

Are Canadian Seniors Becoming More Active? Empirical Evidence Based on Time-Use Data*

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RÉSUMÉ

Dans cette étude, nous examinons les tendances en terme d'emploi du temps chez les personnes âgées au Canada depuis les années 1980s. Tout particulièrement, nous posons la question à savoir si les personnes âgées aujourd'hui consacrent plus, ou moins, de temps aux activités productives qu'il y a 20 ans. Notre étude est motivée par l'énoncé fait par certains auteurs que les personnes âgées d'aujourd'hui ne poursuivent pas un vieillissement actif (active aging). Notre étude utilise des données tirées d'une série d'enquêtes budget-temps administrées au Canada depuis 1981 afin de tester empiriquement la validité de cet énoncé. Nos résultats suggèrent certains changements vers un vieillissement plus actif depuis les années 1980s. Cependant, ces changements impliquent un modèle complexe de ré-allocation du temps qui varie par genre et âge.

ABSTRACT

In this study, we examine trends in the patterns of time use of seniors in Canada since the 1980s. In particular, we ask whether today's seniors devote more, or less, time to productive activities than 20 years ago. Our inquiry is motivated by the claims that today's seniors are not engaged in "active aging." This study uses data from a series of time-use surveys carried out in Canada since 1981 to empirically test the validity of this claim. Our results suggest that some shift towards active aging has taken place in Canada since the 1980s; however, this shift involves a complex pattern of reallocation of time that varies by gender and age.

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Introduction

In Canada, as in other industrialized countries, people have been retiring earlier and living longer. The average age of retirement in Canada has dropped from about 65 to 61 years of age between 1976 and 1999 (BC Stats, 2001). Meanwhile, those aged 65 in the

late 1990s could expect to live another 18 years, nearly 3 years more than in the 1970s (Health Canada, 2003a). As Canadians are enjoying a longer period of life after retirement, what are seniors doing with this extra "free" time? Are they simply spending their time on passive activities such as watching television? Or are they "actively aging" by performing socially

and economically productive activities, as defined by the Organisation for Economic Co-operation and Development (OECD), such as paid work and volunteering (Hicks, 1996, 1998), or are they engaged in other active pursuits such as physical exercise? These questions are at the core of this paper. Using time-use surveys from 1981 to 1998, this paper examines the patterns of time use of older adults in Canada.

The paper is divided into six sections. In section 1, we review the literature on factors that are known to influence older people's patterns of time use: health, education, employment, and income. We then present our theoretical framework in section 2, our methods and data in section 3, and our results in section 4. We discuss the implications of our findings in section 5 along with limitations of the study, and conclude the paper in the last section with suggestions for future avenues of research.

Review of the Literature

The patterns of time use of older adults in Canada and other industrialized countries have been the subject of an important body of literature. First, there is the literature on trends in market activities, that is, in the employment patterns of older adults. As mentioned above, there is clear evidence that older adults in Canada have been retiring earlier. While men were retiring at an average age of 65.5 years in 1976, this figure had been reduced to 61.5 by 1999 (BC Stats, 2001). During the same period, the average retirement age for women declined from 64 to 60 years between 1976 and 1999. Data suggest that the trend towards an earlier age at retirement may, however, be levelling off (OECD, 2000).

The decrease in the average age at retirement may be surprising, considering the increase in older people's life expectancy and therefore in their ability to work at older ages. The trend in the age at retirement is, however, a complex phenomenon affected by numerous macro-level factors, including the downsizing of companies, incentives to retire early, disincentives to remain in the labour force at older ages, and discrimination against older workers (Gruber & Wise, 1998). In particular, Canadian data suggest that an increasing number of people report that they retired early because they had lost their job and were unable to find other employment (Vanier Institute of the Family, 1998). It is obviously beyond the scope of this paper to examine all these factors. What is important is to note the clear evidence that seniors have been spending less time on market activities during the past decades. Also important is the evidence of strong variations in the age at retirement by ethnicity and immigration

status. An analysis of census data revealed the higher labour force participation of older men who were born in Asia, Africa, and South/Central America, as compared to Canadian-born men, after the age of 65 (McDonald & Wanner, 1990). Likely this difference captures the financial necessity of recent immigrants from less-developed countries to remain in the labour force because of small (or absent) pension entitlements.

