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Canada's Oldest Old: A Population Group which is Fast Growing, Poorly Apprehended and at Risk from Lack of Appropriate Services

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CANADA'S OLDEST OLD: A POPULATION GROUP WHICH IS FAST GROWING, POORLY APPREHENDED AND AT RISK FROM LACK OF APPROPRIATE SERVICES

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Summary: People in Canada aged 85 and over (the "oldest old") – form a distinct population group which is destined to grow as a proportion of the country's population. This is a demographic fact which needs to be taken into account in policy making.

Key Messages:

- People aged 85 and over are a particular population group in Canada. Population research will have to take this demographic reality into account in future.

- The rapid rise in the numbers of people aged 85 and over in Canadian society has the potential to outstrip the capacity of existing infrastructure.

- The 85 and over are different from the65 and over. For example, only 8% of those aged 65 and over live in private or public care institutions. This proportion rises to 31% for the 85+.

- The oldest old are defined as a population group not just by age alone, but by a series of criteria such as state of health, socio-economic conditions, etc.

- Policies must be devised which can meet the particular needs of the oldest old of the future, whose characteristics will be different from those of this group today. For example, in 2015;
    - Just over 50% of those aged 80 and over have fewer than 13 years of education. We already know that this will change in future, because it is those aged 65 to 74 today who will be the over-80s of 2030, and in this group almost 50% of men and 40% of women have a higher education qualification, compared with less than a third of men and a quarter of women aged 80 and over today.
    - 67% of those aged 85 and over are women; in 2060, women will make up only 57% of this cohort.

Executive Summary

Population aging in the industrialised countries, including Canada, will be driven in future not by lower fertility but by increases in life expectancy. Declining mortality will have most effect on the oldest age groups.

Peter Laslett's (1989) ideas on rethinking traditional approaches to the life cycle are fundamental here. He argues that we need to move from three stages of life to four: childhood; adulthood; then the new third age lasting from retirement until old age, which becomes the fourth age.

Our report examines the present and future characteristics of the oldest old, and the public policies needed to ensure their well-being.

1. A population group which needs further study

Reaching the age of 85 is increasingly unexceptional. Statistics Canada mortality tables show that in 1931about 10% of men and women lived to age 85. Today, by contrast, 30% of men and 50% of women reach this age, according to the 2001 data.

Our report gives an outline demographic sketch of Canada's "oldest old" as we enter the 21st century. The data fall under four main headings: population trends, living arrangements, economic and social characteristics, and health status and use of health services.

2. A growing population

In Canada the oldest section of the population (aged 85 and over) is growing faster than the population as a whole. Canadians in this fourth age (the "oldest old") are a population group which is increasing in number, and this demographic reality has major consequences in many social spheres.

Between 1971 and 2013 the population of Canada grew by 60% to reach over 35 million. In the same period, the population of 65 and over grew more rapidly than the population as a whole (by 205% compared with 60%). So the population is aging; and it is among the 85+ that the rise in numbers is most marked, amounting to an increase of 405% (Figure 1). This is explained partly by improved treatment of fatal diseases in old and very old people. The result of this decline in mortality at advanced ages has been an explosion in numbers of 85+. Both actuaries and demographers have become aware of the significance of these numbers of the oldest old.

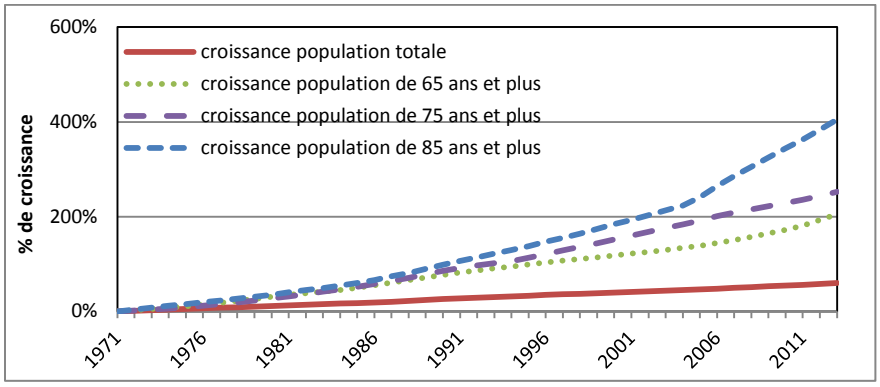

Figure 1: Percentage population growth, Canada, by age group
Source: Statistics Canada, Table 051-0001 Estimates of population, by age group and sex for July 1, Canada, provinces and territories, annual, CANSIM database

Life expectancy at age 85 has been increasing steadily since the post war period. Since the 1990s it has been noticeable that advances in life expectancy have been greater for men than for women. This is because women's lifestyles have been becoming more like men's, and because men are paying more attention to their health than before. In addition, the most significant gains in life expectancy at age 85 have come about since 2000 (an average annual increase of 7.8% for women and 9.8% for men). This will have a direct effect on the proportion of 85+ in the population in the decades to come. Three data sources (Statistics Canada, 2014, United Nations 2014, Gerland et al., 2014) show that this rising trend in the proportion of 85+ will continue in the long term. Figure 2 shows that in 2060 the number of people aged 85 and over will be 3.6 times higher than in 2015: 2.7 million versus 755,000 today. Although long term projections of this kind need to be treated with great caution, the United Nations and the International Institute for Applied Systems Analysis (IIASA) forecast that there will be between 4 and 8 million people aged 85 and over in Canada in 2100, representing between 8.6% and 15.2% of the total forecast population.

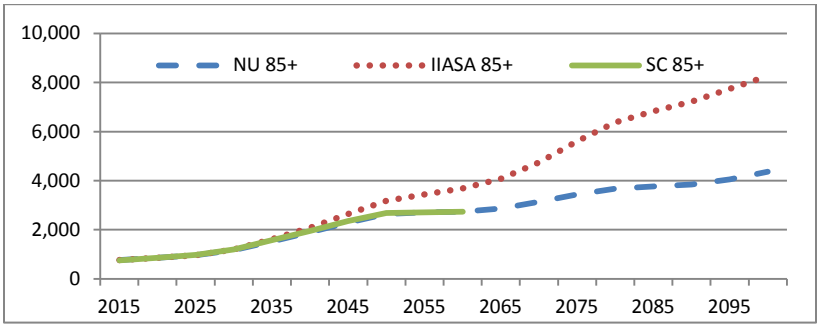

Figure 2 : Projection of the population aged 85 and over in Canada (000s), according to Statistics Canada (SC) 2015-2060, United Nations (UN) and IIASA, 2015-2100.

3. Particular needs

For the oldest old, being in good health does not mean having no illnesses. It is their degree of independence, in terms of a certain number of potentially disabling incapacities, which determines whether they can avoid being institutionalised. Population aging, bringing with it a rise in the prevalence of chronic diseases and changes in the provision of health services, implies increased demands for home care services.

At the same time, if we are to meet the needs of the oldest old of the future, we must be aware that their characteristics are changing. For example, their level of education is a key variable which affects the entire life course (in terms of fertility, nuptiality, living arrangements, mortality….). In 2015, just over 50% of those 85+ have had less than 13 years of schooling. We already know that this will be different in the future, given that those aged 65 to 74 today will be 80 and over in 2030; by then, almost 50% of men and 40% of women will have a post-secondary diploma, compared with less than one third of men and a quarter of women today.

Conclusion

The 65+ are too often treated as if they were a homogenous group, with insufficient attention being given to the particular characteristics of the oldest old. There are two possible reasons for this. Firstly, reaching the age of 85 is sometimes seen as exceptional, whereas our report shows that the numbers of those aged 85 and over, and the proportion of the population they represent, will grow strongly in the coming decades. Secondly, being 85 or over, which is generally accepted as marking out the oldest old, and which we have used as the criterion in our analysis, needs to be considered as a variable marker, dependent on individual characteristics, rather than as an immutable threshold. As our report shows, social policies should be designed to provide for individuals not on the basis of their age (with some exceptions), but of criteria such as their state of health or their income. It may also be possible to design a threshold for the Oldest Old category which changes with life expectancy or healthy life expectancy.

