the associations with health, housing satisfaction, and both positive and negative affect.

Clearly the data in the matrix suggest that all of these variables are highly interrelated. Together, they appear to measure aspects of the same construct which may be considered a *sense of community*. The data in the study as a whole show that a sense of community is an important contributor towards wellbeing among older people, even after controlling for socio-demographic factors, and even after controlling for the *rate* of participation — how many times the respondents actually participated in available activities within their housing setting.

The major implications of this study then are that while safety and quality maintenance are important in seniors housing, social structures which enhance the sense of control, fairness and belonging are also very influential. The lesson for groups providing housing for frail elderly people is that these variables must be attended to. A sense of community is integrally related to high levels of wellbeing. This is not to advocate a particular form of housing tenure. Many older people, particularly those in ill health, are no longer interested in taking the responsibility for getting the roof repaired. What the study does suggest, however, is the importance of opportunities for *meaningful and dignified* participation, which reinforce a respected social identity; a sense that one continues to be a respected person who can influence and have some control over her own environment.

**Table 4**  
*Correlation Matrix of Subjective Housing Variables Plus Health, Seniors Housing Study*

	Hlth	Maint	Safety	Contef	Fair	Belong	Satis	Pos	Neg
<b>Health</b>	1.00								
<b>Maintenance</b>	.18	1.00							
<b>Safety</b>	.12	.43	1.00						
<b>Control</b>	.27	.37	.35	1.00					
<b>Fairness</b>	.21	.35	.34	.32	1.00				
<b>Belonging</b>	.31	.27	.29	.50	.36	1.00			
<b>Satisfaction</b>	.31	.45	.47	.44	.42	.47	1.00		
<b>Positive</b>	.39	.26	.29	.34	.34	.54	.35	1.00	
<b>Negative</b>	.29	-.15	-.14	-.29	-.15	-.36	-.40	-.35	1.00

**Note:** For this sample the values of the correlation coefficient are significant as follows (2-tailed test):  $r = .15$ ;  $p < .05$ .

### THE LIVING ALONE STUDY <sup>3</sup>

A second study which sheds light on the importance of socio-structural variables to wellbeing is one completed in the spring of 1992 on the choice of older women to live alone. The study (Doyle, 1994) sought to understand some of the personal values underlying the fact that an increasing proportion of elderly women live alone.

The approach taken in the study was to ask older women how they experienced living alone. Do they in fact feel that living alone is a choice? Or did they have a sense of abandonment, a sense of having to struggle to take care of themselves? Ultimately, were they looking for a place where they could be taken care of or would they prefer to live alone as long as reasonably possible?

These are alternative scenarios that have very different implications for housing and health-care policy: either we should be planning more facilities where people will be taken care of because that is what consumers will demand, or we should be preparing more supports to enable people to live alone.

Data were collected through structured interviews with 174 older women living in Vancouver. Their mean age was 80 (range 70 - 96), 74% were widowed, and approximately the same portion had incomes under \$12,000. Eighty per cent were recruited by drawing at random from lists of women living alone who were receiving homemaker services, but not

<sup>3</sup>This study and a descriptive video entitled *It's My Turn Now: The Choice of Older Women to Live Alone* were funded by Health and Welfare Canada under the Seniors' Independence Program. Both the report of the study and the video are available from the Gerontology Research Centre at Simon Fraser University.

nursing care, from the Vancouver Health Department. There was a 20% control group recruited by referral from the Health Department respondents. Again, wellbeing was measured by the Bradburn Affect Balance Scale.

The analysis first addressed the usual predictors of wellbeing among elderly people: income, frequency of social contact, and socio-demographic variables. For most of these variables very little effect was found. Not surprisingly, self-reported health was a significant predictor of wellbeing. Another significant variable was the number of groups the respondent belonged to and attended regularly. It is important to note that statistical significance was attached not to frequency of activity but to the actual number of groups that the respondent attended regularly.

As shown in Table 5 mean positive affect scores<sup>4</sup> increased from 7.3 among those who did not regularly attend any group to 9.3 among those who attended four or more groups. Negative affect scores varied significantly in the opposite direction. These findings support the tenet that social networks as a component of social identity contribute to wellbeing. The extent, variety and complexity of the social network, the number of social roles occupied, is critical. This conclusion is supported by data from the Seniors Housing Study which show less frequent contact with family among co-op members than for either renters or condominium owners, accompanied by significantly higher levels of group participation and neighbourly contact, and high levels of positive affect.

**Table 5**

*Mean Positive and Negative Affect Scores by Number of Groups Belonged to, Living Alone Study.*

<b>Number of Groups Attended Regularly</b>	<b>Positive Affect <sup>a</sup> (max=11 points)</b>	<b>Negative Affect <sup>b</sup> (max=5 points)</b>
None (n=50)	7.3	1.50
One (n=45)	8.2	0.85
Two or Three (n=48)	8.7	0.82
Four or More (n=13)	9.3	0.67

<sup>a</sup> C<sup>2</sup> = p < .0004  
<sup>b</sup> C<sup>2</sup> = p < .0007

<sup>4</sup> The reader should note that the Bradburn Positive Affect Scale has been augmented for this study, making an 11 rather than the usual 5 point scale, as discussed in Doyle (1990).

The third variable that predicted wellbeing in this sample was the degree of choice respondents felt they had in living alone. They were asked whether they felt living alone was, at this point in their lives:

- 1) a definite choice,
- 2) something they did because they had no acceptable alternative,
- 3) something that just happened that they couldn't be bothered to change, or
- 4) whether they felt that they had no choice.

Although the full implications of the pattern are not clear, it is evident (see Table 6) that respondents who felt that they were living alone by choice (whether or not they had originally come to live alone by choice), had substantially higher levels of positive affect and lower levels of negative affect than those whose situation was otherwise.

**Table 6**  
*Mean Positive and Negative Affect Scores by Perceived Degree of Choice in Living Alone*

Perceived Choice	Positive Affect (max=11 points)	Negative Affect (max=5 points)
Definite Choice (n=114)	8.51*	.81*
No Acceptable Alternative (n=26)	7.29*	1.56*
Can't Be Bothered To Change (n=18)	7.78	1.22
No Choice (n=16)	7.50	1.56

\* Indicates groups in each column which are statistically different from each other.

The overall conclusion of the Living Alone study constitutes a shift of perspective akin to suddenly realizing that a glass which appears half empty is, in reality, half full. For a large portion of the older respondents, living alone appears, after the first several years, to be a positive experience rather than an experience of choicelessness and abandonment. Although risk was acknowledged, with concern expressed about being able to continue to care for themselves in the event of accident or illness, the underlying theme, of the importance of retaining their freedom, was suggested by the frequently-repeated phrase "*I can do what I want to do, when I want to do it.*"<sup>5</sup> A content analysis of several open-ended questions showed that 88.5% of the respondents articulated this theme at some point in their interview. Much of the

joy in living alone reported by the respondents appears to come from the positive experience of being able to do what they like, to think only of themselves after a lifetime of caring for others. This latter theme is reflected best as: *It's My Turn Now!*

## IMPLICATIONS

The importance of having choice and control of one's life and surroundings was very strongly expressed in both the Seniors Housing Study and the Living Alone Study. In planning seniors housing and related services this theme must be kept in mind. If people are living alone and liking it they will want to continue this arrangement for as long as it is possible to do so. However, safety and comfort may become a problem if health fails. Another serious consideration is that if people's health declines to the point where they can not get out and keep busy, they may have difficulty seeing themselves as respected actors on the social scene. That is the point where seniors or supportive housing must be carefully scrutinized as a potential means of maintaining choice and control. Further, if people are happier in housing settings which allow meaningful participation, then management style and policies in seniors developments are critical. The findings would suggest, firstly, that seniors' developments should be managed with a community development focus. This means that the caretaker is viewed as there not only to change light bulbs, sweep floors and to monitor people's wellbeing, but also that he/she (or other on-site staff) have some skills in developing a sense of community, fostering participation and fostering choice and control. This applies not only to recreational activities, but also to the formulation of the regulations, the policies, and indeed the social setting that affects people's lives when they live in multi-unit accommodation.

Secondly, the findings would suggest that health care, meals, recreational opportunities and other assistance that is required on occasion and perhaps, for a short period of time on a regular basis, be readily available, affordable and accessible on an as-needed basis. The approach should be that people can access assistance when they need it, control who provides the service, and not have to have it when it is not needed/wanted. For example many respondents in the Living Alone Study stated that they did not wish to be tied into a meal service agreement which meant that they had to be up at a certain time each day, or had to pay for meals whether they ate them or not.

The main issue is that people living in a seniors' development, even a supportive one, should not have to take on permanently the degraded social identity of *client* or *sick person* or even *old person*. Seniors housing and seniors programs which promote wellbeing are those which allow choice, control and meaningful participation, which support a respected social identity, and which let a person know that they are still somebody, an actor in the social world, and that they count.

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<sup>5</sup>The frequent use of this phrase is also reported by Rubinstein, Kilbridge & Nagy (1992) in qualitative research with frail elders living alone. These researches introduce the term *miniaturization of choice* to describe the importance of immediate personal surroundings in supporting independence.

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**PART II**  
**PROBLEMS IN PROVIDING SERVICE**  
**WITHIN EXISTING SENIORS HOUSING**



## Chapter 3

# CURRENT REALITIES AND CHALLENGES IN PROVIDING SERVICES TO SENIORS: THE HOME CARE PERSPECTIVE

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## INTRODUCTION

The American Association of Retired Persons conducts a national survey every three years to identify consumer preferences and trends. The 1990 survey (Dobkin, 1992) showed that 86% of older people wish to stay in their own homes and never move. This is an increase from 78% in 1986. As Dobkin (1992) notes: "Determining how to creatively and affordably maintain these people in their homes of choice will be the greatest challenge to public policy makers and to housing, health and social service providers" (p.31).

The recently released *Partners in Health — The Government of Alberta's Response to the Premier's Commission on Future Health Care for Albertans* (Alberta Health, 1991a) outlines the direction of Alberta's New Vision of Health for the Future. Within this document, the value of providing services to enable people to remain in the community is well recognized. One of the vision statements of this document is that: "The Health System of the future will... provide a better balance between community and institutional care delivery systems by targeting shifts to community based care" (p.8). While it is acknowledged that most people prefer to remain in their own homes, community care options have not reached their full potential. The potential exists to serve more persons with acute and long term care needs in the community (Alberta Health, 1992a).

This chapter focuses on the provision of home care services to seniors and other people living with disabilities. Using the Province of Alberta as an example, the current realities and challenges to providing services to seniors in the community are described and some potential strategies are presented to address the barriers identified. Both broad home care issues and some issues more specific to housing are discussed. This approach recognizes that housing and health care need to be viewed in an integrated manner, as it is the combination of the two that makes the difference in maximizing individuals' independence.

## **THE CURRENT SITUATION IN ALBERTA**

### **Demographics**

Alberta has a relatively young population: 9.1% were aged 65 and over in 1991 compared with a national average of 11.6% (Statistics Canada, 1992). However, like everywhere else, the seniors population is growing. It is anticipated that by 2020 the number of Albertans aged 65+ will double, and the group aged 85 and over will triple (Alberta Treasury, 1991). The number of individuals with disabilities in Alberta is also increasing, because of medical and technological advances.

### **Bed Ratios**

Persons aged 65 and over use 90% of all long term care beds in nursing homes and auxiliary hospitals (Alberta Health, 1991b). In the past 10 years, the number of long term care beds in Alberta has increased by 20%, while the population aged 75 and over has increased by 50%. To maintain the current bed-to-population ratio Alberta will need 620 new long term care beds per year for the next 25 years (Alberta Health, 1992b).

### **Financial Pressures on Health**

Over the past ten years, annual per capita expenditures on health have increased by 107%, from \$1,859 per Albertan in 1982 to \$3,861 per Albertan in 1991 (Alberta Health, 1992c). Continuation of health expenditure growth at past rates of increase would result in total annual expenditures rising from \$3.73 billion in 1991 to \$10.71 billion by 2001 (Alberta Health, 1992c).

### **Government Roles and Relationships**

Within Alberta Health, the Public Health Division is responsible for community health, and within the Public Health Division, the Home Care/Community Long Term Care Branch is responsible for community long term care health services. The Acute and Long Term Care Division is responsible for health care within hospitals and other facilities. The Long Term Care Branch is responsible for long term care facilities. Housing is under the jurisdiction of Alberta Municipal Affairs. This department is responsible for the physical components of various housing options including seniors housing and seniors lodges. Provision of services to seniors and other persons who live with disabilities in the community is an important issue to various sectors within the government. Coordination and collaboration between Alberta Health and Alberta Municipal Affairs is essential. Various strategies are currently in place to foster the partnership.

### **FOCUS ON HOME CARE**

Many changes are currently underway within home care in Alberta. Similar changes and challenges are being faced by other provinces throughout Canada, as the importance of having options that enable people to remain in the community is increasingly emphasized. It is

important to note, however, that home care services have developed at different rates and with different patterns throughout Canada, and there is by no means a common approach to how services are funded and delivered (Federal/Provincial/Territorial Working Group on Home Care, 1990). Some of the differences in the ways in which home care services are provided in Canada reflect the varying housing and long term care options that are available in different parts of the country.

The Home Care Program in Alberta was initiated in 1978, and has experienced tremendous growth and expansion during the past 14 years. For example, in October 1992, Alberta's Home Care Program had a caseload of approximately 22,500 individuals per month compared with 18,500 in 1990. This represents a 22% increase in the caseload of Home Care clients in just two years. Currently, 87% of Home Care clients are seniors.

### **SINGLE POINT OF ENTRY**

The Single Point of Entry (SPE) process was developed in Alberta in 1984 through collaboration between Home Care and the long term care facilities. The SPE process provides one access point to all individuals seeking long term care whether in the community or in a facility. The purpose of SPE is to explore all possible community options before facility care is considered. Home Care staff conduct assessments, identify needs in cooperation with clients and their families, and recommend health and support services that best suit these needs. The right of people to be knowledgeable about the long term care options available, and to be involved in the decision-making process, is respected throughout the SPE process.

The Alberta Assessment and Placement Instrument (AAPI) is the assessment instrument used by long term care programs throughout the province. The AAPI guides the Home Care assessor in documenting an individual's long term care needs and in determining appropriate service options, either in the community with Home Care or in a long term care facility. The focus throughout the assessment process is on determining what persons can do for themselves or with the assistance of their family or community support system. The emphasis is on exploring community alternatives before considering facility placement.

### **BARRIERS TO PROVIDING SERVICE**

Many challenges are encountered when providing services to enable people to live in the community. Below are five of the major challenges currently faced by staff working in Home Care and by individuals who wish to remain in the community.

#### **1) Lack of options that combine housing, health and support services**

Within Alberta, there are relatively few housing options available for people who require health and support services in order to remain in the community. This forces service providers to try to "fit" people into one of the limited number of options, which in many instances are not appropriate and may not meet the individual's needs. Aside from private homes, seniors apartments, and some privately-operated options, the only other community alternative that currently exists in Alberta is a Senior's Lodge.

### ***The Alberta Lodge Program***

In a lodge, residents have some personal living space, but share communal areas for meals and recreation and may share bathroom facilities. There are currently 142 lodges in Alberta that are operated by senior citizen foundations. The size of the lodges varies considerably, from housing 15 to housing 122 individuals. In the future, however, lodges will be built to house from 30 to 60 individuals. The mandate of a lodge includes providing meals and housekeeping to the residents. Within current Home Care policies a lodge is considered to be an individual's home. Professional health and personal care services are delivered to lodge residents in the same manner as to individuals living in their own self-contained housing. According to a survey conducted by the Alberta Health Facilities Review Committee in 1990, approximately 45% of lodge residents receive Home Care services.

In general, if an individual's needs are greater than can be met through existing Home Care services delivered to the individual's home, or in a lodge, the person must either pay for care privately (which can occur in a number of private and non-profit housing developments) or move into a long term care facility. Individuals with certain specific needs cannot currently be maintained in the community unless they have a very strong informal support system. These individuals have a frequent unscheduled need for support services (e.g. are incontinent; have frequent needs for assistance with transferring) or they have a need for 24 hour a day supervision (e.g. client with Alzheimer's Disease). To meet the needs of these client groups and to enable individuals to remain in the community, a service option that includes the 24 hour availability of support services (personal care and home support) is needed. It is evident that the range of options combining health services, support services and housing must be broadened. Public policy that addresses the need for a range of appropriate and affordable housing options for seniors will go a long way toward assisting people to live in the community.

### ***Co-op Housing***

In Edmonton, there are two examples of another strategy to combine housing and support services: "Abby Road" and "Artspace." Both are housing cooperatives that integrate people with, and without, disabilities. Abby Road has 50 units, 23 of which are adapted to accommodate persons with disabilities; Artspace has 88 units, 29 of which are so adapted.

These housing complexes have been developed through the drive and initiative of disabled people who wanted an option that would afford them greater control over their lives. Both housing cooperatives are provided with a grant for support services from Alberta Health. The funds go to a Support Service Committee made up of members of the Co-op, who are responsible for designing and delivering the personal support services program. Support service staff are on-site and are able to provide service on both a scheduled, and an on-call basis, 24 hours a day.

The services provided to these individuals are based on assessed need, and are delivered within a philosophy of maximizing independence, choice and self determination. If professional health services are required by the residents they are provided by visiting Home Care staff.

These two housing co-ops have proven to be very successful. Many of the people residing in Abby Road and Artspace have stated that their lifestyle has improved greatly since moving into these new living environments. Many had previously lived in facilities, and have gained greater control over their lives by this experience. The control that these people describe as extremely important is that they are now able to direct the people who provide their care.

Other benefits perceived by residents (McGregor & DeRosario, 1992) are that:

- “Co-op living makes disabled people aware that yes — they can contribute. They come into their own.”
- “You have your own place. You can come and go as you please and do the things you want to do rather than dealing with basic living necessities so you can make more of a contribution.”
- “The Co-op and Support Services Program is geared to allow you to be as independent as possible.”
- “For someone who is disabled, this program (Co-op and Support Services) is a huge opportunity to make the most of what they can.”

Abby Road and Artspace also exemplify the importance of mutual support and integration. The people who live in these housing complexes state that a very important aspect of this model is that people can assist one another, and that the different strengths of both able-bodied and disabled individuals can be utilized. Although our Alberta experience with this model is limited to a younger disabled population, it could easily be generalized to elderly persons.

In summary, there are currently relatively few options combining housing, health and support services in Alberta. Home Care will need to work closely with the housing sector to encourage development of innovative options that combine housing, health and support services.

## **2) Lack of Financial Resources**

The report of the Federal/Provincial/Territorial Working Group on Home Care (1990) points out that “Home Care expenditures have up to now constituted no more than 2% of the total health budget (publicly funded) in any jurisdiction” (p.6). Based on 1992/93 budget allocations, Alberta’s Home Care Program received 1.98% of the total provincial health care budget. A focus on facility-based care has created a system which is expensive to maintain, yet does not sufficiently meet the needs of Albertans (Alberta Health, 1992). Home care programs are faced with the difficult task of balancing the client’s identified needs with the available resources.

In addition, as a result of priority setting, or recruitment difficulties, not all home care programs are able to offer a full range of professional health services. For example, while the

provision of rehabilitation services has expanded significantly in the past few years, not all programs have physiotherapy or occupational therapy services. More fiscal and human resources are required to meet the needs of people living at home.

The role of Home Care in Alberta's health system is considered to be very important. The Honourable Nancy Betkowski, Alberta's Minister of Health, has described Home Care as the *oil* that assists the health system to operate smoothly. The future role of Home Care will be even more important considering the aging of Alberta's population, the restricted availability of long term care beds and the shift towards reliance on community alternatives.

Additional resources will assist Home Care in enabling individuals to remain at home. In these times of fiscal restraint, it is important to ensure that resources, both fiscal and human, are used in the most appropriate way. To address some of these resource utilization issues, Alberta Health has initiated a pilot project to study a client classification system within the home care environment. Results of this study should assist us in utilizing our resources more effectively.

### **3) Roles, Responsibilities and Expectations of the Community**

Home Care is provided in some settings where there is a potential for roles and responsibilities to become blurred or misunderstood. This may be the case when seniors are living in congregate settings such as the previously described lodges, in seniors apartments, or in other private non-profit, or for-profit housing arrangements where some health care or support services are included in the rental package.

The interface between Home Care and lodges is a good illustration of this challenge. In 1958 when the Lodge Program was introduced lodges were intended "to provide low rental accommodation for senior citizens not suffering from any chronic disease or disability that incapacitates them to the extent of requiring specialized care". Facilities were constructed throughout the province in order to keep people as close to home as possible.

The Lodge Program has changed since its inception. The Lodge mandate is now "to provide affordable room and board for senior citizens who are functionally independent with the assistance available through existing community-based services and who would not otherwise be more appropriately provided for in a health care facility." In other words, it is now recognized that many lodge residents need access to the kinds of health and support services provided by Home Care.

The introduction of the Home Care Program has had two major impacts on the lodge system. First, it has enabled some at risk seniors to remain in their existing accommodation, thus delaying or eliminating their movement into lodges or long term care facilities. It has allowed lodge residents to remain in lodges longer, thus preventing or delaying admission to higher level care facilities. As a result, the typical lodge resident is now older and has greater need for health and support services. As noted above, approximately 45% of lodge residents currently receive services from Home Care.

Over the past several years, various surveys and input from the field have identified some concerns about the role of Home Care in lodges. These include concerns related to:

- confidentiality
- communication between Home Care and lodge personnel
- expectations regarding the amount of service that Home Care should provide to residents
- numbers of Home Care personnel coming into the lodge
- coordination of Home Care visits with other lodge activities

In general, there are two key underlying problems. The first is lack of understanding and a clear delineation of the philosophy, roles and responsibilities of lodge personnel and Home Care staff. The second is a lack of clarity surrounding the levels of need that can be met by Home Care.

A process is currently underway in Alberta to develop principles and strategies to guide future Home Care service delivery in lodges. This process is a joint initiative between Alberta Health, Alberta Municipal Affairs and the Alberta Senior Citizens Homes Association (the umbrella organization for the lodges). Lodges will continue to be a housing option in the community, and Home Care will continue to be responsible for providing needed health services to these residents. What is currently being explored is whether changes are needed in the method of service provision within lodges. We need to determine what makes the most sense from a fiscal perspective, and what will best meet the needs of the people living in lodges. In addition, Home Care personnel and lodge personnel need to examine their current interaction, clarify their roles and responsibilities and work together to enable residents of lodges to remain in the community. Some examples of ways to improve the Home Care/lodge interface might be to encourage regular meetings between Home Care and lodge staff; to limit the number of Home Care staff in a lodge; and to educate each about the others philosophies and principles.

Other settings in Alberta where clear definition of roles and responsibilities is important include *lodge type* units that are attached to long term care facilities. In addition, more private initiatives are being developed to provide housing for individuals who have some need for support services. As innovative approaches are developed it will be important that roles and responsibilities of the housing facility, Home Care and the resident, are mutually understood.

#### **4) Design of the Physical Space**

The structural design of where an individual lives can be a barrier to both the individual and to the Home Care staff providing services. Conversely, a building which incorporates features to facilitate independence can go a long way towards enabling an individual to remain in the community and lessening his/her need for Home Care service. The design of the housing can impact on an individual's quality of life.

Home Care staff frequently provide information to people about how they can adapt their homes to facilitate greater independence. These adaptations are often quite simple and inexpensive, but make a significant difference in that person's life. Examples are: the installation of grab bars for independent bathtub transfer, replacement of doorknobs or dials for people with a weak grasp, or replacement of swing-out doors with sliding doors to enable wheelchair accessibility. Other adaptations may be more costly, such as construction of ramps or installation of elevators within a person's home.

Design features are also very important in a lodge. The design of lodges has changed considerably over the past years. The rooms were traditionally very small and in some lodges individuals were required to share their room with another person. Bathrooms were also frequently shared.

Lodges are now striving to incorporate features that will make them more home-like, and facilitate independence. It has been recognized that people want, and need more private space, and therefore the size of individual rooms has been enlarged. In addition, large communal spaces in lodges are now being constructed so that they can be divided into smaller, more intimate areas.

In developing future options that combine housing, health and support services the design of the building is an essential consideration. The design must maximize accessibility and independence, and also recognize the need for privacy.

#### **5) Societal and family expectations regarding who can, or who should, live in the community**

Although society has moved a long way in accepting that people with limitations can function in the community, Home Care staff still struggle with "well meaning" family, friends or building operators who believe that their family member or friend should no longer be living on his/her own.

The availability of a range of options that combine housing and health services is key to many quality of life issues. Having maximum choice, control and independence appears to be what consumers want. We need to ensure that control is not prematurely taken away from people when they enter the continuing care system. In trying to protect people, we often prevent them from having opportunities that will improve their quality of life.

Consumer groups, such as the Alberta Premier's Council on the Status of Persons with Disabilities, the Seniors Advisory Council and the Alberta Council on Aging have broadened our awareness of the importance of providing people with opportunities for choice and control over their lives. For example, the Premier's Council on the Status of Persons with Disabilities (1989) notes that: "Freedom of choice encompasses the concept of dignity to risk, and includes the implications/consequences of risk taking" (p.17). One of the challenges this poses for people working in the health care field is to understand our own inherent need to protect others whom we perceive to be more vulnerable and make what we think are the *best* decisions on their behalf. Our future philosophical parameters need to encourage independence, privacy, self-determination and minimal intrusion in people's lives.



## CONCLUSION

This chapter has outlined some of the most important challenges that face Home Care providers in meeting the needs of seniors and others with disabilities living in the community. In Alberta several important strategies are currently underway to broaden the range of options available to enable seniors to remain in the community. The need for close collaboration between the ministry responsible for housing and the various branches within Health in developing and implementing these strategies has been emphasized.

We need to ensure that there is enough flexibility in our health system to develop options that make the most sense for providing the housing and services that people require. These options must maximize an individual's opportunities for independence through both the manner that health and support services are delivered and through the design of the housing. The provision of alternate options that combine housing and health will enable more people to remain in the community and overcome many of the current barriers to providing services.

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## Chapter 4

# DIFFICULTIES OF PROVIDING SUPPORT SERVICE IN BUILDINGS CONSTRUCTED UNDER SHELTER-ONLY HOUSING POLICIES

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## INTRODUCTION

**M**eadowcroft Housing in Edmonton has encountered serious difficulties providing services in its seniors housing project. The project was constructed under Canada Mortgage and Housing Corporation (CMHC) shelter-only housing policies. Approximately 10% of the 500 residents need services which these policies preclude us from offering. Discussion with the managers of other shelter-only projects suggests that the problems are not unique to our building. This chapter argues for an extension of federal policy boundaries so that seniors housing projects can meet current needs resulting from aging of the original tenant population and from changed provincial policies that have affected new admissions.

## HISTORY AND BACKGROUND OF MEADOWCROFT HOUSING

In 1970, the author and two other individuals, one a lawyer and one a minister, met through mutual association with a United Church inter-city agency. Although having no prior experience in providing seniors housing, we were aware of deficiencies in the stock available at the time and wanted to do something about it.

We ascertained that the Alberta government would provide one-third of the capital costs for an apartment building and that CMHC would finance two-thirds with a low-interest mortgage if we undertook to house low-income seniors. Armed with this knowledge, we hired a developer and a construction company. By the fall of 1972 we owned a non-profit company, which in turn, owned a seniors apartment building with 308 bachelor and 112 one-bedroom suites.

At the time planning commenced, we were told by both levels of government that all our suites were to be *self-contained*. A self-contained suite is one that contains, within itself, the

basics for a resident to live on his or her own. It includes kitchen, stove, refrigerator, bed space, cupboards, closets and private bathroom. Both levels of government insisted that we needed no facilities or staff to provide care. We were to provide shelter only. Obviously some of our 500 residents were going to get sick starting the day after we opened but our government advisers told us not too worry, the sick would just move out to a lodge or nursing home. In retrospect, it is difficult to believe that we actually believed them.

Once a low-income senior has lived in a complex for awhile, familiarity, belongingness and attachment result in it becoming his or her whole world. As former friends die or move away, new friendships are formed within the building. Restricted by health and lack of finances from travelling to visit friends and family members, and with reduced mental and physical strength to cope with change, the senior relies more and more on resources available within the building. We are finding ourselves with increasing numbers of residents who need care but who would rather die where they are than move elsewhere. However, we lack the staff, money and equipment to care for the 20-60 residents who, at any one time, need one or more services.

## THE SIMPLE PROBLEMS

As seniors age, some are afflicted with specific diseases. Others simply become weaker and more frail with age. At any point in time there are seniors in our building who need services to cope with the following health and functional problems:

**1. NUTRITION.** As weakness (mental or physical) occurs the senior fails to prepare and eat a sufficient quantity and/or variety of food. Lack of proper nutrition leads to further weakness which leads to worse eating habits, specifically, the infamous *tea and toast* syndrome. Some of our residents have been admitted to hospital diagnosed as suffering from malnutrition. They usually are back in a week or two healthy and zestful but, the cycle soon starts again.

In Edmonton, as elsewhere, there is an excellent "Meals on Wheels" service that will deliver a hot nutritious meal to the senior's door for a lower price than local restaurants charge. Some of our residents have used the service for many years and are happy with it. However, most quit after a short period of time. The reasons they give include: too much food, too little food, don't like eating out of a box, don't like macaroni, steak is too hard to chew, don't like the taste, don't like the delivery person, too expensive. At best, Meals on Wheels serves less than half of the residents who need it. Generally, the refrigerators and cupboards of those who need the service but don't use it are well stocked by family and friends. These residents, however, are too frail to properly look after their own nutritional needs.

**2. SHOPPING.** Edmonton experiences harsh (-20°C and -30°C) weather in winter. The nearest food store is a half kilometre walk from our building. If the resident can get there then she/he must bring the groceries back across the snow drifts and icy ruts. Falls take place and bones get broken almost every winter. This is not to say that residents should be discouraged from going out of the building. Most go out and buy a bit of food almost daily. The trip is good for them, providing physical exercise and mental and social stimulation. However, about 20

of our residents would have insurmountable problems in winter if they were forced to rely solely on this method of food purchasing.

**3. HOUSE CLEANING.** Over time, house cleaning becomes too much for some residents. Once it overwhelms them they often stop caring. Some walk in the garbage and eat from dirty plates. Approximately 30 residents receive outside house cleaning service and a dozen more probably require it.

**4. HAIR DRESSING.** Most of our residents are women and having their hair done is important to them. This area is well looked after with about 50 people per month using our hair salon which is staffed and run by outside operators.

**5. DOCTOR, DENTIST, PHARMACY AND PHYSIOTHERAPY.** A number of our seniors are too weak or sick to access the medical services they need. Two doctors come to the building for a half day each per week and see a dozen patients. We have at least a dozen residents who need a doctor but refuse to see one.

**6. EXERCISE.** Learning that exercise is equally or even more important for seniors than for younger people, we took a bachelor suite out of service and installed several stationary bikes and rowing machines. Residents have put many miles on the bikes and worn out the rowing machines, so they are popular. Some residents use the room for daily aerobics as well.

**7. AMBULATION.** There are many reasons for losses in walking ability in seniors. Some are medically treatable. Some residents get by with canes, walkers or wheelchairs. Persons with serious ambulation problems have difficulty coping in a self-contained suite. The rare person who becomes bedridden has overwhelming problems. At any one time, we have 8 - 15 people with serious ambulation problems.

**8. VISION.** We have one resident who is totally blind, two or three who are legally blind, and dozens with poor sight. It is estimated that approximately 50 people have trouble reading the stove controls, elevator buttons, floor numbers, etc.

**9. HOSPITAL DISCHARGE.** Patients are discharged as soon as possible as hospitals in Alberta, as elsewhere, scramble to save costs. Following hospital discharge, some people are bedridden for days. We average one serious problem of this type every couple of months.

**10. CONFUSION.** USUALLY we have one or two people in the building who experience periods of confusion. There is danger of these individuals wandering outside, getting lost and freezing to death in the winter.

**11. OTHER PROBLEMS.** Many other problems occur such as drug and alcohol abuse, drug misuse, loneliness and depression.

## THE COMPOUND PROBLEMS

Below are what we refer to as the compound problems. They are problems that arise when people age in place at Meadowcroft.

**1. CARE-GIVER BURNOUT.** From time to time a tenant will come into the office, have a traumatic break-down in front of the staff and plead for help. The story is nearly always the same. Mrs. Smith started getting a little too weak and frail so she got her neighbour Mrs. Jones to buy her a few groceries now and then. As time passed, Mrs. Smith got frailer and, we suspect, lazier. After awhile she has Mrs. Jones doing all her shopping, cooking, laundry, housekeeping and letter writing. Mrs. Jones must not tell the office or they will force Mrs. Smith to leave, and then she will die. Using a combination of guilt, threats and sympathy, the care-receiver often becomes a tyrant over the care-giver.

**2. RESIDENT RESENTMENT.** Not everyone applauds our attempts to maintain the sick, the frail, the lame and the blind. Many of the healthy residents do not enjoy looking at these people in the hallways and at social events.

One incident illustrates, however, that there are two sides to this coin. One lady went so far as to take up a petition to have the sick forced out and she turned it into the office along with some verbal demands. The next week she fell ill and went to the hospital. When she came out she was permanently disabled and should have been evicted if we had complied with her petition. The first thing she did on coming home was to come to the office and try to withdraw what she now called her 'misguided petition'. In spite of this lady's sudden change of heart, there continues to be a certain amount of expressed and silent resentment amongst the well.

## SERVICE OPTIONS

When a problem occurs there are four possible options: (1) the senior receives no service; (2) informal services are provided by relatives, friends or other residents; (3) formal services are provided by an outside agency; or (4) formal services are provided by on-site staff. Below are the perceived strengths and weaknesses of each of these options.

**1. NO SERVICE.** This is the usual first response. Most problems grow slowly and have to become fairly severe before someone says that a solution is needed.

Some seniors may reject the service because it costs money, they don't want anyone in their room, they don't want to be bothered or they may not be mentally competent to make decisions. Certainly we don't want to force unwanted services on anyone. The situation would be simple enough except for the fact that Mrs. Smith can't bathe herself anymore, she won't accept help, she stinks and she insists on going to every social event. It is rumoured the other tenants are forming a lynch mob!

In general, our philosophy is to encourage residents to take as few services as possible and to be as independent as possible. However, we still have residents such as Mrs. Smith to deal with. Under Alberta law our relationship is that of landlord and tenant. As a result, we have no power over her and eviction is next to impossible. For the same reasons we can seldom

intervene with the mentally incompetent no matter how bad their situation.

**2. INFORMAL SERVICES.** Services provided by relatives, friends and other residents can be the best of services and they can be the worst. Deep mother/daughter bonds can be forged or split apart. Care-givers can receive a deep sense of purpose and self-worth or end up hospitalized as a result of exhaustion. Informal services are essential in large developments comprised of self-contained suites, such as Meadowcroft. They are difficult to monitor yet sometimes need to be watched closely because they can be highly reliable or highly erratic. Also, their break-up can be very traumatic.

**3. OUTSIDE SERVICES.** Several years ago, the Alberta government froze the number of nursing home and hospital beds in the province. With an expanding population of seniors the whole system backed up. Nursing homes found themselves coping with hospital patients. Lodges found themselves coping with nursing home patients. Projects with self-contained suites have had to cope with increasing numbers of people eligible for lodges and nursing homes, without appropriate staff, facilities, equipment or funding to do the job properly. The Alberta government's solution to the problems that have resulted from this back-up was that seniors would receive services in their homes. The assumptions underlying this solution were that it was far cheaper than adding beds to the system and that seniors would be happier aging in place. However, problems with this approach include:

- (i) Sick and frail seniors often have little knowledge about what services are available to them.
- (ii) They have little energy, will or ability to make the necessary arrangements.
- (iii) Being sick, they are easily annoyed and, on a whim, will phone and cancel a badly needed service.
- (iv) There seems to be little supervision or follow-up to ensure that the correct services are delivered in appropriate quality.
- (v) Some services are provided by for-profit organizations whose primary interest does not seem to be the senior.
- (vi) The service provider often just dashes in and out. The senior is left on his or her own to cope with loneliness and depression. In our rush to have people stay in their own homes for as long as possible we should not forget how important socialization is for all of us but especially for lonely and isolated seniors.

**4. ON-SITE SERVICES.** These include any services or care provided by the owners of the project. Although the most expensive of the alternatives, the great strengths of on-site services are that there is someone present whose job it is to intervene if necessary, to assess, to follow-up, to adjust services as required and, most importantly, to be there and to care.

No matter which of these service options the resident chooses, or defaults to, our shelter-only staff become involved. If no service is chosen our staff must cope with the emergencies that often arise due to lack of service. Informal caregivers turn to our staff for information, advice and help with emergencies as do outside services. What this means is that the office staff are jumping into the breach on weekdays and the live-in maintenance staff provide care services at night and on weekends. We are very lucky to have staff that will look after a broken hip at 2:00 am and still be on time at 8:00 am to start their maintenance routines. These examples are common in Edmonton and in other projects across Canada.

## THE GROWTH IN UNMET NEEDS

There have always been unmet needs in our building as a result of people choosing to stay when they could have relocated to a nursing home. It might be argued that if they chose to stay, doing without services and care was their choice. This argument does not hold, however, for residents forced to stay by changed government policy and for whom we are not equipped.

In terms of the simple problems listed earlier, the unmet needs of the new, more frail residents are as follows:

- 1. NUTRITION.** In spite of having our own kitchen we still have many problems. For example, in nursing homes, staff go into the residents' rooms and get people out who fail to turn up for meals. We don't have the staff for this. We serve meals to about 20 people per day and there are probably 20 more that need the service but have not signed up for it.
- 2. SHOPPING.** Some projects have a shopping service for frail residents. We do not. Family and friends help some and the rest are out of luck.
- 3. HOUSE CLEANING.** A number of outside people and agencies come into the building but the tenants who need help the most never seem to sign up.
- 4. DOCTOR, PHARMACIST AND PHYSIOTHERAPIST.** They share two converted bachelor suites. CMHC may force us to close them down. There are many residents with mental health problems who are not receiving adequate treatment.
- 5. IMPROVED PHYSICAL DESIGN AND LIGHTING.** The needs of those who can get around on their own are fairly well met. There are no total barriers in the building but those requiring wheelchairs and walkers get around awkwardly because the building was not designed with their needs in mind. The bathrooms are very awkward for wheelchair users.

Staff from the Canadian National Institute for the Blind are very good about helping our residents. However, the building was not designed for persons with poor sight. We have had to upgrade hall lighting and would like to upgrade lighting in the suites, elevators, etc.



## **AN UNREALISTIC POLICY**

Twenty years ago, when Meadowcroft was built, we received funding from CMHC. In return, we had to sign an operating agreement under which our mandate was limited to providing shelter only. At the time, we objected to this viewing it as impractical when dealing with seniors. However, we were instructed that we had to sign if we wanted to build and not to worry since CMHC would be flexible and wanted what was best for seniors.

For ten years this was true. During the 1970's, other building managers in Edmonton also found CMHC to be relatively flexible and easy to deal with. We could try new things with CMHC's blessing so long as we could show they were helpful to seniors. In the early 1980's, CMHC's National Office in Ottawa decreed that everyone had to comply with the letter of their agreements.