The second body of literature concerns trends in non-market activities. Results here suggest a mixed picture. On the one hand, data suggest that the proportion of seniors who regularly exercise has increased since 1981. Among seniors born in the 1930s, the activity level has increased from about 17 to 27 per cent between 1981 and 1995 (Canadian Fitness and Lifestyle Research Institute, 2002).¹ Data also suggest an increase in volunteer rates, in the total number of hours contributed to volunteering among those 45 years of age and older, and in leisure travel (Heinz, 2000).² Thus, on the basis of some indicators, today's seniors appear to be more active than their predecessors. On the other hand, some other indicators suggest an opposite trend. For instance, results from the United States reveal a large increase in time spent watching television among adults aged 65 and over, between 1975 and 1995. In fact, although seniors have been enjoying more leisure time since the 1970s, "about half of the newly acquired free time on seniors' hands goes to TV viewing" (Robinson, Werner, & Godbey 1997, p. 20). Results from various other data sources also suggest that seniors have been spending less time socializing (Putnam, 2000).³

We should note, however, that there are major variations among seniors regarding their allocation of time to non-market activities, notably by gender, health status, immigration status, race, health, educational level, and occupational statuses (Robinson & Godbey, 1999; Ujimoto, 1988; Victorino, 2001). For example, results for the working-age population from the United States suggest that although college graduates have less free time than non-college graduates, they spend more of their free time "reading, going to cultural events, being involved in organizational/educational activities and doing sports/exercise activities...and spend far less time watching television" (Robinson & Godbey, p. 193). Data, also from the United States, suggest that men and women have become more alike in their allocation of time to activities such as education, socializing, television watching, and hobbies (Robinson & Godbey, p. 193). As to age itself, data from various sources indicate that as they age, people spend less time on physically demanding activities, more time on personal activities, and more time on passive activities such as watching television (Victorino, 2001).

In short, the empirical literature contains clear evidence concerning the decrease in time devoted to market activities by older adults. However, the empirical literature contains mixed evidence as to what type of activities have benefited from the freeing of time resulting from earlier retirement. While some results suggest an increase in active pursuits, such as physical exercise and leisure travel, others suggest an increase in more passive forms of activities, such as watching television. As such, this empirical literature contains no strong evidence of a shift towards active aging. The evidence, however, is based on various sources of data, and does not provide a comprehensive and consistent picture of historical changes in the patterns of time use of older adults. We address this issue in the following sections of this paper by using a series of time-use surveys that have been carried out in Canada since 1981. As discussed below, this data set has a strong advantage in having used the same instrument to collect data since 1981, and thus, in providing a more consistent basis to analyse historical trends in patterns of time use.

Theoretical Framework

Rational choice theory is often used in the literature on time-use allocation (Gauthier & Smeeding, 2003). According to this theory, individuals make decisions by weighing the benefits and costs of each option and ultimately choosing the option that produces the most benefits (Stiglitz & Walsh, 2003). Such a theoretical framework is inspired by the work of Becker (1965), which assumes that the allocation of time between work and non-work activities is the result of a utility maximization function, itself determined by the cost of each activity and subject to an income constraint and to personal preferences. In the case of older adults, we expand this theoretical framework to include other types of "constraints" such as income, health, and family responsibilities, and the availability of work opportunities. Using this framework, we assume that older adults act rationally and have complete information about work opportunities and the health benefits of various activities, and that they consequently will spend more time on activities that maximize their well-being (Gauthier & Smeeding, 2003). The rational choice framework may be criticized for being too rigid and for relying too much on the assumption of rationality among actors. It nonetheless provides a good basis from which to hypothesize about historical trends in patterns of time use of older adults.

On the basis of this theoretical framework, any reduction in older adults' constraints (such as health) can be expected to lead to a reallocation of time, itself aimed at maximizing older adults'

well-being. And since we assume that older adults are rational, it follows that increases in health will be associated with increases in activities that are mainly active rather than passive – because of the well-known links between active aging and well-being (Canadian Fitness and Lifestyle Research Institute, 1998; Rowe & Kahn, 1998).⁴

When examining the historical trends in the allocation of time among older people, two factors are of particular importance. First, there is the historical improvement in the health of older adults. As indicated above, seniors in Canada have been enjoying a longer life expectancy after the age of 65. But more important, there has also been an increase in the so-called disability-free life expectancy. Data suggests that the disability-free life expectancy at age 65 increased from 8.1 years in 1986 to 10.9 years in 1996 for men, while among women the increase was from 9.4 years to 12.4 years in the same time period (Jacobzone, 2000; Statistics Canada, 2002). Similar trends have also been observed in other countries (Waidmann & Manton, 1998). Following our theoretical framework, it may be hypothesized that such improvements in seniors' health would be associated with an increase in time devoted to active pursuits.

Second, there are the historical trends in the education level and income situation of the elderly population. In Canada, as in other industrialized countries, the average education level of the population increased rapidly from the 1950s, following the rapid expansion of higher education (Wisenthal, 2002). As a result, today's seniors have a higher mean level of education than their predecessors. This increase in the educational level of the seniors population may be expected to have significantly affected seniors' patterns of time use for several reasons, including the known link between education and health (Roberts & Fawcett, 1998), and the link between education and income. As such, we may expect a more highly educated population to be devoting more time to activities that are beneficial to its physical and mental health, such as physical exercise and reading, and to be devoting more time to consumption-related leisure activities (because of its higher income) such as leisure travel.

With regard to income, the incidence of poverty among seniors in Canada has strongly declined during the past decades. While 34 per cent of seniors lived in a low-income household in 1980, this was the case for only 20 per cent of them in 1998 (Health Canada, 2002a). The average income of seniors has also substantially increased during this period, while it has remained stable for non-seniors (Health Canada, 2002b). As argued above, this increase in seniors' income may be assumed to have increased

time devoted to more expensive forms of leisure such as travel.