At a time when older people, and especially the oldest old, are becoming more and more important as a group, it is regrettable that an ambitious Canadian programme, the Social and Economic Dimensions of an Aging Population (SEDAP) which focussed on the socio-economic consequences of ageing, has come to an end. In our view it is important for Canada to equip itself with a panel made up of a multidisciplinary team of researchers and public policy-makers who have a common interest in the implications of population aging for the society of today and tomorrow. Although this kind of research team is quite rare, there are examples such as the New Dynamics of Ageing programme in the United Kingdom, which has set up MAP 2030 (Modelling Ageing Population to 2030). This multidisciplinary research programme brings together academic and civil service experts with a shared interest in the consequences of population aging; forecasting, and particularly micro-simulation models, are at the heart of their research. A similar type of research programme would be very pertinent in Canada.

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Introduction

The definition of the term "Oldest Old" varies according to one's approach, which may be bio-demographic, functional, gerontological or demographic (Robine, 2003). The use of the term "elderly" is hardly precise. But it is possible to agree that we are referring to persons at the very top of the age pyramid.

Peter Laslett (1989) defines a person as entering the "fourth age" – the category of the oldest old - when he or she becomes physically dependent on another person. This kind of definition is based on the loss of personal autonomy. Nevertheless, demographers generally agree that the fourth age starts, and one becomes part of the oldest old, at 80 or 85 (Robine, 2003), despite the fact that a sizeable minority of older people will never lose their autonomy. In this study we focus on those aged 85 and over. However it is important to bear in mind that it is a threshold which varies with time, space and the characteristics of the individual.

There has been little interest in studying this population sub-group scientifically until relatively recently (Robine et al. 2007a), despite the Canadian study by Havens and Finlayson (1999), because it has always been so small in numbers. But in the 21st century this is no longer the case. This change is partly caused by significant improvements in mortality at advanced ages. The ten main causes of death among the65+ have been declining since 2000, with the result that life expectancy at 65 and at 85 has greatly increased (Bergeron-Boucher, 2012). It is also due to the large sizes of the cohorts born during the 1940s and 1950s, which, with constant mortality, eventually result in increasing numbers of 85+.

The aim of this study is to provide an overview of the reports, data and policies concerning the oldest old in Canada. It focuses on the present and future characteristics of these oldest old Canadians and on the public policies adopted to ensure their well-being. In addition, it is worth emphasising that as of today we are dealing with a largely female population group, and that its gender composition will be different in the future. The life cycle of these future oldest old people will also have been different, and this will in turn influence their demographic and socio-economic characteristics.

The report is made up of three sections:

- A demographic portrait of Canada's oldest old
- Mortality and morbidity projections at advanced ages and their impacts on the numbers of the oldest old in Canada
- An overview of policies towards the oldest old in Canada and other countries.

I Demographic profile of Canada's oldest old

Following the most recent Canadian censuses, Statistics Canada published a monograph on the subject of older people in Canada (Turcotte and Schellenberg, 2007). In the same way it should be possible to create a portrait of the oldest old, because data on this sub-population is not as scarce as might be imagined. A considerable amount of information is available on the 85+, but has not been analysed by academics or policy makers, mainly because of the size of this population and of the samples involve.
In this report we offer a summary demographic view of Canada's oldest old at the beginning of the 21st century, with a reminder that we need to be flexible in terms of defining thresholds and accept either 80 or 85 as marking entry into the Fourth Age, depending on the available data.

The data we have reviewed are presented under four headings:

- Demographic trends
- Living arrangements
- Economic and social characteristics
- Health status and use of health services

Rather than an exhaustive presentation, we attempt to isolate the distinguishing features of today's oldest old, in relation to those aged 65 to 84 on the one hand, and on the other to the oldest old of the future.

Demographic trends[1]

Evolution of the total population aged 85 and over

The population of Canada aged 65 and over has been growing at a relatively steady rate since 1971. At the beginning of this period, this population was composed of 1,762,000 persons and represented 8% of the total population. It has grown to reach 5,380,000 in 2013, which represents 15% of the total population (Fig. A.1). In terms of those aged 85 and over, this group has grown from 139,000 in 1971 to 702,000 in 2013. These totals represented respectively 0.6% and 2% of the total Canadian population, and 8% and 13% of the population aged 65 and over. There has thus been a faster increase in the population aged 85 and over compared with the population as a whole, and also compared with those aged 65 and over (Fig A.2). Between 1971 and 2013, the total Canadian population grew by 60% (to reach approximately 35 million in 2013). In the same period, the population aged 65 and over grew faster than the total population (by 205% compared with 60%), which is the basic principle behind population aging. On the other hand it is important to note that, while the growth in numbers of those over 65 has been considerable, it is only half that of those aged 85 and over, who have increased by 405% over the same period. Furthermore we can see that since 2005 the gap between the growth rates of these two sub-populations has been widening more rapidly. This is explained

[1] A number of sources of public data are used (such as CANSIM, or widely published public databases) and we also draw on the findings of analyses by other researchers using confidential data sources. All these are combined to produce our portrait of the oldest old Canadians.

largely by more successful control of terminal illnesses, especially for older and the oldest old people.

Reaching the age of 85 is increasingly unexceptional (Fig A.3). Statistics Canada mortality tables (2007) show that about 10% of men and women survived to age 85 in 1931. By contrast, 30% of men and 50% of women reached this age according to the 2001 data. This is why it is important to understand this population better, and particularly the characteristics associated with it. This is the aim of this report.

Evolution of the population aged 85 and over by gender

Gender is one of the important variables to consider when looking at older people. We know that the ratio of women to men is higher in this group than in the population as a whole. And this is particularly true for those aged 85 and over (Figure 1).

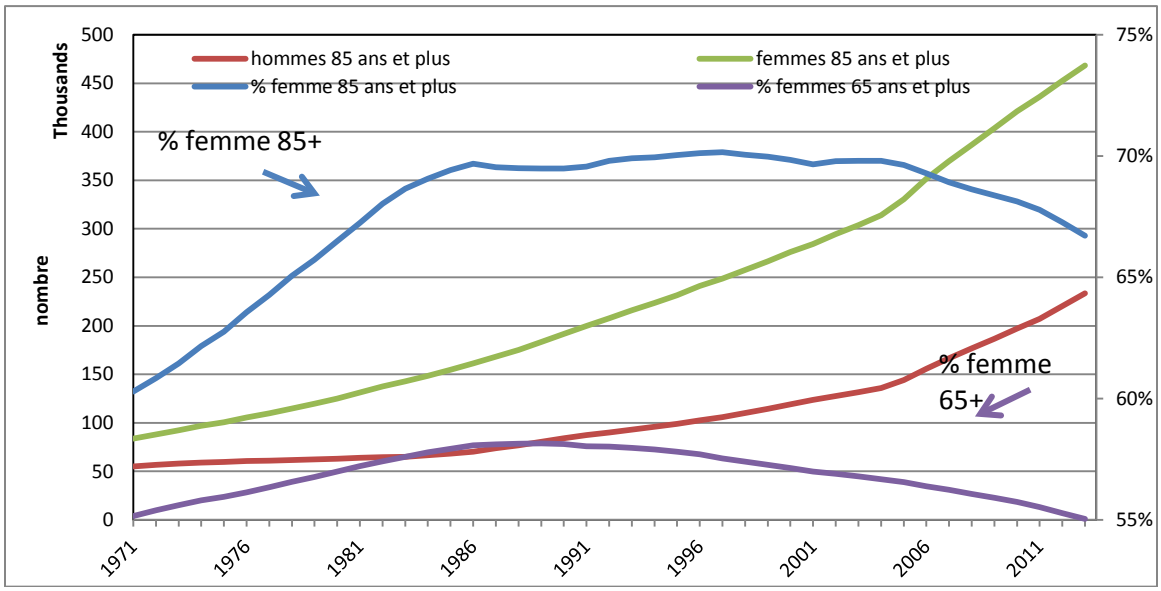

Figure 1: Population aged 85 and over, Canada, by sex, and proportion of women for 65+ and 85+.

The small decrease in the percentage of women since the beginning of the 21st century is largely explained by the narrowing of the gap between male and female life expectancy at birth (Fig. A.4), at age 65 (Fig. A.5), and especially at age 85 (Figure 2).