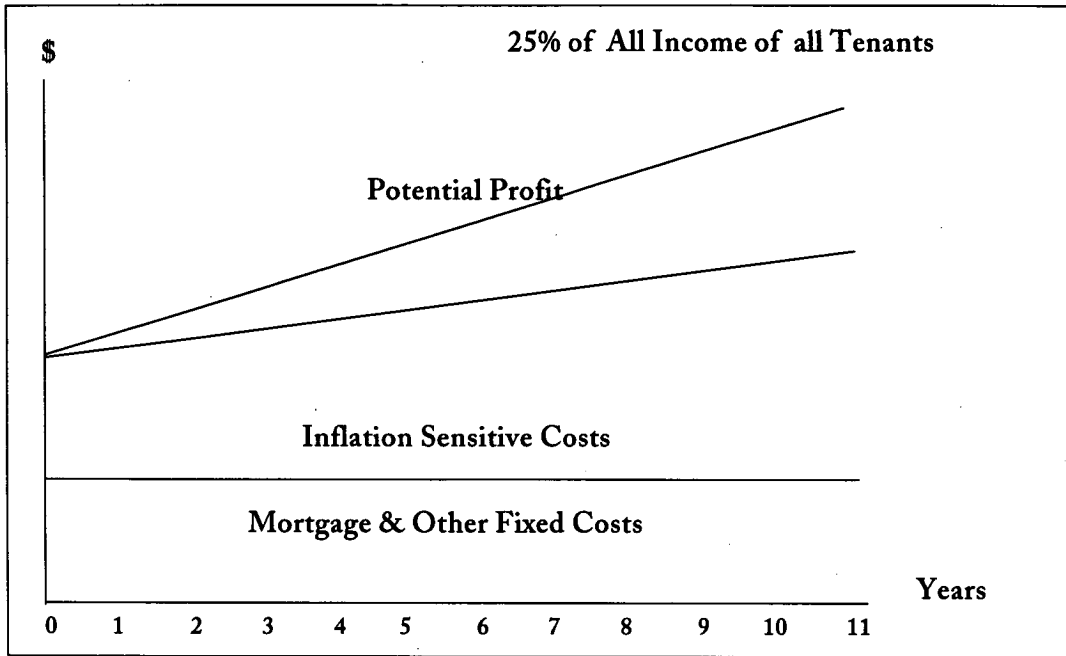
One example of the ensuing problems concerns the residents, described earlier, who were hospitalized for malnutrition in spite of the availability of Meals on Wheels. Unable to stand by and do nothing, we converted two bachelor suites to a kitchen and a dining room and offered our residents a full course dinner once a day. This was probably the single best thing we ever did. However, it triggered a ten year fight with CMHC which was concerned that the suites were not being used for shelter and that the kitchen, being small, was losing money. At meeting after meeting CMHC demanded that we shut it down or they would take us to court. The court threats have stopped recently but the issue is far from resolved. Although this is the most dramatic example it is but one of a host of problems we have had with CMHC as a result of their attempt to enforce the shelter-only policy.

The reality is that when a project offers housing for seniors it also gets into the business of providing care. The sick, the injured, the lonely and the depressed stream into the project office begging for help. Residents lying on the floor with broken hips phone the office for help. Life line services phone us to extract people out of bathtubs. Distraught daughters call from out of town because Mom hasn't answered her phone for three days. Our staff cannot turn their backs on these problems.

## **GROPING FOR SOLUTIONS**

Although feeling constrained by CMHC, we intend to negotiate some funding from the Alberta government for support services for some of our residents. Additionally, we believe a valuable source of funding for services is being missed. When new projects are built in Canada for low-income seniors, they are usually arranged such that the residents pay 25% of their income for rent and the project breaks even. The residents' incomes rise with inflation as the years go by but the project's costs would normally not go up as fast since fixed costs, such as mortgage payments, do not inflate, as show in Figure 1. If rents were to follow the inflationary curve, projects would accrue profits that could be used to finance services.

**Figure 1**  
*Potential Profit Source to Finance Services*



**SUMMARY AND RECOMMENDATIONS**

It has been argued that shelter-only projects do not exist where seniors are concerned. When a seniors residence is opened, the expectations (and demands) of the seniors and their families are that more than shelter will be provided. Currently, the staff of most seniors residences are providing some services and care often in the face of opposition from government agencies, family doctors and others.

Many seniors housing projects in Canada were built by not-for-profit groups with CMHC involvement. It is argued that CMHC should search out projects with good records and revenue possibilities and encourage them to revise their rents and pursue new avenues in services and/or construction.

Finally, local government agencies as well as family doctors need to be more responsive to and cooperate more with the staff of seniors residences. Some of these individuals seem more willing to talk to a daughter in Ontario who hasn't seen Mom for two years or a son in the United States who hasn't seen Mom for four years than to work cooperatively with the staff who have to cope with Mrs. Jones' problems on a daily basis.

**PART III**

**TRANSCENDING BARRIERS TO COMBINING  
SHELTER AND SERVICES**

## Chapter 5

# PUBLIC, PRIVATE AND NON-PROFIT PARTNERSHIPS: THE CCPPPH LINK

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## INTRODUCTION

Over the years, in all parts of the country, the stakeholders of the residential building community have been coming together in various partnership combinations to produce private, open market housing; cooperative housing; government-assisted housing; single-family houses; duplexes; high-rise apartments and nursing homes. In recent years, with the very real fiscal pressures on governments, serious consideration has been turned to new ways to increase the stock of affordable housing. By forming new types of partnerships, housing can be created for segments of the market that are currently being ignored. For example, there are a group of seniors living today in what is colloquially called *the gap*. They are ignored by government because they have incomes above the limit set for eligibility for government assistance and they are ignored by the private sector because they lack the financial resources to access the type of housing typically offered.<sup>1</sup>

This group of seniors lives predominantly in 30 to 40-year-old, debt-free, modest houses with market values, in Alberta, typically between \$75,000 and \$120,000. They have average household incomes of almost \$35,900 (Seniors Advisory Council for Alberta, 1991). By way of comparison, Statistics Canada (1986) data indicates that the average income for seniors living in private households was almost \$24,000, with a median income of about \$16,500.

Seniors with incomes close to the average income, who are prepared to invest some of their household equity, can relocate into housing better adapted to their changing needs, should they choose and should these options be available. They can do so without creating a financial hardship for themselves as defined by federal government policies for determining who is needy.<sup>2</sup>

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<sup>1</sup> The existing supply of housing for seniors in Alberta demonstrates this gap. Canada Mortgage and Housing Corporation data indicate that over 20,000 seniors housing units were built with government housing subsidies. Alberta Municipal Affairs data (Romank, 1991) identifies just over 5,000 'retirement housing' units (i.e. units targeted at people aged 45+) built by private entrepreneurs.

This chapter illustrates an innovative approach to affordable seniors housing. It discusses the role of the Canada Mortgage and Housing Corporation (CMHC), and specifically its mortgage insurance underwriting practices in facilitating the development of housing projects targeting older adults. Four case studies are used to illustrate the process by which the Canadian Centre for Public-Private Partnerships in Housing has impacted this sector of the housing market.

## THE CANADIAN CENTRE FOR PUBLIC-PRIVATE PARTNERSHIPS IN HOUSING

Located in Ottawa and part of CMHC, the Canadian Centre for Public-Private Partnerships in Housing (CCPPPH) officially opened in September, 1991. The CCPPPH arose from the Canadian Housing Financing Conference held in Toronto in late 1990. It was observed at that two-day conference that all too often the private, public, and non-profit sectors do not effectively communicate their goals to one another nor how they could collectively better serve the housing needs of Canadians. As a result, the Centre consults with a Housing Advisory Committee made up of representatives of the residential building and financing community, as well as non-governmental organizations. The current membership of the Centre's Advisory Committee includes:

- The Canadian Bankers' Association
- The Native Council of Canada
- The Urban Development Institute of Canada
- The Canadian Institute of Chartered Accountants
- The Federation of Canadian Municipalities
- The Canadian Life and Health Insurance Association
- The Canadian Real Estate Association
- The Canadian Home Builders Association
- The Canadian Housing and Renewal Association
- The Trust Companies Association of Canada
- The Canadian Institute of Public Real Estate Companies
- Employment and Immigration Canada
- Revenue Canada, Taxation

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<sup>2</sup> Federal housing policy defines households in need as those who cannot afford or cannot obtain adequate and suitable accommodation. It includes: those who occupy a crowded or inadequate dwelling and who pay less than 30% of their income for shelter but for whom basic shelter costs for an adequate and suitable dwelling would consume more than 30% of their income; those who pay 30% or more of their income, and those who have a need for special purpose accommodation. This definition is made operational through a series of core need income thresholds that are set annually for all market areas in Canada and reflect the number of bedrooms that a household requires.

The Centre's primary mandate, however, is to identify, initiate, advise and facilitate public-private partnership arrangements leading to the production of cost-effective, accessible housing with a variety of partners in grass-roots settings, and to do so without the need for ongoing financial commitments from government. The Centre capitalizes on private profit-making opportunities by bringing together the non-profit sector and often private citizens with the private and public sectors to build housing affordable for low- to moderate-income households. The Centre exists to "lever" people's imagination, as well as lenders' cash and builders' expertise.

The Centre facilitates private non-profit housing corporations' access to mortgage capital from National Housing Act (NHA) approved lenders. It does so by arranging for NHA mortgage insurance through CMHC. Mortgage insurance protects lenders from the costs of mortgage foreclosure by ensuring the capital invested in the property is recovered by the lender. Lenders are required to seek insurance when they provide loans greater than 75% of appraised market values because their capital is deemed to be exposed to a higher level of risk.<sup>3</sup>

Private non-profit corporations often have very little in the way of financial strength, either assets or operating capital, to provide a lender with the security it desires for the level of risk that such a loan would represent. NHA mortgage insurance makes the risk-taking easier.

## NATIONAL HOUSING ACT MORTGAGE LOAN INSURANCE

Mortgage loan insurance was introduced in Canada in 1954. Its primary objective is to encourage the availability of more mortgage funds, by fully protecting the lender's capital, secured by a mortgage, in the event of default by a borrower. Other objectives include the desire to increase the liquidity and transferability of residential mortgages, to enable the chartered banks and Quebec savings banks to enter the residential mortgage field and to provide for the continuing participation of approved lenders. The federal government continues to use public mortgage insurance to encourage lenders to finance a variety of housing programs that meet federal housing objectives.

## RENTAL HOUSING UNDERWRITING POLICIES

Prudent mortgage underwriting practices followed by CMHC require the developers/owners of rental property to meet minimum requirements before they can secure financing insured by the Corporation. Some of these requirements are that:

- Entrepreneurs must be able to demonstrate that they have some financial strength so that they can deal with unexpected cost increases during the construction period and

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<sup>3</sup> Appraised market value, as set out in *Real Estate Appraising in Canada* (Appraisal Institute of Canada, 1973) is "the highest price estimated in terms of money which a property will bring if exposed for sale in the open market allowing a reasonable time to find a purchaser who buys with full knowledge of all the uses to which it is adapted and for which it is capable of being used" (p.3).

keep the building operating when vacancies are higher than expected. A sign of this strength is the covenant or guarantee not only of the company, but also of its principals, to repay the mortgage debt.

- Owners must commit equity of at least 15% of the value of the property, since CMHC will not insure a rental loan greater than 85% of market value. As market rental rates are lower than today's costs of amortization and operating, appraised values are lower than economic values. Therefore, achieving a 15% equity position often means committing additional resources.
- All funds are not advanced until the property achieves an income stream felt necessary by CMHC to indicate that it will perform as expected — generally when the building is between 75% to 85% leased.
- CMHC authorizes a lender to advance funds to a project based on the cost of work to complete and that ensures that all equity is put into the project first. This ensures that sufficient funds are held back to complete the project should the owner be unable to do so.

Since its establishment in September 1991, the CCPPPH has received requests from a number of organizations interested in developing special non-assisted housing projects. Following are four examples of projects that CMHC has helped to develop and for which it has provided mortgage insurance.

### CASE STUDY 1: HARMER HOUSE II

Harmer House II, in Nepean, Ontario is the first project of the Centre. Developed by the West Nepean Ecumenical Residential Projects (WNERP), the idea was to build 17 apartment units and some common facilities such as a dining room. Seniors would purchase the units through a form of life-lease tenancy called an Occupancy Right. The apartment building would be an addition to an existing 60-unit non-profit housing project. Sales prices ranged from \$98,500 to \$145,000. The total cost was \$2,392,000.

A cash flow scenario was developed by the sponsor to demonstrate the viability of the project throughout the construction period. Table 1 shows the source of funds. It called for multi-staged payments from the purchasers of \$10,500; it also required some interim borrowing. The sponsor had some equity (\$105,000), generated through a Seniors Support Program which offered, among other things, "Meals on Wheels". They arranged a line of credit, secured by the land they owned and they raised additional funds in the community.

The local Rotary Club assisted in obtaining kitchen equipment; a local seniors group, through the New Horizons Program, provided \$10,000 for the kitchen facilities. The City of Nepean offered a one-year loan of \$200,000, and held municipal development fees at the previous year's level. To borrow the remaining \$1,000,000, WNERP came to CMHC to see what type of insured loan could be arranged.

**Table 1:**  
*Source of Funds, Harmer House, Nepean, Ontario*

Interim requirements		\$ 1,605,000
Loan: City of Nepean		200,000
Contribution: WNERP		105,000
Fundraising		50,000
• New Horizons	\$ 10,000	
• Rotary	25,000	
• Golf	5,000	
• Other	10,000	
Guaranteed line of credit		100,000
Mortgage		1,000,000
Deposits		150,000
<b>TOTAL</b>		<b>\$ 1,605,000</b>
Sales of units		\$ 2,237,000
Fundraising		50,000
WNERP equity		105,000
		<hr/> <hr/>
<b>TOTAL PROJECT COSTS</b>		<b>\$ 2,392,000</b>

CMHC was required to relax a number of its underwriting policies to facilitate the deal. WNERP, because of its non-profit corporate status, was unable to provide the type of guarantee required by CMHC and lenders, nor could its directors provide their personal covenants. The loan-to-value ratio of a maximum of 85% would have to be exceeded in this case. Additionally, CMHC agreed to authorize advances based on costs incurred rather than cost to complete.

CMHC relaxed its requirements due to the equity that was being provided from a wide variety of sources in the community. As well, CMHC recognized the strength of the non-profit sponsor and its roots in the community, as well as the commitment of the directors.

#### CASE STUDY 2: MAPLEHILL RETIREMENT VILLAGE, CLINTON, ONTARIO

The Clinton and District Retirement Community Inc., a private non-profit housing corporation, proposed to CMHC to build a 19-unit apartment building, which would be offered to seniors on a life-lease occupancy basis at prices ranging from \$97,000 to \$120,000.



Units would vary in size from 936 square feet to 1,235 square feet; each would have at least one-and-a-half bathrooms, and be separately metered. The total cost would be \$2,238,000.

The financing required to construct this building called for equity of \$338,500 (15% of the total estimated cost). As shown in Table 2, the money was raised from three seniors grants provided by the town and by the province totalling \$49,000; equity in the land (valued at \$112,250) owned by the non-profit sponsor; and \$177,000 from deposits on sold units. The mortgage required during construction would be about \$1,900,000, up to \$1,250,000 in permanent or take-out financing also being required.

**Table 2**  
*Source of Funds, Maplehill Village, Clinton, Ontario*

Grants from province	\$ 49,000
Land equity from sponsor	112,500
Unit sale deposits (15% of sale price)	177,000
<b>MORTGAGE</b>	<u>1,900,000</u>
<b>TOTAL COSTS</b>	<u>\$2,238,000</u>

Units had been sold to households who would occupy the units and to some investors. The investors were asked to provide additional security in the form of promissory notes for their share of the take-out financing. The Board members were asked to sign a promissory note equivalent to 25% of the mortgage amount attributable to unsold units. In addition, it was asked to provide a guarantee that all operating shortfalls caused by the unsold units would be covered.

To allow this project to proceed CMHC again relaxed a number of its underwriting requirements. Officials at CMHC were sufficiently impressed by the dedication and the commitment of the Board of Directors, as evidenced by their willingness to provide their personal covenants. It also took some steps to ensure that the level of risk being underwritten was manageable. In addition, CMHC instructed the lender to accept the corporate covenant of the charitable non-profit corporation so that loan advances were to be authorized based on costs incurred, rather than on the cost to complete.

### CASE STUDY 3: PINE MEADOW NURSING HOME, NORTHBROOK, ONTARIO

The Land O' Lakes Community Services, a private non-profit housing corporation, proposed to CMHC the construction of a 60-bed, fully licensed nursing home that would cost about \$3.47 million. This corporation had been in existence since 1976. They demonstrated

their dedication, their commitment and their obvious resourcefulness by raising over a half a million dollars of equity for the project. They were successful in obtaining grants of \$75,000 each from the local governments of the Counties of Frontenac, Lennox and Addington. The Ontario Ministry of Industry, Trade and Technology contributed a grant of \$120,000. The Land O' Lakes Lions Club pledged \$100,000. As shown in Table 3, other local service clubs and private individuals made contributions as well.

**Table 3**  
*Source of Funds, Pine Meadow Nursing Home, Northbrook, Ontario*

Counties of Frontenac, Lennox and Addington	\$ 150,000
Ontario Ministry of Industry, Trade and Tech.	120,000
Land O' Lakes Lions Club	100,000
Private donations (part)	25,000
Payment deferral scheme from builder and providers of professional services	375,000
<b>MORTGAGE</b>	<b>2,700,000</b>
<b>TOTAL COSTS</b>	<b>\$ 3,475,000</b>

The board members negotiated a payment deferral scheme with the general contractor, Scotia Construction, whereby the contractor agreed to postpone receiving payment of 5% of the contract price for one year following completion of construction and waived lien rights on this amount. In a similar vein, the providers of professional services (e.g: architect, engineer, lawyer) deferred their invoicing until the project was completed. The value of this deferral was about \$375,000.

Mortgage guarantees totalling \$300,000 were offered by members of the community. These ranged from personal pledges of \$1,000 to the Land O'Lakes Lions Club's guarantee of \$150,000. These guarantees were secured by promissory notes.

Based on the high level of community resolve, CMHC agreed to insure the \$2.7 million mortgage requested. As with the previous two examples, CMHC waived a number of its underwriting safeguards to facilitate the development of the project.

#### CASE STUDY 4: AUBERGE DU BON TEMPS, STE. MONIQUE, QUEBEC

The Corporation de développement Ste-Monique proposed to CMHC a 24-bed nursing home that would cost about \$561,000. The project consisted of converting the present community centre, owned by the village, into a nursing home offering room and board for seniors. Fueled by the desire to stop the exodus of its young and older people from Ste-Monique, the people of the area decided to take matters into their own hands and created the Corporation de développement Ste-Monique, a non-profit corporation made up of more than 180 households who agreed to make monthly financial contributions, to be used for community development purposes.

The corporation raised an equity contribution of \$111,400. The village contributed the building that was renovated into the nursing home (a former community centre), and waived a number of fees totalling \$11,400. The village also agreed to defer the payment of property taxes for a five-year period. The local Caisse Populaire de Ste-Monique made a contribution of \$25,000, and also provided \$75,000 of interim financing. The sum of \$55,500 had been raised from the corporation's members to the time of project commitment. The remaining equity came from the efforts of volunteers who would do some of the painting and landscaping required.

*Table 4*

*Source of Funds, Auberge du Bon Temps, Ste. Monique, Lac St. Jean, Québec*

Village of Ste. Monique	\$ 11,400
Caisse Populaire de Ste. Monique	25,000
La Corporation de Developpement de Ste. Monique	55,500
Volunteer labour	19,500
MORTGAGE	<u>450,000</u>
TOTAL COSTS	\$ 561,400

As with the previous examples, CMHC waived a number of its underwriting practices because of the evident viability of the finished project and because it was impressed by the community that support was solidly in place, support that was backed by a financial commitment.

#### CONCLUSION

This chapter has presented four examples of how the CCPPPH has been able to help local communities increase the supply of affordable housing that would not, in all likelihood, have been built otherwise. The four projects share a number of things in common. First, a

strong commitment from the community and from the Board of Directors that the project would succeed, backed up by cash and, in some cases, personal guarantees. Second, these groups did extensive fundraising in the community, and required cash from their intended clients in the case of the two life-lease projects. Third, they were able to assemble a viable housing project without ongoing financial support from any level of government for the housing portion. And fourth, they were able to form a partnership with the CCPPPH and arrange for mortgage financing on terms that were satisfactory to all parties.

## REFERENCES

Romank, L.(1991). *Analysis of the Retirement Housing Stock in Alberta*. Edmonton: Alberta Municipal Affairs, Housing Division.

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Statistics Canada (1986). *Total Income of Individuals*. Catalogue 93-114.

## *Chapter 6*

# GROUP HOMES: THE SWEDISH MODEL OF CARE FOR PERSONS WITH DEMENTIA OF THE ALZHEIMER'S TYPE

*Elaine Gallagher, Ph.D.,  
Associate Professor, School of Nursing, University of Victoria and  
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## INTRODUCTION

The movement away from large-scale institutions in caring for both mentally ill persons and those with physical handicaps is well underway. However care of the demented elderly other than in private homes remains mainly in large hospitals and nursing homes.

This chapter provides a description of small group homes for the care of persons with dementia of the Alzheimer's type. The history and rationale for this type of accommodation is outlined, a description of the group home approach is provided, aspects of operationalizing this approach are presented and potential barriers and unresolved problems are described. It must be noted that systematic research on this model is extremely rare. A review of four research reports which evaluate the group home approach in Sweden suggests, however, that the group home approach may be a more humane, more effective and less expensive method of delivering care to those with dementia, when compared with most present methods of care.

## BACKGROUND AND RATIONALE

Dementia is a progressive, degenerative disease of the brain that produces losses of memory, intellect and independent functioning. The majority of cases are attributable to Alzheimer's disease and cerebrovascular disease. The American Psychiatric Association (1987) has outlined five diagnostic criteria in the DSM-III-R with additional criteria to differentiate mild, moderate and severe forms of the disease. Clearly, different settings and care approaches are needed for different levels of the illness.

The exact incidence and prevalence of the condition is difficult to determine, since large scale epidemiologic inquiries have only recently been started. However, prevalence rates are estimated to increase from 1.4% in the 65-69 year old age group, to 38.6% in those 90 and over. And because of expected increases in the proportion of seniors in the population, the

strong commitment from the community and from the Board of Directors that the project would succeed, backed up by cash and, in some cases, personal guarantees. Second, these groups did extensive fundraising in the community, and required cash from their intended clients in the case of the two life-lease projects. Third, they were able to assemble a viable housing project without ongoing financial support from any level of government for the housing portion. And fourth, they were able to form a partnership with the CCPPPH and arrange for mortgage financing on terms that were satisfactory to all parties.

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The exact incidence and prevalence of the condition is difficult to determine, since large scale epidemiologic inquiries have only recently been started. However, prevalence rates are estimated to increase from 1.4% in the 65-69 year old age group, to 38.6% in those 90 and over. And because of expected increases in the proportion of seniors in the population, the



prevalence is expected to increase from 5.6% among those 65 and older in 1981 to 7.4% in 2006. In British Columbia, this translates into a 100% increase in only 20 years: from 20,271 cases in 1986 to 42,217 cases in 2006 (McEwan et al., 1991).

There is no known cause of Alzheimer's disease, and to date, treatment has centred on physical and chemical restraint, environmental control, and maintenance of physical and nutritional status.

In addition to the symptoms of the illness, a number of problem behaviours are thought to be predictable features of dementia. These include wandering, agitation, hostility, anxiety, sleep disturbance, incontinence and poor hygiene, all of which appear more frequently among those with severe forms of the disease. New evidence is emerging to suggest that some of these symptoms are attributable to underlying psychiatric illness such as depression and psychosis, and more importantly, iatrogenic disease caused by the institutional settings and treatment methods currently available. This chapter discusses this evidence within the total framework of care options.

## CARE OPTIONS

A number of options exist in Canada for the shelter and care of persons with Dementia of the Alzheimer's type (AD). It is estimated (McEwan et al, 1991) that between one-half and two-thirds of persons with AD reside outside of institutions.

**Home management**, which usually requires both paid assistance and the help of family caregivers, is undoubtedly the choice care option and should continue to be supported in every way possible. But as care demands increase and caregiving capacities decline, alternatives are often required. For an increasing number of the very old, staying home is not an option due to either burn-out of aging family caregivers or in many cases, the absence of family caregivers. Priest (1988) noted that "the most significant challenge that we face as a society is to recognize and respond to the very great numbers of persons aged 75 and over who, by the turn of the century, will be living alone or will be in need of institutionalization" (p. 31).

**Day hospitals and day care** have been established to provide assessment and therapeutic treatment for clients and respite for caregivers. For some caregivers, this option is sufficient to allow for home management on a long-term basis. For others it proves to be an interim measure to delay the need for institutional placement. For mild forms of the illness, for which other forms of caregiving are available, day care will continue to be a valuable resource.

**General hospitals, psychiatric hospitals** and, in particular, **long-term care facilities** are the care options used for between one third to one half of all clients with AD. Much has been written about the difficulties associated with caring for persons with dementia in settings that were not designed for them. Among the problems identified are injuries to residents and staff, increasing care requirements and decreasing quality of life for residents, and dissatisfaction of family members (Barnes et al., 1990). The disturbing effects of very confused residents on non-confused residents can be observed daily in many of our intermediate and

extended care hospitals. The medical model, with excessive drug therapy continues to be the most frequently exercised form of care. British Columbia has one of the country's highest utilization rates of psychotropic medicine among institutional residents (Tuominen, 1988). This continues in spite of the well-known fact that persons with dementia react in very diverse and unpredictable ways to these drugs.

For these reasons, **specialized Alzheimer care units** were developed in many facilities during the 1980's. The literature describes design and program options in special care units. In general, the most common features are a low stimulation environment with programs that promote individuality, emphasize capacities, foster self-respect, and encourage family and client in decision-making. Terms like "gentlecare" "minimal drug routines" and "therapeutic milieu" are used in many of these programs. Program activities include group work, reality orientation and validation therapy (Abraham & Neundorfer, 1990). However, as Ohta and Ohta (1988), Gutman (1989), Gutman and Killam (1989) and others note, units vary tremendously in philosophy, design, staff-patient ratios, staff training, admission and discharge criteria, and therapeutic approach. Further, while proponents hail the success of their units, as Ronch (1987) notes, there are few, if any, valid studies which support or refute their claims. Descriptive and anecdotal evidence does suggest that improvements in mental and emotional status, removal of physical and chemical restraints, improvements in ADL functioning and increased family satisfaction may be possible for some types of patients in special care units (Ohta & Ohta, 1988). Disadvantages include increased costs of staff training, capital improvements and increased staff levels. Staff burnout, patient stigmatization, increased confusion (on units of 30 to 40 residents), and increased family alienation have also been reported on special care units (Ohta & Ohta, 1988; Ronch, 1987). General agreement exists in the literature that smaller-scale, home-like environments show promise for managing some types of persons with Alzheimer's disease.

## THE GROUP HOME OPTION

A fairly new option for caring for persons with Alzheimer's disease is the small group home. Examples in England include Highgrove House in High Wycombe, a small domestic-style long-term stay unit, and the Domus project, a scheme in London designed to replace all long-stay beds with small group homes (Shulman & Arie, 1990).

In Sweden, where 18% of the population are aged 65 and over, about 6,700 persons with dementia occupy group homes (Hollo, 1992). Their "revolution" began in 1978 when it came to light that nothing was expected from old, frail persons - an enforced dependence that resulted in excessive institutionalization. Today, all but the dying are expected to be capable of rehabilitation, regardless of their age or mental ability (Hollo, 1989). As a result, a number of long-stay hospitals have been converted for other uses. The current institutional rate is 4% and a goal of 2% has been set for the year 2000. Care of the elderly is being removed from the *medical model* as evidenced by its transfer from the Department of Health to the Department of Community and Social Services.

The first Alzheimer's group home — the Rabyhome — occurred as a result of an accident when the most confused long-stay patients were moved into a private home during facility renovations. After three months with a room of their own in a normal house, remarkable improvements were observed in mental and physical functioning, the need for medication was reduced and both wandering and aggressive behavior all but disappeared (Hollo, 1988).

Beck-Friis (1988), in writing about the Baltzargarden project, reports that:

So far the results from the Baltzargarden alternative are sensational. When they were admitted all of the [nine] patients were using nappies, sleeping pills and psychopharmaca....After three months at Baltzargarden none of them needed to use nappies. Sleeping pills and psychopharmaca could be withdrawn completely.... Aggressiveness, aimless wandering, anxiety at night, and periods of screaming — all of which were common before — have ceased (p.38).

### Physical Designs and Neighbourhood

The following description of group homes in Sweden is based on published information and the author's recent personal visit to Sweden.

According to Hollo (1989), the group homes all look different. A number are free-standing homes with six to eight bedrooms. Another style consists of renovated bachelor and one-bedroom apartments clustered around a common living room, kitchen, dining room and laundry. The home at Baltzargarden has seven single bedrooms and three doubles. Bedrooms are furnished with the residents' own furniture, while common furnishings date back to the 1930's and 1940's. There are stairs between the two floors, which is not problematic, since in the early and mid-stages, most persons with Alzheimer's disease do not suffer from physical limitations.

Common to the homes is a large dining-room-kitchen-living-room area. This is an important design consideration. It has been observed by the care staff that much anxiety and fear is reduced if residents can see their caregivers during all waking hours. All homes are equipped with special security locks so that residents are only allowed to wander through "safe" areas. Another key feature is that the homes are located in neighbourhoods in which the residents have always lived. Familiar landmarks and proximity to relatives provide triggers for remote memories and a sense of comfort.

### Residents

In Sweden, each home selects its own residents, in consultation with physicians and district nurses. While there are no standardized admission criteria, there is agreement that an accurate diagnosis of dementia and the full cooperation of the person's physician and family are essential. A score of between 0 and 10 on the Mini Mental Inventory was found at time of admission to one group of homes evaluated by Asplund et al.(1988).

Residents number between six and ten. We were told that ten was the maximum size for providing individualized care and the minimum size in terms of cost-effectiveness. Residents were selected from private homes, nursing homes, general hospitals and psychogeriatric wards.

There are no standard discharge criteria. However, we were told that residents are moved only if they fail to adjust to the home after a trial period, exhibit continuing aggressive behaviour, or develop medical complications requiring 24-hour nursing care. Discharge rates are very low, with most homes reporting only one or two discharges a year due to death or physical deterioration.

### Staffing

Wide variation exists in the staffing ratios of these homes. The Baltzargarden staff, caring for 8 residents, consists of 11 persons who share 8 full-time positions (Beck-Friis, 1989). Their minimum qualifications are staff nurse or mental orderly. This is in contrast to two Stockholm homes where all of the staff were non-professional persons, hand-picked for their suitability and interest in working with the demented elderly. In these homes, the staff to patient ratio was 1.5 to 1; nursing care was provided as needed by the district nurses. Other staff used on a consultant basis included a physician, recreation therapists and a psychologist.

According to Hollo (1988), equally impressive results are obtained by non-professional and professional staff. The key ingredients appear to be personal affinity for the work and both pre-employment and on-going education. Initial training appears to be about 40 hours and at least one training session a month is offered thereafter.

We questioned the use of non-professionals for activities such as medication administration and were told that with dosettes and weekly consultations with the community nurse, no problems with medications were encountered. This approach does require re-alignment of traditional roles. As with *Le Chez Nous*, a special care unit in rural Manitoba (Lehaie & Theroux, 1992), all staff perform generic duties such as assisting the residents with meal preparation, light housekeeping, grocery shopping, and bathing.

### Funding

A combination of methods are used to finance group homes in Sweden. In many areas, municipalities and counties either individually or in concert provide financing. Residents are expected to pay for basic board and room in most homes, with rents varying according to the size of the room and the activities provided. The literature describes a few similar projects in the U.S.A. which are totally private (c.f. Bramble, 1990).

Given the very small number of evaluation studies conducted to date (c.f. Malmberg & Zarit, 1993), it is difficult to ascertain the cost-effectiveness of group homes compared to other options. Hollo (1988) claims that "collective dwellings are beneficial to society in comparison with institutional care". The cost saving in the first collective dwelling was estimated to be \$20 US per day per resident, when compared with nursing home residents

(Shulman & Arie, 1991). As outlined above, cost savings are realized by using non-professional personnel, with nursing and rehabilitation services being provided on an "as needed" basis. It is conceivable that services such as nutrition consultation, administrative services and heavy laundry could be shared between several group homes or between a group home and an existing long-term care facility.

### Philosophy and Treatment Approaches

Admission is seen to be a critical time when great care is taken to involve the family and physician in determining suitability and individualized lifestyle patterns. This approach is furthered by assigning a staff member to serve as the sponsor for all planning and coordination of a resident's care.

*Resource stimulation*, a modified form of reality orientation, is used during all waking hours to stimulate the client along with the aid of the many opportunities available in day-to-day existence. These activities are planned to coincide closely with the daily lives of people prior to their illness. They include the things people do in their own homes - bathing, cooking, cleaning, laundry, grocery shopping, gardening, going for walks and other outings. Activities are individually paced, with a mood of calm reassurance and encouragement, but with no pressure to answer correctly or perform an activity that is too difficult.

All activities and communications are designed to increase residents' self-esteem. Praise, warmth, happiness and laughter are encouraged. Relatives are an integral part of group home activities, participating in client conferences, training sessions and dinners and excursions. They are provided with on-going support.

Continence training is a focus for many residents on admission. Specific techniques include scheduled washroom visits, planned fluid intake, mapping the route to toilets, lighting the bathrooms at night, and preparing individualized continence plans for each resident as required. The staff with whom we met claimed that most incontinence can be reversed with these approaches.

Medications are reviewed and eliminated to the extent possible, since it is now known that many drugs affect Alzheimer's patients in unpredictable and undesirable ways. A key expectation is that staff will be creative and innovative; strict adherence to fixed standards and routines is discouraged.

### CONCLUSION

The group home approach for dementia patients is similar to models of *special care units* in terms of programming and philosophy. However, group homes appear to be unique in their emphasis on replicating a home-like environment and using normal activities of daily living as therapeutic strategies. They are also characterized as housing fewer residents, have less formal programming, and appear to be operable with carefully selected, well-trained non-professional staff. Clearly, they show a great deal of promise as a humane and effective alternative for providing care to persons with Alzheimer's Disease.

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## Chapter 7

# SUPPORTIVE HOUSING FOR ELDERLY PERSONS IN ONTARIO

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## INTRODUCTION

In 1976, the Ministry of Community and Social Services (MCSS) funded four attendant care pilot projects for physically disabled persons that became the models for the development of Support Service Living Units. These first initiatives were followed by a number of other efforts that have been referred to as *supportive housing*. They served a wide range of needs and client groups but were not distinguished by common features that would identify them as *supportive housing* other than that a residential setting was the focus of the delivery of personal support services. The first clearly cooperative initiative between a housing provider and the MCSS was not until 1980/81 when the first support services allocation for elderly persons was made. This funding allowed elderly persons to receive support services in their own residence, usually in a seniors building or other segregated setting, from on-site staff. Prior to this, if a person's needs could not be met by a visiting homemaker and/or professional service, they would usually be required to move to another setting such as a Nursing Home or Home for the Aged.

From 1980 to 1986, housing for persons requiring support services was funded through low-rate mortgages provided by the federal government through the Canada Mortgage and Housing Corporation (CMHC). During this time period, the Ontario Housing Corporation concerned itself exclusively with providing housing for low income people who did not require any personal supports. In 1986, however, the federal government turned over responsibility for delivery of most government sponsored housing programs to the provinces. In Ontario, this was to the Ministry of Housing (MHou) and included the Federal/Provincial Non-Profit Housing Program (F/P). In turn, the Coordinated Application Review Process (CARP) was developed where applications for housing for persons who require support services are reviewed jointly by the CMHC, the MHou and the relevant support service ministries (MCSS, Health).

The CMHC estimates that there are 60,000 elderly people living in social housing in Ontario, developed jointly and cost-shared by the provincial and federal governments. Of the



26,500 new housing units developed since 1986, one-quarter are dedicated to seniors.

In 1989/90, the Province, through the MCSS, announced a \$100 million capital re-development plan for Homes for the Aged. As part of this plan, *supportive housing* units were created to replace beds that were lost by the replacement of ward accommodations with semi-private and private rooms. These "Community Residential Alternatives", as they were called, represented a cooperative effort of Homes for the Aged, community support agencies, municipalities and non-profit housing providers. These projects are presently under review as an alternative to institutional care.

In 1989 the Elderly Services Branch of the MCSS issued a consultation paper entitled *Living in the Community: New Directions in Residential Services for Frail Elderly People*. The paper (MCSS, 1989a) outlined a model of supportive housing based on "supported independent living" and provided a set of principles on which supportive environments for elderly people could be based. The same year, Burt Perrin and Associates were jointly hired by the MCSS and the MHou to produce a discussion paper on supportive housing. This paper (Perrin, 1991), as well as describing the changing focus of public housing and its relationship to support services, emphasized the need to "de-link" the housing component from services in order to enhance people's right to housing without interfering with their access to support services.

In a second joint venture, the MCSS and the MHou hired Norpark Research Inc./Lapoint Consulting Inc. to conduct a "research study of supportive housing initiatives". Their report (Norpark, 1991), identified complications in funding of supportive housing initiatives due to differing federal and provincial policy objectives. The report also stated that "...efforts to communicate the policy objectives of the Supportive Housing Initiative have been unsuccessful" (p.99).

This critical finding was supported during discussions with MHou corporate and field staff at which point it was clear that principles such as: de-linking, integration, independence and stability (*aging in place*) were not always guiding the planning and development of supportive housing. It appeared that there had been a failure to provide field staff, service agencies, or both with sufficient policy direction to ensure the effective delivery of supportive housing.

In this chapter it is argued that if the redirection of long term care is to depend on supportive housing as an important factor in the prevention of institutional admissions and the maintenance of people in the community, then clear policies are needed to guide planning and implementation efforts. Towards that end, an operational definition of supportive housing and a description of alternative models that may be subsumed under it are provided. The chapter also reviews the key philosophies and precepts and the public consultation process that have guided supportive housing developments in Ontario.

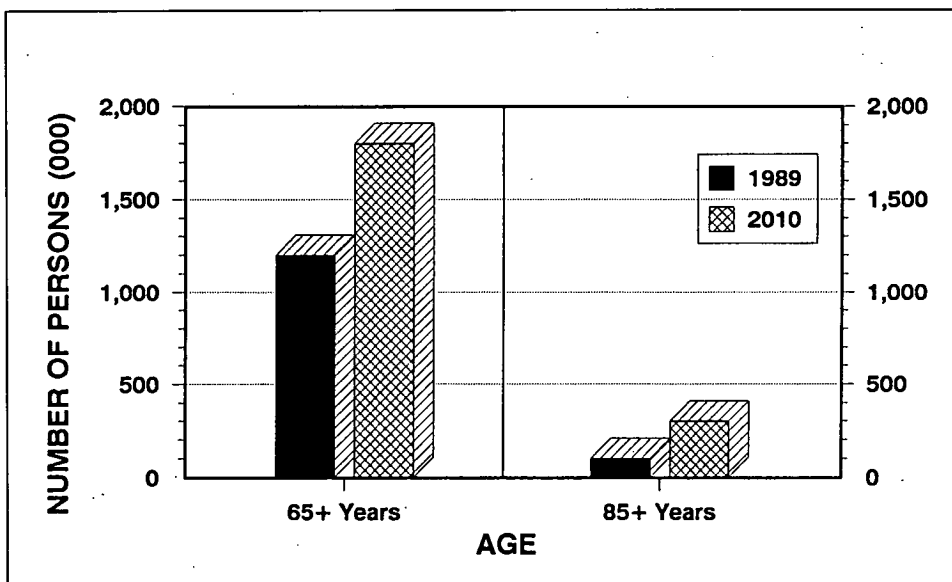
## THE CONTEXT OF CHANGE

In the October, 1990 throne speech, the Ontario government announced its intention to reform the way in which long-term care services were provided to elderly and physically

disabled persons. A year later, a public consultation paper, *Redirection of Long-Term Care and Support Services in Ontario* (MCSS, Health & Citizenship, 1991) was released for public discussion.