In short, the increase in seniors' health, education, and income can be posited to have increased, on average, seniors' ability to engage in active pursuits. We expect these trends to be more pronounced for the younger cohorts of seniors in view of their better health and education, as compared to older cohorts (who may be more seriously affected by health constraints). As for gender differences, our theoretical expectations are less clear. On the one hand, women benefit from longer disability-free life expectancy than men, and thus may be expected to have more years to devote to active pursuits. On the other hand, women may be more constrained than men in their allocation of time because of greater caring responsibilities.

Data and Methods

In this paper, we use data from a series of four cross-sectional time-use surveys carried out in Canada since 1981. Specifically, the surveys were conducted in 1981, 1986, 1992, and 1998. These surveys are comparable in that they all relied on a diary to collect information via phone interviews on people's activities during a 24-hour period. The diary format involves asking respondents to describe every activity performed in the day prior to the interview, indicating when the activity started and ended, and the nature of the activity. If a respondent was simultaneously engaged in more than one activity during a specific time, the person was asked to identify the main or "primary" activity he or she was doing; information regarding other or "secondary" activities was collected only in the 1981 survey. In addition to providing a rich and comprehensive picture of people's allocation of time, the diary has, moreover, been shown to provide more reliable estimates of patterns of time-use than other methods, such as stylized questions about time spent on specific activities during a reference period (Robinson & Godbey, 1999). Technical details on the time-use surveys appear in Table 1. As already

Table 1: Technical information on the Canadian time-use surveys

Year	Age	Total Sample Size	Response Rate (%)	Survey Period
1981	15+	2686	46	Sept.–Nov.
1986	15+	9946	80	Oct.–Dec.
1992	15+	9815	77	12 months
1998	15+	10749	78	12 months

stressed, the strength of this data set resides in the consistent use of the diary as the mode of data collection. However, there are also some non-negligible differences across surveys that may affect their degree of comparability, including the sample size, sampling design, period of data collection, and response rate. For instance, while the 1992 and 1998 surveys covered the 12 months of the year, this was not the case for the earlier surveys.⁵

There is no established typology of activities in the literature. Ideally, we would like to distinguish activities according to their economic value, their contribution to seniors' physical health, and their degree of social engagement. Since activities may serve different purposes, however, such a classification is not possible. In this paper, we use a simple typology that approximates some of the above dimensions and that are similar to typologies used elsewhere by the authors (Gauthier & Smeeding, 2003; Victorino, 2001). More precisely, five broad categories of activities are distinguished. This list encompasses all activities carried out during one diary day, and their sum is consequently equal to 24 hours. The list is restricted to primary activities; secondary activities are not taken into account.

- Paid work: including travel to work
- Housework: including cooking, washing up, and house repairs
- Active pursuits: including sports and fitness, socializing, education, hobbies, child care, volunteering, and out-of-home leisure such as going to the theatre
- Passive leisure: including watching television, listening to the radio and to tapes, and relaxing
- Personal activities: including sleeping, bathing, and eating

Our method consists in analyzing the patterns of time use of older adults aged 45 and over by gender and age. Although our main focus is on seniors aged 65 and over, for comparative purposes we also included adults 45–65 years old. This grouping takes into account the fact that a non-negligible proportion of adults retire before the age of 65. We do not consider other socio-economic characteristics such as education and ethnicity, even though the literature suggests that they are important determinants of patterns of time use. Our aim in this paper is to provide basic results from which further analyses could be built upon.⁶

The results reported below have been weighted to take into account the sampling design and to ensure an equal representation of every day of the week.⁷ In addition, the weights have been adjusted so that the average weight is approximately equal to one,