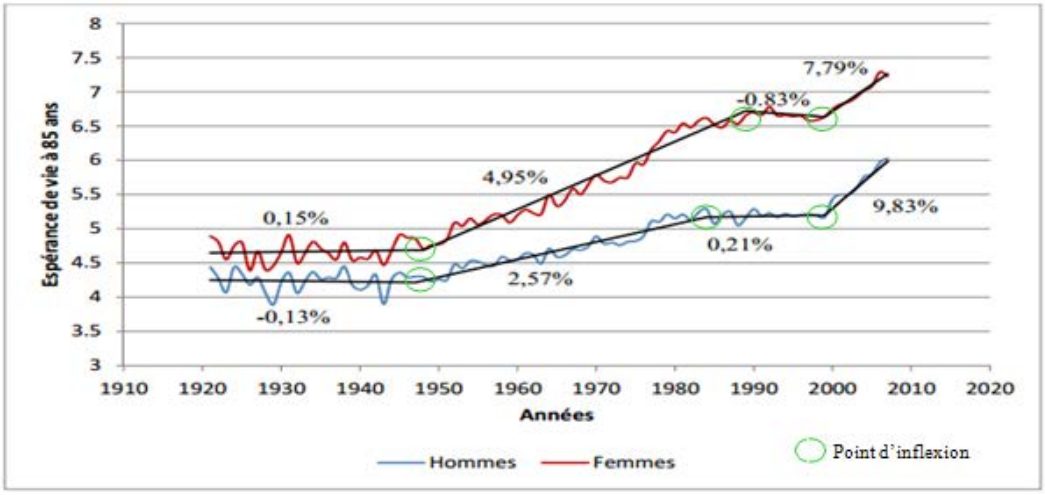

Figure 2: Life expectancy at 85, Canada, and average annual increase, 1921-2007 (Bergeron-Boucher, 2012)

The leading finding is that life expectancy at age 85 has been increasing since the post-war period. It is also noticeable that since the 1990s the increase in life expectancy has been greater for men than for women. The narrowing of this difference between the sexes results from the fact that women's lifestyles have been becoming more and more like that of men, and that men have been looking after their health better than before. In addition it is worth noting that the most significant gains in life expectancy at age 85 have taken place since the beginning of the 21st century (7.79% for women and 9.83% for men). Other things being equal, this demonstrates the relative importance of the place occupied by those aged 85 both now and, especially, in the coming decades.

Evolution of the population aged 85 and over by province

Although population aging is a phenomenon affecting Canada as a whole, the degree of aging varies from one province to another, and affects particularly the provinces of British Columbia, Quebec and the Atlantic provinces, which have proportions of people aged 65 and over above the Canadian average of 14% (Fig. A. 6).

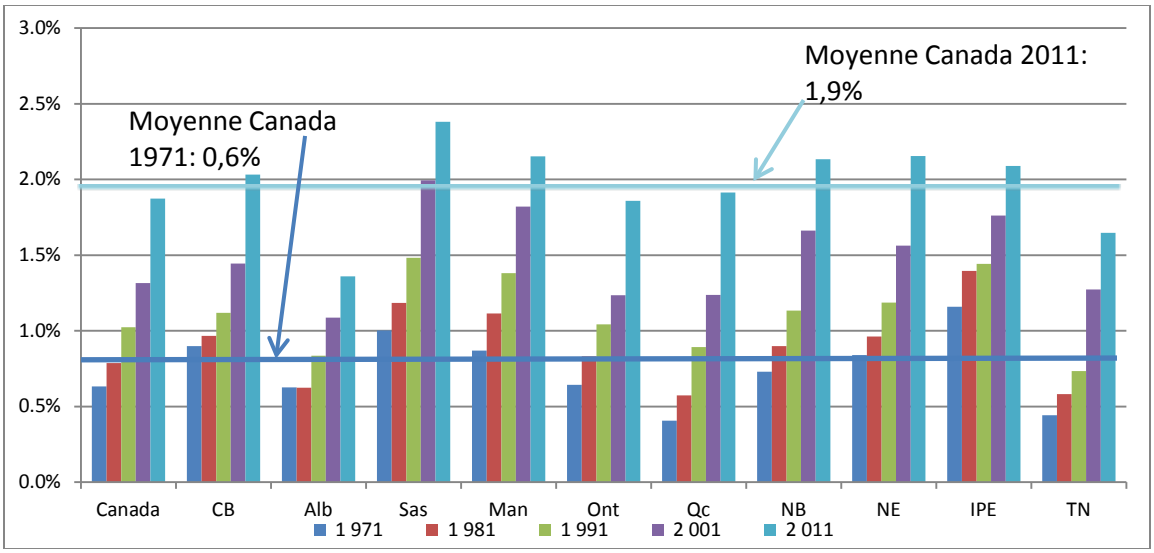

Figure 3: Proportion of 85+ in Canada, by province, 1971-2011

Analysing the proportions of those aged 85 and over in relation to the total population (Figure 3), we see that each province presents a slightly different profile. For example, in 2011 Saskatchewan and Manitoba had proportions of 85+ of 2.4% and 2.2% respectively, above the Canadian average of 1.9%, which was not the case for proportions of 65+. Newfoundland and Labrador was below the Canadian average in 2011, with a proportion of 85+ of 1.7%.

Furthermore, it is not only the intrinsic change of the age structure of the population which is important, but also the speed at which this change takes place. The more rapidly a change takes place, the more complex it is for a society to take measures to protect itself from possibly undesirable effects. As we can see by looking at the growth rates of the over-85 population by province (Figure 4), it is in fact in the most populated provinces that the growth in numbers of oldest old is most significant, Quebec being a case in point.

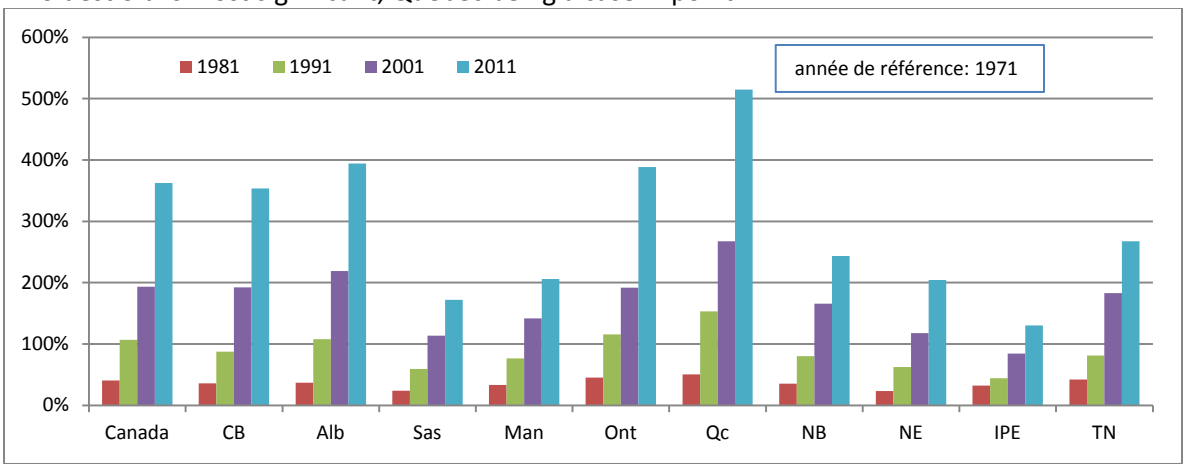

Figure 4: Increase in population aged 85 and over, in percentages, Canada, by province, 1971-2011

Living arrangements

Living arrangements are one of the variables differentiating those aged 85 and over. As Milan et al. (2014) show, this variable has undergone change in the past 30 years; and, given that the conjugal careers of the older people of tomorrow will have been very different from those of older people today, we should expect this variable to continue to evolve. In 2011 we see that a large majority, 92% of the 5 million people aged 65 and over, were living in private households, but that this proportion was about 70% for those aged 85 and over (Fig. A.7). We also see that the number of those living in a couple (with a married spouse or partner) declines with age in favour of those living in collective households.

Marital status of the those aged 85+

In 2011, 55% of men aged 85 and over were married, compared with only 14% of women. The most common marital status for women aged 85 and over was that of widow, representing 76% of women over 85 in 2011 compared with 35% of men over 85 who were widowers (Fig.A.8). These percentages have changed relatively little since 1991 (and show that living alone is more prevalent for women than for men (Fig. A.9).

It is also important to differentiate between the 65+ as a whole and the 85+ when analysing the marital status of older people. The situation of people aged 65 to 85 is quite different in this respect from that of those over 85 (Fig.A.10). Of the 65 to 85 sub-group, more than 70% of men and nearly 50% of women were married in 2011, and only 9% of men and 31% of women were widowed in that year. Furthermore, as the baby boomers are now reaching the age of 65, the relative proportion of those aged 65 to 84 within the over-65 group will rise rapidly over the next 20 years, which could lead policy makers into mistaken conclusions concerning certain policies, such those to do with home support, which are sensitive to this variable.