The reform was directed toward an existing system that was fragmented, inequitable and relied heavily on institutional services. It also recognized an increasing elderly population and its impact on the provincial service system. As shown in Figure 1, in 1989 there were 1,200,000 people aged 65 and over in Ontario. It is projected that by the year 2010, their numbers will grow to 1.8 million persons. In 1989, there were 100,000 persons in Ontario aged 85 and over. It is projected that there will be a tripling of the 85+ group by 2010 to 300,000 persons.

**Figure 1**  
*Elderly People in Ontario, 1989 and 2010*



The present system of services is not structured to meet this increased pressure. The costs of continuing to utilize facility-based services as a main focus of the system cannot be afforded. More importantly, the demand for care has shifted away from institutions to a more integrated, stable, consumer-empowered concept of community-based services. As noted in the *Redirection paper* (MCSS, Health & Citizenship, 1991):

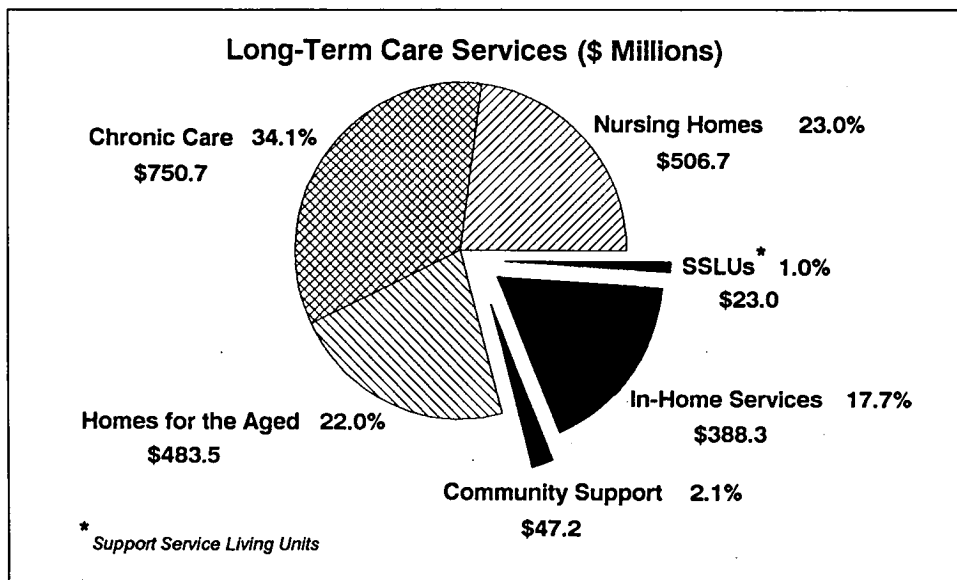
....the challenge in long-term care is to redirect and restructure a system that will respond to the needs of Ontario's elderly people....in ways which minimize institutionalization and maximize secure and stable home, family and community living (preface).

The consultation paper included proposals to: expand funding for community support services, improve service coordination, provide for more community participation, reduce regional disparities, increase funding for supportive housing and provide for an integrated approach to provincial management of all long-term care health and social services.

To meet this challenge a new organization was formed from several branches of the Ministry of Health and the MCSS. Known as the *Population Health and Community Service Systems Group*, it includes in its Long-Term Care (LTC) Division: the former In-Home Services Branch and the Nursing Home Branch of the Ministry of Health and the Elderly Persons Branch and the Services for Disabled Persons Branch of the MCSS. The Ministry of Citizenship adds another area of responsibility through its Office for Seniors Affairs and Office for Disability Issues. The Citizenship Ministry will also have responsibility for new legislation regarding guardianship, consent to treatment and advocacy.

The current array of LTC services in Ontario is shown in Figure 2 with the associated costs and percentage of total services provided by each sector. As can be seen, expenditures in 1989/90 totalled \$2.2 billion; 79.1% of this funding supported institutional care provided in Nursing Homes (23.0%), Chronic Care Hospitals (34.1%) and Homes for the Aged (22.0%). The remaining 20.8% went to provide support services in the community. These were mostly services for elderly persons but persons with physical disabilities and other client groups shared a portion of these services

**Figure 2**  
*Current Resource Allocation*



In order to reduce dependency on institutional care and maximize community-based service options, the thrust of the new policy will be to consolidate existing facility services through new funding arrangements. Over \$200 million in increased funding will be provided for this sector to maintain and improve these services by 1996/97. However, the largest increase, in excess of \$444 million, will fund a less fragmented, more equitable and improved system of services, including the amalgamation of a number of programs delivering in-home services, under *Personal Support and Professional Services (PSAPS)*. The net result of this change (see Figure 3) will be that by fiscal year 1996/97 expenditures for community services will rise from 20.8% of the total budget to 31.4%. Concomitantly, while costs of institutional care will increase, the percentage of total funding for facility care will show a net drop of 10.5%.

An essential component of this redirection will be the coordination of support services in community residential settings developed under public housing programs for elderly and physically disabled persons. The concept of supportive housing has been used to bring residential and support services together for a number of client groups including elderly persons and those with physical disabilities.

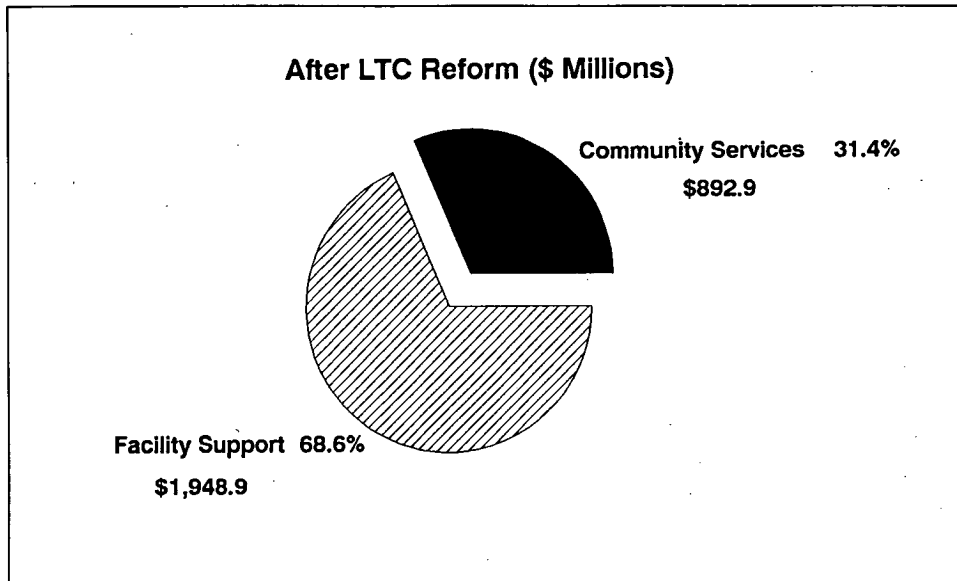
The types of settings considered to be supportive housing has varied considerably across the province. These include: group homes, supported apartments clustered in larger housing complexes, Community Residential Alternatives attached to Homes for the Aged or operated by other non-profit agencies, and transitional and emergency shelters.

The MHou has completed an extensive consultation with consumers, housing providers and other ministries. The issues for which consultation was sought are described in *A Housing Framework for Ontario* (MHou, 1991). According to the Population Health and Community Services Systems Group and its LTC Division, supportive housing will be a major component of the redirected system.

In the Fall of 1991, the LTC Division undertook the largest public consultation ever held in Ontario. Approximately 75,000 people attended over 3,000 meetings held across the province. The meetings included representatives of all major organizations and stakeholders as well as ethnic, cultural and aboriginal groups. Special consultations were held with the Senior Citizen's Consumer Alliance for LTC Reform, the Ontario Community Support Association, the Francophone Senior Citizens and others.

The consultation process has provided a range of ideas and suggestions that will be considered in the development of a policy on supportive housing. For example, it was agreed that there is a need for more supportive housing across the province, particularly in rural areas. There was support for developing more integrated settings, with some caution against grouping too broad a range of disabilities together. Further, it was recognized that the differing service needs and wishes of the various groups may preclude sharing of accommodation sites. At several meetings a need was identified for support services in existing public housing projects as well as for a mechanism to monitor the availability of units and to match these with prospective consumers.

**Figure 3**  
*Resource Allocation by 1996/97*



Recurrent recommendations included:

- more creative options (e.g. “granny flats”)
- more two and three bedroom units so that families with disabled members can be accommodated
- more choice (e.g. shared housing not just apartments)
- easier physical access, particularly in existing buildings
- infirmary services in larger projects
- emergency response systems
- coordination of community support services

## DEFINITION OF SUPPORTIVE HOUSING

The *Redirection* LTC consultation document (MCSS, Health & Citizenship, 1991) defines supportive housing as follows:

Supportive housing refers to independent permanent living arrangements where persons with special needs live as tenants in non-profit settings. Support services are separate from the accommodation but there is some coordination between the housing operator and the service provider (p.26).

However, this definition describes every example cited in the literature and includes virtually all consumers in social housing to be served under the new Personal Support and Professional Services Program. A similar and equally ambiguous definition was provided in the MHou's (1991) *A Housing Framework for Ontario*. If it is to be clear what are to constitute future supportive housing initiatives, then a narrower, more precise definition is required.

A definition of supportive housing that meets the demands of the LTC Division is as follows:

Supportive Housing is a program that, through a cooperative planning and delivery process, provides personal support services in permanent, preferably in not-for-profit community residential settings, for elderly and physically disabled people whose levels of need require the availability of on-site assistance.

In order to clarify this definition and minimize ambiguity, the following explanation of terms is useful.

**“...cooperative planning and delivery process...”** refers to two levels of activity. The first involves the LTC Area Offices, MHou, housing and service providers and the federal government in the Coordinated Application and Review Process (CARP). The same process will coordinate housing and services that have no federal input. This planning mechanism brings together the major development activities necessary to initiate new supportive housing projects. The second level links consumers and the service and housing providers who, through a local coordinating body, will develop and deliver the community support services.

**“...personal support services...”** includes assistance with personal care and such other services as are currently provided by Homemakers and Attendant Care workers. Tenants may access programs offered by community support services as long as they do not duplicate the on-site services provided. Professional services are available on a home visit basis only.

**“...permanent...”** reflects the expectation that residents of supportive housing may, if they choose, remain and have their service needs met by the on-site provider. This means that the consumer will have protection under the Landlord and Tenant Act or the Cooperative Corporations Act. While the intent is to minimize the transitional aspect of supportive housing, it is recognized that it may be impossible to provide sufficient service or a person's needs may change to a degree that continuous medical or professional services are required. Examples would be for services to those with degenerative diseases, progressive cognitive disorders or deteriorating medical conditions. Alternative placement would be sought in these cases.

**“...preferably in not-for-profit community residential settings...”** It is expected that the majority of housing will involve rent-geared-to-income accommodation but any form of housing provided by the MHou could become a supportive housing project, including existing public housing where elderly and disabled people already live. Although most of the services will be provided in social housing settings, elderly persons living in privately owned accommodation will not be excluded.

“...elderly and physically disabled persons...” describes the current mandate of the LTC Division. Supportive housing will be provided to those aged 65 and over and to physically disabled persons over the age of 18. However, there will be some exceptions such as people with more than one handicap, Alzheimer’s disease and other early onset cognitive disorders or with brain injuries.

“...needs require the availability of on-site assistance.” Crucial to understanding the role of supportive housing in the LTC service continuum is recognition that there are elderly and physically disabled people whose needs can be met in the community but not effectively on a visitation only basis. These are relatively independent people who need to have support services available on a 24 hour basis, require monitoring overnight, need immediate emergency response services or whose personal care needs are high enough to warrant on-site services.

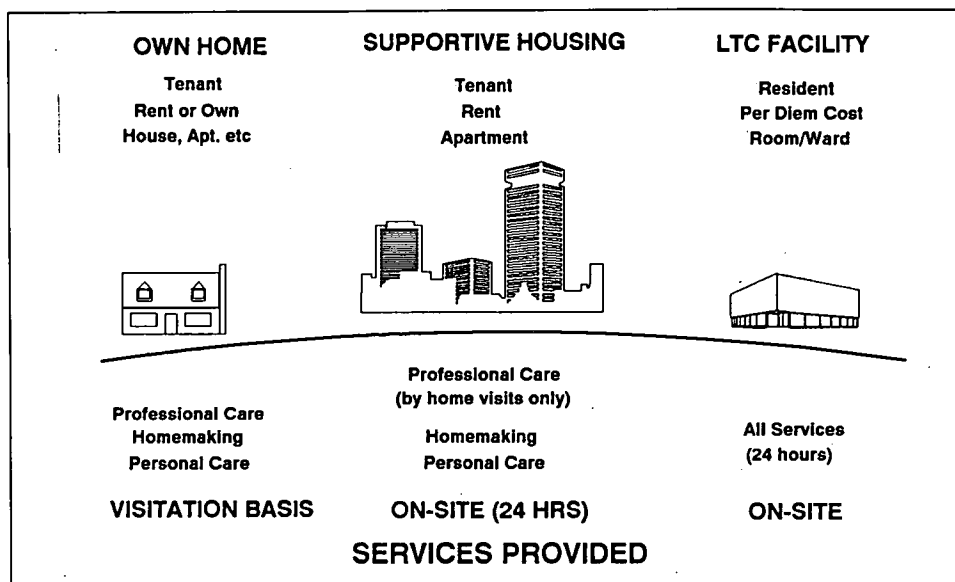
Figure 4 pictorially represents where supportive housing “fits” in the redirected LTC system.

## PRINCIPLES FOR SUPPORTIVE HOUSING PROGRAMS

In addition to the general principles articulated in the *Redirection* paper (MCSS, Health & Citizenship, 1991) there are seven key precepts (see also MSCC 1989a,b) that are guiding the formation of a supportive housing policy in Ontario. These are:

1. **INDIVIDUALIZATION.** In order to serve people with widely varying needs and disabilities, it is imperative that future services have the ability to respond to specific individual requirements. This principle supports the development of service packages that meet the needs of the consumer, rather than fitting people into static programs. It is inherent in this principle that the dignity and uniqueness of each person is recognized and respected.
2. **FLEXIBILITY.** Closely linked with individualization is the concept of the flexibility of support services. By flexibility, it is meant that elderly and physically disabled persons should have a choice of service options, and that as their needs change over time, the services can be varied in a meaningful response to these changes.
3. **INTEGRATION.** Integration means maintaining the maximum level of assimilation, both physical and social, with the community at large. The physical design of supportive housing should enable people with support service needs to feel part of their community and to interact with others, especially those who do not have special needs.
4. **INDEPENDENCE.** Independence implies that individuals are able to live in the community with as much freedom, self-determination and responsibility as is feasible given their support service and housing needs. In the supportive housing environment, it means that people have the opportunity to influence decisions about the housing and support services they receive. This is empowerment of the consumer.

*Figure 4*  
*Residential Settings*



5. **STABILITY.** Stability refers to continuity in a person's environment and social relationships. In a supportive housing setting it refers to a person's permanence of tenure and to continuity in the provision of support services. This principle implies permanence although it is recognized that there may be instances where individuals will have to leave their present setting in order to receive the care they require.

6. **SAFETY.** The principle of safety is at the core of any supportive housing program. It is the component that allows consumers to feel secure at all times regardless of their needs. The level of safety required or requested may vary from person to person but in all cases it is the measure of a sensitive and responsive program.

7. **SELF-HELP.** It is important that a service system not interrupt or replace self-help, peer, family or any other support network. This principle strengthens the notion that individuals have and want the self-reliance that this type of support can give.

The operationalization of these principles through program design and implementation will enable the goals articulated in the *Redirection* document to be pursued, including:

- integration of long-term care health and social services
- creation of community alternatives to institutions
- improved access to quality services
- greater consumer participation and control of services



- promotion of racial equity and cultural sensitivity
- preference for a not-for-profit service delivery system

## **SUPPORTIVE HOUSING MODELS**

This section describes some models of supportive housing based on the principles and intended goals of the LTC Division. There are some general and preferred characteristics that are common to these models. These include:

**Tenants.** Tenancy is preferred over client status. This means that the consumer is covered by the Landlord and Tenant Act (or Cooperative Corporations Act), rather than being excluded under Section 1(c)(ix). This section excludes accommodation deemed to be “occupied by a person....for the purpose of receiving care.”

**Clustered Accommodation.** Although the residential settings are self-contained with private, rather than shared kitchens, bathrooms, bedrooms and living space, the units are clustered in a building complex to facilitate service delivery.

**Integrated Tenant Mix.** Supportive housing environments should intermix apartments for people with support needs with those for people who do not have such needs. This means throughout a project and not just isolated to a single floor or area within a site. People with support needs should not be concentrated at such a level that they dominate a housing project or neighbourhood.

**Community Integration.** Buildings where supportive housing units are located should be an integral part of the community in which they are located. This means that malls, stores and services should be nearby and accessible.

**Not-for-profit Service Providers.** The preference is to support coordinated, community based services delivered through existing, not-for-profit agencies.

**Off-site Administrative Offices.** While on-site staff are necessary to provide the support services in a timely and effective manner, ideally, agency administrative centres should be located away from the accommodation site. This does not preclude having space available for staff to take breaks, keep and update records or store equipment. The intent of this principle is to minimize the intrusion into people’s lives of non-service personnel.

**De-linked Services.** In order to minimizing the non-service activities of agencies whose major focus should be delivery of support services, the preference is for arrangements where the service provider is NOT also the provider or manager of the accommodation.

## **DEDICATED SITE MODEL**

In the dedicated site model, the occupants of the project are of one consumer group. A senior citizens apartment building would be an example. All residents of the complex may require some level of service or there may be a mix of residents, with some requiring no services. The most salient features are the availability of services on a 24

hour basis and an emergency response or backup system. This does not imply that people in dedicated sites or units require 24 hours of service. They may, in fact, need only a few hours of direct assistance but their needs dictate that some of the services *be available* during the night or on an “on call” basis. Staffing for this model is on-site.

## **SUPPORT SERVICE LIVING UNITS**

Support Service Living Units (SSLUs) were originally developed for attendant care service for physically disabled people but could serve a range of consumers in a redirected LTC program.

There are a number of variations of the basic model, ranging from 40+ bed “mini-institutions” to fully integrated units with services delivered by staff hired by a non-profit, community consumer board. The apartments could be clustered or spread throughout one or two buildings in a complex. Their distance apart would be dictated by the logistics of meeting the consumer’s need. As in the dedicated site model, a key feature of the SSLU model is the availability of 24 hour services and a quick response capability provided by on-site staff.

## **SUPPORTED INDEPENDENT LIVING UNITS**

There are physically disabled and elderly individuals, living or eligible to live in public housing, whose needs are sufficiently high that on-site staffing would be the most efficient way of providing services. These individuals currently need assistance only during the day. They are sufficiently independent that overnight supervision or services are unnecessary. A 24 hour service could be put in place at a later date if required.

## **SMALL CONGREGATE HOMES**

Despite attempts to provide service to LTC consumers in integrated settings, there will be individuals whose needs are such that small, segregated housing units will be the best alternative. These include: persons with Alzheimer’s disease and early onset cognitive disorders, people in the late stages of degenerative diseases and those with severe traumatic brain injuries. While these consumers do not require extensive medical care, they do require intense supervision and/or specialized professional treatment. Ideally, these residential settings would accommodate no more than six people and would be integrated in their communities.

## **VARIATIONS**

There are a range of variations on the above models that have and will continue to be developed in response to specific community needs through local planning processes. For instance, there are senior’s buildings where amenity space for recreation and activities and/or communal dining or restaurant areas have been added to the original design. In some projects an infirmary has been included, giving the residents immediate access to care for minor injuries that might otherwise go unattended, foot care on a regular basis and, in some cases, providing respite for family care-givers in emergencies. It should be noted, however, that the guidelines given to MHou field offices clearly limit the type of amenity space and therefore the services that can be added to existing or new supportive housing sites. Amenity space that cannot be

incorporated into housing projects include: nursing stations, sick bays, doctor's offices, staff apartments or sleeping areas and any other facilities usually considered essential to a staffed institution.

In developing supportive housing for persons of differing ethnic and cultural backgrounds and for aboriginal people, care must be taken to enable preservation of traditional ways of providing care to elderly and disabled persons. This may require that a whole project or a portion of a project be segregated for the use of an identified group.

## INTER-MINISTERIAL COORDINATION

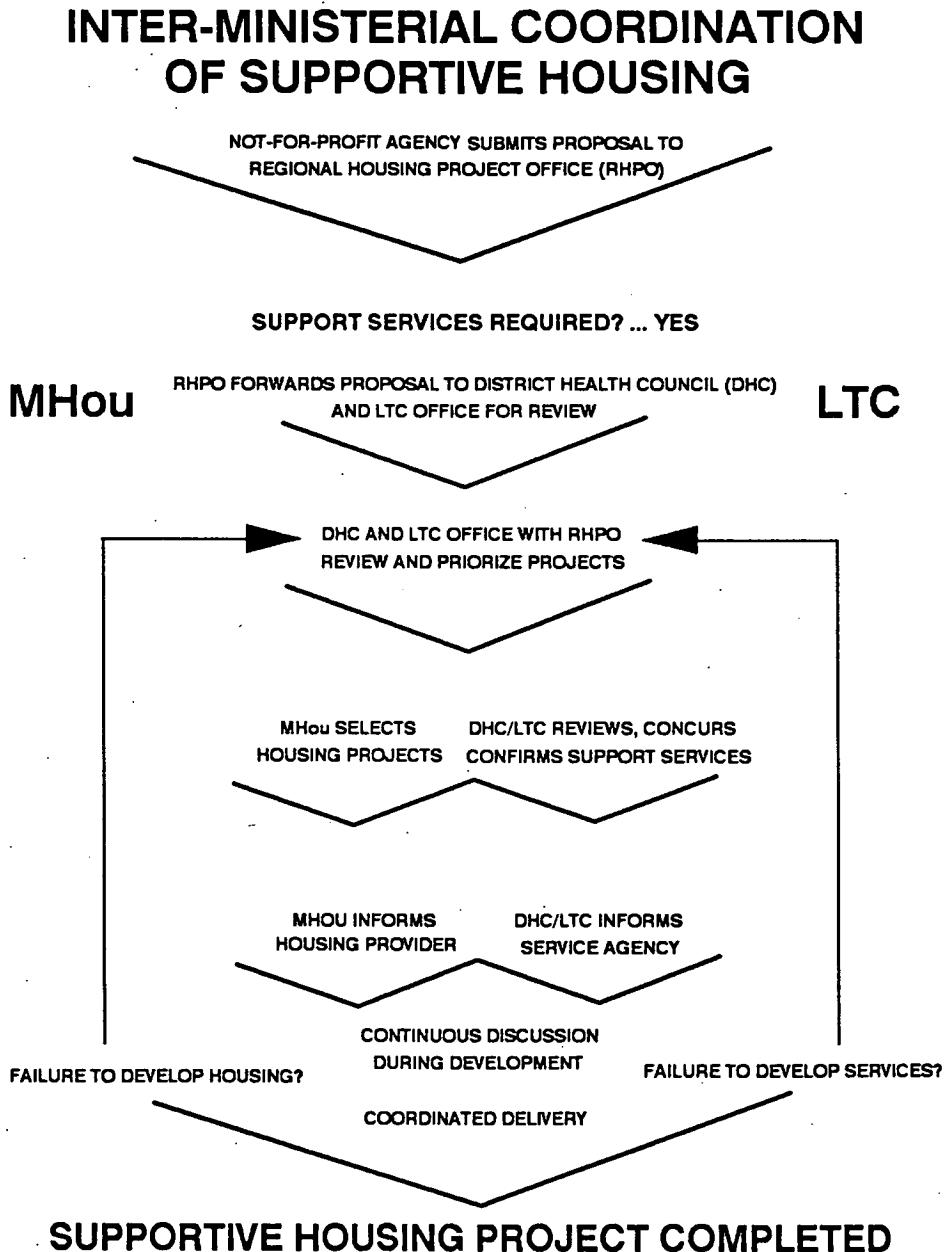
Key to the success of a supportive housing program in a redirected LTC system is the coordination of the development of housing stock with the availability of support service funding. In the past, there were a number of impediments to this. For example, the MHou operated on a multi-year cycle, necessary to bring new housing projects to completion whereas the Ministry of Health and MCSS worked on a year by year basis. As a result, there were often times when an agency received approval for the housing component of a project but there was no support services funding available or vice versa.

Several aspects of the redirection will begin to resolve these issues. First, the LTC Division will have a multi-year financial planning cycle that will allow greater freedom to commit funding for support services to match future housing programs. Second, the coordination process for new supportive housing will be improved by expanding the CARP to include unilateral Provincial initiatives as well as the Federal/Provincial Program (F/P). This process is being enhanced by an Inter-Ministerial Coordinating Committee, chaired by the MHou and involving all the support service ministries and the LTC Division.

At an operational level, there is a jointly chaired LTC/MHou Committee, established to resolve specific coordination issues. The committee includes field staff from both ministries as well as housing providers from across the province.

Figure 5 is a diagrammatic representation of the CARP. As can be seen, an agency (service provider, housing provider or both), may approach any one of six Regional Housing Project offices (RHPOs) with a proposal to develop a social housing project. If support services are required (MHou encourages inclusion of people with service needs in most social housing projects) the proposal is forwarded through one of 14 LTC offices across the province to the appropriate District Health Council (DHC) for review. DHCs will have responsibility for local planning and prioritizing of services as well as funding approval (Ministry of Health, MCSS & Citizenship, 1993 a,b). The partners, DHCs, local LTC offices and the RHPOs, then meet and prioritize the submissions for the local area they represent. The projects are then submitted to the MHou Head Office for selection. Selected projects are then again reviewed by the DHC for a service funding commitment. Successful proposals are announced and detailed discussion of the contractual arrangements are begun. Projects would then normally proceed to completion.

*Figure 5*  
*Inter-Ministerial Coordination of Supportive Housing*



## COMMITMENTS FOR THE FUTURE

As redirection of the full range of LTC services evolves, the coordination of support services with the development of social housing through the LTC Division's Supportive Housing Program will provide opportunities for elderly persons to receive the personal supports they require in the comfort of their own homes and communities.

This initiative necessitates cooperation between the MHou, Health and the MCSS to resolve key issues such as: tenancy vs residency; imposition of mandatory service packages on elderly persons seeking only housing; and the services that cannot be provided "on-site". (There are current limitations related to professional services.) Additionally, the use of segregated sites for delivery of services to special groups and the government's role in the provision of emergency response systems require attention.

The Province of Ontario has already committed \$58 million annually to supportive housing in 255 projects serving 5,530 people. In 1992/93 an additional \$7.8 million was added to that total in 22 new projects. This was a first instalment of the \$40 million over the coming years for supportive housing that was part of the *Redirection* proposal (MCSS, Health & Citizenship, 1991). To compliment this funding, the MHou has announced the development of 20,000 social housing units over the next three years through the Jobs Ontario Program. Fifteen percent of these will be for special needs groups and 10% will be fully accessible. This means that between 1,800 and 2,700 units will be available for supportive housing programs.

While the above projects will produce new supportive housing units, it is recognized that there are a number of elderly persons already living in seniors apartments and other forms of social housing who require support services and care if they are to remain in their present location. Through its local offices and in cooperation with local housing authorities, the LTC Division is working to identify locations where on-site supportive housing would be the best service delivery alternative.

Through these efforts, it is expected that over the coming four to five years, a meaningful number of social housing sites will be developed as part of the Supportive Housing Program. It is expected that this component of the LTC system will contribute significantly to the overarching philosophies of consumer empowerment, independence and choice that are the hallmarks of the LTC redirection initiative in Ontario.

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## Chapter 8

# SOCIAL POLICY MODELS FOR SHELTER AND SERVICES: AN INTERNATIONAL PERSPECTIVE\*

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## INTRODUCTION

To safeguard their quality of life, seniors need access to health and social services in their place of residence. Though this need is widely recognized by the public and by governments, the integration of housing, social services and health services continues to challenge public policy in developed countries of the world. Canada, on the verge of a seniors boom, can benefit from the experience of other countries which have acted to integrate and streamline their policies to meet the needs of their older population. This chapter provides a rationale for analyzing, simultaneously, housing and health services policy for an aging population, develops a framework for understanding and evaluating social policy models, and critically examines the merits and shortcomings of social policy strategies that have been tried by various governments.

## REFRAMING THE PROBLEM

In most developed countries, social policies for income security, health, housing and social services were enacted decades ago. Life expectancies were lower and, as a consequence, the average number of years in retirement were fewer. In each social policy domain, a uniform policy to cover these years was sufficient. Now, however, it is not rare for retirement to stretch for 35 years. With longer life expectancies, there are greater variations in income, health, social service and housing needs. It is axiomatic that a single social policy strategy cannot serve persons from birth to 35 years, but it is only now recognized that it is insufficient to utilize a single policy strategy for health, social services or housing to cover a 35 year spread from age 65 to age 100 years.

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\*The views expressed in this chapter are those of the author and do not necessarily reflect the views of organizations with which she is associated.



Because a well developed social safety net of policies existed in most developed countries, the integration of housing, health and social services was first considered a design problem. It soon became evident that the key policy issues revolved around organization of social policy regimes and responsibility for costs. The rationale for government intervention varied for social policy components such as health or housing and therefore, they were organized and delivered differently. The manner in which the responsibility for costs was shared between the public and the private purse was different for each social policy component. These two factors have been major impediments for the integration of social policy sectors.

Social policy reforms underway aim to increase efficiency, while minimizing differences in quality of life among various groups in the population. In order to be successful, these reforms have to be implemented within the larger policy context.

## THE POLICY CONTEXT

Developed countries, including Canada, are experiencing demographic, economic and political trends that have a critical impact on housing and service-related policy decisions.

### Demographic Trends

A major demographic trend in developed countries is population aging, a phenomenon where the proportion of seniors in the population grows progressively. Canada has a relatively young population at present compared to many European countries. For example, in 1990, the population aged 65 years and over was only 11.5% in Canada compared with 17.8% in Sweden, 14.1% in France and 15.4% in Germany. But the population of Canada is aging faster than the populations of many European countries. By 2020 when the baby boom generation enters the ranks of seniors, the proportion aged 65 and over in Canada is expected to soar to 20% equalling that of many European countries (OECD, 1992).

The characteristics of the population of seniors in Canada parallels that in other developed countries. The life expectancy of both men and women continues to grow. In 1990, the life expectancy for men was 73 years in Canada, 72.7 years in France and 74.8 years in Sweden. Since the likelihood of functional limitations increases with age, larger numbers of seniors, especially those aged 80 and over, escalates the demand for health and social services, institutions and special housing. It is estimated that at least one in three seniors will rely on these services. If current hospitalization patterns continue, the hospital capacity must double in the next 50 years to meet the demands of seniors alone (Fellegi, 1988). Furthermore, poverty has been shown to be correlated with ill health, disability and institutionalization (Wilkins & Adams, 1983).

Many persons entering retirement today have worked, built up pensions and assets and are not poor. Indeed, the proportion of seniors among the poor has fallen steadily over the past decade; from 22.2% of couples 65 and older in 1980 to 9.0% in 1991 (National Council of Welfare, 1993). Growing numbers of seniors appear to have discretionary income and asset and the present high level of reliance (up to 50% of seniors) on income transfers may decline.

However, it is uncertain if their income will keep pace with rising costs for housing, health and social services. Moreover, unattached women comprise the majority of seniors with incomes below the poverty line (National Council of Welfare, 1993) and their numbers are growing.

### **Economic Trends**

Most developed countries have well developed social security policies. However, under current tight economic conditions, the restructuring of national economies has caused major changes in tax income, public expenditures and national debt. The budget deficit as a percentage of GDP in 1992, was 39.4% in Canada, 43.9% in France and 36.6% in Germany (Department of Finance, 1992). It appears that new or increased taxes, reduction of public expenditures and re-allocation of public expenditures are more likely than new or increased public spending. When expenditures are made, they are strategic. Since Canadian housing stock is numerically adequate, any additions should strategically be used to improve the quality and flexibility of the current stock. Therefore, economic resources are unlikely to be spent on increasing special housing for seniors.

### **Political Trends**

The definition of public goods and services and the role of government in their delivery are being re-examined in many developed countries. According to the classic economic definition, public goods are consumed collectively and each citizen gains satisfaction from the total output of a public good. No one person's satisfaction should be diminished by the satisfaction gained by others and it should not be possible for anyone to appropriate a public good for his own personal use or gain (Henderson & Quandt, 1980). Thus, for example, government subsidies for housing that result in personal benefit and gain exclusively for beneficiaries are being questioned. Nevertheless, the role of government in managing social insurance in the public interest is accepted in part because of the social contract that requires citizens to purchase such security through compulsory ear-marked contributions. But because the relationship is contractual, the public is demanding greater choice and better quality public goods and services.

These trends affect the way in which policy issues receive attention and the way in which resources are allocated between competing policy goals. They also have a crucial effect on the way existing policies are reformulated.

## **POLICY CHALLENGES**

The public policy challenges with respect to seniors are major. Fortunately, there is general public support for policy reform to ensure better and more equitable outcomes for seniors. Also, increasingly seniors are using their political clout as voters to demand change.

The goal of social policies in all developed countries is to maintain a high quality of life, by assuring equitable benefits to all citizens while meeting the specific needs of population

groups such as seniors. The success of social policies is measured by outcome. There appear to be two intractable types of outcome inequity for seniors: differences between seniors and other groups and differences among individual seniors.

The inequitable financial share of social programs consumed by seniors compared to other age groups is one major concern. On average, in the OECD countries, the per capita public expenditure on those aged 65 and over exceeded outlays on those under age 15 by a ratio of 2.7 (OECD, 1988), which has fueled debate about intergenerational conflict. Furthermore, governments are under pressure to provide public support to the working population in order to improve economic conditions.

Consistency in public policy administration is intended to ensure that every individual with similar needs has equal access and equal outcomes. In many developed countries, the benefits flowing to seniors depend more on their type of residence than on individual patterns of needs. Thus, two seniors with roughly equal needs, would receive very different public goods and services if one lived at home and the other in an institution.

## **A SOCIAL POLICY FRAMEWORK**

A conceptual framework for the discussion and comparative analysis of social policy is presented below. Categories of social response may not be exhaustive, nor mutually exclusive, however, this framework is useful as a point of departure.

### **Defining The Social Contract**

Any social policy framework depends on the nature of the social contract that allocates responsibilities between the individual, the market and the state. Critical questions include: What roles and responsibilities should be borne by each sector for health, social services and housing? How should goods and services be organized and how should they be paid for?

The role of the government for each social policy component is defined by three criteria: (1) criticality of goods and services (2) responsibility for costs and (3) coverage. Each of these criteria is discussed below.

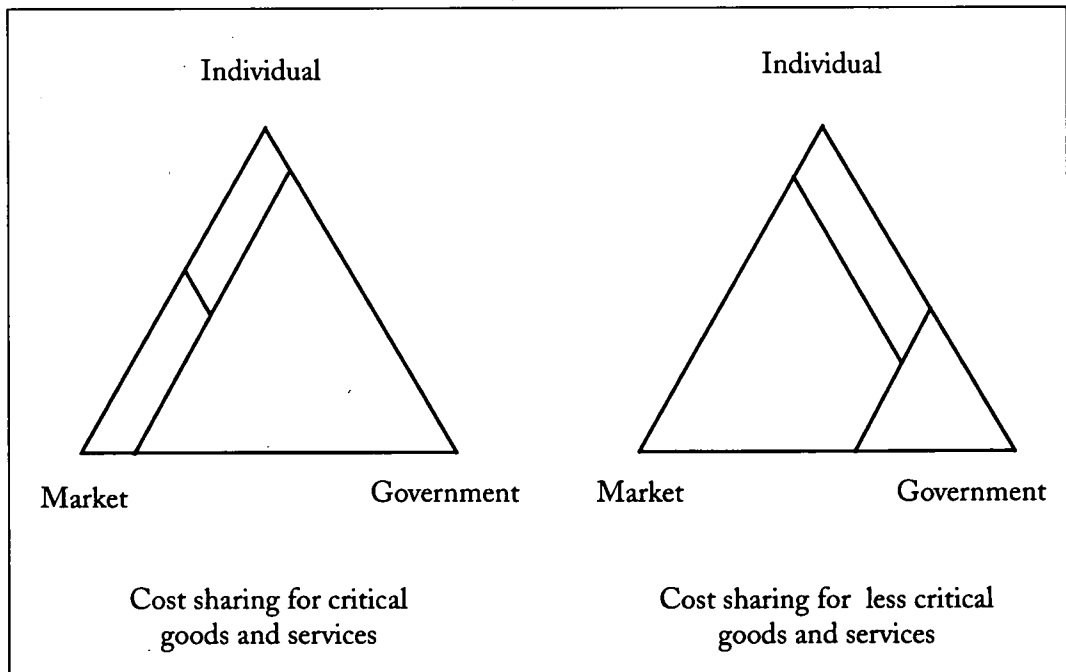
#### ***1. Criticality of Goods and Services***

This criterion defines goods and services that are selected to be in the public domain because of widespread benefits in the national interest. For example, basic income security and health are generally considered appropriate policy fields for public action. Depending on the criticality of the goods and services, greater or lesser public action may be taken. As a consequence, public goods and services may be divided into first tier public goods and services, where governments guarantee a certain basic standard for national benefit, and second or third tier public goods and services, where government activity may be partial or residual. As will be seen, the criticality of goods and services is integrally linked to who is responsible for costs.

## 2. Responsibility for Costs

The responsibility for costs may lie with the individual, the market or the government (Figure 1). The individual may produce the good or service absorbing the cost involved. Care provided by a family for a senior would fall into this category. The goods or services may be purchased on the market. Nursing care purchased from a for-profit organization is an example. Finally, the goods or services may be publicly provided, funded by tax revenues or through ear-marked contributions. Public home care service is such a case. The public responsibility for social services may be partial, dovetailing with personal responsibility and with market activity. Where public responsibility is residual, government interventions are condoned only in cases where the market is unable to serve the public or parts of the public adequately due to market imperfections or failure. The manner in which responsibility for costs is divided between the three sectors depends on the criticality of the public goods and services. When it is important for the national interest that the goods and services be consumed, a greater proportion of the cost may be public. Where the services are not critical, few costs may be assumed by the public purse.

**Figure 1**  
*Responsibility for Costs for Goods and Services*



### **3. Coverage**

The beneficiaries of public goods and services may vary depending on the decisions derived from the first two criteria. Public goods and services may be universal (for all citizens), be a demogrant (universal for a group in the population such as seniors) or be for a target group. When a good is deemed essential for national quality of life, the public good usually has national coverage. The social contract binding the citizen to the state may be explicit, where the contributions are ear-marked and the benefits specified. This is the case for health insurance.