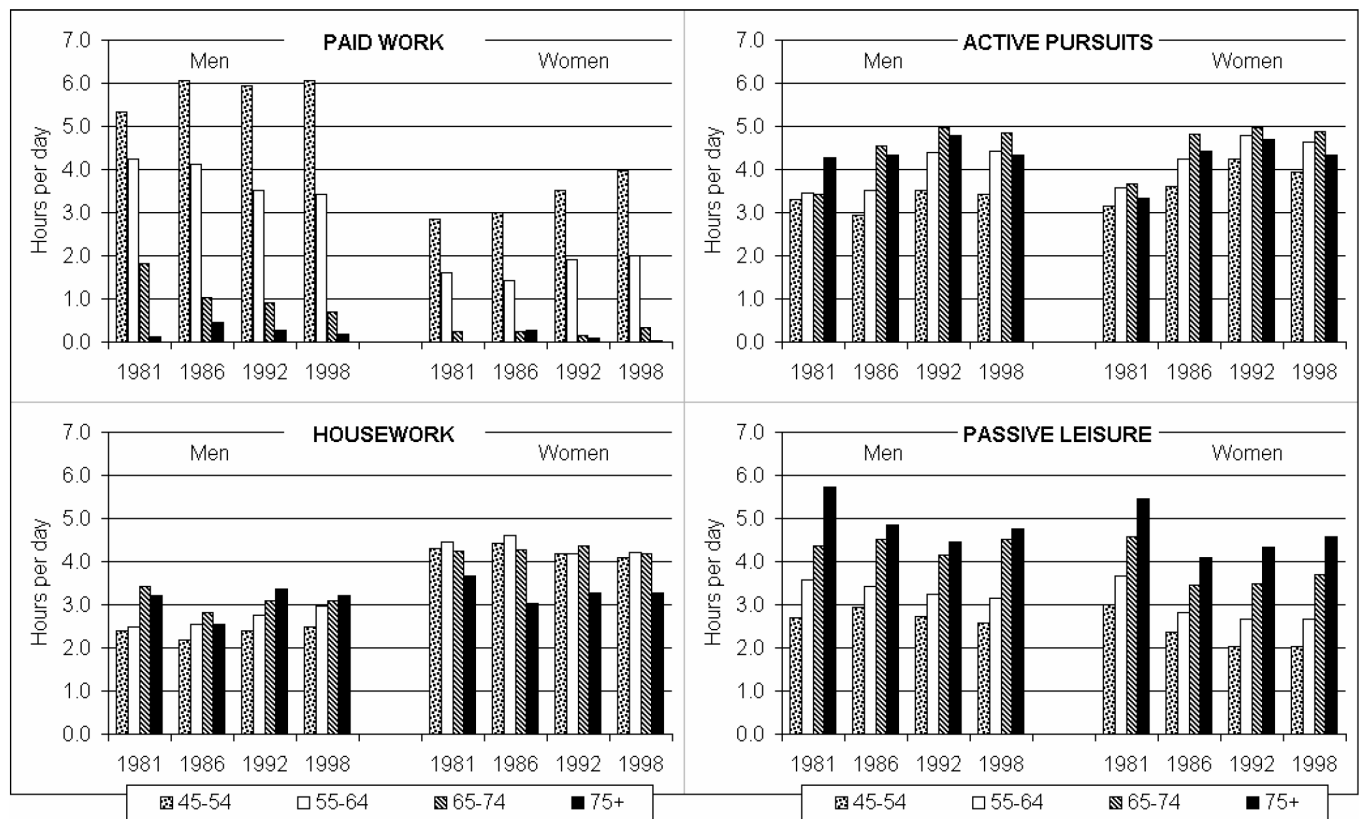


Figure 1: Mean time spent on paid work, housework, active pursuits, and passive leisure by gender and age in Canada, 1981–1998

in order to obtain estimates that have more accurate variances (Statistics Canada, 1992). The results thus correspond to the daily averages across the seven days of the week. Tests for statistically significant differences between the daily averages were performed using ANOVA and the Games-Howell post-hoc test. The Games-Howell test takes into account unequal sample sizes and unequal variances (which were found to be present in the data).⁸ All statistical analyses were carried out using the SPSS statistical software (SPSS Inc.,1998).

Results

Figure 1 shows the trends in average daily time use (averaged across the seven days of the week) for the following broad categories of activities: paid work, housework, active pursuits, and passive leisure.

Paid Work

Since 1981, the average daily amount of time spent on paid work has decreased for men in all age groups, except for those 45–54 years of age, with the largest

change occurring for men 65–74 years of age whose time spent on paid work decreased from around 1.8 hours per day in 1981 to 0.7 hours per day in 1998 ($p < 0.05$) (Figure 1).⁹ In contrast, the average amount of time spent on paid work among women 45–54 years of age increased from 2.8 hours per day in 1981 to 4 hours per day in 1998 ($p < 0.05$). For women in older age groups, time spent on paid work has been fairly stable from 1981 to 1998.

Housework

The average amount of time spent on housework also shows gender-specific trends (see Figure 1). From 1981 to 1998, time devoted to housework by women 45–74 years of age has remained relatively stable at around 4 to 4.5 hours per day. Meanwhile, time devoted to housework by men aged 55 to 64 years old has increased by about 0.5 hours per day during the same period ($p < 0.05$), while it has been relatively stable for other age groups at around 2.5 to 3.5 hours per day.