The over -85s in institutions

We are concerned here with a very particular sub-group, that of people living in collective household. This is a group which is often poorly apprehended (Légaré et al., 2014), but one which is especially important for the study of the 85+. In 2011, 31% of the over-85 population were living in collective household, compared with only 8% of all those aged 65 and over. Given that they represent almost a third of people aged 85 and over, it is vital to know more about these individuals, because these are people who are in less good health and who need particular kinds of care and services, giving rise to health care costs which are generally higher than average. What is more, the number of institutional beds is a purely policy decision; and it is likely that, no matter the number of available places (within reasonable limits), they will always be filled. Other things being equal, the demand will tend to increase because of the imminent arrival of the baby boomers at advanced ages. This makes it all the more important to have the data to analyse this population group thoroughly.

Between 1996 and 2011, the number of persons aged 85 and over living in collective residences rose from 114,000 to 201,000 (Fig. A.11), made up of 154,000 women and 47,000 men. So it is

true to say that the collective residential population is largely female, and also composed of older people among the 65+. In 1996, 43% of those 65+ living in collective residences were older than 85, and in 2011 this proportion was 51%.

As pointed out earlier, the number of residential places is largely determined by political decisions on health, and in Canada these decisions are made at provincial and territorial level. In 2011, while the proportion of those over 85 living in collective residences was 31% for Canada as a whole, there were sizeable differences between provinces. Some provinces, such as Nova Scotia (25%), Ontario (28%) or Saskatchewan (28%) had below the average proportion for Canada, while others like Quebec (38%) and Alberta (38%) were above it (Fig.A.12). Public health policy differences are no doubt partly responsible for these variations.

We should also point out that although we have treated these collective households so far as a homogeneous whole, the data from successive censuses show that there are more than 20 categories of them.

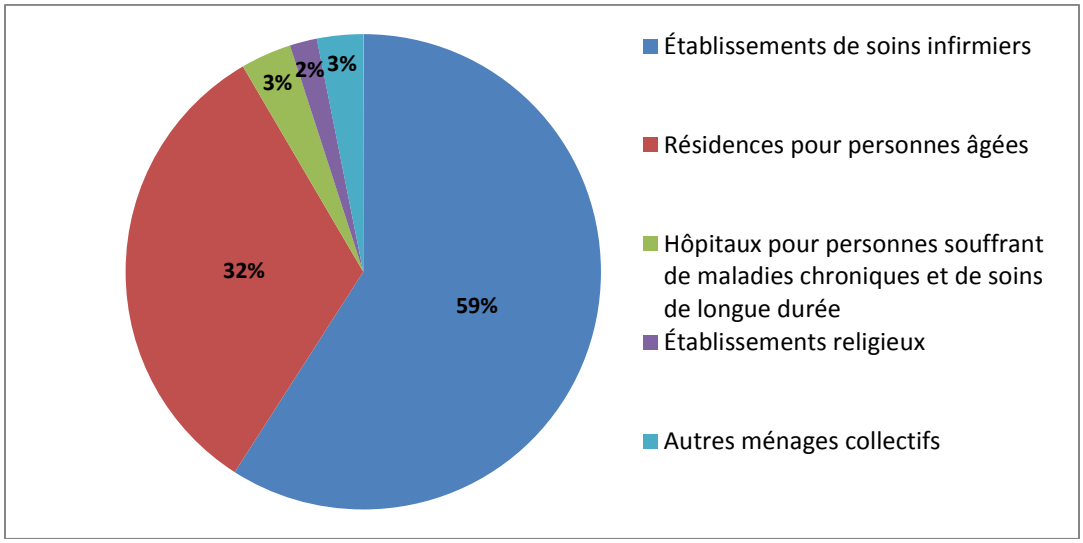

Figure 5: Distribution of the 85+ by type of collective residence, Canada, 2011

As Figure 5 shows, the overwhelming majority (91%) of the 85+ living in collective residences in 2011 are divided between two main categories: nursing homes and old people's homes.

Although people living in collective residences are generally single, some of those in old people's homes are living in couples. Nearly 30% of men aged 85 and over or between 75 and 85 are living in couples in old people's homes, while for women the proportions are 14% of those aged 75 to 84 and 7% of those aged 85 and over (Table A. 13).

Economic and Social Characteristics

If we are to achieve a better understanding of the oldest old, and be in a position to establish appropriate policies to meet their needs, we have to go beyond demographic variables and examine a number of economic and social variables. In this section we look at the levels of education and incomes of those 80 and over (rather than those over 85, for whom there is no accessible recent information). The findings here derive from the use of a micro-database which is widely available, from the Survey of Labor and Income Dynamics (SLID) of 2011. The data refer only to those living in private households. This is an important limitation, given that we know that more than 25% of those 80 and over live in collective households.

Education is a fundamental variable to take into account when attempting to understand and predict behaviour. This is particularly true for phenomena such as fertility and mortality. The level of education is generally acquired early in adulthood and does not change over time. It is an important characteristic in terms of the clear evolution taking place since the mid-20th century. Just over 50% of the over-80s of today (both men and women), who were born the first half of the 20th century, have less than 13 years of primary and secondary education and do not have higher degrees or diplomas (Table A. 14). Although less than a third of men and only a quarter of women today have any post-secondary education, we already know that the future will be different, because in 15 years' time the 65 to 75 year-olds of today will be aged 80 and over; and in this cohort almost 50% of men, and almost 40% of women, will have a post-secondary qualification. This improvement will extend throughout the current century, and the level will reach close to 80% at the turn of the next century (See Figure 7, Section II). In terms of median income, we find that this declines with age both for men and for women; and, as might be expected, it is lower for women by about 20%. However, there is no difference between the income at age 75 to 80 and at 80 and over, for either sex. Moreover, since the level is around 30,000 dollars for men and 20,000 dollars for women, there is little difference in total income before and after tax (Table A.15).

Health status and use of health services

Measuring the health status of a population is a challenge which has to be faced if political policy makers are to be able to provide the services which are needed. And this is particularly the case for older people, and especially the oldest old, who are the main users of health services. In looking into the health of the oldest old, the first point to recognise is that is difficult to find information on the health of the population living in institutions. But as we have seen, 30% of the 85+ live in such household. Those we can observe here are those who live in private households or, in common parlance, "at home".

When discussing health status, it is useful to distinguish between objective and subjective health. To begin with, we note that two thirds of the 85+ describe their own state of health as good, compared with just under 75% of older people at younger ages (Table A.16), despite the fact that more than half of them are vulnerable (based on a vulnerability index (VI) score of >0.21) (Table A. 17), and that 25% report dissatisfaction with their lives and, in particular, a degree of loneliness.

For older people especially, being in good health does not mean being free of all illness: all of them have at least one illness. It is above all their degree of independence, in terms of a greater or smaller number of potentially disabling incapacities, which is crucial. This relative independence is what enables them to avoid being institutionalised, and to continue to live at home despite potential limitations on their activities.

Hospitalisation

The first aspect to focus on is that of home support services, because in case of necessity, older people – and the oldest old in particular – have an average length of stay in hospital, depending on the type of treatment, which is comparable to that of adults aged 20 to 64, except in cases of long term complex treatment, where their average length of stay is half that of adults (CIHI, 2011a; Table A.18).

Activity Limitations

As pointed out in CIHI 2011a, there is a wide variation of limitations of functional capacities reported by older people. This supports our hypothesis of heterogeneity within the group of over-65s. According to the CCHS 2008-2009 data, the majority of Canadians aged under 85 report having no impairment of their functional capacities. However the opposite is the case for those aged 85 and over, of whom the majority report at least minor limitations on activities.