Reforms may or may not be possible due to the nature of the social contract. Inter-relationships between policies may be facilitated or hindered due to differences in the social contract for each policy.

## **CONSUMPTION ALTERNATIVES AND IMPACT OF ESSENTIAL GOODS AND SERVICES**

When a need is experienced, the individual may consume the required goods and services or forego consumption. This decision is dependent on the degree of need, the availability of personal resources to access the goods and services and the supply of goods and services. If the decision is to consume and if the services are not available from the state, then the individual must either produce the service or purchase it on the market.

The outcome of the decision to consume or not to consume can affect the individual senior as well as the population as a whole. When the decision is made to forego consumption, depending on the need, there is the risk of potential deprivation and spin-off impacts (Figure 2). For example, if a senior requiring first aid foregoes consumption, a more serious condition may result. This might ultimately lead to greater costs to both the individual and to the tax paying public. Public goods and services are supplied in the national interest to ensure consumption by all regardless of variation in personal resources.

Whether the goods and services are produced by the household, purchased on the market or purchased as public goods and services through taxes and social security contributions, the impacts for the individual vary in terms of cost, access, equity, security of supply, quality, choice and customization. Though some variation is possible for a particular good or service, in general, outcomes due to access, equity and security of supply are very sensitive to personal resources when goods and services are either produced by the household or purchased on the market. Customization and choice, on the other hand, are likely to be higher in the case of goods and services produced by the household or selected on the market. Due to the principle of equity, public goods and services tend to be more uniform.

The collective public interest for desired outcomes defines the roles governments play with respect to elements of social policy. The goal is to optimize the outcomes for the individual and, therefore, for the country. Where better benefits are possible from household or market supply of goods and services, the state may not intervene at all or it will undertake to support such production or to regulate the quality of goods and services. When choice and

**Figure 2**  
*Consumption Alternatives and Impact of Essential Services*

<b>IMPACT</b>	<b>Cost</b>	<b>Access</b>	<b>Equity</b>	<b>Secure Supply</b>	<b>Quality</b>	<b>Choice</b>	<b>Customization</b>
<b>CONSUMPTION</b>							
• produced by household	Hi	Varies	Varies	Varies	Hi/Lo	Lo	Hi
• purchase on the market	Hi	Varies	Varies	Varies	Hi/Lo	Varies	Hi
• purchase through taxes and s-s contributions	Hi/Med	Hi	Hi	Hi	Hi/Lo	Lo	Lo
<b>FOREGO CONSUMPTION</b>	<b>Potential Deprivation and Spin-off Impacts</b>						

customization are more important than equity, the public is generally unwilling to support public goods and services through taxes. For this reason, housing is generally provided through the market. However, when goods and services are essential, access, equity, security of supply and quality are primary. In such cases, public goods and services are supplied and the public is willing to pay the costs. Public pension is such an example, however, there is growing debate surrounding universality.

## A GENERIC SOCIAL POLICY FRAMEWORK

A generic social policy framework for the relevant social policy components discussed earlier is presented based on existing social policy infrastructures in developed countries. This framework is comprised of the following elements: the character of the social contract, eligibility, the responsible level of government and the size of the budget. These criteria are used to describe income security, health, social services and housing policy (Figure 3). In so doing, a foundation will be laid by which a variety of integrative social policy models can be introduced and contrasted.

### Income Security

Income security, widely regarded as a first tier social policy, consists of public pensions and income support. Though pensions largely benefit seniors the contributions are made throughout the working career and they are, therefore, considered universal benefits.

**Figure 3**  
*Generic Social Framework*

<b>Tier</b>	<b>Social Policy</b>	<b>Character of Social Contract</b>	<b>Eligibility</b>	<b>Responsible Level of Government</b>	<b>Size of Budget</b>
<b>1</b>	Income security	Contributory two tier national pension. - basic (public) - job related (public or private)  From general revenue Income support	Universal Contributors  Income tested	National	Large
	Health	Contributory National public insurance (activated when needed)	Universal	Provincial or local	Large
<b>2</b>	Social services	Personal responsibility  From general revenue provincial and local	Support by providers  Needs tested targeted assistance	Local	Small
<b>3</b>	Housing	Personal responsibility	Subsidies to: - targeted housing - to income tested persons	Privately financed, built and operated  Subsidies from all levels of government	Small

Contributory pensions are generally of two parts: a national basic pension and a job related pension which may be public or private. Income support is generally supported through tax revenues and is targeted to income tested clients. Both these aspects of income security have important economic ramifications in terms of the labour force and economic activity, therefore, responsibility rests generally with national governments. The budgets tend to be large.

## Health

Health is also regarded as a first tier policy and it is therefore universal in scope but the responsibility is usually delegated to the second order of government. It is generally funded through compulsory contributions for public insurance and it is accessed when required. Health is frequently the largest item on the provincial/regional budget.

## Social Services

Social services are usually relegated to the second tier. The individual is expected to shoulder the costs although governments provide support to providers and act to protect consumers. Needs tested targeted assistance may be provided from tax revenue for those individuals unable to bear the costs. Though some revenue or tax point sharing is common, the responsibility is exercised by local governments. The budgets tend to be small.

## Housing

Housing tends to be privately financed, built and operated. It is usually deemed a personal responsibility and it is an important vehicle for building assets. However, the fundamental nature of housing is also recognized and policies tend to be residual though interest or tax subsidies may be available in some countries to universally reduce the cost of housing. Subsidies are generally targeted to housing (not available on the market, such as for disabled persons) or to income tested persons (who are unable to purchase or rent housing on the market.) All levels of government may have some involvement but the budgets are typically small.

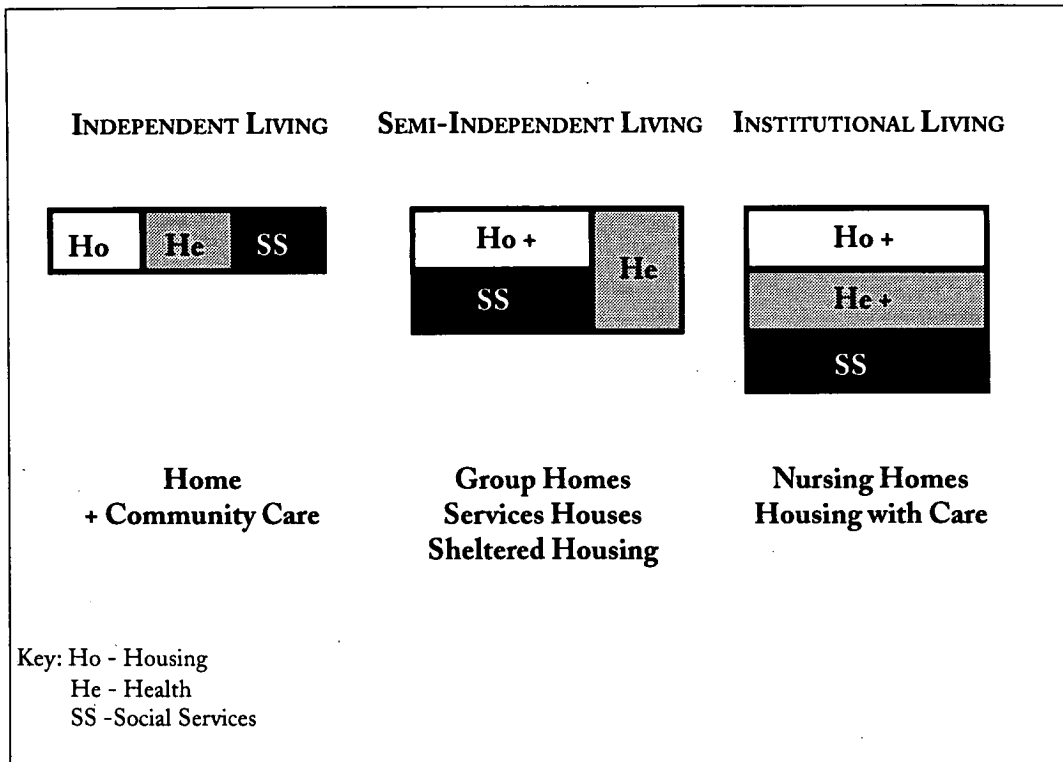
Variation in the contribution of the social policy to the national interest, the jurisdictional allocation and legislation may be barriers to integration. Different approaches are used by various countries to overcome these impediments and to achieve integration of health, social services and housing.

## INTERNATIONAL STRATEGIES FOR INTEGRATING SOCIAL POLICIES FOR SENIORS

To accommodate the great variance in income, health, social services and housing needs among seniors aged 65 and over, a set of solutions have been developed by various countries. Though there is some variation in details, the solutions are remarkably similar. These solutions fall into three categories (Figure 4). Although these categories may have different names in different countries, the characteristics are the same. The first category may be described as **independent living**, where seniors living in the community rely on community



**Figure 4**  
*International Patterns of Responses to the Varying Needs of Seniors  
 for Housing, Health and Social Services*



care for health and social services. Much effort is being expended to increase the proportion of seniors availing themselves of this option under programs supporting “aging-in-place”. The second category may be called **semi-independent living**, where some social services, such as food and cleaning services, are available on-site in housing for seniors but health services are accessed from the community or from hospitals. Examples of such solutions are group homes, service houses and sheltered housing. The third category may be described as **institutional living**, where health and social services are integrated with shelter in institutions. Nursing homes and housing with care are examples. (See Brink, 1988 for further information about each category).

In countries where the diversity of needs among seniors have only recently been recognized, only solutions in the last category have been developed. In countries, such as Sweden, where population aging is well advanced, many solutions in between housing and institutions have been developed. Though there is little international variation in the solutions, the policy strategies utilized to integrate housing, health and social services vary considerably.

## MODELS FOR INTEGRATING SOCIAL POLICIES FOR SENIORS

In reality, most countries tend to have mixed strategies though they tend to rely on one or two. From these strategies, three models are identified and described. These models vary primarily in the way in which public funds are divided within and between sectors and in the way in which benefits are distributed. Public budgets can be separated into income security, health, social services and housing. It should be remembered that the first two budgets tend to be large while the other two tend to be small. The first two tend to be associated with social policy components that are universal in nature while the last two tend to be targeted. In the case of housing, public subsidies or assistance may flow to housing units or to the individual. When assistance flows to housing construction, the costs are very high. Since housing is an immovable good, flexibility of distribution is lost. When assistance flows to the individual, existing mechanisms for non-government financing of housing can be utilized. The following three financing models are described using examples from various countries: (1) the integrated cross-sectoral model, (2) the co-ordinated multi-sectoral model, and (3) the co-located sectoral model.

### 1. The Integrated Cross-Sectoral Financing Model

Within this model there are two sub-types: the health budget dependent model and the housing budget dependent model. This model does not integrate income security.

#### *A. The health budget dependent model*

As shown in Figure 5, in this model, the funding assistance is drawn from the health budget and flows to housing. Full or partial assistance from the health budget is used to construct housing and/or to operate housing, health and social services for the residents.

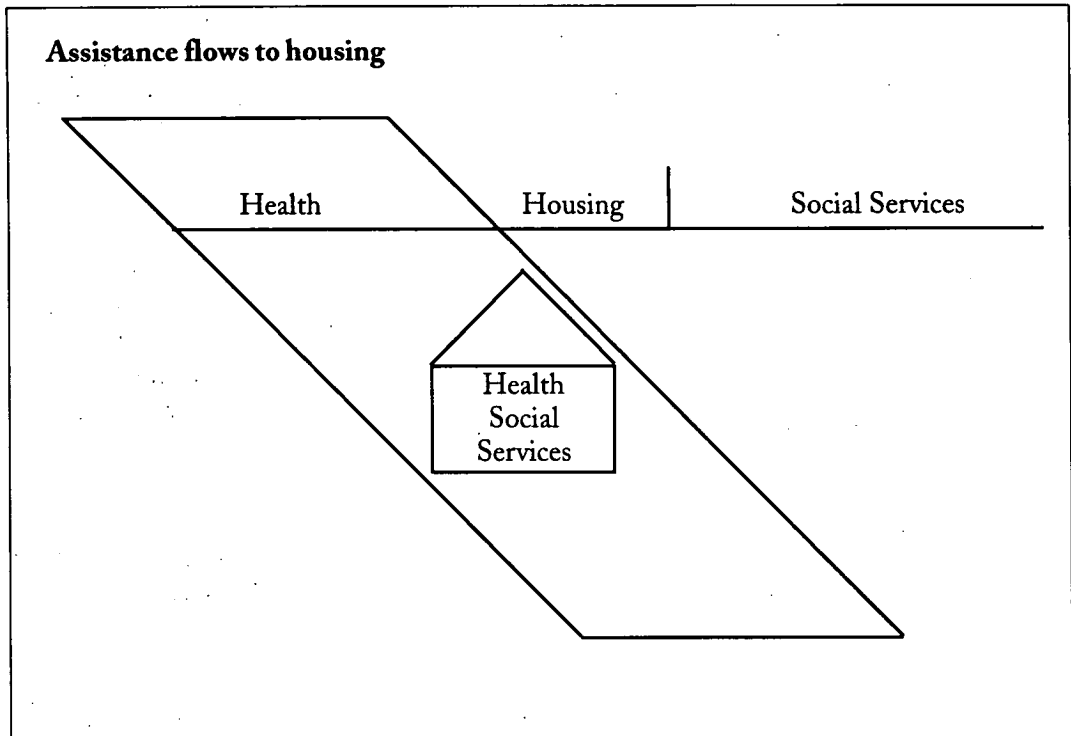
In many countries, when seniors began to live longer, this solution was used to free up beds in hospitals that were being used for long term care. Historically, the illnesses and disabilities associated with aging led to the development of the first hybrid form combining health and housing, the nursing home. The lander in the eastern part of Germany still rely on health insurance to cover the costs of housing, health and social services.

This model facilitates the co-ordination of policies between the two lower orders of government. The health budget is quite large and, initially, when only few spaces were needed, these solutions were considered advantageous because they were cheaper than hospitals.

Many disadvantages of this model are becoming apparent. The high costs, because assistance flows to the construction of housing, is a prime disadvantage. Fittings such as institutional kitchens and staff for services are not cost effective on a small scale. Further, in most developed countries, it would be impossible to build sufficient stock to meet the projected demand. Expenditures for such hybrid forms of "health care institutions" compete with other health care expenditures.

Since these institutions fall under the health portfolio, they tend to follow the medical

**Figure 5**  
*Model 1a: The Health Budget Dependent Model*



model providing shelter with a low housing standard but with health and social services on-site. In many cases, the resident is offered a package that includes rent, food and services and therefore, health insurance is used to cover costs of rent and food. These additional costs are covered by higher insurance premiums for all citizens.

Based on the medical model, sick seniors are the primary residents and they tend to be cared for in their rooms, which often house two or more persons as in hospitals. Due to the limited numbers of spaces, administrative gate keeping procedures are used, where evaluations focus more on health needs than other legitimate needs. However, since few other solutions are available, deserving seniors are housed but their admission is considered inappropriate.

For a resident, the loss of control and the diminished quality of residential life are obviously serious shortcomings. If their needs place high demands on the system, they can be moved. Where costs are split up, charges are more complicated. The senior may be responsible for the costs of rent and food but cannot negotiate the supply or the costs.

Finally, this model is considered inequitable because seniors with similar needs living in the community pay the same premiums but they do not receive the same benefits. Publicly subsidized solutions, other than this age segregated option, are not available for those who prefer mixed residential settings.

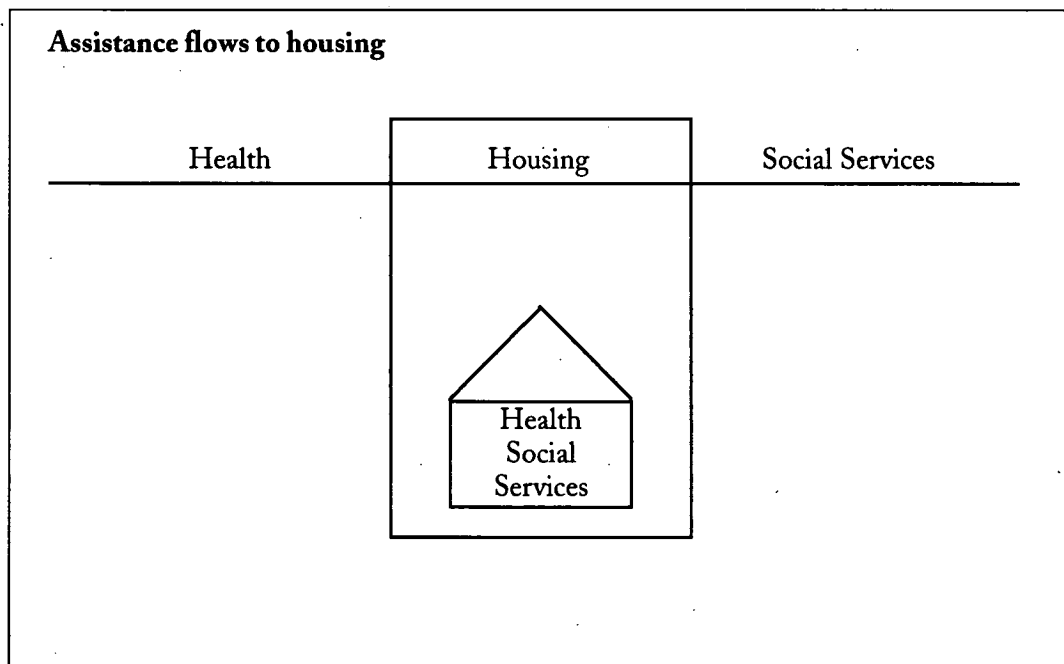
***B. The housing budget dependent model***

As shown in Figure 6, this version of the integrated cross-sectoral model relies on housing budgets that flow to housing. Since housing budgets are relatively small, the subsidies are generally partial, relying on private sector financing and construction. Operating subsidies cover the costs of housing and services.

Facilities built under the housing portfolio tend to be more residential than medical. Housing standards are better but the design is generally not appropriate for delivery of many health and social services. Selected social services are delivered on-site but limited health services are home delivered. The United States Congregate Housing Program is an example of this model.

Several disadvantages have been cause for concern. Although only partial subsidies accrue from the limited housing budget, such special housing consumes greater subsidies than other housing. Special housing is more expensive to construct because it has a limited market and there are few economies of scale. This type of special housing for seniors competed for subsidies with housing for other groups or for targeted households. Because funding flows to housing, distribution flexibility is lost. It is difficult to ensure spaces are available in the right places at the right times for the right numbers of people.

**Figure 6**  
*Model 1b: The Housing Budget Dependent Model*



In the tradition of targeted housing assistance, this model favours the poor over others who may have other needs. Because space is limited, gate-keeping procedures are necessary and the possibility of social mixing is limited. A high proportion, if not all residents, are poor, relying on income security or welfare payments.

Since housing is considered the responsibility of the individual, seniors residing in such facilities are expected to pay rent or purchase the housing. The services are generally compulsory and little variation is possible. There is little security as residents may be moved out if their needs exceed the services available.

Finally, this model is considered inequitable since seniors with similar needs do not have access to similar services. Only the poor elderly are eligible and only a few actually benefit. The proportion of seniors among the poor has steadily declined and scarce housing subsidies are required to house other groups. The expenditures of housing subsidies for housing that is flexible enough to house a variety of groups is preferred to special housing limited to one type of resident. As a consequence, this type of funding has become limited.

## **2. The Co-ordinated Multi-Sectoral Financing Model**

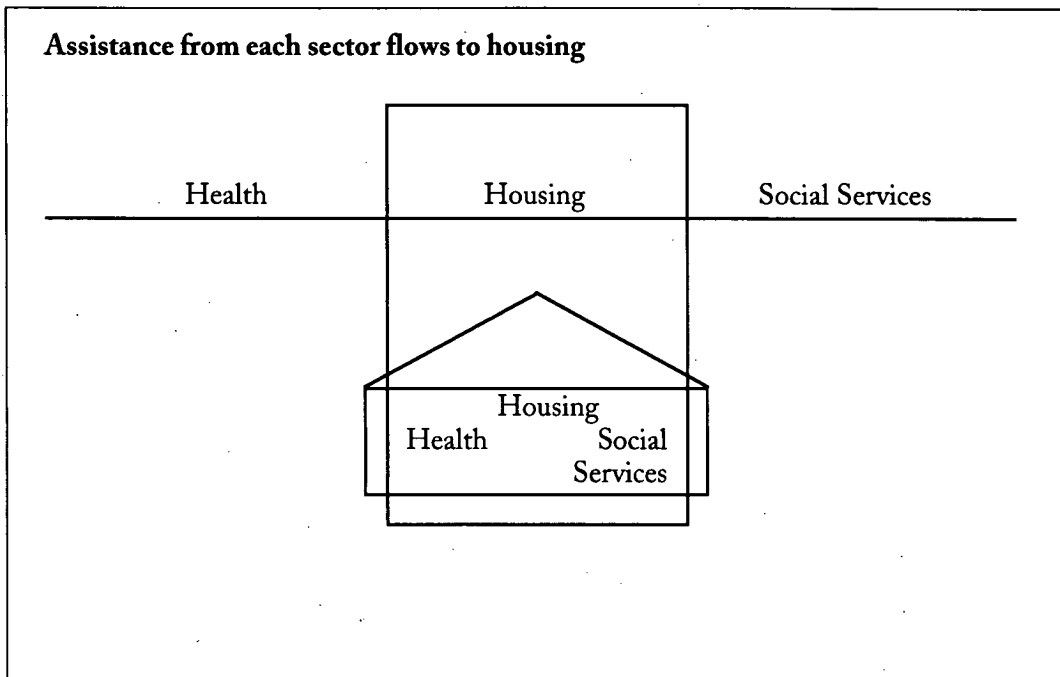
As shown in Figure 7, this model draws from the health, social services and housing budgets by relying on joint financing and partnerships. Assistance flows to housing so benefits accrue only to residents while they live in the facility. Depending on the conditions under which each of the budgets is accessed, residents receive health and social services. This model does not integrate income security. In France, for example a variety of subsidy packages are possible. Mortgage assistance may be combined with health subsidies for a certain number of beds and social service subsidies for certain services.

The facility tends to provide some flexibility to residents by variable packaging of housing and services depending on the composition of the funding, which is an advantage. Different tenure and financing options are possible for residents.

The difficulties of joint financing are tremendous because applications have to be made separately to each funding source. Such projects compete with traditional demands on each of the budgets. When there are jurisdictional differences in budgets, funding may not be available because of differences in priorities. When subsidies are received, each subsidy is governed by its own legislative rules. For example, some programs are universal while others are targeted, causing administrative difficulties. Until the funding process is complete, the project tends to be stalled.

Since funding is locked into housing, flexibility is lost. Only a few people can benefit because of the limited stock that receives funding. Gate-keeping by operators may not be fair or transparent.

**Figure 7**  
*Model 2: The Co-ordinated Multi-Sectoral Financing Model*



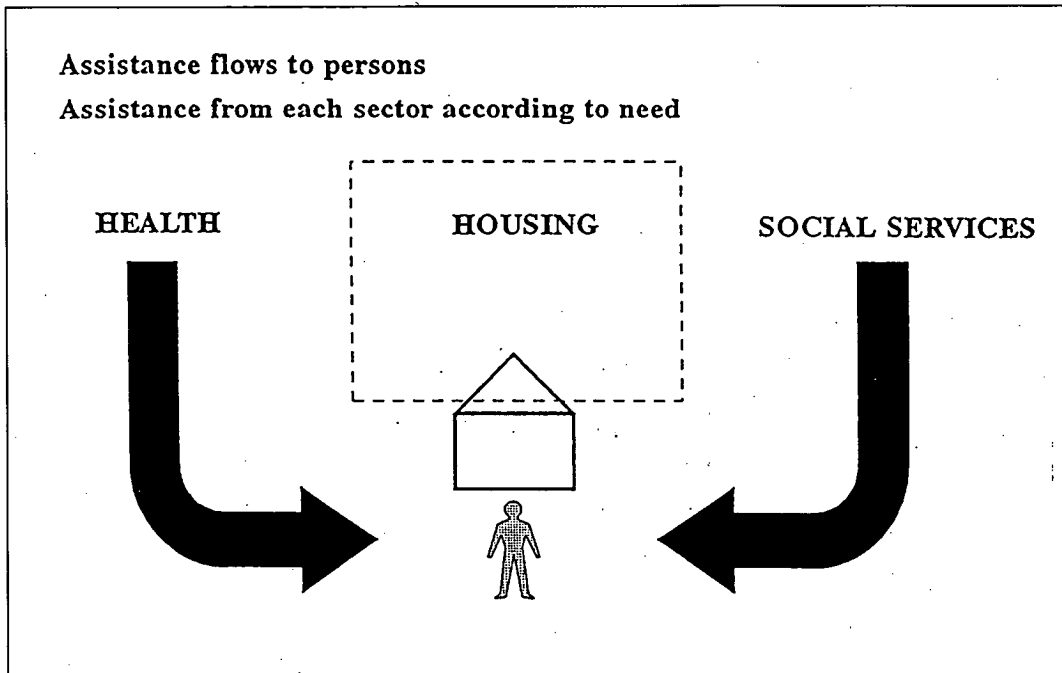
### 3. Co-located Sectoral Financing Model

This model has two key characteristics: Assistance flows to persons and assistance is drawn from each sector according to need. This model integrates income security as well as housing, health and social services. Because assistance flows to persons, there is a more equitable distribution of benefits. Receipt of benefits is not dependent on the type of housing. The benefits are not forfeited when the individual moves (Figure 8).

This model, used in Sweden, relies on a demand side approach, providing resources to the senior who then accesses required goods and services from the existing system, public or private. The individual draws income security if eligible. The senior chooses his or her housing according to need and preference. Whether an owner or a renter, the senior receives housing assistance, if eligible. Health and social services are covered according to need. They may be accessed in the community or in the residential setting. If the senior living independently requires greater services and moves to a care setting, all the subsidies he/she is eligible for, remain intact. The benefits are portable.

There are many advantages to this model. Demand stimulates public and private supply of goods and services, and therefore, the senior has greater choice and possibilities for customization. Many agents, private, public and non-profit, are involved. Market forces and competition are mobilized to keep costs down. Existing resources are better used and the

**Figure 8**  
*Model 3: The Co-located Sectoral Financing Model.*



senior is competing for scarce resources on the basis of need, exactly like others in the population.

More efficient wide coverage is possible under this model. Varying jurisdictional responsibilities for social policy components do not cause problems. Single entry administrative systems are generally efficient to operate.

Furthermore seniors make independent decisions for housing, health and social services. They are not obliged to move if their needs change but they can increase or decrease consumption of goods and services according to need. They choose to live in their own housing or in special housing. Also they exercise more individual responsibility, paying for their own housing and food and they can negotiate the services they need and have better control of costs. An infinite mix of services can be consumed under this model.

The principle disadvantage is the requirement for a well-developed social policy infrastructure. A good range of appropriate housing of good quality must be available. This includes barrier-free housing stock. Government may regulate and license rather than produce or operate goods and services so there is a dependence on market activity which may not be well distributed geographically.

## CONCLUSION

The growing number of seniors with their diverse patterns of income, health, social service and housing needs has initiated social policy reform. Seniors form a vocal electoral group demanding public goods and services for a multi-option society. These demands are occurring at a time of economic restraint. Therefore, public policy solutions that are cost-effective, equitable and responsive are being sought.

A slow move to the co-located sectoral financing model appears to be emerging in many developed countries. Governments are stimulating pluralistic supplies of goods and services by public, quasi-public, private and non-profit agencies. Supports are provided to selective construction and renovation to improve the stock of housing in terms of its flexibility and standard. Assistance is directed more and more to individuals and less and less to housing. Health and social services are being de-linked from housing. Instead, single entry systems are blending income security, health, social services and housing assistance for the individual.

These changes take advantage of political aspirations of contemporary society. As societies grow more affluent and educated, individuals want to be clients, not beneficiaries and they are willing to pay more for choice and customization. The additional revenue, whether in terms of taxes, user fees or personal expenditures relieves the burdens on the public purse.

This transformation takes time because it necessitates a mature social policy infrastructure. However, with political will and the support of society, the required steps will be taken, in Canada, as well as in other developed countries. The need to be competitive in both public and private spheres is a key incentive. The rewards are high national standards of living throughout the life of each citizen.

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**PART IV**  
**MEASURING AND MAXIMIZING**  
**PERSON-ENVIRONMENT FIT**

## *Chapter 9*

# DEVELOPMENT OF A FILMED MEASURE OF PERSON-ENVIRONMENT FIT FOR FRAIL OLDER ADULTS

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## INTRODUCTION

For several decades now, it has been widely recognized that housing concerns of the elderly transcend shelter. Recently, a growing area of interest among both researchers and policy makers has been the integration of services and housing, that is, the delivery of human services in combination with specially designed and/or affordable housing. Some of this attention stems from changes in social policy or government organization, such as a new (or renewed) emphasis on intersectoral collaboration between ministries of housing, health and social services. In some cases the interest is the result of community pressure for the local availability of this housing option. The study of the social-psychology of environmental behaviour motivates others who are interested in, for example, individual decision-making strategies surrounding utilization of home care or the undertaking of home modification. All of these approaches to ecology and aging must, at some level, react to the interrelationships between the physical, social, and psychological environments of the older person, and simultaneously, the behavioural consequences of these elements.

Over the last fifty years, a considerable literature has accumulated examining the interface of aging and environment. Adaptations made to the physical environment of older persons that compensate for declines in competence (e.g. addition of ramps, grab-bars) are recognized as necessary in order to maintain well-being and delay institutionalization. Limitations in sensory and cognitive ability magnify the importance of the environment in terms of such factors as colour, texture and light. Central to this work are the notions that as people age, their lives become more closely tied to their environment, and the person-environment transaction becomes more salient. To date, research into person-environment transactions has been dominated by phenomenological approaches (Carp & Carp, 1984). What appears to be missing is an objective measure that captures the dynamic nature of the interrelationship between the individual and his or her environment. This chapter reports on the development of such a measure, called the Filmed Measure of Person-

Environment Fit (FMPEF), which is based on the rating of filmed footage of frail older adults engaging in a set of tasks within their own home.

## THEORETICAL APPROACH

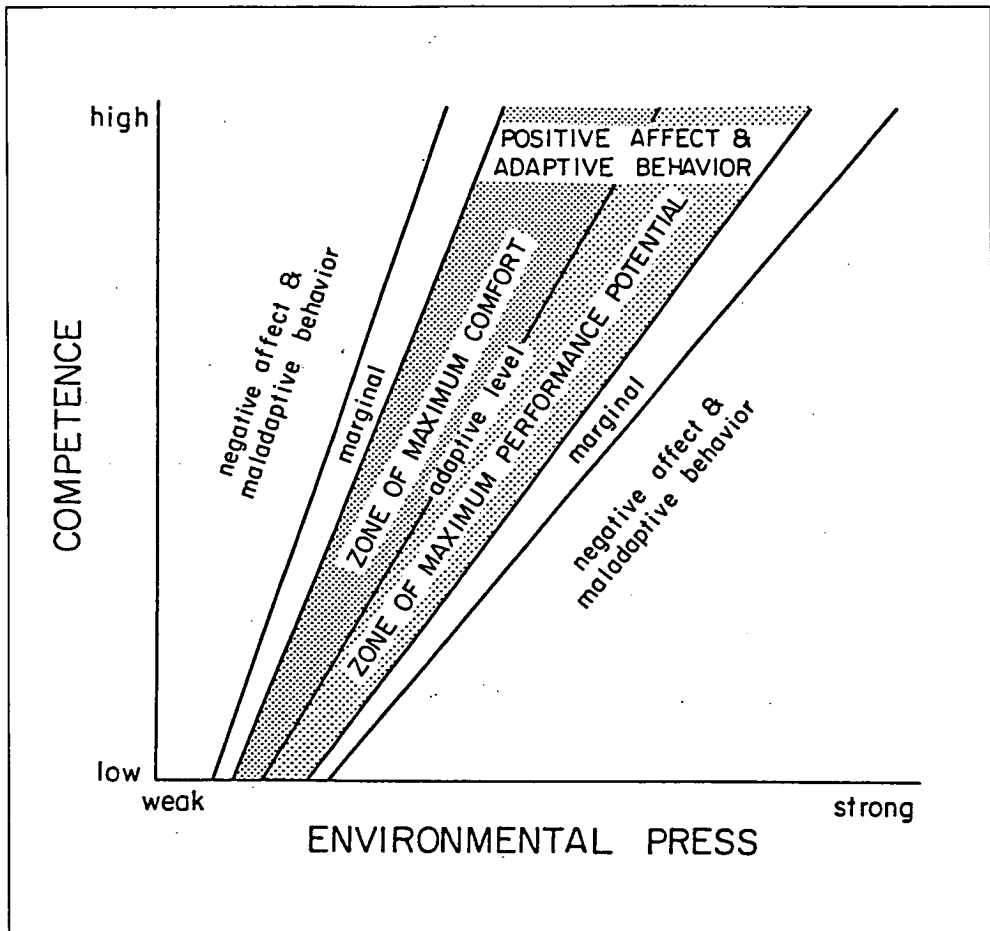
A series of theories have been developed that attempt to elucidate person-environment (P-E) transactions. The Ecological Model of Aging, introduced by Lawton and Nahemow (1973) has been the most influential of these. Others, such as Pastalan's (1972) Loss-Continuum Model, Kahana's (1975, 1982) Person-Environment Congruence Model, and Carp and Carp's (1984) Complementary Congruence Model are consistent with this theory.

Lawton and Nahemow's Ecological Model accounts for individual behaviour and well-being in terms of the degree of balance or fit between environmental press and the individual's ability to cope with those demands, termed competence (see Figure 1). Environmental press can originate from the physical or social surroundings and can range from positive to negative in its impact on the individual. It might involve the demands imposed by steep steps or the absence of social support or both. Competence, on the other hand, refers to the individual's ability to respond adaptively, which in turn is thought to depend on his or her physical health, sensory-motor, perceptual and cognitive functioning levels.

Several criticisms have been voiced against the Ecological Model. The principal complaints have been that it omits people's preferences, needs, perceptions, attitudes, knowledge and material and nonmaterial resources (Carp & Carp, 1984; Svensson, 1985). Furthermore, several researchers (e.g. Rowles & Ohta, 1983; Pollack & Newcomer, 1986) argue that the application of person-environment models to solve community service delivery and housing problems have been based on the assumption that there is an ideal environment given any set of individual attributes. This has shifted attention to the physical environment side of the person-environment relationship. Finally, in addition to functional ability, competency also includes an individual's risk-taking behaviour within the physical environment. This important component of competency is often overlooked in the person-environment transaction.

In response to these criticisms, the concepts of proactivity, reactivity, and individual resources have been incorporated into a revised Ecological Model of Aging (see Lawton, 1987a, 1987b, 1990). Regarding proactivity, Lawton (1987a, 1990) argues that the active, volitional contribution of the person needs to be acknowledged. Reactivity is a behavioural response to environmental press. The introduction of these concepts reflects an important shift in focus from manipulating the physical environment to better understanding individuals' roles in interpreting and shaping their environment. However, little is known about which subjective factors are important in affecting environmental proactivity and reactivity and to what extent these influence decisions to alter one's home environment. Moreover, there is a need for the objective measurement of competence, environment, and congruence between the two. Past research has tended to use crude indicators, such as the score on a particular ADL scale as an indicator of competence, and facility or housing type for environment. Problems in measurement have contributed to the fact that the Ecological Model as a whole has not been tested empirically (Carp & Carp, 1984; Wister, 1989).

**Figure 1**  
*Ecological Model of Aging*



Source: M. P. Lawton and L. Nahemow, 1973

With regard to the provision of services to the frail elderly, there is little known about the degree to which an individual's perception of person-environment fit is congruent with assessments made by professionals in the field. A significant separation between the two can have serious implications for the delivery of services. It is also important to ascertain at what point it is advisable to recommend changes to the physical environment (including assistive devices) and if there is a threshold in person-environment incongruence after which household accidents (falls, burns, etc.) are significantly more likely to occur.

One major impediment to filling the knowledge gap has been the lack of measurement instruments that enable accurate assessment of incongruence between an individual's competence and the demands imposed by the physical milieu. The rationale for using film for this purpose comes from other disciplines, such as anthropology and social-psychology, where it has been successfully used to study group behaviour. It is argued that film has several advantages over survey or observational techniques. In particular, film can capture detailed contextual information and segments of behaviour that can easily be overlooked in typical observational research. In addition, the researcher can review the footage multiple times. It is also possible to rate the data using different judges. This medium is well suited to the study of person-environment behaviour because it is not static. Also, this type of data can be analyzed using either qualitative or quantitative approaches or triangulation of both.

The FMPEF measure is not intended to replace comprehensive assessment instruments currently used in long-term care such as Lowe and Durrell's (1988) Geriatric Functional Score Scale, Klein and Bell's (1982) ADL scale, the IADL scale developed by Lawton and Brody (1969) or functional status measures used for assessing stroke patients (Granger, Sherwood and Greer, 1977). It also does not replace tools used to evaluate the environment such as Pynoos, Cohen, Lucas and Davis' (1988) Home Evaluation Checklist for the Elderly. Such scales are needed for clinical assessment and for specific research purposes, but in turn, do not meet the research needs of the present study.

## **DEVELOPING AND TESTING THE FMPEF**

As originally devised, the FMPEF included five task environments: kitchen, bedroom, bathroom, sitting room ("control centre"), and stairs. The respective tasks that subjects were asked to perform in each setting were: setting the table; transferring from the bed and making the bed; transferring from the bath or shower; transferring from a chair or couch; and negotiating a commonly used set of stairs. Respondents were only asked to engage in those tasks that they normally perform independently. The filming protocol for the FMPEF is summarized in Table 1.

### **Pilot Test**

A sample of 26 volunteers, recruited through the Home Care division of the Vancouver and Burnaby Health Departments, participated in a pilot study of the FMPEF. Each subject was interviewed prior to commencement of filming. The interview took approximately 30 minutes to complete and the filming about 22 minutes, on average.

*Table 1*  
*Person-Environment Fit Study Filming Protocol*

Ask the respondent if they wish to participate in this part of the study. **They should only do those tasks that they can do themselves.**

**Note:** First film the room without the subject. Second, film the relevant task for each location (see PROTOCOL below).

### **PROTOCOL FOR FILMING OF SPACE**

For all filming of the space, do the following:

1. Ask if you can open all cupboards and closet doors when filming.
2. Scan the floor slowly making sure to film all stairs, rugs, corners, and potential hazards. Look for loose cords and ask respondent to point out light switches.
3. Scan all furniture and appliances.
4. Scan walls and lighting fixtures.
5. Remember to move around the space and to get different angles.
6. Film **SLOWLY!**

Now film the relevant task for each space (see below).

### **TASK PERFORMANCE PROTOCOL**

#### **Task 1: Kitchen**

1. Find a position in the kitchen or adjacent space where you can film the action easily. Get the camera ready. Ask the respondent to place a pot on the counter or on the stove without heat.
2. Film this manoeuvre.
3. Then ask the respondent to set the kitchen table (or dining room if there is no kitchen table) for one person (plate, utensils, glass and tea cup).
4. Film this task.
5. Ask the respondent to show you how they clean their dishes (or load a dish washer) and film this task.