With regard to the variations in time devoted to housework by age, in 1981, men over the age of 65

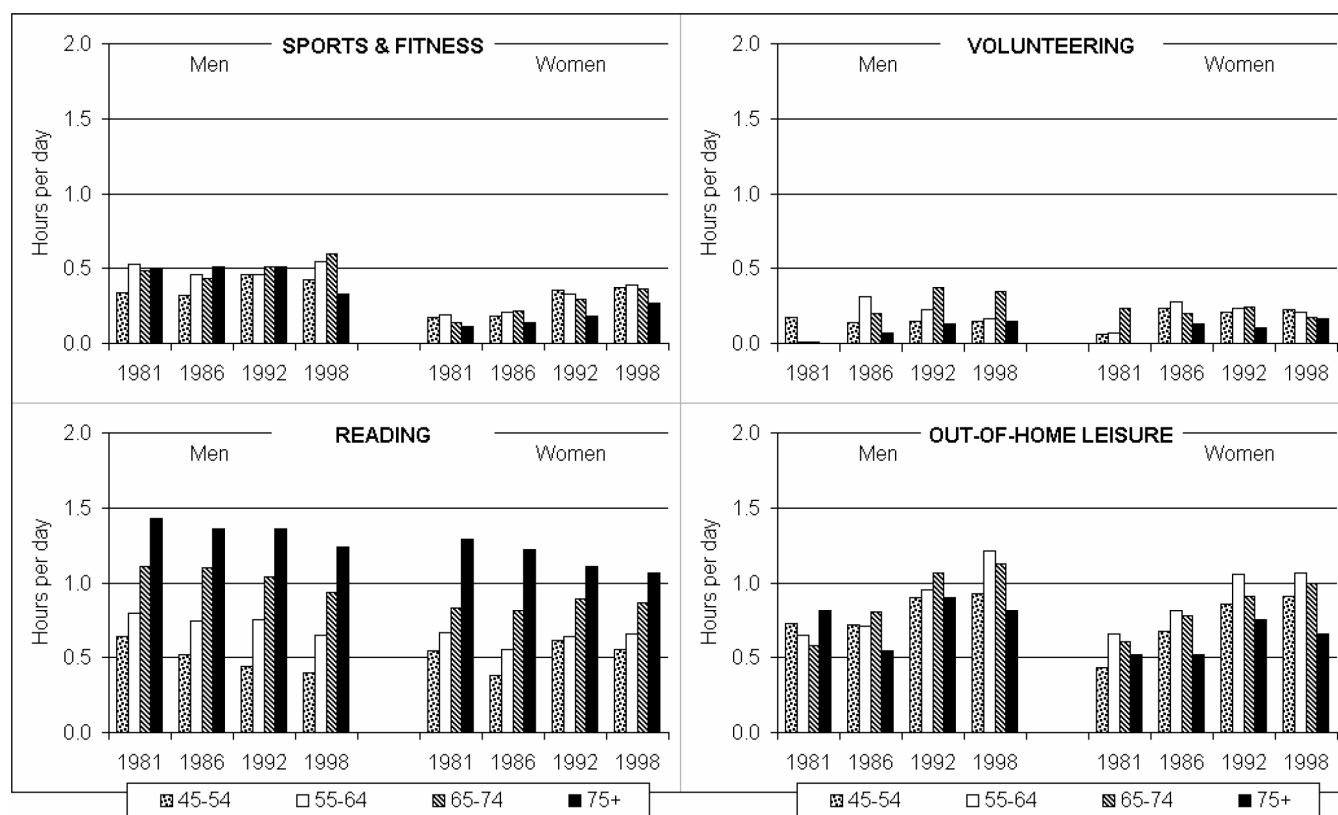


Figure 2: Mean time spent on selected active pursuits by gender and age in Canada, 1981–1998

spent 0.5 to 1 hour per day more on these activities than men less than 65. This gap has narrowed in 1998, although men in the group aged 45–54 still spent about 0.5 hours per day less on housework than older age groups ($p < 0.01$). This finding was not observed among women. Instead, older women appear to be spending less time on housework than middle-aged women. Women 75 years of age or older spent approximately 1 hour per day less doing housework than those in the group aged 45–74.

Active Pursuits

For women in all age groups and men less than 75 years of age, there has been a statistically significant increase in the average amount of time devoted to active pursuits (see Figure 1) from 1981 to the early 1990s, when it appears to have levelled off. The largest increase in time spent on active pursuits occurred from 1981 to 1992 when it increased from 3.4 hours per day to 5.0 hours per day for men 65–74 years of age, and from 3.7 hours per day to 5.0 hours per day for women in the same age group ($p < 0.01$). Increases of nearly 1 hour per day in active pursuits from 1981 to 1992 were also observed for women aged 55–64, and 75 years and more.

Active pursuits encompass a wide range of activities. In order to shed more light on the historical changes in the allocation of time to these activities, we also analysed the data for the following subcategories: sports and fitness, volunteering, child care, out-of-home leisure, education, socializing, reading, and hobbies (only data on sports and fitness, volunteering, reading, and out-of-home leisure are reported in Figure 2).

Subcategories of Active Pursuits

The average amount of time spent on sports and fitness activities has been relatively stable at around 0.5 hours per day for men in all age groups in the past 20 years (see Figure 2). Women spend less time on sports and fitness activities compared to men in all age groups; however, the amount of time allocated to these activities for women in all age groups has increased from around 0.1 hours per day in 1981 to around 0.4 hours per day in 1998 ($p < 0.05$). The average amount of time spent volunteering has been relatively stable at around 0.2 hours per day for men and women from 1981 to 1998. However, there has been a statistically significant increase in the proportion of seniors (65 and above) engaging in any volunteer work

from about 2.7 per cent in 1981 to 8.2 per cent in 1998 ($p < 0.01$).