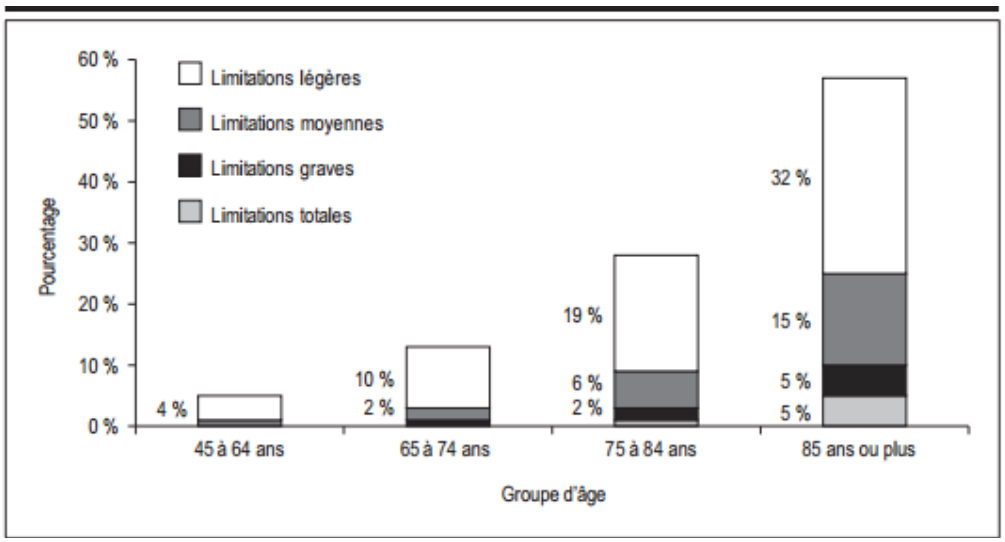

Figure 6 : Self-reported impairments of functional capacities by age group. Canada, 2008-2009, ICIS 2011a

The loss of functional capacities becomes not only more common but also more severe with age, according to self-reports. As Figure 6 shows, the vast majority of those aged 65 to 84 with impaired functional capacities consider this impairment to be slight. By contrast, although 32% of people aged 85 and over consider their impairment to be slight, 15% report having moderate impairments, 5% severe, and 5% total (CIHI, 2011a).

Disability-free life expectancy

There are a number of indicators of healthy life expectancy. Where there is sufficient available information on activity limitations, demographers usually calculate expectancy of life free of disabilities. Unfortunately, until quite recently, it was impossible to do this for Canada (Lefrancois et al., 2014). It is to be hoped that the results of the Canadian Survey on Disability of 2012 will enable this indicator to be updated.

Home support and help

Population aging, the rise in the prevalence of chronic diseases, and changes in provision of health services all mean that an increase in demand for home care and home support must be expected in future. As the proportion of older people increases in Canada, and given that the prevalence of disability rises with age (Statistics Canada, 2013a), and also that older people want to stay in their own homes for as long as possible (Tang and Lee, 2010; Sabia, 2008), rising demand seems inevitable. Home care and home support services are all the more important because they can reduce the demand for hospitalisation and the probability of being placed in an institution. In addition, they are generally viewed as having economic advantages, and also as being more in keeping with the expectations of older people, compared with institutional care (Hoover and Rotermann, 2012).

As Table 1 shows, use of home care and home help services rose between 2003 and 2009 both for men and for women. Age is closely correlated with use of home care services. 42% of the 85+ report having received home care compared with 20% of those aged 75 to 84 and 8% of those aged 65 to 74. These proportions are all higher for women than for men. A number of factors such as the type of housing and the need for help to go about daily activities largely explain this difference (Rotermann, 2006).

Table 1 : Percentage of older people receiving home care, by age and sex, Canada, 2003 and 2009

	2003			2009		
	hommes	femmes	**TOTAL**	hommes	femmes	**TOTAL**
65-74 ans	6%	10%	8%	12%	18%	15%
75-84 ans	17%	22%	20%	22%	37%	30%
85 ans et plus	**36%**	**44%**	**42%**	**44%**	**59%**	**54%**

Source: CCHS 2003 (Carrière, 2006) and CHSS 2009 (Hoover et Rotermann, 2012)

In terms of home help and support, age is also seen to be an important variable affecting the type of help received. As Table 2 shows, 59% of the 85+ report having received help for health care, compared with 53% of those aged 75 to 84 and 47% of those aged 65 to 74. Those aged 85 and over are also more likely to receive support for housework and food preparation.

Table 2: Variation in services received by clients of long term home support services, by age group, 2009-2010

Type de services à domicile	Groupe d'âge			
	20 à 64 ans (%)	65 à 74 ans (%)	75 à 84 ans (%)	85 ans ou plus (%)
Aides de soins de santé à domicile	42	47	53	59
Infirmières visiteuses	40	31	21	19
Services d'aide ménagère	23	27	33	42
Repas*	5	5	9	15
Services de bénévoles	1	1	1	1
Physiothérapie	8	8	7	7
Ergothérapie	9	8	7	5
Orthophonie	1	1	0†	0†
Centre/hôpital de jour	3	3	3	2
Travailleurs sociaux à domicile	4	1	1	0†

Source: Information system on home services, 2009-2010; CIHI 2011a

Home care support and un-met needs

Finally it is worth asking whether those who need help actually receive it. And if so, is the help they receive sufficient (Busque and Légaré, 2012)? These questions are of vital importance because research shows that the risk of deterioration in health status, which may lead to earlier institutionalisation, is markedly greater when one or more needs for help or care at home is not met (CIHI, 2010 ; Sands et al., 2006 ; Gaugler et al., 2005). Furthermore, Hoover and Rotermann (2012) show that the percentage of people who have unmet needs for professional care at home increases with age. Indeed results from the CCHS (2009) show that 3.2% of people aged 65 to 75 report having unmet needs, and that this percentage is more than doubled for those aged 85 and over (6.7%)

Health expenditure

Expenditure on health by Provincial and Territorial governments varies with the age groups within the category of older people (Fig. A. 19). On average, the highest expenditure per person is for those aged 80 and over (CIHI, 2014).

According to the CIHI (2014), health expenditure on the oldest old is highest for two main reasons: the cost of health care in the last months of life, and the longer term medical care generally needed by the minority of people who suffer from chronic illnesses as they get older. The data of the Canadian Survey of Experiences with Primary Health Care (CSE –PHC) of 2008 indicate a closer correlation between the presence of multiple chronic diseases and increased recourse to health services than between age and recourse to services (CIHI, 2011a).

Conclusion

In conclusion we believe, like Orpana et al. (2009), that it is important to go beyond cross-sectional surveys of the population living at home if we want to study the determinants of positive aging. We also need to have access to data covering residents in health establishments. At the same time, we must not lose sight of the growing relative scale of the 85+ as a group over the course of the present century, and of their singular characteristics compared with today's older population as a whole.

II Mortality and morbidity projections at older ages and their impacts on numbers of the oldest old in Canada

The emergence, and the scale, of a decrease in mortality after age 80 was a pleasant surprise in the 1980s. Work by Kannisto (1994), Thatcher et al. (1998) in the 1990s were the first to report on this little known phenomenon. They showed that in all the industrialised countries, standardised mortality rates for the 80 to 90 year old age group had declined substantially, although the speed of this decline varied from one country to another. The consequence of lower mortality at advanced ages is an explosion in numbers of the 85+, the oldest old, of whom some will go on to become centenarians and even super-centenarians (those who reach the age of 110) (Vaupel, 2010 ; Oeppen and Vaupel, 2002). Actuaries as well as demographers have become acutely aware of the importance of the oldest old.

Given the significant progress of life expectancy at 65 and at 85 since the beginning of the 21st century (Bergeron-Boucher, 2012), it is to be expected that the average Canadian will live beyond the age of 90 by 2075 (OSFI, 2014). The oldest old, who were formerly a marginal group, are thus becoming a centre of attention, especially for public programmes of health care and pension provision.

Estimation of mortality at older ages

Statistics Canada revised its mortality tables methodology starting with the period 2005 to 2007, to take account of the latest methods in the study of mortality.

Two major methodological changes were applied to the calculation of mortality tables (Statistics Canada, 2013b). The first concerned the estimation of mortality at older ages: a logistic model derived from the work of Kannisto (1992) was preferred to the quadratic model of Coale-Kisker (1990). Research has shown that in countries with good quality data, the age-related increase in death rates follows a logistic curve (Kannisto et al., 1994; Thatcher et al., 1998). The second change has to do with the smoothing of age-related probabilities of dying. The former method relied on pivotal ages, and this was replaced by a method based on splines, which is more flexible and which overcomes the arbitrariness of pivotal ages (Ouellette, 2011).

Two sources of data were used to construct complete mortality tables: the civil register and Statistics Canada's Demographic Estimates Programme. In general, the quality of the Canadian raw data on deaths by age and sex in the Vital Statistics is considered to be very good (Bourbeau and Lebel, 2000), even for ages from 80 to 100 (Beaudry-Godin, 2010).

Estimates of mortality after age 100 are a particular challenge, because the population numbers and the numbers of deaths are lower, and registration is more subject to declaration errors. Using a logistic model however does enable a coherent series of death rates at older ages to be obtained. The methodological details on the calculation of mortality tables are available in Statistics Canada 2013b.