**Task 2: Bedroom**

1. Find a position in the bedroom where you can film the activity.
2. Ask the respondent to mess up their bed as if it were slept in and then lie on top of the covers.
3. Then ask the respondent to get out of bed and make it while you film.
4. Ask the subject to walk around the bed, if they usually do so on their own.
5. Then ask the respondent to sit on the side of the bed and stand without using their hands.
6. Film the respondent.

**Task 3: Bathroom**

1. Find a position in the bathroom or doorway where you can film.
2. Ask the respondent to go into the bathroom and show how they get in and out of the bath or shower with their clothes on (but without shoes or socks).
3. Film the respondent while they do this task.
4. Then ask the respondent to show you how they transfer on and off of the toilet.
5. Film this manoeuvre.

**Task 4: Sitting Room**

1. Ask the subject to show you the most frequently used sitting room.
2. Ask the respondent to sit in the chair or coach and then transfer out of the chair or couch.
3. Film the space first, then the transfer.

**Task 5: Using Stairs**

**Note:** If the entrance has no stairs, skip this section.

1. Ask the respondent to show you the most frequently used stairs in the home.
2. Find a good vantage point to film the respondent using the stairs, both up and down.



The interview was designed to provide information concerning: any home modifications that may have been implemented; participants' risk perception and possible denial of health limitations; health status and cognitive ability; living arrangement; income; and other socio-demographic characteristics.

The 26 participants' average age was 78; 19 (73%) were not married; 18 (69%) lived alone; and 17 (65%) lived in a multi-unit complex (apartment or condominium). All of the participants experienced some type of mobility restriction and all were receiving services through the B.C. Continuing Care Program or had done so in the months prior to the survey. With regard to functional status, 17 (65%) rated their strength as only fair or poor, 15 (58%) rated their mobility as fair or poor, 19 (73%) rated their balance as fair or poor, and one half rated their vision as fair or poor. The average number of medications consumed by the subjects was 3, and 6 of the 26 (23%) reported having had a fall in the three months prior to the survey. Together, these health status indicators suggest that the participants were frail.

### **The Film Rating Procedure**

Three judges, a physiotherapist, an occupational therapist, and a registered nurse, were recruited to view each subject's film and rate each subject on competence and his or her home on environmental press. The instructions provided to each rater were as follows:

You are being asked to scale two visual measures for a set of common tasks performed in five living spaces. The measures include: 1) competence; and 2) environmental press. The five tasks/environments include: 1) managing some kitchen tasks; 2) getting out of a bed and making it (bedroom); 3) bathing or showering and toilet transfer (bathroom); 4) transfer from a chair or couch; and 5) going up and down stairs.

Competence is the ability to perform the task effectively, taking into account how risky the behaviour is to the individual's safety. Competence can be perceived as ranging from poor to good.

Environmental press refers to the demands that an environment imposes on an individual, taking into account the design features. Environment can be viewed as ranging from weak to strong. Strong means that the environment is very demanding.

If there are no stairs, leave that section blank.

View each task environment, pause the film, then scale the press level for that environment (e.g. kitchen).

Then view the tasks performed in that environment, and scale these in terms of competence.

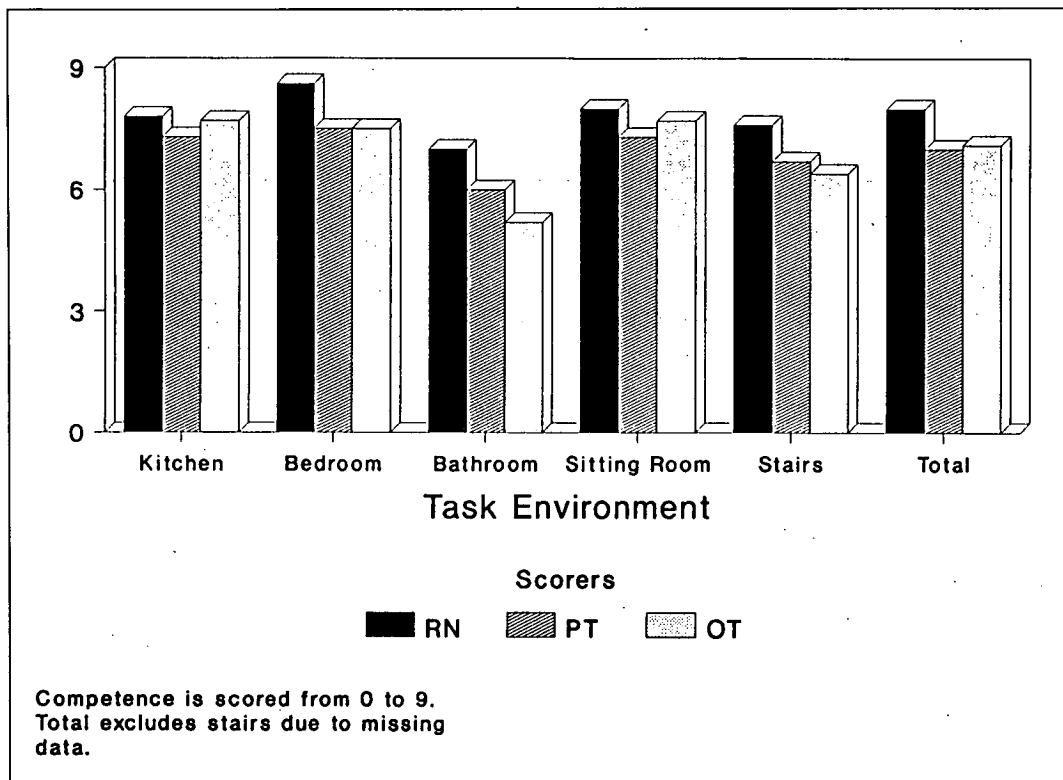
Use your experience (if relevant) to produce what you believe to be an accurate assessment of these concepts.

Both competence and press ratings were reflected on a 9-point scale, the former anchored with the terms “poor” and “good,” the latter with the terms “weak” and “strong.” P-E fit was calculated by subtracting the press score (0-9) from the competence score (0-9), resulting in a range from -9 to +9.

## FINDINGS

Figure 2 shows the average competence score for each task environment separately for each of the three judges. Analysis of the FMPEF ratings indicates that, overall, the competence scores are high (range = 5 to 8 on the 9 point scale). As expected, competence within the bathroom tended to be scored the lowest. As can also be seen, the nurse tended to give slightly higher competence scores than the other two judges.

*Figure 2*  
*Means for Competence Scoring*



The mean press scores were lower than for competence, ranging between 1.5 and 5 on the 9-point scale (see Figure 3). Press scores were highest for the stairs and bathroom and lowest for the bedroom. In all five settings, the nurse perceived substantially lower levels of press than the occupational therapist and the physiotherapist.

**Figure 3**  
*Means for Press Scoring*

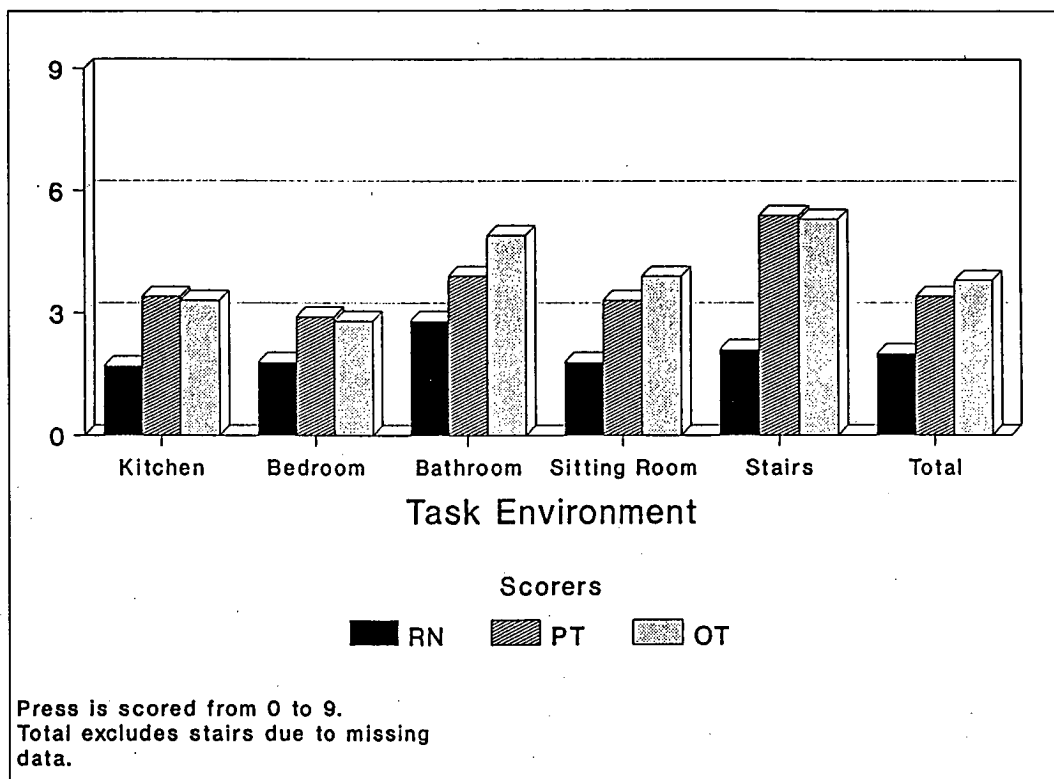


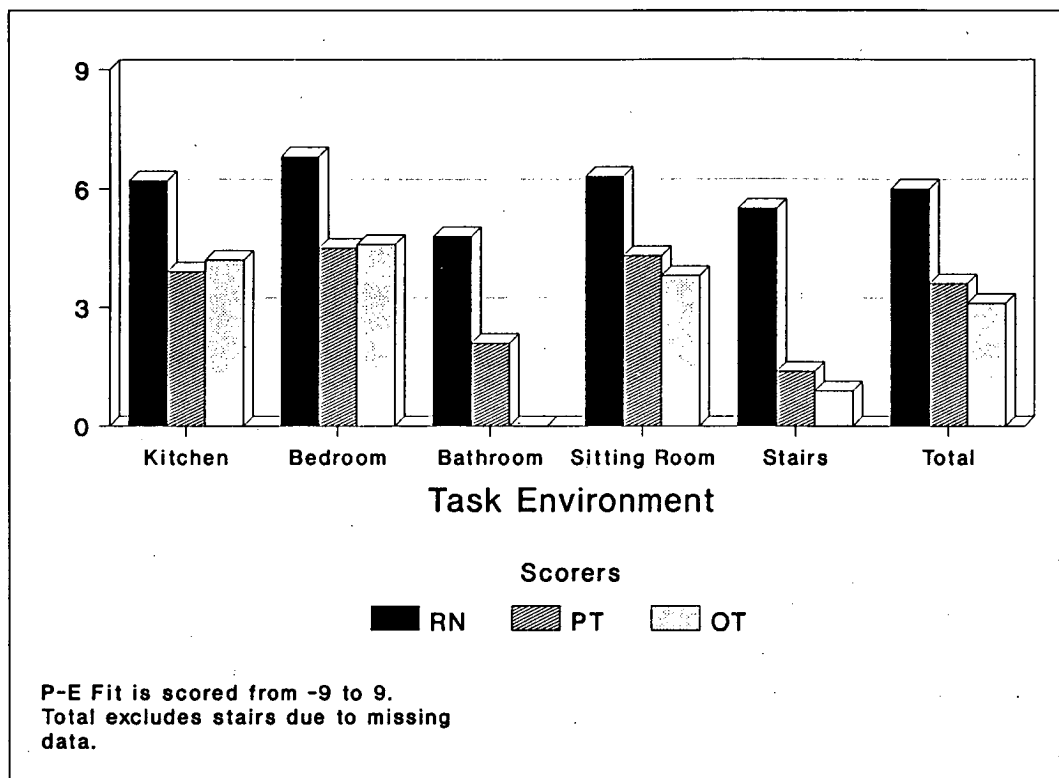
Figure 4 shows overall P-E fit scores. These scores ranged between 0 and 7. While the interjudge reliabilities for the overall P-E fit measure were 0.8, 0.6 and 0.6, the most striking finding is that the overall P-E scores for the nurse were considerably higher than for the other two judges and tended not to discriminate between the task environments. Also, lower P-E fit scores were found for the bathroom and stair task environments than for the other three environments.

## DISCUSSION

This chapter outlines the development and pilot testing of a measure, entitled the Filmed Measure of Person-Environment Fit (FMPEF), that is designed to capture the transaction between an individual's competence and the demands imposed by the environment. The conceptualization of the measure is based on a critical review of models within the environment and aging literature, in particular, Lawton and Nehemow's (1973) Ecological Model of Aging. By environment, we mean both the physical and social milieu.

From an applied perspective, it is argued that a visual medium provides rich information

**Figure 4**  
*Means for P-E Fit Score*



that can be used for both qualitative and quantitative analyses. The main purpose of the pilot study was to fine-tune the filming protocol and the scaling methodology. The pilot study also produced some intriguing results that suggest further work.

First, the competence and overall P-E fit scores were relatively high given that the sample was comprised of individuals of advanced age (mean age = 78) who had moderate to severe mobility restrictions. This result may be partly explained by the fact that the sample included only seniors who were clients of the B.C. Continuing Care Program. Many of these seniors have had frequent visits from professionals, have access to assistive technology, and have had various design alterations made to their homes. To ascertain the extent to which the data are normative, the study would need to be replicated on a larger and more diverse sample of seniors (i.e. including persons both who are and some who are not Continuing Care clients).

Second, it is interesting that the nurse consistently perceived subjects as having higher competence and as being exposed to less demanding environments than the other two judges one of whom was a physiotherapist and the other, an occupational therapist. Since all three judges had significant experience making functional assessments for Continuing Care, it is

assumed that the difference is likely due to different discipline-based models of disability and care. Investigation into differences in the judges' perceptions based on training and experience will be examined in a subsequent study.

Finally, the "debriefing" interviews with the judges regarding their cognitive processes in the scaling process provided several suggestions for revision to the filming protocol and the scaling instructions (see next section).

### **Revisions to the FMPEF**

Based on the pilot study, the FMPEF protocol has been reduced from five to four task environments: 1) the kitchen; 2) the main bathroom; 3) the respondent's bedroom; and 4) a stairway inside the dwelling or used as an emergency exit. It was apparent from the pilot study that little unique information on competence was gained from the sitting room films. The set of tasks for each environment have, on the other hand, been extended based on interviews with the judges. In particular, reaching high cupboards and transfer of a filled kettle to a stove have been added to the kitchen activities. Also, future subjects will be asked to pick up an article of clothing from the bedroom floor.

Further, a decision was made to film the environment *before* activities are performed in it so that rating of environmental press is not contaminated by perceptions of the older person's competence. This may increase the congruency between assessments of press made by the judges. Another revision was to add written examples of low and high (0 and 9) levels of competence and press that can be used by the judges as hypothetical ranges.

### **Proposed Future Studies**

The revised measure will be used in three interlocking studies. In the first proposed study, a condensed version of the visual (FMPEF) data collected in the pilot study will be rated by a sample of 50 physio-therapists, 50 occupational therapists, and 50 registered nurses working or being trained to work in continuing care. The objective will be to establish the reliability of the FMPEF within groups and across disciplines.

The second study will extend the pilot study to include data from 300 frail seniors living in the community, 50% of whom are and 50% of whom are not receiving service from Continuing Care. Information will be gathered using the revised FMPEF measure and the piloted questionnaire containing self-report measures of P-E fit, several health status indicators, social and family resources (support), recent adaptations made to the home, measures of social-psychological adaptations to environmental press, risk perception, income and a set of socio-demographic variables. Comparisons will be made between the standardized FMPEF measures and the perceptions of P-E fit expressed by the sample of older persons. The P-E measures, or their component parts (e.g. competence or press), will then be used in an analysis of the interrelationships of physical alterations to the home, social, and psychological processes of adaptation.

In the third study, scores on the FMPEF will be correlated with the incidence, over a one year period, of: household accidents (e.g. falls, burns, dropping heavy objects); changes in level and/or location of care (e.g. from Personal to Intermediate Care I; from home into a long term care facility); changes in daily activities, and changes in household adaptations. The purpose of this study will be to establish the predictive validity of the FMPEF and to examine its relationship to several important outcome variables.

### **Implications for the Shelter-Service Interface**

Results from the development and testing of the FMPEF suggest that this instrument may provide important information for understanding the relationship between shelter and service needs of seniors. Assuming that the measure supports the principal hypotheses in the literature, such as the Environmental Docility Hypothesis (Lawton and Nehemow, 1973), the FMPEF instrument could be used to identify a need for rebalancing competence and environmental press. This may involve the use of assistive technology (e.g. a walker) or modifications to the home (e.g. adding grab bars, railings). Another equally important domain is a person's knowledge and proper use of assistive technology or home design features. The filmed data provided explicit information on various ways in which frail elders misuse their environment. For example, it was not uncommon to see an individual transfer from the bathtub using the soap dish for support instead of a grab bar or, to use the grab bar incorrectly. Perhaps poor cognitive ability, the absence of knowledge of proper use of assistive technology, poor environmental design or some combination of all three factors are the cause. In any event, these data suggest a potential need for education of frail community-dwelling seniors in such activities of daily living as bathtub transfer. Clips from the FMPEF could certainly enhance the impact of any educational programming that were to be developed.

Merging the FMPEF measure with the broader conceptualization of environmental adaptation that covers physical, social and psychological components, results in several key questions. First, to what extent do human services or informal social support substitute or compliment adaptations made to the physical dwelling? Second, how do psychological forms of adaptation, for example, denial, perceptions of limited remaining life, or risk behaviour, interact with physical and social forms of adaptation?

Finally, the filmed data provide rich information on the ways in which seniors with a given level of functional and cognitive competence interact with their physical environment. These data can be used in longitudinal studies to track the progression of a particular disease process (e.g. document changes in competence and press in Alzheimer's or Parkinson's Disease). They also can be used to train professionals and used as health promotion vehicles for seniors. With respect to education, one can easily imagine using filmed information to show both proper and risky interactions with various environmental elements.

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## Chapter 10

# ASSESSING THE CLIENT'S PERCEPTION OF PERSON-ENVIRONMENT FIT USING THE CANADIAN OCCUPATIONAL PERFORMANCE MEASURE

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## INTRODUCTION

Each human being has the potential and right to achieve a personal harmony among the life tasks of work, leisure and self care within a supportive environment. This philosophy, subsumed under the rubric of Occupational Performance, is fundamental to the practice of occupational therapy and provides a rationale for both assessment and intervention.

The focus of occupational therapy is prevention or reduction of incapacity and activation of residual adaptive strengths enabling clients to carry out the daily activities required by their social roles and environment. Occupational therapists promote health by enhancing clients' skills, competence and satisfaction with daily occupations so that there is a balance between the skills and the challenges of activities within a supportive, non-threatening environment. Therapists need to determine the effect of the environment on clients' abilities and performance in order to provide the *just right challenge* to enable clients to meet their own occupational needs.

One of the preoccupations of an assessment of occupational performance is the relationship between the physical, social and cultural environments and human occupational performance: the person-environment fit. This chapter will describe one measure of person-environment fit, the Canadian Occupational Performance Measure (COPM) (Law, Baptiste, Carswell-Opzoomer, McColl, Polatajko & Pollock, 1991). The COPM is based upon the model of occupational performance expressed in the *Guidelines for Client Centred Practice of Occupational Therapy* (Department of National Health and Welfare & Canadian Association of Occupational Therapists, 1983) and adapted from the work of Reed and Sanderson (1983).

## HWC/CAOT MODEL OF OCCUPATIONAL PERFORMANCE

As shown in Figure 1, the model of occupational performance included in the HWC/CAOT guidelines places the client in the centre of interacting spheres which implies active participation by the individual in her/his own health. A *balanced life* is defined as having adequate performance in three occupational performance areas (middle sphere): *self-care* including personal care, functional mobility and community management; *productivity* including paid or unpaid work, household management and handyman work; and *leisure* including recreation and socialization. Satisfactory performance in each of the three areas is dependent upon the integration of physical, mental, spiritual and socio-cultural performance components (inner sphere) and is influenced by the clients' roles and the social, physical and cultural environment in which they live. The harmonious integration of these four components defines health and a sense of well-being. Clients integrate the components through engaging with the social, cultural and physical environments which they affect and by which they are affected (outer sphere).

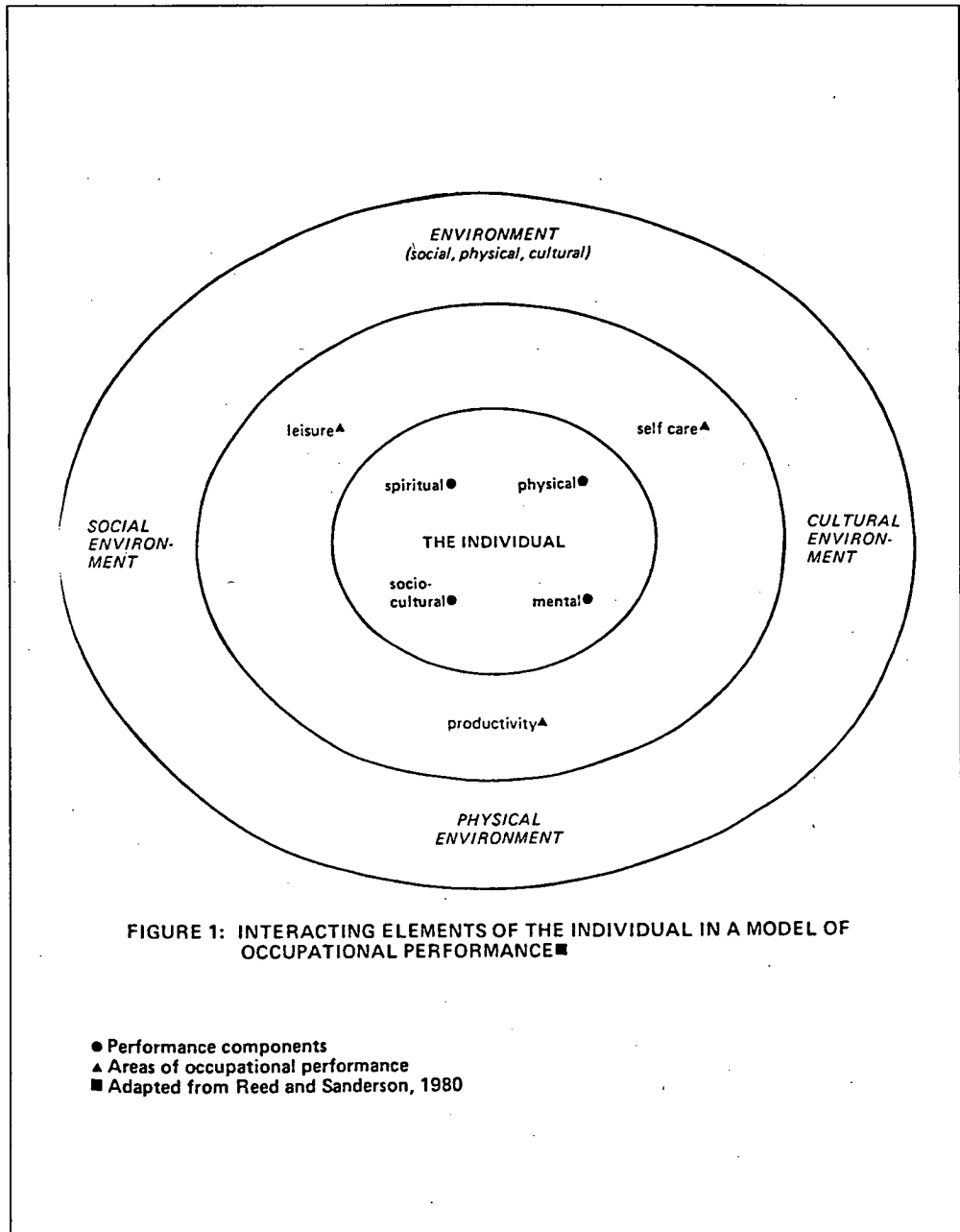
For each elderly client there is a unique occupational performance that depends on his/her physical, social and cultural environments, stage of development, social roles, personal satisfaction with performance, and motivation. Therefore, a comprehensive assessment should measure person-environment fit across a variety of environments, recognizing that they may include a community, an institution, a home, a family, a job or a social event.

Pollack, Baptiste, Law, McColl, Opzoomer and Polatajko (1990) reviewed 54 instruments cited in the literature that assess occupational performance. Of the 41 that were accessible for evaluation, only eight met most of the criteria based on the Occupational Performance Model. These included the:

- Occupational Performance History Interview (Kielhofner & Henry, 1988)
- Functional Status Questionnaire (Jette et al., 1986)
- Sickness Impact Model (Gilson et al., 1975)
- Reintegration to Normal Living Index (Wood-Dauphinee et al., 1988)
- Satisfaction with Performance Scaled Questionnaire (Yerxa et al., 1988)
- National Institutes of Health Activity Record (NIH, 1985)
- MACTAR Patient Preference Disability Questionnaire (Tugwell et al., 1987)
- Activity Pattern Indicators (Diller et al., 1983).

Overall, the review indicated that each measure had limitations. It was concluded that there was a need for a valid and reliable instrument that captured the total sphere of occupational performance for the client, as well as assessing the environment in a comprehensive fashion. This is the approach taken in the COPM (Law, Baptiste, McColl, Opzoomer, Polatajko & Pollock, 1990), described in detail in the next section.

**Figure 1**  
*Interacting Elements of the Individual in a Model of Occupational Performance*



**FIGURE 1: INTERACTING ELEMENTS OF THE INDIVIDUAL IN A MODEL OF OCCUPATIONAL PERFORMANCE ■**

- Performance components
- ▲ Areas of occupational performance
- Adapted from Reed and Sanderson, 1980

Source: Department of Health and Welfare and the Canadian Association of Occupational Therapists (1983)

## THE CANADIAN OCCUPATIONAL PERFORMANCE MEASURE

The COPM is a client-centred outcome measure that focuses upon the client's performance in self-care, work and leisure while taking into consideration his or her environment, developmental stage, life role, role expectations and motivation in formulating therapeutic goals and measuring change over the course of an intervention. The measure is not diagnostic. Rather, it uses the World Health Organization (1980) disability classification. It also is not age specific.

The COPM enables the client to identify and deal with relevant life-span and environmental issues. It engages clients, from the start of the occupational therapy experience, in identifying tasks or activities which are important to them, describing their ability to perform the tasks/activities and their satisfaction with their performance. If clients are unable to answer on their own behalf, there is sufficient flexibility to allow input from caregivers. The COPM may also be used to measure the outcome of different objectives of intervention.

The measure is an individualized, semi-structured interview administered in five steps. The steps are 1) problem definition, 2) problem weighting, 3) scoring, 4) re-assessment and 5) follow-up. Each of these steps is described below.

### 1. Problem Definition

Using interviewing skills the occupational therapist asks clients to identify issues that affect their ability to perform self-care, leisure or work tasks or activities. As shown in Figure 2, they are asked whether they "need to, want to or are expected to" perform the identified task or activity. It is essential that the client defines only those tasks/activities relevant for her/him. For example, an adolescent boy may not see a need for or want to clean his room, however there are family expectations that he does clean it.

If the client does not feel that she/he has a problem with daily activities in one area of occupational performance (e.g. self-care), the next area is examined (i.e. productivity). Once the client has identified that there is a problem, then the interviewer addresses the issue of performance. The client is asked whether she/he "can perform, does perform and is satisfied with" the manner in which she/he performs the activity. If the client responds with a "no" to any of those three questions, then the environmental barriers are further examined.

White (cited in Christiansen & Baum, 1990) suggests that person-environment fit is being able to interact with the environment while maintaining individuality, growth and a sense of competence. Therefore, when clients identify tasks with which they feel incompetent, person-environment fit is compromised. With facilitation from the interviewer, the client can specifically define her/his precise cultural, physical or social environmental issues.

### 2. Problem Weighting

Once specific problems have been defined, clients rate each problem as to its importance in their life at that moment. The importance scale is a ten point scale ranging from *not*

*Figure 2*  
*Canadian Occupational Performance Measure*

**STEP 1: PROBLEM DEFINITION**

To identify occupational performance problems interview the consumer using these questions as guidelines (i.e. self-care, productivity and leisure).

- a) Do you need to .....
- b) Do you want to .....
- c) Are you expected to .....

If **YES** to either a, b, or c:

- d) Can you do .....
- e) Do you do .....
- f) Are you satisfied with the way you do. ....

And **NO** to either d, e, or f:

Then go on to identify specific problems

If **NO** to a, b, or c, or **YES** to d, e, or f then proceed to the next area

**STEP 1a: SELF-CARE Personal Care**

- Functional mobility
- Community management

**STEP 1b: PRODUCTIVITY**

- Paid/Unpaid work
- Household management
- Play/School

**STEP 1c: LEISURE**

- Quiet Recreation
- Active Recreation
- Socialization

**Figure 3**  
*Canadian Occupational Performance Measure*

**STEP 3: SCORING**

Ask the client to choose their 5 most important problems and record them below. Using the scoring cards, have the client rate each problem on performance and satisfaction, then calculate the weighted scores.

<b>PROBLEMS:</b>	imp	perf	sat	imp $\times$ perf	imp $\times$ sat
can't bath (seat)	9	3	1	27	9
can't get out (four stairs)	8	5	4	40	32
social isolation	10	3	1	30	10
meals (too tired)	6	5	5	30	30

**TOTALS:** total imp $\times$ perf/# problems =  $127/4 = 31.75$

total imp $\times$ sat/# problems =  $81/4 = 20.25$

imp = importance

perf = performance

sat = satisfaction

*important at all to extremely important.* The data are generated by the clients. There is no limit to the number or types of problems clients may identify as long as they relate to occupational performance.

Clients then select no more than five problems from the list of rated problems. They are asked to choose those that they perceive to be the most pressing or the most relevant to them at this time. This process results in up to five importance ratings, based upon the client's perception of the importance of each problem. Each importance rating becomes a weighting factor throughout the rest of the scoring process.

### 3. Scoring

Clients complete a subjective assessment of both their current performance in each problem area and their satisfaction with that performance. Clients rate their current performance on a ten point scale from "not being able to do it" to "able to do it extremely well". They rate their satisfaction with their performance also on a ten point scale from "not satisfied" to "extremely satisfied". The importance scores are used to weight the clients' perception of their current performance and their satisfaction with that performance. This is done by multiplying each performance and satisfaction score by the relevant importance score (See Figure 3). Two total scores are calculated by adding the weighted scores and dividing the sum by the number of problems.

As the COPM is geared to the individual client, there are no normative data to help in interpreting the score. The scores are sensitive to change over time in each client's performance and satisfaction.

### 4. Re-evaluation

This depends upon the progress of the client and the clinical judgement of the occupational therapist. Often a contract between the therapist and client defining the re-evaluation date is developed at the initial evaluation. Clients reassess the same problems according to performance and satisfaction (the importance rating does not change). New scores are calculated by multiplying the new performance and satisfaction ratings by the original importance rating. Change in performance and satisfaction are calculated by subtracting Time One values from Time Two values.

### 5. Follow-up

Together with the occupational therapist, the client plans for continuation of intervention, follow-up or discharge. The client determines whether there are problems remaining from the original list or identifies new problems and rates them according to importance, performance and satisfaction.

## CURRENT STATUS OF THE COPM

As a first step towards establishing the viability and usefulness of the COPM, it was administered to 125 clients in 55 clinical practice sites across Canada, and the therapists in these sites were surveyed. Clients for whom forms were complete (n=108) had a mean age of 51 years (range 2-85 years). Of these, 54% identified a personal care disability, 55% had a locomotor disability, 35% a dexterity disability and 34% a situation-specific environmentally related disability (these categories are not mutually exclusive). The mean number of problems was 4. The average initial performance score was 33.6 and the average satisfaction score was 30.0. Upon reassessment, the average performance score was 60.8 and the average satisfaction score was 57.5 giving overall change scores of + 26.1 and + 31.6. In the aggregate this suggests that the measure is sensitive to change. The data are being analyzed further to determine the relationship between disability and change scores, number of problems and the types of problems.

Of the 55 sites that responded to the survey the majority (34%) were general hospitals providing in-patient care (28%) although chronic care facilities (10%), children's hospitals (8%), rehabilitation centres (12%) and community agencies (34%) were also represented. The two most frequently reporting practice areas were geriatrics (33%) and adult physical medicine (35%).

The therapists reported that the measure was easy to administer and that the clients tolerated the process well. They stated that the format and rating scales were clear and they confirmed that through the COPM process the client's true priorities for intervention became very clear. Some of the therapists were surprised with the clients ability to define what was important to them and what was not. It was also reported that the COPM is not appropriate for all clients, particularly those with no insight.

This study supports the validity of the COPM as an individualized, generic, outcome measure of occupational performance. It was used successfully with all age groups of clients with a number of different disabilities in distinctly different clinical settings. At present there are a number of studies being undertaken to look at the reliability and validity of the measure in the elderly in long term care, in home care clients and in children with a developmental disability.

## CONCLUSION

Person-environment fit can be viewed as requiring three adaptive processes: understanding one's environment, knowing the options for performance and being able to perform the appropriate task or activity. It changes with age and ability (Christiansen & Baum, 1991). People move into and out of social and physical settings throughout a lifetime, which are determined by availability, choice, and the ability to interact with or adapt to the environment. Thus, a measure that considers the environment, identifies performance issues and is adaptable to age and disability is a clinically useful measure.

It has been observed that if the stakeholder has a vested interest in an outcome there



is an increased likelihood that change will occur (Lord & McKillop Farlow, 1990). A measure that relies on the client to identify her/his problem with occupational performance, categorize her/his ability to perform the activity and label that performance according to her/his satisfaction is empowering. It provides the client the right to realise her/his "full health potential through a safe....environment, adequate income, housing, food and education, and a valued role to play in family, work and the community" (Premier's Council on Health Strategy, 1991, p.1).

A number of criteria influenced the development of the COPM among which were that it encompassed a model of occupational performance; that it focused on the client's environment to ensure the relevance of the problems to the client; that it engaged the client in the evaluation process; and that it supported the notion that clients are responsible for their health and their therapeutic process. The COPM meets these criteria. It is deemed a clinically useful tool which empowers clients to identify their individual person-environment fit. Future research will establish its psychometric properties.

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**PART V**  
**ENABLING TECHNOLOGIES IN**  
**HOUSING FOR SENIORS**

## Chapter 11

# PERSONAL EMERGENCY RESPONSE SYSTEMS: CANADIAN DATA ON SUBSCRIBERS AND ALARMS

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### INTRODUCTION

The invention of Emergency Medical Alert Systems, also known as Personal Emergency Response Systems (PERS), is credited to Andrew Dibner, who more than 20 years ago made an innovative link between the fall event, the senior who lives alone, and the potential to provide help by using telephone and other electronic technology (Dibner, 1981). Previous to PERS, "pull cord" or "call button" technology existed in care institutions and purpose-built seniors housing to allow residents to contact authorities when they were experiencing an emergency, in most cases a fall or a serious medical emergency. The limitation of such technology was that the resident had to experience their emergency within reach of the pull cord, which usually was located in their bedroom or bathroom. With improvements in telephone technology, as well as remote electronic technology, significant progress has been made toward increasing the portability and general quality of PERS.

For many frail older adults, falls and other home accidents are a key threat to maintaining an independent lifestyle (Nevitt, Cummings, Kid, & Black, 1989; Tideiksaar, 1989; Tinetti, Speechley & Ginter, 1988; Watzke & Kemp, 1992). PERS are one form of support that, at least in principle, can enable older adults to remain in the community longer. This chapter begins with a description of the technical and non-technical components of PERS. A review of the limited research literature describing the common delivery models of PERS, PERS hardware efficiency, PERS users, the impact of PERS on their lives and on utilization of other services is then presented. This is followed by data derived from a sample of Canadian subscribers of one PERS company (LIFECALL of Canada) over the 12 month period August 1, 1992 to July 31, 1993. Information is presented concerning their sociodemographic and health characteristics. As well, the number and nature of *real* and *false* alarms that occurred

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\*The author would like to acknowledge and thank Doug Talling, who performed all the data management and analyses for this chapter.

during this time period and the reasons for subscription cancellation are described. The chapter concludes with a discussion of the findings in terms of their comparability to previous PERS findings as well as implications for the future of PERS in the continuum of housing and health service provision.

## TECHNICAL COMPONENTS OF PERS

In the United States today there are over 30 separate companies providing PERS while in Canada there are about 10 (AARP, 1992; CMHC, 1988). The total number of persons using the technology in North America is estimated to be 450,000 (AARP, 1992). It should be noted that the present work focuses only on PERS that offer hardware and "live" monitoring services, as opposed to systems that might only offer an autodial function in an otherwise standard telephone.

The basic elements of most systems include:

**A portable help button**, which is worn by the subscriber and is pushed in an emergency event, such as a fall. Some buttons are waterproof and most contain long-term batteries. The help button transmits a signal to a help console.

**A help console**, which receives signals from the portable help button, and is integrated with the telephone to automatically contact an emergency response centre. Although not the case early on, today many manufacturers have help consoles that contain speaker phone technology and allow "voice to voice monitoring", i.e. where the subscriber can talk to a live voice in an emergency, even if they are not able to reach the telephone. Key features distinguishing between help consoles are their transmitting and receiving ranges in the subscriber's home; whether or not they have an "inactivity timer" and their battery backup capabilities. In addition, some help console models are now capable of receiving signals from other electronic devices such as smoke alarms and home security hardware.

**An emergency response centre**, which is either local or nationally based. The response centre is the "brain" of the system. It is there that subscribers' emergencies are first monitored and responded to. National monitoring stations are usually staffed and operated by a PERS manufacturer whereas most local response centres are staffed and operated by a local hospital, senior centre, or any number of non-profit community organizations.

Key questions pertaining to response centres concern: their backup capabilities (e.g., what happens in an electrical storm?); the training and tasks required of monitoring centre personnel; the quality of the response protocol when an alarm is received (e.g., if there is a true emergency, how long will it take response centre staff to perceive the event accurately and contact the proper authorities?); the quantity and quality of customer services beyond the actual alarm situation (e.g., do response centre personnel make unsolicited "social" phone calls to subscribers?).

## NON-TECHNICAL COMPONENTS OF PERS

In addition to the equipment and technical components, there are other non-technical ingredients relevant to PERS. These include:

**Subscribers:** The typical subscriber in the United States is a female, aged approximately 75, who lives alone, and most likely has multiple chronic disabilities, especially cardio-vascular and musculo-skeletal problems (Stafford & Dibner, 1984). Detail on subscribers' characteristics appears in later sections of this chapter.

**Responders:** Many PERS ask the subscriber to designate three persons to be contacted in the event of an emergency. Typically, such responders are relatives, neighbours, friends, or health professionals. Responders often have a key to the subscriber's home.

**Costs:** The two major costs for a PERS are for the help console and the monthly monitoring fee. Currently in Canada, the purchase price of a help console ranges from \$350 - \$1000. Unsubsidized monitoring fees in Canada currently range from \$20 to \$35 a month.