For men and women less than 75 years of age, the amount of time spent in out-of-home leisure (such as travel for leisure and going to the theatre) has increased from around 0.5 hours per day in 1981 to nearly an hour per day in 1998. Meanwhile, very little time has been spent on activities related to education and childcare activities from 1981 to 1998 particularly among seniors (around 0 to 0.1 hours per day). The daily average amount of time spent on child care from 1981 to 1998 has been fairly stable at around 0.1 to 0.2 hours per day. As a result of the general activity coding nature of the 1981 time-use survey, information on the amount of time devoted to hobbies was unavailable. Results from this study suggest no clear trend in the amount of time spent socializing among men and women from 1981 to 1998, with daily averages of approximately 1 to 2 hours per day. The daily average amount of time spent reading has been fairly stable from 1981 to 1998, with seniors spending more time reading (around 1.1 hours per day) than those less than 65 years of age (around 0.6 hours per day) ($p < 0.01$). With regard to hobbies, the average amount of time men and women spent on these activities from 1986 to 1998 remained relatively steady at around 0.5 hours per day, with older women (65 and more) spending nearly an hour per day on hobbies ($p < 0.01$).

Passive Leisure

Figure 1 shows that, on average, men and women over the age of 65 spend significantly more time on passive leisure than those 45 to 64 years of age, with no obvious differences between men and women. With the exception of men 45 to 54 and 65 to 74 years of age, other men and women had decreases in time spent on passive leisure from 1981 to 1998. In particular, men 75 and over, and women 65 and more spent nearly 1 hour per day less on passive leisure in 1998 than in 1981 ($p < .05$).

Again, passive leisure encompasses a wide range of activities. Below, we distinguish between time spent on watching television, and other passive leisure activities such as listening to tapes and the radio (not reported in figures/tables).

Subcategories of Passive Leisure

The average amount of time allocated to television viewing has been fairly stable from 1981 to 1998 for men, except for an increase of about 0.8 hours per day from 1981 to 1986 for men 45–54. Men 65 years of age and more spend 3.5 to 4 hours per day watching

television, while men 45 to 64 years of age spend between 2 and 3 hours per day on this activity. A relatively stable trend was also observed for women, except for increases of about 0.5 hours per day from 1981 to 1986 for women aged 45–54 and 75 years and more. Older women (over 65) spend between 3 and 4 hours per day watching television, while women 45–64 years of age spend between 2 and 3 hours per day on this activity. Among women 45–54, there has been a decrease of 0.4 hours per day watching television from 1986 to 1998 ($p < 0.01$). However, there has been an increase in television viewing among older women. For women 75 years of age and over, average television viewing increased from around 2.7 to 3.8 hours per day between 1981 and 1998 ($p < 0.01$). An increase of nearly 0.5 hours per day among men 65–74 between 1981 and 1998 was not statistically significant.

From 1981 to 1998, the average daily amount of time spent on other passive leisure activities, such as listening to tapes and the radio, decreased for men and women. Statistically significant decreases of nearly 1 hour per day on these other passive leisure activities was observed for men 75 years of age and more, and women 65–74 years of age from 1981 to 1986 ($p < 0.05$). This decrease is much more pronounced among older women. The average amount of time that women 75 years of age and over allocated to these other passive leisure activities decreased from 2.8 hours per day in 1981 to 0.8 hours per day in later years ($p < 0.01$).

Personal Activities

Results do not indicate a clear historical trend in the average amount of time spent on personal activities, with the exception that men 45–54 years of age have had a decrease of about 1 hour per day on these activities, while men 75 and above had an opposite trend between 1981 and 1998 ($p < 0.01$) (results not reported in figures/tables). There are no obvious differences in the amount of time spent on these activities between men and women. There are, however, noticeable differences between age groups, with seniors spending nearly 1 to 2 hours more per day on these activities than those 45–64 years old ($p < 0.05$). From 1981 to 1998, individuals in the 45–64 age group spent around 9.5 to 10.5 hours per day on personal activities, while those 65 years of age and over spent between 11.0 to 12.0 hours per day on these activities. These findings probably reflect greater physiological constraints in older age groups (Masoro, 2001), including serious health limitations that translate into more time being devoted to basic

personal activities such as bathing and dressing, and the increased need to take care of oneself through rest.

A More Active Life?

One key question asked at the beginning of this paper is whether or not seniors have been leading a more active life during the past decades. The answer to this question appears to be positive. Since 1981, male seniors have reduced time spent on paid work, but they have increased time spent on active pursuits and decreased time spent on passive leisure. The extent to which a real shift towards active aging has taken place depends strongly, however, on how active aging is defined. As readers will recall, according to the OECD, active aging corresponds to socially and economically productive activities carried out at older ages. In Table 2, we summarize our results, using alternative definitions of active aging. To simplify the analysis, only the years 1981 and 1998 are considered. Our first definition of active aging is a classic one and is restricted to paid work. According to such a definition, among men, only those aged 45–54 have become more active since 1981. Men aged 55 and over, in contrast, have become less active, since they have reduced the time that they allocate to paid work. The situation for women is very different, since women of all ages (with the exception of those over the age of 75) have increased their allocation of time to paid work between 1981 and 1998, and have thus become more active. This first definition of active aging is, however, not satisfactory, since it excludes unpaid work and other socially productive activities.