It is important to emphasise that particular care has to be taken with the estimation of death rates at older ages. From the age of 95 to the open ended group of those aged 110 and over, death rates may show random fluctuations because of the small numbers of deaths and of persons at risk of dying. At some very advanced ages, usually above 105, it is impossible to calculate a rate because of a complete absence of deaths and/or of persons at risk of dying. These fluctuations may lead to inconsistencies and so need to be carefully controlled for, especially as regards the solvency of pension systems.

In this context it is preferable to make use of a model to estimate death rates at older ages, because this is more conducive to an accurate representation of mortality and the construction of a complete series of projected rates up to the open-ended age group of 110 and over. Statistics Canada therefore uses a simplified logistic model derived from Kannisto (1992).

Model of mortality projection at advanced ages

For projecting mortality, Statistics Canada (2014) uses the Li-Lee method (Li et Lee, 2005), which is an adaptation of the well-known Lee-Carter model (Lee and Carter, 1992), and which is useful in situations where it is desirable to limit divergence between diverse groups and to enable coherent projections of mortality to be achieved. The reliability of the Lee-Carter method (Lee and Miller, 2001; Booth, 2006), its capacity to project mortality across all the provinces and territories using the modified version proposed by Li and Lee (2005), and its relative simplicity, are all considerable advantages in projecting future trends in mortality in Canada. A number of improvements have also been made compared to the methodology employed in previous projections. The most important of these has been the introduction of a rotation model which enables projected rates of decline in age-related mortality to change over time (Li et al., 2013). A noteworthy advantage of the method concerns the estimation for older ages. The values of the estimated parameters at older ages were usually negative, implying mortality rates which increase over time. For this reason these values were modified so as to follow an exponential decrease from 90 to 110. A detailed description of this methodology is available in Statistics Canada 2014.

A different methodology is employed by the Office of the Chief Actuary of Canada (OCA): here projections of mortality cover a longer period of 75 years and the guiding hypotheses place more importance on long term rather than on short term and more recent trends (OCA, 2014).

Mortality rates taken from the Canadian Human Mortality Database (CHMD) of the Université de Montréal are used as the basis of mortality projections. The projection of mortality rates involves formulating hypotheses concerning future annual rates of improvement in mortality by age, sex and year. Establishing future projections of mortality thus begins with an examination of historical trends, followed by an estimate of their impact on future mortality improvement rates (MIR) (OSFI, 2013).

With a view to the preparation of the 26th Actuarial Report of the Canada Pension Plan, the OCA analysed the Canadian data using methods developed by the Continuous Mortality Investigation group of the Institute and Faculty of Actuaries of the United Kingdom (CMI, 2013). In addition, in order to formulate MIR projections for the medium term the OCA used tools provided by this research group, or, more precisely, the OCA integrated into its own model the elements of these tools which relate to cohorts.

Longer life and quality of life

Although Canadians are living longer - with average life expectancy at 81.7 years and the most frequent age at death being as high as 85 - for most adults the capacity to perform key functions related to autonomy, in other words their functional health, declines as they get older. The growing proportion of Canadians reaching older ages raises questions concerning the demand for home care services (Decady and Greenberg, 2014).

After the age of 65, the decline in functional health tends to accelerate, with a larger number of serious disabilities (involving many activity limitations) appearing on average around the age of 77 (Decady and Greenberg, 2014). However, it is very difficult to monitor the evolution over time of the level of disability of older people in Canada, because of the lack of continuous data-collection (Lefrancois et al. 2014). An analysis of data from the Canadian Disability Survey 2012 by Statistics Canada should however enable us to have a better appreciation of the current situation.

Health-adjusted life expectancy (HALE) (Wolfson, 1996) may also be used to evaluate quality of life during the later years of life. This measure represents the number of years that an individual can expect to live in good health. The most recent estimation of health-adjusted life expectancy at birth (2005-2007) was 69 years for men and 71 for women. This means that an average Canadian can expect to live for about 10.5 years with a certain level of disability (Decady and Greenberg, 2014).

The number of years lived with diseases can also be studied (Global Burden of Diseases, 2013). For Canadians aged 80 and over in 2010, the diseases which distinguish them from younger people are cardio-vascular diseases, neurological conditions and muscular diseases.

Finally, a study of 90 year-olds living in the community in Canada (Wister and Wanless, 2007) reveals two main trends. The first is that approximately three quarters of men and two thirds of women in their nineties report being in good or excellent health, although their level of functional health and the presence of chronic conditions suggest a less good state of health. Approximately 8.5 in every 10 people in their nineties are limited in their levels of activity, and

the majority have at least one chronic disease, although many of them will go on to become centenarians. Secondly, men in their nineties seem to be in better health than women, although women nonagenarians are much more numerous. These findings of a descriptive analysis are confirmed by multivariate analysis. A selection effect may be at work, caused by mortality and by the fact that the research does not take account of people living in institutions. In fact approximately 35% to 45% of the population of people in their nineties are resident in institutions, and these are likely to have severe disabilities.

In this context the challenge for an aging population is finding ways to increase the number of healthy life years. This challenge is made all the more important because in Canada health indicators of the global burden of diseases are measured only at birth, which does not enable us to examine in what ways the relationship between morbidity and mortality changes with age, particularly at advanced ages (Luy et al., 2014). Further research on better differentiated measures of health-adjusted life expectancy at particular ages would enable the dynamic processes associated with aging to be clarified (Robine and Cambois, 2013; Jagger et al., 2013).

Future numbers of oldest old in Canada

As we pointed out in the introduction, the numbers of oldest old are increasing in the Canadian population. It is therefore natural to ask questions about the future evolution of their numbers in coming decades. These future numbers will depend on the size of the initial cohorts, on the contribution of net international migration, and especially on the future evolution of mortality at older ages.

Projections by Statistics Canada (2014) suggest that we should anticipate a growth from about 6 million people aged 65 and over in 2015 to about 12 million in 2060; in the same period the numbers of 85+ can be expected to increase from 200,000 to 1,200,000 men and from 500,000 to over 1,500,000 women. This marked increase in over-85 numbers compared with those 65+ will take place and grow in scale from 2030 onwards (Figure 7), with the arrival of the first baby boomers in the oldest old group.

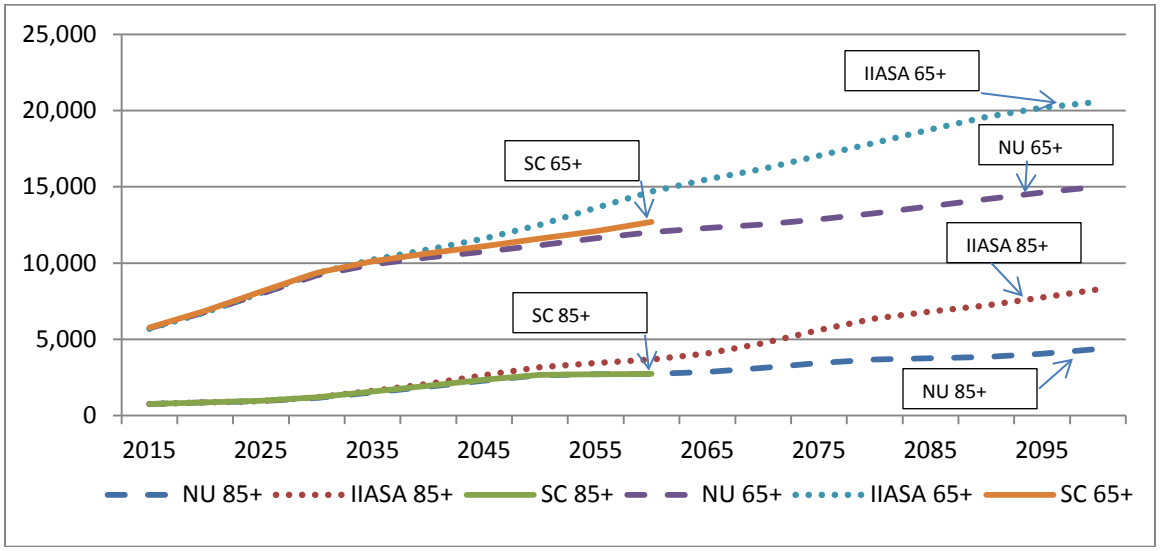

Figure 7: Projection of the older population in Canada (in 000), according to Statistics Canada (SC) 2015-2060, United Nations (UN) et IIASA, 2*015-2100*

Beyond this, the projections can also take into account other variables besides sex and age. This is particularly the case for projections based on microsimulation modelling. The DemoSim model of Statistics Canada enables us, among other things, to differentiate the population based on socio-cultural identity. The LifePaths model distinguishes between people living in institutions and those living in private households, which is important for the oldest old group. There is certainly room to doubt the likelihood that the health authorities will implement the projected number of institutional beds presented in this model, amounting to 200,000 today and rising to over 700,000 in 2051 for the 65+, and from 100,000 to almost 400,000 for the 85+ by the same date (Table 3) (Légaré et al., 2014). But this kind of exercise does allow us to estimate the potential under-evaluation of those at risk of being forced to live at home with numerous and severe disabilities.