## PERS DELIVERY MODELS

In a special issue of the *International Journal of Technology and Aging* (Dibner, 1991), authors from 12 countries shared their PERS experiences. These papers are based on presentations made at the First International Symposium on Emergency Response Services, which took place in Washington, D.C. in May, 1990. As might be expected, the delivery of PERS varies from country to country, depending on the socio-political structure of each. In countries with higher government involvement in welfare and health service provision (e.g., Sweden, Denmark, and the U.K.), government funding for PERS has been available, administered at either the local or regional level. Several countries also feature subsidies (supplied by government, charitable, or non-profit organizations) whereby users pay only a portion of the costs of the PERS service. In the U.S. and Canada, government sponsorship of PERS has been minimal and private pay arrangements have been the norm. North America also is distinguished by the high proportion of PERS programs that are distributed by hospitals. Although many countries suggest that subsidies to PERS are on the decline (Dibner, 1991), in the U.S. and Canada there appears to be increasing pressure to have PERS included in Medicaid and other community support service programs. Interestingly, PERS provision has been tied more to housing than to health authorities (Dibner, 1991).

For the most part, the type of PERS available and the methods of provision in Canada have mirrored those in the U.S. (AARP, 1992; CMHC, 1988; Glendenning, Morrow & Forbes, 1992). In Canada, to date, there has been only one substantial government-sponsored PERS program: The Seniors Emergency Medical Alert Program (SEMAP) of Alberta. Under the Alberta PERS program, eligibility standards were established both for vendors and subscribers. Only PERS vendors providing a 24-hour monitoring service could participate in the program. Seniors with a household income of \$25,000 or less were eligible for a \$700 grant towards the purchase of a help console. The grant may not be applied towards monitoring costs and the PERS must be purchased from a list of eligible providers. To date,

it is estimated that the SEMAP program has provided grants to 5300 Alberta seniors. A comprehensive longitudinal study of SEMAP subscribers is in progress and is reported in detail elsewhere (see Watzke, Wister & Gutman, 1993).

Recently, "rental" programs have evolved where for a single monthly fee the subscriber receives both the PERS hardware and the monitoring service (LIFECALL of Canada, personal communication). However, it is too early to tell if such a distribution strategy will be effective in increasing the number of subscribers.

## **HARDWARE EFFICIENCY**

The American Association of Retired Persons (AARP, 1992) has published a Product Report of PERS. The AARP report was based on: (1) "human factors" studies of PERS equipment supplied by 20 U.S. manufacturers (e.g., testing the transmission of the help buttons, measuring the sound of the help consoles, and clocking the time between sending an alert and receiving a callback from a monitoring centre); 2) information from approximately 2,000 PERS users who responded to an advertisement in the AARP Newsletter asking readers to write in and share their PERS experiences; and 3) a telephone survey of 600 of the above respondents.

The AARP report, which is intended to be a "consumer awareness" publication, concluded that the majority of the equipment functions reliably. For example, of the 20 manufacturers' help buttons that claimed to be waterproof or water-resistant, all but two passed a test which consisted of submerging buttons in water or placing them in a steamy environment. The two failed buttons did activate the help console upon a second push (AARP, 1992). Performance tests were also conducted upon 20 help consoles with regard to their receiving range and back-up battery capabilities. (For a detailed description of these tests see AARP, 1992, p. 6-9).

## **RESPONSE CENTRE EFFICACY**

The AARP study also examined the performance of emergency response centres. The primary test required selected users to activate their alarms and response centres to call back the researchers (all response centres were informed that such a test was taking place). The "callback" time (simulating a real alarm) was measured for 113 callbacks from 20 different response centres. Callback times ranged from 1.5 to almost 13 minutes, with 60% less than four minutes (AARP, 1992). The tests also showed that national monitoring stations made quicker callbacks than local stations (75% of national vs. 40% of local station callbacks were executed in under four minutes). However, the validity of these results might be questioned, since asking response centres to call the research centre is not standard protocol, i.e., response centres usually call designated contacts, or other local emergency numbers. The AARP (1992) report recommends that PERS hardware and services be tested in subscribers' homes to ensure their functional capability. It should be noted, however, that "of the 2,000 people writing to AARP in 1991, fewer than 5% had negative comments about their PERS. Most of these comments were related to sales practices, not malfunctioning of equipment" (AARP 1992, p.11).

## SUBSCRIBER DEMOGRAPHICS

Several authors have reported on the characteristics of PERS users. However, there are many variations in the amount and nature of the demographic information presented. The most thorough demographic analysis of PERS users was conducted by Stafford and Dibner (1984) who sampled 9,262 LIFELINE subscribers.

Various reports indicate that between 85% and 95% of PERS users are over age 60 (Herman, 1991; Rodriguez, 1991; Schantz, 1991; Stafford and Dibner, 1984; Vlaskamp, 1991). Stafford and Dibner (1984) report an average subscriber age of 76. Younger users (under 60 years), who are often severely disabled, are reported to comprise 5% to 15% of subscriber samples (Rodriguez, 1991; Stafford and Dibner, 1984; Vlaskamp, 1991).

The reported proportion of female PERS users is very high, ranging from 75% to 87% (Breen, 1991; Herman, 1991; Rodriguez, 1991; Schantz, 1991; Stafford and Dibner, 1984; Vlaskamp, 1991). As expected, a high proportion of users (ranging from 70% to 84%) live alone (Rodriguez, 1991; Stafford and Dibner, 1984; Vlaskamp, 1991). However, one study from New Zealand reports a much lower percentage (54%) of PERS users living alone (Herman, 1991).

Only limited, and conflicting information is available on subscribers' housing type. Stafford and Dibner (1984) report that 71% of the PERS users in their U. S. sample lived in their own single detached homes. Rodriguez (1991), in a Canadian sample, found that 70% of users were living in seniors housing and care homes. A U.K. study estimated that 55% of PERS users were living in "sheltered housing and grouped dwelling schemes for elderly people" (Fisk, 1991, p.37).

A few investigators have offered detailed information on the disabilities of PERS users. Stafford & Dibner (1984) report, as expected, that many (66%) had multiple disabilities (30% with three or more). The most commonly reported disabilities were: cardiovascular (57% of users); musculo-skeletal or mobility (31%); and rheumatoid (22%). Further, between 12% and 16% of users reported neurological, metabolic, visual, auditory, and/or pulmonary conditions. In a Danish PERS sample, Leeson (1991) reported a similar disability profile, the notable exception being a lower rate of cardiac and circulatory diseases (30%).

## ALARM DATA

It is well established that the vast majority of alarm signals transmitted by PERS users are *not* actual emergencies (Stafford & Dibner, 1984). The reported range of *real alarms* is from 6% to 10% of all alarms, the balance being *false alarms* (Herman, 1991; Rodriguez, 1991; Schantz, 1991; Stafford & Dibner, 1984). Reported average total annual alarm rates per subscriber (real plus false alarms) range widely, from 0.50 to 9.48 per person (Cahn, 1991; Dibner, Lowy, & Morris, 1982; Stafford & Dibner, 1984). However, the variability of average annual *real* alarms per subscriber is much less, ranging from 0.44 to 0.84 per person (Cahn, 1991; Dibner, Lowy, & Morris, 1982; Sherwood & Morris, 1980; Stafford & Dibner, 1984). Further, Stafford and Dibner (1984) report that 78% of subscribers



experienced no emergencies during their entire time on the system (a 10 month average tenure) and that men had significantly more emergencies than women.

It has also been established that most real emergencies (90%) are medically-related (Cahn, 1991). In a U.K. study, Tinker (1991) reported that 46% of real alarms were related to heart attacks, stroke, a collapse, or a sudden illness and 39% involved a fall. In studies conducted in the U.S. by Stafford and Dibner (1984) and Gatz et al. (1984) falls accounted for approximately half of the real alarms; the next largest category was cardiovascular events (18%).

Stafford and Dibner (1984) found that: "In 39% of the reported emergencies the responder was able to resolve the situation alone...in 55% of the emergency situations described, the client was brought to the hospital, 86% were admitted due to their emergency" (p. 3). Other studies report rates of "medical intervention" following real alarms ranging from a low of 14% to a high of 75% (McIntosh, 1988; McWhirther, 1987; Rajkumar et al., 1993). Farquhar et al. (1992) found that 48% of real PERS emergencies resulted in hospital admission.

## **IMPACT ON LIFE AND LIFE-STYLE**

PERS providers, as well as fire, police, and emergency room personnel, have presented anecdotal evidence that PERS save lives. For example, in the AARP study, several respondents provided written testimonials of life threatening situations where their PERS worked effectively (AARP, 1992). However, although PERS have been in existence for almost two decades, there have been relatively few systematic, controlled studies of the impact of this technology and service on users and their families. Most of the existing studies have focussed on psycho-personal effects.

Self-reports have shown high subscriber satisfaction with the technology, as well as reduced anxiety about medical vulnerabilities, especially home medical emergencies (Gatz & Pearson, 1988; Sherwood & Morris, 1981). PERS usage has not been shown to significantly affect other psycho-personal variables such as general anxiety, sleep, happiness, psychologic distress, or sense of mastery (Gatz & Pearson, 1988). Studies of subscribers' families have revealed no significant changes in sense of burden (Gatz & Pearson, 1988). Interestingly, in one of the most comprehensive PERS studies to date (Sherwood & Morris, 1980), it was found that older adults who were more socially active (less socially isolated) and higher users of existing community support services, also displayed more benefit from having a PERS.

## **IMPACT ON UTILIZATION OF OTHER SERVICES**

Studies of PERS effects on hospital, nursing home, and home care aide use have reported mixed outcomes. Some investigations have shown favourable effects for PERS users, e.g. longer stays in the community and fewer days spent in nursing homes and/or hospitals (Bigel Institute, 1990; Dibner, 1985; Ruchlin & Morris, 1981; Sherwood & Morris, 1981). As well, PERS acquisition has been shown to produce significant decreases in the number of

hours of homemaker services used (CCMC, 1989; Dixon, 1987; Ruchlin & Morris, 1981). Such reductions in service utilization have resulted in attractive cost-benefit ratios and reported dollar savings for some agencies. For example, \$808,000 in savings is reported for 34 home care aide clients during a 2-year demonstration project (CCMC, 1989). Interestingly, the substitution of PERS and other types of technical support for human care is developing into a controversial subject.

## RESEARCH ISSUES

Before firm conclusions can be drawn from the above research, the study designs/methodologies need to be closely scrutinized. For example, studies that had control groups (Bigel Institute, 1990; Sherwood & Morris, 1981) do not reveal lower hospital use by PERS users, but the ex-post facto studies with no control groups do (Cain, 1987; Dibner, 1985; Koch, 1984). Among other things, this may be indicative of the difficulty of identifying and recruiting an appropriate control group, and that PERS acquisition is a selective phenomenon which may be correlated with a subscriber having a particularly poor period of health. None of the above studies reported on subjects' health events prior to PERS acquisition. In addition, most previous studies have used relatively small samples: experimental groups range from 22 to 209, with an average size of 95.7. The representativeness of PERS samples must also be examined. Many PERS programs, by their inclusion criteria, serve persons with poor health and/or persons that are at high risk for falls and other emergencies (see Sherwood & Morris, 1980; Rajkumar et al., 1993). This non-representativeness of study samples must be considered when evaluating any PERS study. A further research concern is the fact that most PERS users only stay on the system for about one year (Schantz, 1991), which limits the period of effective data collection for any study and subsequent attempts to assess PERS effects. Finally, most, if not all of the scientific studies in North America have been conducted on one company's product (LIFELINE). For a more detailed criticism of this research see Watzke (1991).

## METHOD

All subjects in the present study were active subscribers of LIFECALL of Canada, a subsidiary of VOXCOM Incorporated. LIFECALL of Canada uses a central monitoring station, located at company headquarters in Edmonton, Alberta. Two types of data were analyzed. The first is the subscribers' personal information (consisting primarily of demographics, designated contacts, and health information) which is collected on a subscriber profile and monitoring service agreement form. This form is filled out by the company representative in the home of the subscriber at the time of PERS installation. The information is verified by response centre staff to assure its accuracy.

The second source of data is "alarm data" which consists of the number, type, and outcome of alarms made by subscribers. Length of time on the system and reasons for cancellation were also analyzed. This information is collected and entered into a computer system at the company headquarters. After identifying information was removed, data files

containing complete customer and alarm data were sent to the researchers for analysis.

Due to accretion and attrition, PERS subscriber databases are constantly changing, making analyses of the same group of subscribers at different points in time problematic. To solve this problem, a sample window was selected that only included individuals who were active subscribers from August 1, 1992 to July 31, 1993. Subjects (n=5,221) had to have been on the system a minimum of two months before the start of this period and still be on the system at its conclusion. Unless otherwise specified, all the analyses that follow are based on this sample.

## **SOCIO-DEMOGRAPHIC AND HEALTH CHARACTERISTICS OF LIFECALL-ALBERTA SUBSCRIBERS**

### **Sex and Age Distribution**

Of the sample's 5,221 persons, 72.9% were female, almost 10% lower than the proportion of females reported by Stafford and Dibner (1984) for another large PERS subscriber database. Subscribers ranged in age from 1 to 103; the mean age was 72.5 at the start of PERS service, which is slightly lower than a mean age of 76 reported by Stafford and Dibner (1984). As shown in Table 1, 9.7% were under the age of 60 and 10.2% were aged 85 and over. The age distribution was similar for males and females, with slightly higher proportions of females in the 75+ range.

### **Living Arrangements**

In comparison to U.S. data (Stafford & Dibner, 1984), a lower proportion of the Canadian subscribers were living alone (65% vs. 80%). As shown in Table 1, the proportion living alone was substantially higher for females than for males (74.2% vs. 40.4%).

### **Rural-Urban Distribution**

The vast majority were living in urban environments (80.3%), defined as population centres and bedroom communities with 25,000 or more inhabitants.

### **Health Problems and Use of Mobility Aides**

In order of frequency, the most commonly reported health problems in this sample were: arthritis, rheumatism or osteoporosis (38.2%); heart problems (25.0%); high blood pressure (23.3%); diabetes (13.2%); cataracts and/or glaucoma (8.9%) and stroke (7.1%). As expected, a higher proportion of the females reported having arthritis, rheumatism, or osteoporosis, compared to the males (43.6% vs 23.5%). A sizeable portion of the sample reported none of the primary disabilities above or no disabilities (24.1%). If heart problems and high blood pressure are grouped as "cardiovascular," the Canadian sample's health problem profile is similar to the large U.S. sample studied by Stafford and Dibner (1984).

Of the total sample, 10.3% reported using a cane; 14.8% used a wheelchair and 5.2% used a walker.

**Table 1**  
*Age Distribution and Living Arrangements of Subscribers, by Gender*

Age	Male (n = 1,415)		Female (n = 3,806)		TOTAL (n = 5,221)	
	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>
under 60	201	14.2	308	8.1	509	9.7
60 to 64	81	5.7	210	5.5	291	5.6
65 to 74	503	35.6	1,289	33.9	1,792	34.3
75 to 84	500	35.3	1,598	42.0	2,098	40.2
85+	130	9.2	401	10.5	531	10.2
Mean Age	70.6		73.3		72.5	
<b>Living Arrangement</b>						
Alone	571	40.4	2,824	74.2	3,395	65.0
With spouse	677	47.8	696	18.3	1,373	26.3
Multiple	167	11.	286	7.5	453	8.7
<b>Note:</b> All individuals were subscribers from June 1/92 to July 31/93, inclusive. Events were recorded from Aug. 1/92 to July 31/93, inclusive, excluding the first two months on the service.						

## ALARM DATA

Most PERS monitoring services keep extensive records of alarm data. Although the classification of *real* versus *false* alarms can vary from provider to provider, in general, a real alarm implies that an emergency situation existed which required assistance (e.g., an ambulance or a call to the designated contact on the subscriber's behalf). False alarms are all non-emergency events that transmit an alarm signal to the monitoring station such as an accidental push of the help button, a power outage, changing batteries, etc.

### Real vs. False Alarms

For this Canadian sample (n=5,221), over the 12 month period August 1, 1992 to July 31, 1993 LIFECALL of Canada recorded 7,196 alarms, of which 1,066 (14.8%) were real alarms. This averages to 0.20 real alarms and 1.17 false alarms per subscriber, per year (Table 2). The average annual rate of both real and false alarms was 1.37 per subscriber. Further analyses showed that 11.6% of subscribers had at least one real alarm, 49.2% had at least one false alarm and 46.5% did not activate any alarms during the year. Unlike Stafford and Dibner

**Table 2**  
*Number and Percentage Distribution of Alarms, by Alarm Type & Subscriber Gender*  
*(Aug. 1/92-July 31/93)*

	TOTAL NUMBER OF ALARMS					
	Male		Female		TOTAL	
	n	%	n	%	n	%
•Real	304	17.5	762	14.0	1,066	14.8
•False	1,431	82.5	4,699	86.0	6,130	85.2
	AVERAGE ANNUAL ALARM RATES					
•Real	0.22		0.20		0.20	
•False	1.01		1.24		1.17	

(1984), who reported that men had significantly more real alarms than women, the present study showed no statistically significant gender differences in average annual rates for real alarms ( $t=0.46$ ;  $df=5,219$ ;  $p=0.65$ ). However, significantly more women than men did activate false alarms ( $t=3.53$ ;  $df=5,219$ ;  $p<.001$ ).

### Time of Day, Location, and Activities During False Alarms

Table 3 displays the time of day, location in the home, and the activities in which subscribers were engaged at the time of a false alarm. As can be seen, the majority of false alarms (72.3%) occurred between 6 a.m. and 6 p.m., 14.8% in the evening from 6 p.m. to midnight, and 12.9% from midnight to 6 a.m. False alarms most commonly originated in the living room, den, or dining room (29.4%), followed by the kitchen (27.3%) and bedroom (23.0%). Consistent with these locations, the principle activities at the time of a false alarm were cooking (20.6%), leisure activities (16.5%) and resting and/or illness (15.7%). Interestingly, there were few differences in these data between males and females.

### Factors Contributing to False Alarms

As can be seen in Table 4, a variety of factors contribute to false alarms. The largest group of factors might be classified as "human-user related": the subscriber touched the help button (21.3%); was not sure how the alarm occurred (11.1%); was cooking and set off a smoke alarm (11.9%) which is often directly linked to the PERS alarm mechanism; tried to test the unit (8.7%), or aborted the unit too late (9.0%). It is worth noting that "power outages", which are events that are not caused by subscriber behaviour, accounted for 22.6% of all false alarms.

**Table 3**  
*Time of Day, Location and Activities During False Alarms*

	Male		Female		TOTAL	
	(n = 1,431)		(n = 4,699)		(n = 6,130)	
<b>Time of day</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>
6 am to noon	523	36.8	1,793	38.3	2,316	38.0
Noon to 6 pm	510	35.8	1,586	33.9	2,096	34.3
6 pm to midnight	187	13.1	716	15.2	903	14.8
Midnight to 6am	204	14.3	586	12.5	790	12.9
Missing	7		18		25	
<b>Location</b>						
Lvg. Rm/ Den/Dng. Rm.	308	29.4	1,032	29.5	1,340	29.4
Kitchen	266	25.4	979	27.8	1,245	27.3
Bedroom	250	23.9	799	22.7	1,049	23.0
Out of residence	121	11.6	328	9.3	449	9.8
Bathroom	84	8.0	281	8.0	365	8.0
Entry/Hallway	12	1.1	61	1.7	73	1.6
Stairs	6	0.5	36	1.0	42	0.9
Missing *	384		1,183		1,567	
<b>Activity</b>						
Cooking	203	19.2	738	21.0	941	20.6
Leisure Activities	173	16.4	579	16.5	752	16.5
Resting, Illness	181	17.1	536	15.3	717	15.7
Testing unit/ Home maintenance	153	14.5	428	12.2	581	12.7
Personal Care	87	8.2	303	8.6	390	8.5
Out of residence	122	11.6	315	9.0	437	9.6
Housekeeping	66	6.3	300	8.5	366	8.0
Eating	23	2.2	81	2.3	104	2.3
Walking	33	3.1	144	4.1	177	3.9
Getting in/out of bed	13	1.2	71	2.0	84	1.8
Not involved	2	0.2	16	0.5	18	0.4
Missing *	375		1,188		1,563	

\* Subscribers' location and activity was not ascertained when equipment failure caused false alarm.

**Table 4**  
**Factors Contributing to False Alarms**  
*(Values Represent Alarms, not Number of Subscribers)*

Factor	Male (n = 1,431)		Female (n = 4,699)		TOTAL (n = 6,130)	
	n	%	n	%	n	%
Power out in area	347	24.3	1,038	22.1	1,385	22.6
Touched button	270	18.9	1,033	22.0	1,303	21.3
Cooking/Smoking	169	11.8	562	12.0	731	11.9
Not sure/Unaware	139	9.7	540	11.5	679	11.1
Aborted too late	113	7.9	437	9.3	550	9.0
Trying to test unit	137	9.6	396	8.4	533	8.7
Unit unplugged	63	4.4	172	3.7	235	3.8
Sleeping w. pendant on	55	3.8	142	3.0	197	3.2
Equipment problem	37	2.6	107	2.3	144	2.4
Other	34	2.4	109	2.3	143	2.3
Pet set off unit	27	1.9	71	1.5	98	1.6
Changing batteries	26	1.8	53	1.1	79	1.3
Home maintenance	10	0.7	27	0.6	37	0.6
Demonstrating/Kids playing	0	0.0	9	0.2	9	0.1
Telephone disconnected	1	0.1	1	0.0	2	0.0
Couldn't get to unit in time	2	0.1	0	0.0	2	0.0
Missing	1		2		3	

Power outages due to storms are quite common in Alberta, the location of the majority of LIFECALL subscribers.

### Perceptions of Danger

At the request of the researchers, upon follow-up of each false alarm, LIFECALL staff asked subscribers: "Was there anything about the situation that could have been dangerous?" The vast majority (99.4%) of such inquiries received a *no* response. Further analyses showed that 613 (13.3%) of the 4,601 false alarms (not including alarms caused by power outages and equipment problems) were activated by subscribers' smoke alarms. Although 88.6% of the 613 subscribers who had set off their smoke alarm (automatically sending an alarm signal to the PERS monitoring centre) were cooking, 95.4% told the monitoring centre staff there was no potential danger in the situation.

## Outcomes of Real Alarms

Table 5 presents outcome information for real alarms. For this PERS sample, 58.6% of subscribers experiencing an emergency went to a hospital, and 42.7% of those persons were treated and released. About 30% of these emergencies were dealt with at home by ambulance personnel, and 4.0% of the real alarms were handled by a designated contact. A very small percentage of the emergencies resulted in a fatality (1.3%). Comparative outcome data from the U.S. indicated that 55% of real alarms resulted in the subscriber going to a hospital, with only 14% of those persons being treated and released. For the U.S. study, "In 39% of the reported emergencies the responder (subscriber) was able to resolve the situation alone" (Stafford & Dibner, 1984, p.3).

**Table 5**  
*Outcome Reports of Real Alarms*  
(Values Represent Alarms, Not Number of Subscribers)

Outcome	Male (n = 304)		Female (n = 762)		TOTAL (n = 1,066)	
	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>
Ambulance dealt with at home	72	24.1	237	31.7	309	29.5
Treated & released	78	26.1	184	24.6	262	25.0
Hospitalized < 1 wk.	62	20.7	132	17.7	194	18.5
Hospitalized > 1 wk.	51	17.1	107	14.3	158	15.1
Police or Fire	19	6.4	48	6.4	67	6.4
Designated contact handled	12	4.0	30	4.0	42	4.0
Deceased	4	1.3	10	1.3	14	1.3
Other	1	0.2	0	0.0	1	0.1
Missing	5		14		19	

## PERS Tenure and Attrition

An analysis of tenure and attrition was conducted of all LIFECALL subscribers for whom start and end dates were available (n=1,025). This analysis revealed that a subscriber's average tenure on PERS was 14.2 months, a slightly longer time than reported by Schantz (1991). There were no significant gender differences in attrition. It is worth noting that 21.7% of the attrition took place within the first three months of PERS service. However, over one-third (37.0%) of the subscription terminators had stayed on PERS for 18 months or longer. An annual attrition rate of 9.5% was calculated; rates were similar for males (10.5%) and females (9.2%).



Table 6 shows reasons for PERS termination. As can be seen, relocation to a long-term care facility (30.2%) and death (13.0%) accounted for nearly half of the attrition. The next most frequent reasons for terminating service were “decided no longer needs PERS” and “can’t afford monitoring fee” (13.1% and 11.1% respectively). There were no noteworthy gender differences in reasons for PERS termination.

**Table 6**  
*Reasons for Subscription Termination.*  
*These Subscribers were on Lifecall Anytime up Until Sept. 30/93, but were not*  
*in the Window Sample (i.e. June 1/92 to July 31/93)*

Reasons	Male (n = 293)		Female (n = 732)		TOTAL (n = 1,025)	
	n	%	n	%	n	%
Moved to nursing home, etc.	86	29.6	221	30.4	307	30.2
Decided they no longer need it	42	14.4	91	12.6	133	13.1
Deceased	42	14.4	90	12.4	132	13.0
Can't afford monitoring	31	10.7	82	11.3	113	11.1
Temp. cancel. (outstdg acct.)	20	6.9	39	5.4	59	5.8
Can't afford system	13	4.5	45	6.2	58	5.7
Moved in with family	15	5.2	39	5.4	54	5.3
Dissatisfied customer	11	3.8	21	2.9	32	3.1
Changed their mind	8	2.7	21	2.9	29	2.9
Switched to another system	5	1.7	16	2.2	21	2.1
Family advised against	1	0.3	15	2.1	16	1.6
Not comfortable with system	2	0.7	14	1.9	16	1.6
No reason given	4	1.4	6	0.8	10	1.0
Misunderstood financial commitment	0	0.0	3	0.4	3	0.3
Grant refused - can't afford purchase	0	0.0	2	0.3	2	0.2
Cancel due to price increase	0	0.0	0	0.0	0	0.0
Other	11	3.7	20	2.8	31	3.0
Missing	2		7		9	

Finally, several analyses were performed comparing the sample which used PERS during the 12 month study window (n=5,221) and the subscription terminator sample (n=1,025). As expected, there were some differences. Table 7 shows that a significantly higher percentage of terminators were living alone (73.5% vs. 65.0%), they were significantly older (mean age 74.1% vs. 72.5), and significantly more reported having had a stroke, eye problems and heart problems. Further, the terminators' average annual real alarm rate of 0.56 and average annual false alarm rate of 2.83 were both significantly higher than corresponding rates for the window sample.

**Table 7**  
*Demographic and Alarm Data Comparisons Between  
the Active Window Sample and Terminators*

Variable	12 Month Window Sample (n = 5,221)		Terminators (n = 1,025)	
			t/ $\chi^2$	p
Mean Age	72.5	74.1	t = 3.82	.001
% Living alone	65.0	73.5	$\chi^2 = 29.1$	<.001
% Stroke	07.1	9.1	$\chi^2 = 04.8$	<.05
% Glaucoma Cataracts	08.9	11.5	$\chi^2 = 06.6$	<.01
% Diabetes	13.2	13.2		ns
% Blood pressure problem	23.3	25.1		ns
%Heart problem	25.0	28.3	$\chi^2 = 4.8$	<.05
% Arthritis, Osteo, Rheum	38.2	36.3		ns
<b>Average Annual Alarm Rates</b>				
Real	0.20	0.56	t = 7.38	<.001
False	1.17	2.83	t = 8.02	<.001

## DISCUSSION

The present study represents probably the most thorough analysis of a large PERS sample to date. The focus was on the sample's demographic characteristics as well as providing an analysis of their alarms. Another thorough PERS population analysis was conducted by Stafford and Dibner on a large U.S. sample (1984). Where comparisons are possible, the two studies showed many similarities in subscriber characteristics. Clearly, in North America, the

typical PERS subscriber is an older female (70+) who lives alone and has one or more disabilities that put her at risk for a fall or some other serious medical emergency.

There were some noteworthy differences between the U.S. and Canadian data. Although *real* alarms and emergencies are a relatively infrequent event, almost double the percentage of U.S. subscribers (22%) activated a real alarm compared to the Canadian sample (11.6%) for a similar time period (10-12 months). However, the urgency and outcomes of those real alarms are quite serious. In both the U.S. and the present study, over half (55%, 58.6%) of the subscribers who activated real alarms were taken to a hospital. Of those, just over half (57.3%) were admitted to the hospital, compared to 86% for their U.S. counterparts. Further, the annual real alarm rate reported for the present study (0.20) was noticeably lower than other reported rates (0.44 to 0.84).

The differences in alarm data may be explained by differences in research methodology. In the present study, we chose to control for accretion and attrition effects by calculating alarm rates only for subscribers on the LIFECALL system for the full twelve month period of interest. We also did not include their first two months of alarm activity because LIFECALL staff advised us that those first two months are best viewed as a stabilizing or learning period for subscribers. It is unclear whether other PERS researchers considered such issues of learning effects, or the effects of including subscription terminators when calculating average annual alarm rates.

Another important difference may be affecting reported alarm and emergency outcome data — the largest U.S. PERS provider (LIFELINE) is closely linked with acute care medical settings (hospitals). This may make it more likely that subscribers are admitted to a hospital after a real alarm. It is also possible that although, in general, LIFELINE subscribers have a similar disability profile to their Canadian LIFECALL counterparts, they may be more frail due to a recent medical event — i.e., more may have been discharged from a hospital immediately prior to becoming a PERS subscriber.

To date, *false* alarms have not received much study, although it is clear they are much more frequent than real alarms. The high proportion of false alarms received by monitoring centres attests to the need to make the equipment more user friendly. One could also speculate that some subscribers push false alarms in order to have some social contact with response centre personnel. It is also interesting that over 95% of those subscribers who had set off their smoke alarm (automatically sending an alarm signal to the PERS monitoring centre) told monitoring centre staff that there was no potential danger in the situation. This lack of perception of risk deserves to be investigated.

One final conclusion deriving from the demographic and alarm analyses is that, with the exception of females' higher rates of false alarms, men and women seem to have similar experiences with PERS.

A fundamental question that remains is whether PERS has a role in the public health delivery system in Canada. To date, in Canada (and in the U.S.), there has been very little

support for PERS from government health authorities. This is remarkable given that it is known that the vast majority of real PERS alarms are related to medical emergencies. The present study provides information that could help health authorities to assess the value of PERS. For example, user profiles could be compared with those of clients of other home health care services and overlaps in population characteristics could help target those persons most likely to benefit from PERS. More controversial, those clients might be given the choice of substituting part of their home health services (e.g., number of home care helper hours) for PERS service. Further, the costs of establishing and operating PERS programs can be estimated with a fair degree of accuracy now that large PERS subscriber data bases exist in Canada, and the accretion and attrition rates for such populations are known.

The number of and outcomes of *real* alarms can also be predicted. Cost-benefit analyses could be applied to these outcomes. An area that was not explored in the present study is the role PERS might play in facilitating safe and earlier hospital discharge for high risk patients. To the best of our knowledge, this information is not currently being collected by PERS providers, but with the cooperation of local hospitals, it could be.

Finally, more studies employing control groups are required if we are to truly understand the impact of PERS service and technology. One such study is currently in progress in Canada (see Watzke, Wister & Gutman, 1993) in which we are attempting to learn more about the effects PERS have on subscribers and their families.

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## Chapter 12

# OLDER ADULTS' RESPONSE TO AUTOMATED ENVIRONMENTAL CONTROL DEVICES\*

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## INTRODUCTION

**D**uring the last 50 years, our society has witnessed the development of an incredible number of new “technologies”. Concurrently, we have experienced, and continue to experience, a significant demographic shift resulting in increasing numbers of older adults (Statistics Canada, 1985, 1992). As well, there has been growth in the number of persons with disabilities (Statistics Canada, 1990). Currently, we are witnessing an awakening of academic and commercial interest in “technology and the older adult”. One example of this is the tremendous growth in the Emergency Medical Alert industry in the last 10-15 years (see Watzke, 1994). Another example is the increasing number of academic and trade publications on the topic (e.g., CABA, 1990; *Electronic House*, 1992, 1993b; Haber, 1988; La Buda, 1990; Mann & Lane, 1991; Monk, 1988; U.S. Congress, 1985; Watzke & Kemp, 1992) including an international journal — *The International Journal of Technology and Aging*. As well, there is a growing literature examining older adults’ utilization of “assistive technology” (Forbes, Hayward & Agwani, 1991; Gitlin, Levine & Geiger, 1993, Gosman-Hedstrom, Aniansson & Persson, 1988; Mann & Lane, 1992; Mann, 1991; Parker & Thorslund, 1991; and Manton, Corder & Stallard, 1993). Clearly, the increased attention devoted to the topic also reflects the generally increased interest in home-based health care and possible mechanisms for cost containment (B.C Royal Commission Report on Health Care and Costs, 1991).

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## ENVIRONMENTAL CONTROL DEVICES

There are a number of technology domains of relevance to older adults. The present work focuses on the particular domain that aims to facilitate independent living through the use of "environmental control devices" (ECDs).

ECDs span a wide continuum ranging from relatively simple "stand alone" devices to technologically advanced integrated systems. Devices such as touch-sensitive light switches and photo-sensitive night lamps are representative of the lower end of the continuum. Further along the continuum are devices such as automatic telephone dialers, speaker phones and remote modules for control of individual lights and appliances. The next significant step along the continuum involves the integration of several ECDs into a central control system. A well known set of technologies found in this category are the environmental control systems that have traditionally been designed for and used by severely disabled younger adults and children to control devices in a one-room environment. These systems typically include: 1) a remote user access (i.e. a wireless input switch often using infrared or ultrasound); 2) a primary control unit (i.e. the box that typically houses a microprocessor that mediates all control functions); and 3) external modules with which the primary unit communicates to control the actual home appliances (e.g. TV, telephone, lights). At the far end of the ECD continuum is the emerging field of "home automation" utilizing advanced technologies and complex levels of integration.

Advances in home automation technology are increasing the extent to which people with disabilities can manage their living environments. Recent developments in residential control are opening up new applications that were previously not feasible or were too expensive. For example, home control systems will allow a mobility-restricted person to have integrated control of lights, appliances, the television, VCR, security systems, intercoms, telephone and thermostats. Home automation holds great promise in being able to deliver comprehensive control at a relatively low cost because it is a consumer-based industry that will benefit from economies of scale. Manufacturers of the more traditional environmental control systems designed specifically for persons with disabilities have not enjoyed a widespread consumer market. The key to home automation becoming a well-established industry that can deliver low cost automation lies in the establishment of standards (a universal control protocol). Currently there are three systems in North America that are competing to become the industry-accepted standard. These three systems are: SMART HOUSE; CEBus (Consumer Electronic Bus); and LONWORKS (Local Operating Networks). To date, the number of compatible home products on the market for any of the systems is sparse. Most builders, manufacturers, and consumers are waiting until one emerges as the standard (Electronic House, 1993a).

One important premise of these technological developments is that an automated home environment would significantly increase the independence of mobility restricted older persons, and thereby, increase their quality of life and that of their caregivers. Although the importance of perceived and real "control" for older adults has been a topic of study in

gerontology for many years (Langer & Rodin, 1976; Lawton, 1990; Schulz, 1976; Schulz & Hanusa, 1978) few, if any, studies have investigated older adults' responses to technological devices that are designed to facilitate control over their home environment. Furthermore, although interest in geriatric rehabilitation has grown in recent years (Kemp, Brummel-Smith & Ramsdell, 1990), it seems safe to assume that very few older adults are aware of, or have been exposed to ECDs. The present study was an attempt to investigate the relevance of ECDs for older disabled adults. Key questions underlying the study were:

- **Independence:** What do older disabled adults think about issues of human versus technologically-based support?
- **Technological orientation and competence:** What are older adults' current patterns of use and attitudes toward common home technologies?
- **Awareness of ECDs:** How knowledgeable are older disabled adults about specific ECDs?
- **Motivation to adopt ECDs:** Do older disabled adults perceive any benefits of ECDs upon their lifestyle?
- **Affordability:** When faced with the decision to adopt ECDs, how do older adults approach issues of cost?

## THE STUDY

### Subjects

A total of 25 individuals participated in the study. In recruiting subjects, several local community organizations believed to have older disabled adults as members/clients were contacted (e.g. seniors networks, senior centres, stroke clubs, and the Arthritis Society). Potential participants were screened by telephone to assure that they were aged 60+, had the cognitive and sensory capacity to complete the study protocol, and had a disability that impaired their mobility. The first 25 seniors screened and found eligible participated in the study. Each senior received a \$50 honourarium for their participation.

Table 1 shows the subjects' socio-demographic characteristics and mobility status. As can be seen, they ranged in age from 63 to 89 (mean age = 73.8 years); 60% were female; 44% had at least some post-secondary education; and one third lived alone. More than three-quarters rated their mobility as only fair or poor. Arthritis constituted the primary disability for just over one-third of the subjects (36%). The vast majority of subjects (76%) received human assistance with activities of daily living once a week or more often.

### Procedure

The study, designed to be qualitative in nature, contained four segments. In the first segment, participants filled out a questionnaire designed to provide information concerning their socio-demographic characteristics, living arrangement, health and functional status and

**Table 1**  
*Sample Characteristics*

<b>Sample Size</b>	25	
<b>Mean Age</b>	73.8	
<b>Age Range</b>	63-89	
<b>% Female</b>	60	
<b>Education</b>	<u>n</u>	<u>%</u>
Grade 8 or under	4	16
Grade 9 - 12	10	40
Some College	6	24
University Degree	3	12
Graduate Degree	2	8
<b>Living Arrangement</b>		
Living Alone	8	32
With Spouse/Others	17	68
<b>Self-rated Mobility</b>		
Very Good	0	0
Good	6	24
Fair	12	48
Poor	7	28
<b>Primary Disabilities</b>		
Arthritis	9	36
Stroke	5	20
Polio	3	12
Other	8	32
<b>Human Assistance with ADL's</b>		
Never	2	9
Once a month	2	9
Once per week	9	39
2-3 time/week	4	17
4-6 time/week	1	4
Daily	5	22
Missing	2	

use, awareness of and attitudes toward home technologies, as well as ECDs.

In Segment 2, participants were taken to the "ECD room" where they were asked to give the interviewer their spontaneous reactions to a set of five ECDs that were placed on a table. The five devices were:

- 1) a photo-sensitive night light
- 2) an on-off "touch base" table lamp
- 3) two modular, color coded, sonar remote control units
- 4) an Emergency Medical Alert Unit with pendant and smoke alarm manufactured by Lifecall Inc., U.S.A.
- 5) a Modular Environmental Control System, with a "sip and puff" switch, manufactured by the Kinsmen Rehabilitation Foundation, Vancouver, B.C., hereafter called "Kincontrol".

A series of questions were asked to ascertain participants' knowledge and potential for adoption of such devices (e.g. "What do you think this is?" "Where can you find this item?" "How much does it cost?" "Could you see a use for this device in your own life?"). This segment of the protocol exposed participants to ECDs in a non-threatening manner through 1) using a range of low to higher tech devices; 2) letting participants experience these devices first hand; and 3) discussing the devices with the participants in a non-hurried manner.

The third segment presented participants with an integrated electronic environmental control system (IECS), which was installed to control several items in a simulated full-scale living room environment. The items controlled by the IECS included: a reading lamp, a table lamp, the TV, a telephone (speaker phone), and an electronic door opening system (simulated). Each participant was given hands-on training with the IECS. This included a full demonstration by the researcher as well as a 5-10 minute trial period during which the participant manipulated the device.