Our second definition goes a step further by extending the definition of active aging to both paid work and housework. According to this second definition, only men 45–54 and those over 75, and women aged 45–64 have become more active since 1981. Finally, our third definition encompasses paid work, housework, and other unpaid work, and active pursuits. Results are particularly interesting and suggest that, on average, men and women aged 45 and over have become more active since 1981, with the exception of men aged 65–74, who showed no change. Men have reduced the time that they devote to paid work, and women have reduced the time that they devote to housework, but these reductions were more than compensated for by an increase in active pursuits. These results suggest that the “freeing up” of time at old ages has not been taken up entirely by passive activities.

Discussion

The trend towards early retirement, together with the country’s rapid demographic aging, has been

attracting much attention in political and scholarly circles. The long-term future of Canada’s pension system, the increasing cost of health services, disincentives to remain in the labour force at older ages, and the legitimacy of mandatory retirement are topics that have led to numerous debates (Canada Department of Finance, 1997; Canadian Human Rights Commission, 1988; Canadian Institute of Actuaries, 2001).¹⁰ As summarized by the OECD in its *Reforms for an Ageing Society* (2000), “A critical challenge has been to slow down, and eventually reverse, trends towards a shrinking portion of life being spent in employment and ever-longer period spent in retirement” (p. 3). As also acknowledged by the OECD and the leaders of the most industrialized countries, a related challenge has been to encourage active aging (Denver Summit of the Eight, 1997).

Results presented in this paper suggest that some shift towards active aging has taken place in Canada since 1981. This shift, however, results from a complex pattern of reallocation of time that varies by gender and age. First, there is the decline in time devoted to paid work by older men, while time devoted to paid work by women has increased during the same period. The results for men reflect the well-documented trend towards early retirement, along with the decrease in labour force participation at older ages, which is the result of various economic factors (unemployment, companies downsizing, etc.). For women, the increase in time devoted to paid work at younger ages reflects the historical increase in women’s participation in the labour force. These gender-specific results also mean that the gender ratio in the allocation of time to paid work has decreased since 1981. Men still devote more time to paid work than women at ages 45 to 64, but the gender difference has decreased.

As to housework, a diverging trend between men and women was again observed, with men increasing their allocation of time to these activities, and women reducing it – although this latter finding was not statistically significant. As other studies have suggested, though, this study shows that women continue to devote more time to housework than men, despite women’s increased participation in the labour force (Baxter, 1997; Hochschild, 1989). Such trends are not unique to Canada but have also been observed in other countries (Gershuny, 2000). Thus, it appears that men increase their allocation of time to housework as they reach older ages, while an opposite pattern is observed for women. Again, this points to a narrowing of the gender gap at older ages.

Adults aged 45 and over appear to have increased the average amount of time devoted to other active

Table 2: Overall trends in active aging by gender and age (mean number of hours per day), 1981–1998

Gender	Age	Definition 1		Definition 2		Definition 3	
		1981	1998	1981	1998	1981	1998
Men	45–54	5.3	6.1	7.7	8.6**	11.0	11.9***
	55–64	4.3	3.4	6.7	6.4	10.2	10.9
	65–74	1.8	0.7**	5.2	3.8**	8.6	8.6
	75+	0.1	0.2	3.3	3.4	7.6	7.8
Women	45–54	2.8	4.0**	7.1	8.1***	10.3	12.0***
	55–64	1.6	2.0	6.0	6.2	9.6	10.9***
	65–74	0.2	0.3	4.4	4.5	8.1	9.4***
	75+	0.0	0.0	3.7	3.3	7.0	7.7

Notes:

Definition 1: Paid work only.

Definition 2: Paid work, housework and other unpaid work.

Definition 3: Paid work, housework, and other unpaid work, active pursuits.

* <0.1 , ** <0.05 , *** <0.01 : Indicates whether or not the mean values for 1981 and 1998 are statistically different.

pursuits such as sports and fitness. In 1998, seniors spent around 4.5 hours per day on active pursuits, which is 1.0 hour per day more than in the early 1980s. In contrast, the average amount of time allocated to passive leisure activities has either remained stable over time (e.g., television viewing among men) or decreased (e.g., other passive leisure for men and women). Canadian seniors still spend nearly 4.0 hours per day on passive leisure activities, which includes watching television, but it is 1.0 hour per day less than in the early 1980s.