Table 3 : Older people by housing type, Canada, 2011-2051[2]

	2011		2031		2051	
	65+	85+	65+	85+	65+	85+
Living in the community	4 832 585	605 155	8 856 989	1 018 151	10 267 407	1 986 614
Living in institutions	184 916	82 319	411 948	165 832	715 935	392 745
% living in institutions	3.7%	12.0%	4.4%	14.0%	6.5%	16.5%
Total	**5 017 501**	**687 474**	**9 268 937**	**1 183 983**	**10 983 343**	**2 379 359**

Source: Légaré et al. 2014

Although the official projections of Statistics Canada currently stop in 2063, those by international organisations extend as far as the next century. This is the case for the Population Division of the United Nations (UN) (United Nations, 2014) and the International Institute for Applied Systems Analysis (IIASA) (Gerland et al., 2014). The UN projects a total Canadian population of about 50 million in 2100, while the IIASA forecast is for 54 million. Breaking down this projected total population by age group, we see that the disparity is mainly due to the numbers of people aged 85 and over. Although both models have slightly under 6 million people aged 0 to 14 in 2015, the UN forecasts 4.3 million of persons aged 85+ in 2100 compared with 8.1 million by IIASA (Figure 7). Of course, the margins of error over such long term projections are large, but how is this difference to be explained? The IIASA model takes account of individuals' levels of education, and this variable directly affects hypotheses concerning both fertility and mortality. For example, the hypothesis of differential mortality depending on the level of education implies a life expectancy which is four years greater for those who have post-secondary education compared with those who have only primary level (Samir et al. 2010). In this respect, analysis of the IIASA projections also reveals a projected transformation of the structure of the Canadian population aged 85 and over in terms of educational levels. According

[2] Results from the LifePaths microsimulation model 5.0.2.0. A more recent version containing an important update to the institutionalisation module is now available.

to this model, while fewer than 30% of those aged 85 and over in 2015 had a post-secondary educational qualification, the comparable proportion for 2100 will be nearly 80%.

Given the projected growth in numbers of the 85+, one may question how the network of potential support for these older people may vary, using a calculation of the Oldest Old Support Ratio (OOSR). The OOSR is defined as the relationship between those aged 50 - 74 and those aged 85 and over (Robine et al. 2007b). This indicator aims to show how the number of potential helpers for the oldest old varies over time, given that the 50 - 74 age group contains the majority of these potential supporters. In Canada, between 2015 and 2060 this figure goes down from 14 potential helpers to 5, according to Statistics Canada and the UN, and to 4 according to the IIASA, but by the turn of the next century it may fall to just under two potential helpers for every person over 85 (approximately 1.8) (Table 4). We should recall that while the 85+ of the year 2100 are the 0 to 14 year olds of today, those who will then be aged between 50 and 75 are not yet born. In the very short term the situation is a little more encouraging. For example, the proportion of women over 85 without a surviving child will fall from 22% to 16% between 2001 and 2021, before rising again to 28% by 2051 (Carrière et al. 2007) (Fig A.20).

Tableau 4 : Projected Oldest Old Support Ratio for Canada, according to Statistics Canada 2015-2060 and UN and IIASA 2015-2100

Oldest Old Support Ratio : relationship between people aged 50 to 74 and those aged 85 and over			
	SC	UN	IIASA
2015	14.4	14.2	14.2
2060	5.2	4.7	4.1
2100	NA	3.2	1.8

Conclusion

This section demonstrates the importance and the complexity of the study of mortality at older ages. These analyses also become a basic element in the projection of population numbers which aim to better understand the effects of population aging. These projections are frequently used by policy makers in determining social policies designed to secure the well-being of older people.

III Overview of policies towards the oldest old in Canada and other countries

In Canada there are few if any policies specifically aimed at the oldest old. Rather, policy addresses physical and mental conditions, and aims to minimise the negative consequences which flow from fixing the thresholds for access to services and social programmes at particular ages. Programmes and services responding to the needs of the oldest old are usually those which are open to people who lose their independence, have low incomes or are aged 65 and over. These policies have been designed in the form of action plans, partly by the federal government and, in the area of health, by provincial governments. This section provides an

overview of the various public policies in place in Canada to safeguard the well-being of older people in the short and medium term. More precisely, we review policies dealing with living arrangements, health care and income for the oldest old. These policies are usually in the form of intentions to act and of political announcements, rather than being already in operation. We also look at certain public policies in other countries where the demographic and cultural structure is similar to that of Canada.

The needs associated with the well-being of the oldest old became a subject of interest to researchers during the 1990s, with the International Year of Older People in 1999 (Rowland, 2009). In the same year the National Advisory Council on Aging (NACA) published "Challenges of an Aging Canadian Society: 1999 and Beyond", a report on the situation of older people listing concerns related to their short and medium term needs (Government of Canada, 1999). This report emphasised the many advantages to be gained from good planning and evaluation of needs for the well-being of the population when the baby boomers reach older ages. However the study population of the NACA report is that of Canadians aged 65 and over, which suggests that the quite particular group of those aged 85 and over is hidden in this demographic portrait. The report by Havens and Findlayson (1999) Analyses of Canada's oldest old : from the Survey of Ageing and Independence Canada (1999) has the great merit of tracing the demographic profile of people aged 85 and over who took part in the Survey of Ageing and Independence in 1991. This report is a foundation stone of research on the oldest old in Canada. However its content is now out of date from the viewpoint of policy makers tasked with responding to the needs of the baby boomers who will join the ranks of the oldest old from 2031 onwards. Their demographic and socio-economic characteristics will be distinct from those of their predecessors in 1991 – among other aspects, in terms of their living arrangements and health conditions (McDaniel, 2011; McDaniel et al, 2013). These are the reasons why some of the public policies currently in place are likely not to be appropriate to meet the needs of tomorrow's oldest old.

Federal and provincial research and action programmes on the oldest old in Canada.

The report Principles of the National Framework on Aging: A Policy Guide, published by Health Canada in 1998, established the main factors which determine older people's feelings of well-being.[3] In addition to the Canadian Census and the research studies attached to it, other studies and research networks also have the mandate to deepen our knowledge of the oldest old: the Atlantic Seniors Housing Research Alliance (Shiner et al., 2010), the Manitoba Longitudinal Study of Aging (University of Manitoba – Center on Aging, 2014) and Perspective pour un vieillissement en santé: proposition d'un modèle conceptuel (Cardinal et al, 2008). Other small scale studies have been done in Canada, mainly in the neurological sciences, to evaluate the health status of the oldest old; these are not covered here. All these instruments, and the in-depth research by different parts of federal and provincial government and by organisations with a specific interest in the subject, enable us to survey the main public policies aimed at older people.

[3] Québec did not take part in the elaboration of the National Framework on Aging, on the basis that the Quebec government was solely responsible for all aspects of health and social services.

The National Framework on Aging (NFA) of 1998 had three defined aims: "promoting the well-being of seniors, recognising their valuable contribution, and eliminating ageism" (Health Canada: Division of Aging and Seniors, 1998). Five principles which are commonly found in the literature on public policies towards older people emerge from the Framework: dignity, independence, participation, fairness and security (Shiner et al, 2010; Health Canada: Division of Aging and Seniors, 1998; AgeUK, 2013). Within Canada, provinces and some territories drew inspiration from this Framework for drawing up action plans which set out the foundations, objectives, and strategies aimed at those at risk of losing their independence, such as the oldest old. These action plans are broadly in line with the National Aging Framework Policy Guide (Health Canada: Division of Aging and Seniors, 1998). A number of provinces have also produced informational guides to the programmes and services provided by public agencies. Although these initiatives are important and indeed necessary, it is important that access to them should be easy for all, especially for older people with a disability (Government of Newfoundland and Labrador, 2007; Government of Nova Scotia, 2005; Government of the Northwestern Territories, 2014). In general all these initiatives are aimed, among other things, at the integration of older people into society, and at the maintenance of their independence and financial security.