The IECS itself was an adapted version of a system developed for use by younger paraplegics and quadriplegics. Pilot testing with the system suggested that for wide spread use by older persons, an IECS was needed that was less cognitively demanding and that could be operated by persons with use of their upper limbs. Thus, an expanded membrane keyboard was configured into a set of one inch by one inch keys that were each mapped to a specific function on the IECS. By touching one of these keys, a given control function was executed. This keyboard was used as a portable control pad that was typically placed on the lap of the user and referred to as "the lapboard".

Upon completion of the IECS training, participants were asked to perform a set of common tasks, first with the IECS, then manually without the technology. These tasks were: 1) answering a telephone call, 2) placing a telephone call, 3) turning the reading lamp on and off, 4) operating a television (including on-off, volume and channel changes), 5) answering

the door (included answering and hanging up a telephone, identifying the caller, opening the door, turning on the entry light, and closing the door), and 6) placing an emergency (911) call. Subjects' performance on each task was captured on videotape.

The fourth and final segment of the study focused on probing participants' views concerning the ways in which the ECDs could be improved (ergonomically); the benefits of ECDs for seniors; and concerning ECD marketing and cost issues. Once again, participants were videotaped as they responded to the researcher's questions.

## Analysis

The videotapes of the task performance segment (both with and without the IECS) were viewed by the research staff and scored to reflect the participants': 1) ability to perform the task(s), 2) confidence during the task, 3) stress during the task, 4) time taken to complete the task and 5) overall understanding of the task. The videotapes of the final (feedback) segment were analyzed for recurrent themes.

## Results

### *Use of and Attitudes Toward Home Technology*

Table 2 shows the 11 technologies enquired about. As expected, this sample reported a low rate of usage for most of them, the exceptions being television remote controls, microwave ovens, and to a lesser extent, VCRs. It is interesting to note that if these respondents owned the technology, they tended to use it on a frequent basis. Other findings were that approximately half (48%) of the participants reported some familiarity with the concept of environmental control and 64% with actual devices that control features/appliances in the home.

The first segment of the survey also contained six attitudinal items. As seen in Table 3, while the majority of this sample did not see themselves as very handy at fixing things around the house, they tended to like electronic things and felt that seniors should be more openminded about electronic devices. While the majority (18 of the 23) preferred human over technological support, most understood that electronic devices could improve their daily lives. The majority believed, however, that most seniors cannot afford electronic devices.

It should be noted that the above results reflect the participants' responses prior to being exposed to the devices and procedures in this study.

### *Degree of Prior Exposure and Response to ECDs*

As expected, participants had more prior knowledge of the lower tech items (night light, touch-base lamp) than the higher tech items (see Table 4). The one exception to this concerned Emergency Medical Alert technology, of which, over 90% of participants were able to correctly identify. Similarly, participants were more accurate at estimating the costs of the lower tech items. There was one noteworthy exception however. Participants were highly accurate at estimating the monthly fees for Emergency Medical Alert monitoring.

**Table 2**  
*Frequency of Use of Selected Home Technology (n = 25)*

Technology	do not have one	have one but never use	3-4 times per year	1-2 times per month	1-3 times per week	4-6 times per week	daily	missing
Remote Control (TV)	5	0	0	0	0	0	20	0
Microwave Oven	11	2	0	0	1	1	10	0
VCR	12	1	0	4	4	0	4	0
Personal Computer	20	1	0	0	0	1	2	1
Dishwasher Machine	17	2	1	0	2	0	2	1
Bank Machine Card	15	1	2	2	4	1	0	0
Sewing Machine	16	1	2	1	0	0	3	2
Electronic Home Security System	23	0	0	0	0	0	0	2
Emergency Med. Alert e.g. Lifecall, Lifeline	25	0	0	0	0	0	0	0
Answering Machine	15	1	0	0	1	1	6	1
Speaker Phone and Cordless Phone	22	0	0	0	0	0	3	0

**Table 3**  
*Attitudes Toward Technology (n = 25)\**

Attitude Statement	Agree		Disagree		Missing n
	n	%	n	%	
I am quite handy at making things work, or fixing things around the house.	10	42	14	58	1
In general, I do not like things that are electronic.	9	39	14	61	2
If I have to choose between getting help from a person or an electronic device, I prefer the human support.	18	78	5	22	2
I think seniors should be more open-minded about electronic device.	20	87	3	13	2
I have trouble understanding how any electronic devices could improve my daily living.	6	26	17	74	2
As a rule, I do not think most seniors can afford electronic devices.	16	73	6	27	3

\*Responses were on a 4-point scale: 1 = strongly agree, 2 = agree, 3 = disagree, 4 = strongly disagree



When participants were asked whether they, personally, were willing to use each device, willingness was greatest for the night light and touch-lamp. Given that the Kincontrol environmental control system was designed for use by persons much more disabled than this study's sample, it is not surprising that they perceived it as the least needed. It is interesting that for each device between 2 and 7 subjects attached conditions to its adoption. The most common condition was "if I became more frail, disabled, etc.". Table 4 also shows that these seniors were reasonably accurate with regard to the availability of the devices. The two largest inaccuracies were that approximately one-third of the participants believed the sonar remote control switches and receiver modules could be found at "electrical stores" (32%) and that the Emergency Medical Alert Unit could be found at a medical supply store (37%). This finding may be confounded by the fact that the higher tech devices are less available commercially.

### *Task Performance Measures*

Table 5 displays the task performance ratings. As can be seen, participants were rated as being generally able to perform all six tasks, both with the experimental IECS and without it. Participants' high level of performance may be a function of the relative simplicity of the tasks chosen, the low levels of disability and high degree of competence of the participants, and/or the user friendliness of the ECDs. It is worth noting that, on average, these seniors had more difficulty operating the standard TV remote control than the experimental IECS lapboard. Table 5 also shows that the door entry task was the most difficult; this is understandable given the greater complexity of this task. Concerning the other performance dimensions (confidence, stress, etc.), participants were rated as somewhat less confident and poorer in overall understanding across all six tasks when using the IECS (Table 5).

### *Participant Feedback and Debriefing*

In the last segment of the protocol, participants were first asked to comment on the ergonomics and practical functioning of the experimental IECS itself. Analysis of the videotapes indicated that they clearly understood that the primary design attribute of the system was that it makes several daily living functions immediately controllable in one integrated response board. When asked how the design of the lapboard might be improved, the most frequent response was that it was fine as is. However, seven of the participants suggested the use of colour on the push-board.

When participants were asked whether they thought men or women would be more interested in, or capable of using the IECS, 56% said that they thought there would be no gender difference, 28% attributed greater interest/capability to males, 8% to females and 8% gave no answer.

There were several probes related to issues of affordability of the experimental IECS. Participants were not very accurate at estimating the cost of the IECS; 32%, in fact, gave no dollar value at all. The majority (52%) of respondents preferred a rent or lease-to-own method of payment, as opposed to a one-payment purchase plan. As expected, a majority of the sample



**Table 5**  
*Mean Performance Ratings With and Without IECS Technology (n=25)*

<b>Difficulty of Performance Rating*</b>		
<b>Task</b>	<b>With ECS</b>	<b>Without</b>
Answer telephone	1.9	1.4
Placing telephone call	1.5	1.4
Reading lamp on & off	1.3	1.4
TV	1.5	2.1
Door entry	2.7	2.3
Emergency call	1.7	1.2

\* Ratings based on a 5-point scale; 1=no difficulty, 5=much difficulty.

<b>Ratings Across all 6 Tasks</b>		
<b>Rated Dimension</b>	<b>With IECS</b>	<b>Without</b>
Confidence 1 = not at all, 5 = very	3.9	4.4
Stressed by tasks 1 = very, 5 = not at all	4.2	4.5
Time to execute tasks 1=very delayed, 5=no delay	3.9	3.8
Overall understanding 1=poor, 5=very good	3.9	4.6

(68%) expressed concern about the affordability of ECS technology; the most common comment being “times are tough now, economically, especially for seniors”. However, there were a number of participants who offered constructive/positive ideas about how such technology might be financed (e.g., “If I needed it, I would find a way to pay for it”, or “there are government agencies that should be taking a close look at providing this for those who could benefit from it”).

There were several probes related to the perceived benefits and/or potential positive effects of the IECS upon a senior’s lifestyle. The vast majority (92%) said they saw benefits of this technology for some seniors. The qualities they liked best about the IECS were its “directness, convenience and simplicity”. Other positive comments centered on: a) an appreciation of all forms of technology and the challenge of keeping up with technological innovations; b) the positive role this technology might play in facilitating independent living in disabled seniors; and on c) an appreciation of having been exposed to the technology and a recommendation that others be so exposed (“you must teach seniors about this stuff, just like you are teaching me today”). It is noteworthy that 44% said they were “not intimidated” by the sophistication of the IECS.

Qualities liked least about the IECS were “being dependent upon technology” “space required for the hardware”, “affordability”, and “concern about maintenance/repair”. A typical comment was “I am a great doer — one could become dependent on (or a bit lazy with) these devices”. Another type of negative comment made by several of the participants was “It (the IECS) has limitations, it can only do so much, I’ll still have to clean and cook”. It is interesting that by the end of the study protocol, there were only four participants who said they would prefer human help over technological help compared with 18 who said so initially (see Table 3).

When asked for which type of senior the IECS was best suited, the consensus was “seniors who are extremely disabled (bedridden, stroke victims, and those using canes and wheelchairs)”. In other words, many of these participants perceived the IECS to be beneficial for “other seniors, more disabled than myself”.

Finally, at the end of the protocol, each participant was asked: “If you could take home one of the devices we have shown you today, free of charge, which one would you like to have?” The IECS was chosen by 52%, 24% selected the touch-lamp and 11% the Emergency Medical Alert Unit. Interestingly, a number of the remaining participants said they would take home the speaker phone, which was one of the devices operated by the IECS but not one of the five devices participants were given special training with in segment 2 of the study.

## CONCLUSION

Although this study involved only a small sample (n=25), there are many results worthy of mention. First and foremost, once exposed to the environmental control technology in this study, the participants tended to display a positive response to the devices. One important goal of the study was to expose a group of seniors to the technology. It is believed that the group

left the study with a very positive “technological experience”. How this experience might affect their current or future willingness to adopt assistive technologies, or their willingness to encourage their peers to adopt such technologies cannot be ascertained from this study. Among other things, it appears that actual adoption of this technology is the result of a fairly complicated interaction of financial concerns and perceived need in terms of one’s disability level. Undoubtedly, these issues of acceptance of disability and willingness to spend money on devices that are assistive in nature are what make the behaviour of disabled senior consumers so difficult to predict. However, based on the present study, it is estimated that the appropriate cost for an IECS should be \$500-600.

Another major goal of the study was to begin to sort out some of the human factors and psychological issues surrounding exposure of seniors to such technology. Clearly, the touch-sensitive lapboard interface worked very well for this group, including those participants with severe arthritis in their hands. The cognitive demands of the IECS also seemed appropriate for the group. As discussed, however, the researchers used a methodical and fairly time-consuming approach in introducing the technology to participants. It is our impression that few seniors would receive such attention in a commercial sales situation, or for that matter, in many clinical health settings. Additional studies are obviously needed, comparing methods of exposing older adults to these and to higher assistive technology, to determine the most effective approach(es).

Finally, there are a number of interesting results that relate more generally to seniors’ orientation to technology. For example, this sample would certainly not be classified as “technophobic”, nor were they affirming of the stereotype that men are more technologically capable than women. They also appeared to use common higher household technologies frequently—or they didn’t have them in their homes at all. This is contradictory to the notion that there are a lot of microwaves, TV remote controls, and VCR’s sitting around in seniors’ homes collecting dust. On the other hand, there is support for the idea that seniors are less well informed than they might be about higher assistive technologies, especially those created for persons with severe disabilities. This may be a reflection of the current state of geriatric rehabilitation, i.e., it serves a relatively small proportion of disabled seniors.

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## Chapter 13

# USE AND POTENTIAL USE OF ASSISTIVE DEVICES BY HOME-BASED SENIORS\*

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## INTRODUCTION

The University at Buffalo Rehabilitation Engineering Research Center on Aging (RERC) conducts research, provides service and education, and undertakes product development projects. The RERC on Aging addresses both high technology devices such as print enlargement systems, and low technology assistive devices such as the size of buttons on a telephone pad or a remote control device. For example, one Center project is comparing speed, accuracy, and consumer satisfaction with four different remote control devices incorporating large buttons, two of which were designed and built at the RERC. Another is a "smart" microwave oven. The user passes the bar code on the product package by the bar code reader on the microwave oven and the device automatically sets the correct cooking levels and starts the cooking process. Computer voice messages are also offered, telling the user what the product is, how long it will take to cook and any special instructions.

This chapter focuses on another type of research conducted at the RERC, specifically a needs assessment study of older persons "at risk" for requiring assistive devices or environmental interventions. Referred to as the Consumer Assessments Study, subjects are people aged 60 and over who have received or are currently receiving some type of service from a hospital or human service agency. The study will follow subjects over a five year period. Summarized here are first year results for four groups: seniors with visual impairment, physical disability, cognitive impairment and hearing impairment. Previous reports have

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individually analyzed findings for seniors with visual impairments (Mann, Karuza, Hurren & Bentley, 1993), physical disabilities (Mann, Offenbacher, Hurren, Tomita & Granger, 1994), cognitive impairments (Mann, Karuza, Hurren & Tomita, 1992) and hearing impairments (Mann, Hurren & Tomita, 1994).

## THE CONSUMER ASSESSMENTS STUDY

### Objectives and Definition of Terms

The Consumer Assessments Study was initiated in 1991 as the lead study for the RERC. A major objective for the study is to identify needed areas of product development and further research for the RERC as well as for other investigators.

The term "assistive device" is used synonymously with the term "assistive technology device," defined in the 1988 *Technology Related Assistance for Individuals with Disabilities Act* (Tech Act) as: "any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities." This definition is broad; basically any "tool" or "appliance" that assists a person with a disability, relative to functional independence, is an assistive device. Reachers, grab bars and bath benches are recognized as assistive devices. Under the Tech Act definition, a microwave oven is an assistive device if, for example, it is used by a person with a visual impairment who requires the microwave oven in order to be independent in cooking. Assistive devices are categorized in the Consumer Assessments Study on the basis of the disability or impairment of the user. It should be noted, however, that at times it is difficult to make the distinction as to which category a device belongs. For example, a microwave oven is considered a cognitive device if a person with a cognitive impairment requires it for independent living. It would be considered a visual disabilities device if the person who requires it has severe visual impairment.

### Data Collection

The Consumer Assessments Study employs survey methods, conducting interviews in the residences of people "at risk" for requiring an assistive device or environmental intervention. Agencies and hospitals in western New York State refer seniors who have received or are currently receiving services. In other words people are not selected for inclusion based on their use of assistive devices but rather, on the basis of their being the recipient of services. The services they receive could include Meals-on-Wheels, a hospital rehabilitation program or an assessment by an agency serving individuals who are blind or have low vision.

A total of 129 seniors had been interviewed at the time the analyses were run for this chapter. The interviews were conducted by one individual, a nurse, with training and experience in research data collection. The interviews took an average of 2.2 hours.

The Consumer Assessments Interview Battery (CAIB) gathers information in seven areas: (1) basic demographic information such as income, marital status, age and sex; (2) health status; (3) functional status (4) psycho-social status; (5) social resources; (6) assistive devices; and (7) the environment. Described in detail in a previous publication (Mann, Karuza, Hurren & Tomita, 1993), the CAIB includes several instruments developed by other investigators and two developed specifically for the RERC study. Table 1 lists each of the instruments included in the CAIB. Table 2 presents the areas covered and a sample of the section used to record responses from one of the two instruments developed for the Consumer Assessments Study.

### Sample

Subjects included in the analyses conducted for this chapter consisted of 30 persons with visual impairments, 40 with physical disabilities, 31 with cognitive impairments, and 28 with hearing impairments. Eleven of the subjects in the hearing impaired group were also included in the cognitively impaired group.

Table 3 shows the mean age, sex distribution, health, functional and mental status, and level of social resources of the four groups. The groups are similar in age, with the visually impaired group slightly younger. Mean scores for ADLs (FIM) and IADL (OARs) show that the cognitively impaired group is the most dysfunctional. Mental status scores are highest for the physically and the visually impaired groups, and as expected, lowest for the cognitively impaired group. Social resources were similar and moderate for the three groups for which data were available.

### Research Questions

Six questions were asked concerning assistive device use:

1. What assistive devices are seniors using?
2. What assistive devices do seniors feel they need but do not have?
3. What problems are seniors having with devices they own?
4. What activities do seniors miss doing that might be possible with a device?
5. What devices would people like to see invented?
6. Do assistive devices help seniors be more independent?

### Results

Findings relevant to each of the research questions are examined below:

#### *What assistive devices are seniors using?*

The mean number of devices used by each disability group, by device category (physical, hearing, visual, cognitive and other) and the mean number of all devices used by each group



**Table 1**  
*Instruments in the Consumer Assessments Study Interview Battery*

<b>Dimension</b>	<b>Instrument(s)</b>	<b>Developed by</b>
Demographic Information	1. OARS 2. RERC Demographic Survey	1. *Duke University 2. **RERC
Physical Health	OARS	Duke University
Instrumental Activities of Daily Living	OARS	Duke University
Functional Independence	FIM	Granger & Hamilton (1992)
Mental Status	Mini-Mental State Examination	Folstein, Folstein, & McHugh (1975)
Depression	CESD (Centre for Epidemiological Studies Depression Scale)	Radloff (1977)
Self-Esteem	Rosenberg Self-Esteem Scale	Rosenberg (1965)
Responsibility	Responsibility Scale	Karuza et al. (1990)
Social Resources	OARS	Duke University
Communication	Assistive Technology Communication Needs Assessment	RERC
Supportive Devices & Protheses	OARS	Duke University
Assistive Technology	Assistive Technology Used	RERC
Environment	Environment Survey	RERC
Disability	Sickness Impact Profile	Gilson et al. (1975)
Pain	Jette Functional Status Index -Modified	Jette (1980)

**Source:** \*Duke University Center for the Study of Aging and Human Development.

\*\*University at Buffalo Rehabilitation Engineering Research Centre on Aging.

**Table 2**  
*Assistive Technology Used Instrument*

**A. Physical Disabilities**

- |   |   |
|---|---|
| 1. Environmental control devices                          | 8. Special seating system                   |
| 2. Robotic device   | 9. Functional electrical stimulation device |
| 3. Physical extension device<br>(mouthstick, headpointer) | 10. ADL – bathing                           |
| 4. Special switches or controls                           | 11. ADL – eating                            |
| 5. Special computer keyboard                              | 12. ADL – grooming                          |
| 6. Balance aid  | 13. ADL – dressing                          |
| 7. Wheelchair   | 14. ADL – hygiene                           |

**B. Hearing Impairments**

- |                               |                             |
|-------------------------------|-----------------------------|
| General Device Type           | 4. Telecommunication device |
| 1. Hearing aid                | 5. Cochlear Implant         |
| 2. Alerting device            |                             |
| 3. Assistive listening device |                             |

**C. Visual Impairments**

- |  |                      |
|--|----------------------|
| 1. Stand alone<br>print enlargement system             | 5. Scanning system   |
| 2. Character enlargement system<br>for computer screen | 6. Laptop computer   |
| 3. Braille output device                               | 7. Braille 'n' Speak |
| 4. Audio tactile system                                | 8. Low-tech aids     |

**D. Tactile Impairments**

- |                         |          |
|-------------------------|----------|
| 1. Special thermometers | 2. Other |
|-------------------------|----------|

**E. Cognitive impairments**

- |                                   |  |
|-----------------------------------|--|
| 1. Software such as spell checker | 4. Safety/security device<br>(alerting device) |
| 2. Memory aids                    | 5. Other                                       |
| 3. Screen reading programs        |  |

**F. Other Devices Used**

Code	Specific Devices	Is it used? (yes/no)	Satisfied? (yes/no)	If not – why not?

Source: Mann et al., (1993)

**Table 3**  
*Characteristics of the Four Study Groups*

<b>Characteristic</b>	<b>Visually Impaired (n=30)</b>	<b>Physically Impaired (n=40)</b>	<b>Cognitively Impaired (n=31)</b>	<b>Hearing Impaired* (n=28)</b>
Mean Age	72.5	75.7	77.5	77.9
% Female	67	85	55	64
Mean No. of Diseases	4.2	4.5	3.9	5.1
Mean FIM (Max=126) **	119.0	104.5	65.4	91.6
Mean IADL (Max=14) ***	7.7	8.9	1.4	5.7
Mean MMSE (Max=30)	26.7	27.3	9.6	19.6
Mean No. Social Resources (Max=6.6)	3.4	4.2	not available	3.7 (n=17)

\*11 subjects in this group were also included in the cognitively impaired group.

\*\*One-way ANOVA, excluding hearing impaired group  $F=73.59$   $P < .0001$ . Tukey multiple range test determined that each group differed from each of the other groups.

\*\*\*One-way ANOVA, excluding hearing impaired group  $F=70.29$   $P < .0001$ . Tukey multiple range test determined that cognitively impaired group differs from each of other two groups.

**Source:** Mann et al., (1993)

are shown in Table 4: 14.4 devices per person in the visually impaired group; 11.4 in the physically disabled group, 7.8 in the cognitively impaired group, and 10.6 in the hearing impaired group.

These results indicate that seniors “at risk” are indeed using assistive devices. Visually impaired seniors use the most devices, and this may be a reflection of the services provided by the agency from which they were referred: the New York State Commission for the Blind and Visually Handicapped which assesses, recommends, and in some cases provides funding for assistive devices. Cognitively impaired seniors use the fewest assistive devices, and again this may be a function of the referring service provider, which for most of these subjects was an Alzheimer’s Disease center. Centers of this type typically take a medical management approach, which entails little or no emphasis on the use of assistive devices.

*Table 4*  
*Mean Number of Devices Used by Each Group*

<b>Devices used for</b>	<b>Visually Impaired (n=30)</b>	<b>Physically Disabled (n=40)</b>	<b>Cognitively Impaired (n=31)</b>	<b>Hearing Impaired* (n=28)</b>
Physical Disabilities	2.2	7.1	4.6	5.3
Hearing Impairments	0.4	0.3	0.4	0.9
Visual Impairments	10.6	1.4	0.4	2.2
Cognitive Impairments	0	0.1	1.4	0.5
Other	1.2	2.5	1.0	1.7
<b>Total Devices Used</b>	<b>14.4</b>	<b>11.4</b>	<b>7.8</b>	<b>10.6</b>

\*11 subjects in this group were also included in the cognitively impaired group.

Source: Mann et al., (1993)

As expected, the category of devices having highest use tends to correspond to the category of impairment of the subjects. For example, hearing impaired seniors have the highest rate of use of devices relating to hearing impairments. However, it is important to note the high rate of device use outside the expected category. For example, people with visual impairments average 2.2 devices designed for people with physical disabilities. This reflects the high rate of multiple chronic disease and conditions that seniors tend to exhibit. Table 3 shows the mean number of diseases in this sample as ranging from a low of 3.9 per person for the cognitively impaired group to a high of 5.1 per person for the hearing impaired group. Given these data, which are not atypical for seniors, it is somewhat misleading to separate subjects into single condition groups. For the analyses reported in this chapter, we considered

the “major” impairment faced by the senior. It would require a much larger sample to separate subjects into all of the possible combinations of groups with multiple conditions. As the number of subjects in the Consumer Assessments Study increases, future analyses will consider specific groups with multiple conditions, such as a group of seniors with vision, hearing, and physical disabilities. Table 5 lists the devices used by two individual subjects to provide a better sense of those that seniors use and to illustrate device use outside the expected category.

**Table 5**  
*Two Case Examples of Devices Used By Seniors*

<b>Hearing Impaired Group</b>	
Subject I.D. # 87 (7 devices)	
Hearing devices	Phone amplifier, hearing aid
Physical disability devices	Quad cane, bath bench, hand-held shower
Visual devices	Glasses
Cognitive devices	Signs in home for gentle reminders
<b>Physically Disabled Group</b>	
Subject I.D. #55 (14 devices)	
Physical disability devices	Sock puller, reacher, wood cane, brass cane, quad cane, bath seat, hand-held shower, grab bar on tub, long-handled bath brush, brass grab bar at entry to apartment, remote control for TV
Visual devices	Glasses, bifocals, enlarged numbers added to dial phone

Source: Mann et al., (1993)

***What assistive devices do seniors feel they need but do not have?***

Subjects were asked “Do you need any assistive devices that you currently do not have?” Table 6 clearly shows that there are many devices that seniors feel they need but for some reason do not have.

Is the reason for not buying a needed device related to its affordability? It may be in some cases, especially for the high-technology devices. But subjects could afford most of the devices listed. In fact, they bought most of the devices they currently own, or they were purchased by a relative-caregiver. It may be that there is some uncertainty on the part of seniors or their caregivers as to the effectiveness of the device. Professional assistance in assessment of needs and in selection of devices could help remove such uncertainty. Non-use of assistive technology has been linked to other factors, such as attitudinal barriers as well as to isolated women, living in rural areas, who have low levels of education (Forbes, Hayward & Agwani, 1991). More research is needed to better understand why assistive device users do not have the devices that they feel they need.

**Table 6**  
*Devices Subjects Need but Do Not Have*

Type	Number Needed	Examples
<b>Visually Impaired Group (n=30)</b>		
Mobility/Balance	11	<ul style="list-style-type: none"> <li>- Powered wheel chair</li> <li>- Grab bars on bath tub</li> <li>- Walker with wheels</li> <li>- Hand-held shower</li> </ul>
Provides Magnification	10	<ul style="list-style-type: none"> <li>- Jewelers headset with greater magnification</li> <li>- Head-mounted adjustable telescope</li> <li>- V-Tek</li> <li>- Computer with character enlargement</li> <li>- Stronger magnifying glass</li> </ul>
Modification of every-day device through enlargement or voice output	6	<ul style="list-style-type: none"> <li>- Large numbered timer</li> <li>- Enlarged number wall clock</li> <li>- Talking calculator</li> <li>- Talking dictionary</li> </ul>
<b>Physically Disabled Group (n=40)</b>		
Grab Bars/Railings	13	<ul style="list-style-type: none"> <li>- Grab bars for bathroom</li> <li>- Railing along corridor in apt. building</li> </ul>
Telephone/Accessories	9	<ul style="list-style-type: none"> <li>- Telephone amplifier</li> <li>- Touch tone phone with large numbers</li> <li>- Cordless phone</li> <li>- Car phone</li> </ul>
Visual Aid	7	<ul style="list-style-type: none"> <li>- Eye glass</li> <li>- Magnifying glass</li> </ul>
Household Aid	7	<ul style="list-style-type: none"> <li>- Jar opener</li> <li>- Medication lid opener</li> <li>- Dishwasher</li> <li>- Cutlery with built-up handle</li> <li>- Light weight vacuum cleaner</li> </ul>
Bathroom Devices other than Grab Bars	6	<ul style="list-style-type: none"> <li>- Hand-held shower</li> <li>- Raised toilet</li> </ul>
<b>Cognitively Impaired Group (n=31)</b>		
Bathroom Aids	16	<ul style="list-style-type: none"> <li>- Grab bars</li> <li>- Bath bench</li> <li>- Hand-held shower</li> <li>- Raised toilet</li> </ul>
Transfer	3	<ul style="list-style-type: none"> <li>- Hoyer lift</li> <li>- Lift chair</li> <li>- Device for getting in/out of car</li> </ul>

**Table 6 (cont.)**

Safety	3	<ul style="list-style-type: none"> <li>- Shut off device for stove/oven</li> <li>- Adult lock for drawer/cupboard</li> <li>- Barrier in door</li> </ul>
<b>Hearing Impaired Group (n=28)*</b>		
Bathroom mobility devices	10	<ul style="list-style-type: none"> <li>- Grab bar on tub/shower/toilet (6)</li> <li>- Bath Bench (2)</li> <li>- Raised toilet with larger seat (1)</li> <li>- Hand-held shower (1)</li> </ul>
Hearing Devices	8	<ul style="list-style-type: none"> <li>- Hearing aid (3)</li> <li>- Telephone amplifier (4)</li> <li>- High volume for phone (1)</li> </ul>
Devices to assist with eating	3	<ul style="list-style-type: none"> <li>- Jar opener (1)</li> <li>- Table spoon with built-up handle (1)</li> <li>- Sauce pan with a lip (1)</li> <li>- Sign over stove (1)</li> <li>- Large adult size bib with pocket also preserves dignity (1)</li> <li>- Dycem - non/slip (1)</li> </ul>

**Source:** Modified from Mann et al., (1993)

\* 11 Subjects in this group were also included in the cognitively impaired group.

### ***What problems are seniors having with devices they own?***

To answer this question, subjects were asked what devices they owned but didn't use and their reasons for disuse.

Table 7 shows the percentage of owned devices that are not being used. While the rate of non-use is relatively low for the visually impaired and physically disabled groups, for the cognitively impaired and hearing impaired groups, about one in three devices is not used. This rate is very high and may relate to the motivational and attitudinal factors discussed earlier. It may also be a function of the progressive degeneration in cognitive status which is experienced by persons with Alzheimer's Disease. They may abandon devices that were once useful because they can no longer operate them. A system to recycle unused devices might help in making more devices available to others who could use them.

The rate of non-use of devices is significantly lower than that reported in other studies, most of which have followed subjects after hospitalization and acute rehabilitation. For example, Page (1980) studied 500 people given assistive devices while hospitalized and found that 50% of the devices were not used after discharge. Geiger (1990) found a 54% disuse rate for assistive devices prescribed and given to patients in occupational therapy at an acute rehabilitation facility. Bynum and Rogers (1987), who studied the use of assistive devices by home health care recipients, determined that 31% of 54 selected devices were not routinely used for the intended purpose.

**Table 7**  
*Devices Seniors Own But Do Not Use or Are Not Satisfied With*

<b>Group</b>	<b>n</b>	<b>% of devices owned, but not used or not satisfied with</b>	<b>Mean number of problem devices/mean number of devices owned</b>
Visually Impaired	30	18	2.6/14.4
Physically Disabled	40	18	2.0/11.4
Cognitively Impaired	31	26	2.0/7.8
Hearing Impaired*	28	40	4.2/10.6

\* 11 subjects in this group were also included in the cognitively impaired group.

Source: Modified from Mann et al., (1993)

Several reasons were identified by subjects for not using devices they owned. One visually impaired subject does not use a mobility cane because, in the neighborhood in which he lives, this would identify him as an easy target for muggers and thieves. Another visually impaired senior found binoculars which she would like to use in church, too heavy and conspicuous. One mobility impaired senior has difficulty using a walker which, she feels, increases her risk of falling. Several seniors reported the limitations of reaching devices. A senior with a cognitive impairment has a computerized communication board, but due to poor attention span does not use it. Another person with a cognitive impairment was given a memory dial phone but because of difficulty learning to use the memory buttons, continues to dial the phone manually. The one device that made the "problem" list with greatest frequency was the hearing aid: subjects reported that they whistle, aren't loud enough, or that they pick up too much background noise.

The devices described by subjects as problematic can be grouped into three categories:

- (1) Devices that do not do what needs to be done;
- (2) Devices that do not do what needs to be done easily; and
- (3) Devices that do not do what needs to be done inconspicuously, without calling unwanted attention to the user.

This problem list does not necessarily mean that the devices are not useful - they are just not working well for the person who owns them. Again, professional advice in determining the need for and in the selection of devices could lead to fewer "problem devices." On the other hand, a closer look at some of these problems might lead to the design and production of better devices.



### ***What activities do seniors miss doing that might be possible with a device?***

Table 8 summarizes responses to the question: "Can you name one thing you would really like to do now, that you used to do, but can no longer do?" The single most "missed" activity is crafts, followed by driving a car, socializing with friends, and participation in sports. All of these are "active" pastimes; many could be facilitated with assistive devices. For example, both the visually impaired and physically disabled seniors listed crafts highest on their list of "missed" activities. For those who like to sew, there are needle threaders. Knitting needles can be built up to make them easier for a person with arthritis to hold. Painting on canvas or paper could be substituted with drawing programs available for the computer — and the computer can be adapted to fit the special needs of virtually any person. While often overlooked by service providers who tend to focus on basic care and issues related to ADLs and IADLs, leisure activities are a high priority for seniors. Assistive device interventions should be considered in helping seniors regain, or maintain their participation in leisure activities, as well as to perform ADLs and IADLs.

### ***What devices would people like to see invented?***

Each group had several suggestions for devices that they would like to be invented. Subjects with visual impairments suggested inventing: a talking dictionary, a mobility white cane which would also provide support, an amplified cordless phone, lights on kitchen appliance controls, and a TV with verbal description of the picture. Examples of inventions suggested by seniors with physical disabilities include: devices to assist with dressing, easier to open lids for medication bottles, and a reacher that could grasp china dishes. Examples of suggestions of caregivers of seniors with cognitive impairments include: better restraints and a device to warm the toilet seat and bath bench. Almost every device mentioned has already been invented and is available in the marketplace. These results clearly demonstrate that seniors do not have adequate information concerning available devices. This again suggests a role for professionals who understand the needs of seniors and can make recommendations for assistive devices.

### ***Do assistive devices help seniors be more independent?***

Several studies have examined the effectiveness of specific assistive devices on specific tasks (e.g. Garrett, Olsson & Seeger, 1989; Kohn, Enders, Preston & Motloch, 1983; Mahoney, Euhardy & Carnes, 1992; Shanfield, Perry, Ayyappa, Tornurn & Sanford, 1989). However, there appear to be no reported studies examining the overall effectiveness of the use of assistive devices on functional independence (Connine & Herschler, 1991). In an attempt to fill this gap, Mann, Karuza, Hurren & Tomita (1992) examined data from the Consumer Assessments Study. Correlational analysis was used to identify determinants of functional independence. Two measures were used for functional independence, the OARs IADL instrument and the FIM for ADLs. Mental status was shown to have the strongest relationship to IADL (.76) and ADL (.77). The second strongest correlation was severity of physical disability with IADL (-.33) and ADL (-.50). Other significant variables were sex,

**Table 8**  
*Activities People Miss*

Activities	Visually Impaired (n=30)	Mobility Impaired (n=40)	Cognitively Impaired N=31)	Hearing Impaired (n=28)	Total (n=129)
Crafts (sewing, crochet, ceramics, knitting, painting, woodworking)	11	10	2	2	25
Driving car	7	4	4	1	16
Doing sports (swimming, skiing, etc.)	2	3	6	0	11
Socializing (visit with friends, attend concert)	0	6	4	4	14
Reading	8	1	1	2	12
Walking	0	7	2	2	11
Travelling	1	5	4	0	10
Playing cards	1	0	5	3	9
Cooking	2	2	2	1	7
Attending church services	1	5	0	0	6
Bingo	2	1	3	0	6

Source: Mann et al., (1993)

education, and for ADL only, visual impairment. Having determined “predictors” of functional independence, pairs of subjects were selected, matched on those variables and also on age and, as much as possible, on social support and psycho-social measures. Each subject pair was then examined to see if the person in the pair who used more devices was more functionally independent. There were nine subject pairs, and the expected relationship was found for six of the pairs, the reverse relationship for two pairs, and a tie for one pair. While there are serious limitations with the size of the sample employed for the paired analysis, the results suggest that seniors who use more assistive devices are more functionally independent. Furthermore, the results support conducting more rigorous investigation. One method is an experimental study testing the effectiveness of an intervention consisting of a careful assessment and provision of needed assistive devices and environmental interventions. Such an study could determine the impact of the intervention on functional independence and

quality of life, as well as the cost/benefit in the short term (amount of in-home support personnel needed), and the long term (delaying or preventing institutionalization).

## SUMMARY AND CONCLUSIONS

The Consumer Assessments Study found a relatively high rate of assistive device use among disabled seniors, as well as an expressed need for more devices. However, not all devices that seniors own are being used successfully, and while the "problem rate" is relatively low for those with vision impairments and physical disabilities, the rate is higher for seniors with cognitive and/or hearing impairments. Based on the subjects' suggestions on what needs to be invented, it is clear that many are not aware of existing assistive devices in the marketplace. It is concluded that seniors need more and better information on assistive devices, and in many cases could benefit from professional guidance in assessing their needs and selecting appropriate devices. Apparently, there are many activities that disabled seniors miss doing, and high on the list are leisure activities. Service providers should consider not only ADLs and IADLs, but attend to the leisure interests of seniors. Finally, a preliminary analysis suggests that assistive device use can impact positively on functional independence, but further research is needed to establish this relationship in a more definitive manner.

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## *Chapter 14*

# NECESSARY ELEMENTS OF A COST-EFFECTIVENESS ANALYSIS OF TECHNICAL AIDS FOR THE ELDERLY

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## INTRODUCTION

**I**n the context of enabling technologies for elderly people, technology is "...both a collection of devices or gadgets (i.e. hard technologies) and the development of knowledge or an organizational system (i.e. soft technologies). The two types of technology form the ends of a continuum" (Office of Technology Assessment, 1985, p.7). This chapter examines factors leading to the acceptance of the former type of technology by the elderly and identifies the key elements for a cost-effectiveness model. The model would quantify and assess the effectiveness of enabling technologies in terms of increasing the independence of community-dwelling older persons and analyse the concomitant costs in terms of resource utilization and quality of life. It will be argued that enabling technologies are already part of the support system of many non-institutionalized elderly and that a comprehensive conceptual framework is needed within which technical aids for the elderly can be systematically investigated.

## MAGNITUDE OF THE NEED FOR TECHNICAL AIDS

Activities of Daily Living (ADLs) are the basic tasks of everyday life necessary for personal self-care and independent living (Kane & Kane, 1981; Wiener, Hanley, Clark, & Van Nostrand, 1990). Restrictions in the performance of ADLs provide a logical starting point for estimating the number of elderly who may benefit from the use of technologies. According to the 1986-87 Health and Activity Limitation Survey (HALS) 45.5% of Canada's elderly population reported having some difficulty with one or more of the following ADLs even when using special aids: seeing, hearing, speaking or being understood, standing and

walking, getting in and out of bed, going up and down a flight of stairs, bathing, dressing, bending, reaching, handling/carrying objects and cooking (Dunn, 1990; Statistics Canada, 1988).

Of the estimated 1,221,995 disabled seniors in Canada in 1986-87, the HALS indicates that 84% were living in private households in the community (Dunn, 1990). Manton, Corder and Stallard (1993) report that the proportion of community-dwelling seniors in the U.S. in 1989 with ADL disability was approximately 17%, while Macken (1986) reports 19%. Wiener et al. (1990) reviewed 11 U.S. national surveys concerned with the ADL status of elderly people. They report that the proportion of community-dwelling persons aged 65 and over receiving help for individual ADL's ranged from approximately 5% to 8%, with the highest percentages for bathing. As can be seen, estimates of ADL dependency vary considerably; rates may depend on the subject selection criteria, the ADLs and/or IADLs surveyed, the duration of disability, etc. For example, in the Macken (1986) study, data are from the U.S. Long-Term Care Survey. Subjects consisted of approximately 6,400 telephone-screened Medicare recipients with one or more ADL or IADL limitations that had lasted or were expected to last at least 3 months before or after the date of the interview. In the HALS, ADL limitations had to be of at least 6 months duration to be counted as a disability (Statistics Canada, 1988, p.2). The longer limitation duration criterion would lead one to expect lower disability rates for the HALS than for the Macken study. Instead, rates are higher in the HALS than in other studies. Presumably, the HALS rate is inflated due to the inclusion of institutionalized persons (16% of the sample) and the broader than usual range of ADLs included in the calculation of disability.