These trends are encouraging, as studies have shown that engaging in moderate levels of physical and cognitive activities (e.g., reading) can have beneficial effects on physical and mental health and quality of life (Brach et al., 2004; Dias & Ramos, 2003; Dziura, de Leon, Kasl, & DiPietro, 2004; Verghese et al., 2003). For example, spending as little as 30 minutes most days of the week, as recommended by Health Canada and the U.S. Surgeon General, on moderately intense activities such as walking for exercise, dancing, golfing, swimming, and jogging can help improve physical functioning among older persons (Brach et al., 2004; Health Canada, 2003b; U.S. Department of Health and Human Services, 1996). Furthermore, although active pursuits may not have the same productive value for society as paid work, savings from health-related costs associated with physical inactivity could be substantial. As reported in a recent Canadian study, health-related costs attributable to physical inactivity in Canada in 1999 were approximately \$2 billion, and a 10 per cent reduction in physical inactivity rates could save nearly \$150

million annually (Katzmarzyk, Gledhill, & Shephard, 2000). This study provides some indication that older persons in Canada are becoming more physically active each year. This positive finding suggests that most Canadians, including seniors, are aware of the health benefits associated with being active (Canadian Fitness and Lifestyle Research Institute, 1998).

Regarding other active pursuits, there was no evidence of an increase towards lifelong learning, nor was there any evidence of a decrease in the time older adults spend socializing. There were also no significant differences between 1981 and 1998 in the amount of time allocated to child care or doing hobbies. Although, on average, the daily amount of time spent volunteering did not increase from 1981 to 1998 among seniors, the proportion of seniors engaging in any volunteer work significantly increased during this period, from around 3 to 8 per cent. This trend is important in light of several studies showing the benefits of volunteering among older adults, including decreased levels of depression and improved mental health and overall improvement in life satisfaction, as well as the economic contribution of volunteer work by older persons (Musick & Wilson, 2003; National Advisory Council on Aging, 1999; Tackett 2001; Van Willigen, 2000).

Limitations

A major limitation of this study is that the activity categorizations used may seem arbitrary and that other typologies might have been used instead. For example, some may not consider child care as an active pursuit. As mentioned earlier, since there is

no established typology of activities in the literature, we used a typology used in previous research by the authors (Gauthier & Smeeding, 2003; Victorino, 2001). We also did not take into account the quality of activities such as the type of television program viewed. A further limitation is that this study used cross-sectional data, which does not allow us to distinguish between age and cohort effects. Although diary data are very useful for investigating changes in the allocation of time among older persons, our results need to be interpreted with some caution as a result of the limitations mentioned.

Conclusions

The findings of this study are in line with our theoretical expectations. As discussed earlier, the increase in disability-free life expectancy observed in Canada since the 1980s, the historical trend towards better health, and the improving economic situation among seniors were all expected to have resulted in an increase in time devoted to active pursuits. Results presented in this paper support these theoretical expectations in showing that the average time devoted to paid work, housework, and other active pursuits combined has increased for both genders and almost all age groups (those over 45) since 1981. From a policy perspective, these results are good news: seniors' increased engagement in active pursuits carries potential positive health benefits, and seniors' increasing participation in some type of leisure (such as going to the cinema, going to restaurants, and travelling for leisure) means that seniors have increased their contribution to the Canadian economy through their consumer power.

What is not clear from our analysis, however, is the extent to which these trends characterize all seniors, or whether strong variations persist among subgroups. For example, it is unclear the extent to which active aging varies by place of residence, socio-economic status, ethnicity, and other socio-demographic characteristics. These issues should be examined in future research.

Notes

- 1 Activity level is defined on the basis of daily energy expenditure.
- 2 Adventure travel was identified as a key booming area among seniors as a result of increasing leisure time and increasing disposable income (American Academy of Anti-Aging Medicine, 2002).
- 3 According to Putnam (2000), this is true of adults of all ages.

- 4 The causal relationship between health and patterns of time use can, however, be bi-directional. On the one hand, better health may allow people to spend more time in active pursuits; on the other hand, spending more time on active pursuits may result in better health. We do not attempt to solve this issue of causality in this paper.
- 5 Data from a 1971 time-use survey are also available. We decided not to use this survey since its sample is restricted to the population aged 18 to 64. The 1981 and 1986 surveys also did not cover the 12 months of the year, so results from these two surveys regarding seasonal-specific activities (e.g., gardening) may be underestimated.
- 6 At the time of writing this paper, cross-survey comparable coding of education and other socio-economic characteristics of the respondents was not available.
- 7 For the 1986, 1992, and 1998 surveys, we used the weights provided by Statistics Canada. Such weights were, however, not available in the 1981 data set. We instead used some post-hoc weights that we computed, which correct for the age, sex, and day distribution of the sample.
- 8 We used the Levene test for homogeneity of variances.
- 9 Data and related significant tests are available from the authors.
- 10 In 1988, the Parliamentary Standing Committee on Human Rights issued a report, *Human Rights and Aging in Canada*, in which mandatory retirement was described as a form of "institutionalized age discrimination" (Canadian Human Rights Commission, 1998).

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