## OTHER FACTORS CONTRIBUTING TO DIFFERENCES IN THE ESTIMATION OF NEED

Surveys of elderly persons identify lower perceived needs than surveys of professional service providers and elderly speaking on behalf of other elderly. A survey conducted by the National Advisory Council on Aging (NACA, 1989) illustrates this trend. As can be seen in Table 1, in all areas, professionals who provided service to the elderly and advocates for the elderly estimated the needs of the elderly consumer higher than the elderly consumers themselves. Table 1 also shows that seniors speaking for other seniors estimated needs as greater than seniors speaking for themselves. While professionals may have a vested interest in documenting a high demand for their services, other explanations for the findings are plausible. For example, the NACA (1989) report notes that:

...most seniors are not "complainers". Having lived through "hard times" many tend, almost on principle, to minimize any problems they may have in their later years.

Seniors answering for their associations or for other seniors they know, were more likely to report that seniors have more problems than seniors answering for themselves. This may be because their responses represent a distillation of their observations of the shared experiences of seniors.

Those who work with seniors, however, were even more likely to see many more problems as barriers to independent living. The experiences of these individuals would logically tend to give them a somewhat biased view since, by the nature of their work, they come into contact with seniors who are experiencing problems or who have lost some degree of autonomy (p.108).

The report also notes that ethnic seniors, the very old, the frail, the illiterate and the visually impaired elderly were all under-represented in the sample, while younger, male, higher income and married seniors were all over-represented. As a result of the sample characteristics, the self-reported need may constitute an under-estimate of actual need in the population of seniors. Whatever the explanation, between- and sub-group differences in the perception of need are among the factors that must be taken into account in attempting to determine the cost-effectiveness of technological interventions.

**Table 1**  
*Percent Perceiving That Seniors Have Problems*

<b>Problems Areas</b>	<b>Seniors Speaking for Themselves (n=2,281)</b>	<b>Seniors Speaking for other Seniors (n=464)</b>	<b>Professionals &amp; Advocates (n=855)</b>
Physical Health	71	82	96
Emotional/Mental Well-being	52	75	96
Accessing Community-based Support Services	48	68	82
Mobility & Transportation	50	72	89
Safety & Security	44	67	82
Housing	43	69	82
Communication & Information	43	72	82

**Source:** National Advisory Council on Aging (1989), Appendix 4

## ESTIMATING THE USE OF TECHNICAL AIDS

Table 2 (adapted from Dunn, 1990) shows the number and percentage of disabled elderly HALS respondents who reported using and/or needing equipment aids and the percentage who stated that they need but do not have the device. Disabled seniors reporting that *they use or need* mobility/agility aids, a hearing device, or visual aids are, respectively,



**Table 2**  
*Disabled Seniors, 65 Years and Over, in Households,  
 by Total Need and Unmet Need of Equipment Aids*

<b>Technical Aids</b>	<b>Total in Need</b>	<b>% of Disabled Seniors</b>	<b>% with Unmet Need</b>
<b>Mobility/Agility Aids</b>	<b>235,950</b>	<b>19.3</b>	<b>8.7</b>
Cane	180,210	14.7	1.2
Wheelchair	55,395	4.5	17.8
Walker	43,510	3.6	9.1
Back or leg brace	14,465	1.2	-.
Crutches	13,450	1.1	-.
Orthopedic footwear	11,130	0.9	9.1
Other mobility aids	12,275	1.0	28.3
Artificial foot/leg	6,450	0.5	-.
Aids for hands/arms	6,520	0.5	20.3
<b>Hearing Devices</b>	<b>237,230</b>	<b>19.4</b>	<b>34.8</b>
Hearing aids	220,120	18.0	29.8
Volume control phones	80,645	6.6	30.8
<b>Visual Aids</b>	<b>210,125</b>	<b>17.2</b>	<b>11.2</b>
Glasses	201,195	16.5	6.0
Magnifiers	91,255	7.5	5.8

Source: Columns 1,2, 4: Dunn (1990), p. 11., Table 5

Note: "Total Need" represents the number of persons that use and/or need the relevant adaptation. "Unmet Need" is the percentage of the total that still don't have the adaptation. % of disabled is the percentage of all disabled seniors (1,221,995) who use a device. Columns will not sum to 100% since some persons use more than one device.

19.4%, 19.3%, and 17.2%. Although the percentages are fairly similar for the major disability groupings, they range from a low of approximately 0.5% for an artificial foot/leg and aids for hands/arms to a high of 18% for hearing aids. Among disabled seniors, the percentage of *unmet need* is 34.8% for hearing devices, 11.2% for visual aids and 8.7% for mobility/agility aids. It ranges from a low of close to zero for a back or leg brace, crutches and artificial foot/leg to a high of 30.8% for volume control phones.

Table 3 shows the proportion of functionally impaired elderly in the U.S. Long Term Care Survey by age and special features in their homes (Macken, 1986). Handrails and grab bars are clearly the most common special features (about 22%), while push bars on the door exhibit the lowest rate of use (about 1%). Ramps, elevators/stair lifts, wide doorways and raised toilet seats range between 3% to 6%.

**Table 3**  
*Percent of Functionally Impaired Elderly,  
 By Age and Special Features in Their Homes*

Age	Handrails & Grab Bars	Ramps	Elevators or Stair Lifts	Extra Wide Doors or Hallways	Raised Toilet Seats	Push Bar on Doors
65-69	17.3	3.5	2.5	3.7	4.3	(1 <sup>1</sup> )
70-74	20.6	3.8	4.2	4.1	5.2	1.0
75-79	22.9	4.2	3.6	4.5	5.4	1.1
80-84	24.4	3.5	4.0	5.3	6.5	1.5
85+	24.7	3.1	3.8	4.8	7.5	(1 <sup>1</sup> )
<b>Total</b>	<b>21.8</b>	<b>3.6</b>	<b>3.6</b>	<b>4.4</b>	<b>5.7</b>	<b>1.0</b>

Source: Macken (1986), Table 11

(1) Less than 1%

Table 4, from the same study, shows the proportion of functionally impaired elderly respondents who needed no assistance, used special equipment, received personal help, made use of both personal help and technical equipment, or were completely dependent with respect to the following ADLs: bathing, dressing, toileting, bed transfer, mobility within their home and eating. As Macken (1986) points out:

The most noteworthy finding with respect to ADL limitations appears to be the reliance on the use of special equipment. The use of special equipment, with or without personal help, ranged from 1 percent of those functionally limited in feeding themselves to about 36 percent of those who could not get around the house without some assistance. For four of the ADL's—getting in and out of bed, getting around inside, bathing, and getting to the bathroom or using the toilet — the use of special equipment only (i.e. without personal assistance) in the performance of these activities was the most frequent form of assistance used (p.38).

Analysis of equipment use among disabled seniors between 1982 and 1989 indicates an increase for those with light physical impairment, as well as to supplement personal assistance for the severely disabled (Manton et al., 1993). The authors discuss these patterns of use in terms of their implication for reducing recurrent costs for personal assistance from formal services.

Technical aids can also benefit professional service providers, and family, friends and neighbours helping older persons (see Table 5). The magnitude of the demand and the utilization of technological aids by agencies and individuals providing formal and informal service/care to seniors is not well documented. However, in a recent international survey (Monk & Cox, 1991), absenteeism among home care workers in Norway was reported to be

**Table 4**  
*Percentage Distribution of Functionally Impaired Elderly Reporting ADL Limitations, by Degree and Type of Assistance Required*

ADL	No Assistance	Special Equipment Only	Personal Help Only	Special Equipment & Personal Help	Completely Dependent
Bathing	57.9	14.3	13.7	8.4	5.7
Dressing	80.5	1.3	15.2	1.0	2.1
Getting to bathroom & using toilet	79.1	10.1	4.1	4.5	2.1
Getting in/out of bed	74.0	13.5	4.6	7.0	(1)
Getting around outside	59.9	28.1	3.1	8.2	(1)
Eating	94.0	(1)	4.5	(1)	(1)

(1) Less than 1%

Source: Macken (1986), Table 3

**Table 5**  
*Potential Beneficiaries and Benefits of Technical Aids*

User/Client	Service Provider	Family Caregiver	Community/Society
greater choice flexibility	reduced physical workload	reduced physical workload	greater capacity to care for elderly and disabled
increased safety	lower burn-out rate fewer stressors	lower burn-out rate fewer stressors	potential for cost reduction
greater opportunity to focus on social aspects	greater opportunity to focus on social aspects	greater opportunity to focus on social aspects	reduced absenteeism lower staff turn-over
increased autonomy			

40% and was higher among those who provide services for more than 15 hours per week. The same study reported annual turnover rates of 25% in Holland and up to 40% in England among part-time and non-unionized home help. Few attempts have been undertaken to lessen the work burden of service providers to the elderly by the provision of technologies. Pearlin, Mullan, Semple and Skaff (1990) note that a primary stressor on caregivers is the number of ADLs and IADLs for which the impaired person is dependent on the caregiver and the extent of dependency for each activity. It seems reasonable that technical aids could help to relieve some of the stresses associated with providing ADL/IADL assistance.

Emergency Response Systems are an example of technologies that appear to offer psychological stress relief to families of older persons (Gatz & Pearson, 1988; Gatz et al. 1984; Peck & Gardiner, 1989). These same devices or other monitoring technologies might also help to lessen the frequency of elder abuse and/or violence perpetrated by seniors against staff of long-term care facilities (Boyd, 1993) or family caregivers (Paveza et al., 1992) or, at least, facilitate the summoning of assistance in situations of personal attack.

## ACCEPTANCE OF TECHNOLOGIES BY SENIORS

To estimate the potential demand for technical aids, it is not sufficient to estimate the number of elderly and service providers who potentially could benefit from the technologies. One must also consider the factors that lead to the acceptance or rejection of special equipment. A review of the literature indicates that to date, very little systematic research has been conducted that examines the relationship between aging and the acceptance of technology.

In 1981, the American Association of Retired Persons (AARP) conducted telephone interviews with 750 persons aged 45 and over exploring their use of various devices and their attitudes toward technology. Brinkman (1984) reports that older respondents were less likely than younger ones to have used an electronic calculator, a computer, a video recorder, an automated bank teller and a video game. Education, occupation and income were positively correlated with use of and attitudes towards these products. Women were less positive toward technologies than men, and familiarity with a product increased use, as expected. The greatest consensus was obtained for the impact of technology on efficiency and effectiveness. More than four-fifths of the respondents (83%) agreed that improvements in technology make it possible to get things done faster and more accurately. On the other hand, almost two-thirds (64%) felt that machines make life too impersonal, and only about one-third (34%) felt that life will be better when technology permits people to bank, shop and conduct other business from their home.

The AARP Research and Data Resources Department (1984) report that a follow-up study two years later found these attitudes to be stable. They noted however, that "Older Americans are receptive to technical innovations considered to have positive potential. While their approach varies, there is no evidence for the stereotype that older persons are resistant and/or hostile to new technologies" (p. 1). Brickfield (1984) suggests that older people are

most likely to reject technology that decreases their opportunity for socializing and that tend to isolate them.

A Canadian study (Forbes, Hayward & Agwani, 1991) indicates that "The non-use of assistive devices was often found to be consistently and strongly correlated for women who report social isolation, less education and residing in rural areas" (p.2). Another Canadian study (Robitaille, Gosselin, Maltais & Trickey, 1990; *Window on Technology*, 1990) found that the best indicator of home adaptation was the attitude of the elderly towards such intervention. However, attitudinal studies using a cross-sectional design cannot be definitive in establishing a causal connection between attitude and behaviour. No studies were found investigating the factors leading to the acceptance of technology by professional service providers or caregivers.

### FINANCIAL COST OF TECHNICAL AIDS

In the HALS (Dunn, 1990), cost was identified as the principal reason for not obtaining needed technical aids. Not all studies, however, show cost consistently identified by seniors as a major barrier to the acceptance and use of technical aids. Examination of the reported cost of technical aids and home modifications does not generally support the impression that these are very expensive. For example, Sweden (Fagerberg, 1991) spends about two billion Swedish crowns - the equivalent of \$400 million each year - on free devices and home modifications for the elderly. With a total population of eight million 18% of whom are aged 65 years and over, the \$400 million translates to less than \$330 per Swedish senior per year. A Montreal study (Trickey, Maltais, Gosselin & Robitaille, 1990; *Window of Technology*, 1990) also shows that home modifications and technical aids can be introduced at a relatively modest cost. In this study, an average of five home modifications were made per household. The cost of the modifications (grab bars, bath aids, etc.) ranged from \$5 to \$1,094, with an average cost per home of \$185. In a British study (Hart, Bowling, Ellis & Silverman, 1990), very elderly people with locomotor disabilities were given simple technical aids (raised toilet seat, teapot tipper, tap turner, shoe horn and elastic laces, and double handled saucepan). Compared with controls, subjects randomly assigned to receive the aids showed significantly greater reductions in difficulty and in time taken to complete tasks. The reported average cost per aid was the equivalent of about \$20 CAN and the average cost per improvement in function was about \$80 CAN.

### PSYCHO-SOCIAL COSTS OF TECHNICAL AIDS

Tittnich and Brown (1981) warn against technology's "potential for destructiveness, not only in a physical sense, but also in a psychological, creative, and interpersonal sense" (p. 17). Studies (e.g. Vallerand, O'Connor & Blias, 1989) dealing with life-satisfaction of the elderly have shown that people who have more choices and are less constrained in the performance of their activities report higher levels of life-satisfaction relative to those elderly who live in more constrained environments. Kane and Kane (1981) note that, although "sometimes the two forms of dependency are equated...more often, however, the ability to perform with a

device is rated as a higher level of independence than the ability to perform with human help” (p.43).

## DEVELOPMENT OF A COST-EFFECTIVENESS MODEL OF ENABLING TECHNOLOGIES

A logical starting point for developing a cost-effectiveness model of enabling technologies for seniors is the premise that technical aids and well-adapted environments promote independent living among elderly who have difficulty in performing their daily living activities. This premise is based on theoretical work by Lawton (1984) which suggests that functional inability may be effectively compensated through systematic modifications to the environment and adaptations of the tools (technologies) with which one interfaces with it.

As Ray (1984) notes “... a common complaint against cost-benefit analysis is that it collapses a large and intricate story into a single number” (p. 7). Cost analyses of enabling technologies for the elderly are especially controversial because they appear to be the antithesis of humanistic provision of care. Some argue that cost-benefit analyses, if they are to be successful, must try to quantify and include such intangible elements of human life as suffering, perceived well-being, or creativity (also known as cost-effectiveness models). Many would maintain that the obvious tasks or “bottom line” in calculating the cost-effectiveness of technical aids is to show that such systems maintain or restore independence, that they will reduce the frequency and duration of hospitalization, and lower the probability of entry into long-term care facilities. There are, however, a number of underlying assumptions and smaller questions that also must be addressed. For example, since technical aids fulfill some functions that previously required a service provider or caregiver, one view holds that technologies are substitutes for personal assistance. An alternate perspective is that technical aids and human services are complementary and that increases in the utilization of technical aids will lead to increased demand for services. At the present time there are no clear empirical results supporting either view.

In the past, arguments in favour of the greater utilization of technical aids in support of independent living relied, implicitly or explicitly, on technology driven assumptions. These arguments assumed that the availability of a technology, along with a simple economic rationale (i.e. it costs less than personal care), are sound bases for forecasting the demand for such services. However, at this time, little is known about the process involved in the decision by an elderly person to carry out an ADL with the aid of a device, with personal assistance, or with a combination of the two. Research is needed to identify and elaborate the decision-making process that underlies the use or non-use of technical and/or personal assistance. The following steps in the decision process to select the preferred type of assistance might be hypothesized:

1. Development and realization (sudden or gradual) of a need for assistance to perform one or more ADL functions.
2. Review of alternative ways of performing the required activity with assistance.

3. Information gathering (friends, relatives, professionals) on the different ways in which the activity can be performed.
4. Review of the information (with or without the involvement of others).
5. Decision and choice.
6. Acquisition of service or product.
7. Utilization of service or product.
8. Assessment of utility of service or product and review of decision.

Each of these steps involves many considerations and each needs to be studied before informed decisions about technical aids for the elderly can be made. For example, Macken (1986) reports that, as far as technical aids related to the home are concerned, few are perceived by the elderly as facilitating performance of ADLs or IADLs. It is difficult to know whether this is due to insufficient information about the advantages of special home aids and how to access them, the lack of suitable products, psychological barriers (e.g., denial of need) or a combination of these.

To what extent would the availability of good information help disabled seniors in their decision-making? General utility models, applied in economic research assume that information processing is effortless. This implies that more information leads to better decision-making on the part of the consumer. Psychological models, however, hypothesize that the consumer has the ability to process only a finite amount of information at a point in time so that adding more information may have little or no value and may even be dysfunctional. The decision to acquire a service, which is technical or personal, is also influenced by information about the service or product. How could/should information about technological alternatives be provided to better serve and fit the decision-making processes of the elderly consumer? Information-only sources which do not provide actual services or products appear to be less effective in influencing decision-making than agencies or individuals who provide information as well as service (Price Waterhouse, 1992). Little is known about the role of the attitudes, perceptions, and personal characteristics of the individual and the role of product attributes in the decision-making process. Factors to be considered in a realistic model would have to include the characteristics of the elderly individual, the characteristics of the social/health care system which delivers the services, the individual's perceptions of the available service alternatives, his/her feelings towards the alternatives, and environmental and situational constraints under which the choices are made. Further, for each ADL, the attributes of the relevant services and technical devices would have to be included in order to gain a full understanding of the costs and benefits of technology in support of independent living by the elderly. For example, Macken (1986) suggests that there may be a disability threshold that must be crossed before special features in the home that facilitate mobility are perceived as useful.

The data indicates that only a few of the special features in the home were felt to make things easier for persons. This may mean one of two things: either individuals are not aware of the advantages of special features in the home and how to obtain

them, or their problems are not severe enough that special features are perceived as useful....A review of the data ..shows that most functionally impaired persons did not have severe mobility problems. Persons in the community may remain there not because of adaptations in the home but because the problems are not severe enough to require adaptations to the home (p.46-47).

This is consistent with economic decision-making theory in demography that distinguishes between active and passive decision-making (Leibenstein, 1981). The latter is described as routine behaviour, which is only transformed into active evaluation of alternatives if an event is potent enough to push the individual past a threshold. Attitudinal, perceptual, and situational factors that affect movement across a disability threshold need to be studied in combination with disability characteristics.

## CONCLUSION

This chapter has attempted to identify some of the principal issues that require consideration before a cost-effectiveness analysis of technical devices can be undertaken. Review of the literature suggests that the use of technical aids by seniors living in private households is more extensive than has been thought and appears to be on the increase. Recent data suggests that use is increasing fastest among older adults with light physical impairment, as well as to compliment personal assistance received by the severely disabled. In addition, up to age 85, more elderly use special equipment to perform many activities of daily living than rely on personal assistance. However, the extent to which the adoption of technical aids either substitutes for or compliments personal assistance remains to be established. In fact there may be cases where an individual will use technical devices for mobility but will require some minimal personal assistance for heavy interior and exterior work. It is also important to take into account whether support originates from formal or informal sources and to ascertain all potential costs and benefits of each.

A related issue pertains to operational definitions of both disability and technological aids. It will be necessary to determine cost-effectiveness for individual devices and for specific sub-groups of disabilities. This is particularly important if a comparative cost analysis is being conducted between technology and personal assistance. For example, a person with a hearing problem usually makes few demands on the formal personal care system.

Furthermore, no explicit decision-making framework exists to investigate the costs and benefits of technical aids to elderly persons. In developing one, it may be useful to borrow conceptual frames from other disciplines. For example, considerable work has been done on decision-making models in the demographic (e.g. Burch, 1980) and social psychological literature (e.g. Tversky & Kahneman, 1981). Sophisticated multivariate models may be needed to approximate the complexity inherent in the decision-making process, if we are to accurately evaluate the cost-effectiveness of technical aids for seniors.



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## *Chapter 15*

# BRIDGING THE TECHNOLOGY GAP: THE LINKS BETWEEN RESEARCH, DEVELOPMENT, PRODUCTION AND POLICY FOR PRODUCTS SUPPORTING INDEPENDENT LIVING

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## INTRODUCTION

**T**he potential market for products supporting independent living for aging populations is widely recognized. Most developed nations have embraced the principle of independent living in the community for their elderly citizens. The lobby groups for disabled persons demanding supports for independent living are strengthened by a constituency that now includes persons with age-related disabilities. This has fuelled the demand for technology to be applied to making independent living a possibility for the older consumer and for those involved in caring or serving them. The Japanese use the term “the silver market” to represent, on the one hand, the aging but well-off consumer, and on the other hand, a consumer who is discriminating in the choice of products and services that enhance life after their working years.

Despite the clear indications of demand, there exists what has come to be known as a “technology gap” with respect to products in the market that support independent living. Commercial exploitation of the possibilities has simply not kept pace with the growth in the potential market. The product lines available in the local, national and international marketplace are few and poorly targeted. Furthermore, the progress from research to product development, production, marketing and, where necessary, to policy is slow and unfocussed.

This chapter discusses possible reasons why this technology gap continues to exist, identifies its characteristics and develops a set of recommendations to facilitate linkages between various sectors to eliminate it.

Before such an inquiry can be started, however, some questions must be answered so that the scope of the discussion can be delineated. Is the process of technology flow a problem? If so, solutions must address improving the general flow before addressing the specific need for

unhampered flow in the case of products supporting independent living. Secondly, can such gaps appear because the technology is being applied to a relatively small proportion of the population with particular characteristics? If this was true, special solutions and additional efforts would have to be recommended. Thirdly, is this technology gap a problem only in Canada? Should this be true, then the Canadian technology infrastructure and its relation to research, market and policy domains must be examined carefully. Let us look at these questions one by one.

### **Is Technology Flow a Problem?**

It does not appear that the process of technology flow is itself a problem. Technology flows to products serving other sectors of the economy. For instance, technology serves the information sector very well, whether it is for the management or for the dissemination of information. Research and development activity has resulted in a rising number of intellectual properties in this domain which are seized as investment opportunities by those who develop products for the market. Therefore, one can assume that smooth technology flow from the research lab to the marketplace can be accomplished.

### **Is the Market Too Small or Specialized?**

This proposition, too, does not seem likely. The key argument is that the proportion of seniors within the population is only in the 10% to 15% range and that a large number of them live in poverty or are on fixed incomes. These statements can, however, be equally applied to pre-schoolers and yet technology flows to them are not affected. In fact, residential land use planning and the design of housing are considerably changed by the demands imposed by this small population group. Both seniors and pre-schoolers may be considered vulnerable, with special demands for safety and security. Furthermore, the power of the older consumer has increased considerably now that government pension plans cover most persons aged 65 and over. Moreover, the care and service sectors for seniors comprise a multi-million dollar industry in virtually every developed country.

### **Is the Technology Gap a Problem Only in Canada?**

Again, the answer appears to be no. In many European countries, where the proportion of elderly persons exceeds 15%, the rate at which new products and services are supplied does not reflect the potential demand.

Accepting, then, the assumption that the technology gap is an international problem in the case of products supporting independent living for seniors, some of the factors causing the problem can be unravelled.

# THE TECHNOLOGY FLOW PROCESS

## **Invention vs. Innovation**

Discussions in the research literature on inventions and innovations may shed light on the situation (for a good review see Rogers, 1962). Whereas an invention is a creative solution, an innovation is a creative solution that has been successfully applied. There is some debate whether inventions are necessarily stimulated by the identification of need or come about from the juxtaposition of opportunities to experiment. Either way, an innovation is hailed as a success when the solution is not only creative, but passes into wide and general application resulting in a significant improvement in benefit or efficiency.

But to gain a clearer picture of the tangled web of activities that support and retard technology flow, it is necessary to examine the process holistically. Several weak links in the process result in additional gaps and require a number of bridging actions by various actors.

## **Key Actors**

The field is a complex one because of the number of players. The research, private and public sectors are involved, in addition to the senior consumers themselves. Each of these sectors work towards their own goals and the return on their investment of effort is measured very differently. The differences in the rewards and recognition lead each sector to work independently unless there is a clear benefit to joint effort.

## **Research**

The derivation of creative solutions begins with research, is developed further based on research data, and finally culminates in a product, whether it be an idea for a product or a service. These intellectual properties may be protected by a patent, copyright or registered mark. In some cases, a policy may develop from these creative products, as in the case of guidelines or standards.

## **Application**

The processes involved in application parallel the activities undertaken during invention. Starting from the idea, whether it be a product or a service, research may be conducted to examine application options. During development, the product may be designed and prototypes tested. Services may be consumer-tested and improved. Production involves industrial production of the product or large scale delivery of the service, the ensuring of adequate investment, and the development of the market. Policies (public policies generally) may enhance technology flow by supporting any of the above three activities.

## **BARRIERS TO THE DEVELOPMENT AND APPLICATION OF CREATIVE TECHNOLOGICAL SOLUTIONS**

For ease of discussion, barriers to creative solutions and barriers to application will be addressed separately. In both cases the role of each actor during the processes involved will be reviewed.

### **Barriers to Development**

The processes supporting the development of creative technological solutions are not facilitated in general because of the ambiguous role of technology in the development of solutions for independent living. Technology is considered often as an aid in the prosthetic sense rather than as a market venture. Though the potential for the use of technology to facilitate independent living is recognized, the limited expectations circumscribe the scope of exploration. In fact, creative solutions to services are often victim to this narrow optic.

The relationships between the phases and the actors are shown in Figure 1. It should be noted that the time, effort and investment required for these phases may vary considerably. A single initiative or a number of related or unrelated initiatives may result in a creative solution.

#### ***Research Organizations:***

Researchers in various organizations are actively conducting research in many domains such as health, social services, nutrition, housing and urban planning, because of the aging of the population. Considerable ergonomic information on older consumers is available (cf. Canada Mortgage and Housing Corporation, 1979). However, the research culture is insulated from the market. Theoretical and statistical research is very attractive to many researchers because of the premium placed on new findings for publications and recognition. Market vacuums rarely stimulate research activity. In fact, some ties are being established belatedly between researchers and private industry, because they offer an alternate source or funding in times when public sources are drying up. This development may result in more directed research leading to creative solutions that may be applied later for products and services. The collaboration is largely between established corporations and universities and unless the pressure to diversify is a strong motivating force, it is unlikely that such partnerships will search for new solutions to problems or needs. The research community may produce ideas which result in patents or in copyrighted material but this information is rarely marketed for application. Design guidelines are often developed for furniture, for buildings, for parks, etc., serving older people (c.f. Carstens, 1985; Cohen, Weisman, Steiner, Ray, Rand & Toyne, 1988; Koncelik, 1983). However, these are largely used by the researchers themselves. Since guidelines may be published, even though many sets are already available, they continue to be produced with minor refinements. Few researchers work with practitioners to apply these design guidelines. However, they might themselves use these to conduct evaluations. Few researchers are willing to work through the policy system which would result in standards

**Figure 1**  
*Barriers to the Development of Creative Technological Solutions*

	<b>RESEARCH</b>	<b>DEVELOPMENT</b>	<b>PRODUCTION</b>	<b>POLICY</b>
<b>RESEARCH ORGANISATIONS</b>	Considerable research in related fields.	Insulated from market. Recently more collaboration with private sector.	Guidelines published and used by research community for evaluations.	Do not participate in policy or regulation development process.
<b>PRIVATE SECTOR</b>	Some research to identify new products.	Pressure to diversify. Helpful.	Expensive adds to cost of products.	Regulation considered burden. Participate in regulatory process.
<b>CONSUMERS</b>	Participate in consumer research. Consultation on needs/wishes.	Not involved. Difficult to visualize new products based on experience.	Little involvement.	Lobby for policy. Participate in consumer organisations and in policy process.
<b>PUBLIC SECTOR</b>	Fund research by other sectors. Research in public interest.	Centres of excellence to forge partnerships.	Financial support to new companies. Launching new products.	Policies for aging in place driving force.



or in other regulations such as zoning requirements. This is partly because researchers feel that standards or regulations that are negotiated through processes other than research (e.g. by consensus in carefully constructed committees) lack rigour.

### ***The Private Sector:***

The organizations of the private sector are varied in size and resources. Particularly, small operations that tend to seek new products or services to establish a market niche, find it difficult to spend capital on research and development for the new solutions that are the basis of such products. Established corporations conduct new product research, particularly in support of their market lines of goods and services. The pressure to diversify may lead them to pursue research that could lead to the discovery of creative solutions. Pharmaceutical companies are leaders in this respect.

The pressure to bring products and services to the market with low overhead for research and development has affected investment in these phases. Although regulations are intended to provide a framework within which solutions must be found, their existence is considered to add to the initial costs of research, development and production. However, representatives of the private sector work closely with regulating bodies such as the Canadian Standards Association and committees established by the federal and provincial governments. On the other hand, the private sector, in general, is poorly linked with the research community and the elderly consumer.

The private non-profit sector is becoming an active player, often serving as a link between the consumer and the private for-profit sector. Many manufacturing or service company associations establish non-profit foundations or organizations as their public relations arm, thereby saving individual expenditures on such activities. Others are collaborative efforts between the private and public sectors. For example, the consumer research conducted by Hickling Corporation (1990) for the Canadian Automated Building Association (CABA) focussed on the types of technologies older persons and those with disabilities wanted in their homes (see *Window on Technology*, 1992 for a brief review).

### ***Consumers:***

Consumers are increasingly educated and discriminating and they are increasingly demanding that they be consulted in the development of products and services. Consumers participate in consumer research and articulate their needs and their wishes. There are, however, limited links between the consumers and the other sectors during the development and production phases. It is also recognized that consumers have some difficulty visualizing new products and applications of technology. Consumers, however, are active in the policy phase. Consumer representatives serve on committees formulating regulations. They join consumer organizations and lobby government for policy changes that support their needs. Voting power may be used to good effect as the proportion of older persons in the population rises (Gifford, 1983).

The public sector supports research in two ways: by funding research conducted by non-government organizations and by conducting research that is in the public interest. For example, several national governments have stated that community care for older citizens is a research priority and have allocated funds for research supporting independent living. An example of the second case are the Health and Activity Limitation Surveys conducted by Statistics Canada, which are vital sources of information for designers and researchers (cf. Dunn, 1990). The public sector is also cognizant of the bottleneck between research and the other phases of activity. ARCOR, The Canadian Aging and Rehabilitation Product Development Corporation, has received government funding to work with industry, researchers, consumers and governments to develop marketable affordable products to help seniors and persons with disabilities to live independently. The lack of venture capital for the early stages of product and service development for new companies is also recognized. Several government run programs provide grants and advantage loans to new companies that intend to launch new products and services. "Innovation Ontario" is one such program operated by the government of Ontario. Public policy is a major lever for government action. In most cases, policies must be clearly seen to serve the public interest while not disrupting free market forces. They therefore tend to come into play when products and services are already in the market. But in this case, because of the enormity of the demographic phenomenon affecting society, public policy is a driving force. Most developed countries have public policies supporting *aging in place*, which requires that adequate supports be available for aging residents in the community. Public policy, thus, is responsible for creating or at least enlarging this market demand.

In summary, the technology flow during the development and production phases tend to run mainly through the private sector channel with little communication with other sectors. The quality of the interactions can be characterized by arrows that tend to be unidirectional. The consumers pressure the public sector but their relationship to the other sectors is poor. The public sector influences the private and research sectors, although the quality of that interaction may not be considered interventional since it is achieved either through funding, regulations or public policy.

### Barriers to Application

Application of technology for independent living has been cited as essential for present day cost reduction and as being the wave of the future because of the forecasted shortage of caregivers (Fellegi, 1988). There has, however, been no concerted effort to ensure that this occurs. Since the potential demand is accepted, perhaps market responsive investment is lacking. There are also indications that investment in technology portfolios is considered to be risky, particularly if they imply a change in the lifestyle of the consumer.

Figure 2 shows the relationship between the phases and the actors. The time taken for a creative solution to be applied may be very long. Also, one creative solution may have multiple applications.

**Figure 2**  
*Barriers to the Application of Creative Technological Solutions*

	RESEARCH	DEVELOPMENT	PRODUCTION	POLICY
RESEARCH ORGANISATIONS	Applied research lacks prestige.	Slow stages: <ul style="list-style-type: none"> <li>• improvement</li> <li>• substitution</li> <li>• new application</li> </ul>	Under-use of ideas. Few cross-over applications.	Do not work within regulatory framework.
PRIVATE SECTOR	Some research but often prefer to buy.	Service sector neglected due to perceived labour or logistics problems.	Needs to telescope time to profit before competition reduces price. Special design or specialty markets.	Tax write-offs for development costs.
CONSUMERS	Participation weak. Used in product testing.	Private solutions.	Need for consumer information and education.	Subsidies and tax deductions.
PUBLIC SECTOR	Armstrong funding in order not to interfere in free market.	Policies can hasten application by setting time table.	Demand side assistance.	Technology considered luxury. Contradictory policies.

### ***Research Organizations:***

Applied research lacks the prestige that is associated with basic or statistical research. Sustained replicated research, leading to creative practical solutions, may not be conducted. The interest of the research community in the development and production process is very limited. Even in public research organizations, the record of products and services brought to market is quite poor. Applied researchers are often called designers or practitioners and their relationship to the academic research community is tenuous. There appears to be an identified pattern by which technology is normally applied to tasks in the normal case. Let us explain the stages using a motor. The first application of technology is to achieve an improvement in the way a task is done. A motorized wheel chair is an example. In the next stage, an attempt is made to substitute a new method for the traditional way in which a task is carried out. A dishwasher is an example of such an application. It is only after the substitution stage that technology is applied to new tasks such as the development of a stair glide. Most technological applications have not progressed past the initial stage and, in fact, technology is often expected to ease the tasks of the caregiver. During production, new applications of existing technology are not considered. For example, it is only very recently that the technology used for burglar alarms has been utilized to raise the alarm when an Alzheimer's patient opens an exterior door. Similarly, as illustrated in some personal emergency response systems, the technology used in police cars with radios and car telephones can be used to call mobile caregiving teams, which makes the service more customer-responsive. Such cross-over applications are, however, still uncommon. Further, policies and regulations established for protection of the person or his/her property are often not considered by researchers, resulting in costly retooling being required before the product or service can be marketed. Many researchers feel confident that, if their product is good, then the regulations should be changed. While it may be the case that their product is good, there are often other valid reasons why regulations cannot be changed.

### ***Private Sector:***

Private sector companies and corporations balance the advantages of conducting applied research in-house with the benefits of buying developed products or services or paying royalties for the use of intellectual property. This is because competition cuts down the time during which profits can be made before prices fall because of an increase in the number of suppliers. In this way, the time taken in technology flowup to production, in the application phase, can be telescoped. The service sector provides opportunities that are unfortunately resisted by private companies because of perceived or real problems of labour and logistics. Other lost opportunities result because technological solutions are still considered "special design" for small and specialty market segments rather than for the family-lifecycle use implied by aging in place. Furthermore, applications do not consider trends in technology use which give the marketing firm a market edge such as customization. The old paradigm of standardization is applied to products serving older and disabled persons while customization is used for other groups. (One bicycle firm has 1000 possible ways in which a bicycle can be

customized according to the needs of the customer!) Some advantages accrue to private companies, because of policy incentives, to develop new products. Tax write-offs are offered for developmental costs, for example. Policies may also hinder innovative applications. For example, specifications may be developed for products eligible for subsidies. New products, which do not meet the criteria even though they are actually better, are not eligible for subsidies and may fail in the marketplace.

### ***Consumers:***

Consumer collaboration in the application phase is limited. Product testing may involve some consumers. There are opportunity costs associated with this state of affairs because many consumers are natural problem solvers who apply technology for their own private use. One handy husband adapted a garage-door opener to make a platform lift that glided up a stair. Consumer information and even education may be useful. For example, the microwave oven required consumer information and education, but is now a widely used product. Computers offer a wide variety of options for independent living, but the applications are slow to reach the market. Public perception regarding costs associated with the use of technology may be a problem. However, as products become more durable, consumer resistance is fading. Where independent living is public policy, some demand-side subsidies and tax deductions are offered to permit customers to invest in high ticket items that, over time, will reduce public costs through reduced services.

### ***Public Sector:***

There is considerable resistance to public sector participation in the application phases because it is often considered as interference in the free market. Governments assist through funding provided to the research and private sectors. Research and development is often a priority for maintaining competitiveness but governments are expected to maintain an arms-length relationship with funding agencies. Policies often hasten application. For example, human rights legislation has led to a policy requiring that public transportation be accessible within an established time frame. This has led to increased efforts to meet the deadline with redesigned public transport and transportation facilities. Demand-side assistance may also be provided. For instance, some governments provide a one-time subsidy to taxi drivers for the purchase of an accessible taxi which is then operated normally within the fleet. Policies do not always facilitate the use of technology. For instance, technological solutions are sometimes considered luxury items and therefore, subsidies are withheld. For example, garage door openers are not considered standard fittings and subsidies do not cover them. Since policies are developed over time, they are not fully rationalized. For example, many residents first have to have their home purchased or built before they are eligible for subsidies for accessibility. The costs of retrofitting are higher, but policies accommodating accessibility costs during construction are unusual. Policies and regulations are slowly moving to make accessible structures and services a requirement across the board.

There are indications that the major barrier lies between the development and production activities. Among the technical solutions that filter in from the creative solution phase, few applications are worked out and they are slow to come to the market. The research community and the private sector are often isolated in their efforts to develop technology flow. A two way intersection may be discerned between consumers and the public sector. One way interactions occur between the private sector and the consumers, and between the public sector and the private sector.

## **RECOMMENDATIONS:**

This chapter is an initial effort to examine some of the reasons behind the technology gap. Based on the foregoing discussion, the following recommendations are suggested:

**1. If competitiveness is a priority for Canada, some process or system should be established to engage all of the actors.** No group should be isolated from the market. This could be as simple as a newsletter circulated to all parties interested in working in a specific area of independent living for seniors and persons with disabilities. A computer network may be set up that would provide on-line information on ergonomic data and market data so that the synergy for creative solutions is provided.

**2. The barrier between data and solutions needs to be overcome.** The involvement of the private sector in research will improve the situation. Funding agencies must require a section in research reports focussing on potential applications and detailing the steps that will be taken for this to occur.

**3. Researchers should be encouraged to market intellectual property as a means of raising funds for other research.** Publication or conference presentations should not be the only goal.

**4. The idea that technology serves to enhance quality of life (regardless of one's age or disability) should be the subject of consumer education.** The public and private sectors could share the responsibility for such a campaign which would require both sectors to abandon tendencies to associated luxury and special markets with technology.

**5. A role exists for brokers who can make connections between those with creative solutions, those with investment financing, and companies and corporations.** Even the public sector could assist by organizing trade fairs where such connections can be made. Brokerage agencies could also organize think-tank sessions.

**6. Policies have tended to be regulatory with associated penalties for non-compliance.** A move to a collaborative implementation strategy would help to build partnerships. The process used to implement accessible transportation is a good model.

**7. To initiate the free flow of technology with the hope that it will be generalized, competitions could be held that require a four-way partnership.** The competition would require the development of a product that can be marketed through a private company. The cash award could be applied retroactively to the costs incurred during the process. Governments could assist with finding international markets for the winning product.

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