The baby boomers' desire to remain independent and self-sufficient, even at very old ages, can be seen in the principal aims of the provincial action plans. The concepts of Age Friendly Cities and Communities and "Aging in Place" encourage taking measures and making arrangements such as providing basic care to ensure that older people remain independent and in their own homes for as long as possible (Richards & Rankaduwa, 2008). But to achieve this, appropriate public policies on living arrangements, health and incomes need to be well established.

Living with loss of independence

In the past there was a classification into two categories in the data on housing: private households and collective households. However, alternative forms of housing which offer different service options have been emerging in response to the needs of older people, and to conform to their wish for independence and to the variety of types of care they require. This creates difficulties in the classification of housing types, and reduces the quality of the information available about them, thanks to a lack of precise definition. Public policies envisage institutions which provide full time care, and many researchers forecast a growing demand for beds, indeed a need for new establishments (Légaré et al, 2014; Government of British Columbia, 2011; Government of Canada, 2013a; PEI Department of Health, 2009). Many provinces also plan for regular evaluation of the quality of care, the availability of beds and the maintenance of existing infrastructure. As a consequence, long term investment will be needed to ensure quality of care and services (Government of British Columbia, 2011; Government of Alberta, 2010; Government of Saskatchewan, 2003; PEI Department of Health, 2009; PEI Department of Health, 2009; Government of New Brunswick, 2009).

A limited capacity to carry out Activities of Daily Living (ADL) (housework, washing, food preparation and maintaining the home) is an important determinant of an older person's capacity to remain at home (Richards et Rankaduwa, 2008). The governments of British Columbia and Manitoba have taken steps to make various services available to people who have difficulty in performing ADL (Government of British Columbia, 2011; Government of British

Columbia, 2012; Government of Manitoba, 2014). In return for these, beneficiaries of these services have to meet certain specific criteria and submit to periodic evaluations designed to adjust the services they receive to their overall condition.

For a significant proportion of the oldest old, who lose some of their capacity for independent living, more comprehensive daily support is essential to their well-being, and home support is needed to avoid their having to move into long-term care (Government of Novia Scotia, 2005; Government of Alberta, 2010; Government of British Columbia, 2011; BC Living, 2010). Cooperation between public and private sectors, non-profit-making organisations and communities is to be strongly encouraged in order to provide flexibility and variety in the options for home care services available to meet these needs (Government of Manitoba, 2014; Richards et al, 2009; Lavoie, 2014 ; Government of Novia Scotia, 2005; Gouvernement du Québec, 2007; Bell and Menec, 2013; Government of British Columbia, 2011).

A range of housing types offering different service options is likely to be sought by the oldest old (Government of New Brunswick, 2009; Observation de l'Administration publique, 2006). Ensuring the supply of services and infrastructures needed to guarantee access to safe housing adapted to the needs of the oldest old is also a national priority (Public Health Agency, Canada, 2012; Government of New Brunswick, 2009; Richards et al, 2009). The Centre for Affordable Housing of the Canada Housing and Mortgage Corporation (CHMC) offers support for affordable housing in all provinces in the form, among other things, of guidance on planning housing projects for older people and partial subsidies of housing costs (Canada Housing and Mortgage Corporation, 2014).

Health Services

The role of the state in care and health services for people facing a loss of independence is in the process of being redefined, in terms of the relationship between public and private sector. There are two main categories of public policy on health for the oldest: promotion of healthy lifestyles and access to long term care and health services (CIHI 2011b). These two strands are prominent in the action plans of the majority of Canada's provinces. Promoting healthy life habits contributes to reducing the costs associated with future health problems, because a healthy life increases the chances of a healthy old age (Government of Alberta, 2010; Government of New Brunswick, 2009; Government of British Columbia, 2011; Government of Newfoundland and Labrador, 2007; Government of the North West Territories, 2014; Gouvernement du Québec, 2007; Government of Saskatchewan, 2003). This promotion is done through diffusion of information and knowledge about the benefits of general good health (physical, mental and attitudinal), and at the same time encouraging older people to be integrated into their communities (Government of Newfoundland and Labrador, 2007; Government of New Brunswick, 2009; Government of Saskatchewan, 2003; Government of British Columbia, 2012).

Taken together, the availability of care and health services in a range of forms (home care, inter-generational cooperation, support networks….) enables the needs of more people to be met (Government of the North West Territories, 2014; Government of British Columbia, 2012). But access to these programmes and services is likely to be difficult for those who live in remote

communities, unless some means of transport is provided for people with reduced mobility. The provinces and territories will have to encourage the mobility of specialists towards remote communities, and set up systems of access to information for all (e-health, internet services for older people and their helpers, phone trees…) (Government of Alberta, 2010; Government of British Columbia, 2012; Government of Manitoba, 2013; Richards et al, 2009). However, the means of diffusion of information need to be adapted to the target population if a good level of access is to be achieved. For example, Saskatchewan has opted for postal distribution of leaflets called *Programs and Services of Interest to Seniors,* to ensure access to information for all (Government of Saskatchewan, 2003). In short, the development of policy has to keep in view the fact of the isolation of some communities. Access to care and services becomes more problematic when a loss of independence and mobility leads to a change in living arrangements. For some people, essential journeys (to medical appointments, shopping ….) and taking part in social activities to prevent loneliness become possible only through using a system of transport (AgeUK, 2013; Richards et al, 2009). Those who have not foreseen their possible future loss of mobility, and have not taken steps to relocate to a neighbourhood with options such as public transport systems in urban areas while they were younger (from 60 to 70 years old) will have to either come up with alternative solutions or go without services to meet their needs. Ensuring safe and affordable transport thus becomes a key to prolonging the independence of the oldest old in good health. The WHO Global Age-friendly Cities Guide, in its list of basic requirements, also cites the need for road signage which takes account of the slower reflexes of older people in order to ensure the safety of all (more visible signs, wider pavements etc.) (Government of Newfoundland and Labrador, 2007).

While care and services may be provided for the oldest old by networks which are both formal (private and public sector) and informal (family, neighbours, friends and communities), employers will also be encouraged to have a better understanding of the issues, and the state will need to help the helpers (Richards and Rankaduwa, 2008; Lavoie, 2014). For example, government support to employers of caregivers may be a useful alternative to direct provision (Government of British Columbia, 2012; Government of Newfoundland and Labrador, 2007). The government of New Brunswick, along with community and private sector organisations, offers a daytime respite service so that informal caregivers can continue with their regular occupations such as jobs and courses (Government of New Brunswick, 2009). Informal caregivers can also access support and information materials on the resources available via the programme *Caregivers Out of Isolation* set up by the government of Newfoundland and Labrador, 2007).

Income

All Canadians have access to the federal government's financial security programmes which aim to mitigate falls in living standards and poverty. Provinces provide income supplements in addition to this. Financial security for older people is part of the functions of government, and is generally approached in the form of fiscal measures involving tax relief and state pension systems (Canada Pension Plan, Quebec Pension Plan, Old Age Security and Guaranteed Income Supplement), and of enhanced access to governmental programmes (Government of Nova Scotia, 2005; Government of Alberta, 2010; Gouvernement du Québec, 2007; Government of New Brunswick, 2009; Government of Newfoundland and Labrador, 2007). Government assistance, in the form of tax credits for those on low incomes, and grants to communities to

create and maintain viable programmes and services, provides support of many older people (Richards & Rankaduwa, 2008).

It is important to make people aware of the needs and costs associated with old age, so that they are able to make informed choices between the different options for savings plans and pensions. This financial knowledge is particularly important for those who do not have private pension provision (Government of Alberta, 2010; Government of Newfoundland and Labrador, 2007; Government of Nova Scotia, 2005). Sound financial planning is dependent on information and awareness, and particularly on this being provided at a time when physical and mental health is not yet impaired. Making financial advice services available is a way of providing better access to financial planning and also indirectly to service and support programmes. The end result will be a healthier population, enjoying a better quality of life and more prepared for their future needs (Government of Nova Scotia, 2005). The province of Alberta also plans for regular review of the eligibility criteria for programmes and services aimed at older people, so that these can be adapted at the right times and places to the needs of future generations (Government of Alberta, 2010). Nova Scotia also follows this initiative, establishing systems to accelerate access to programmes by eliminating some of the discriminatory criteria attached to some of the current public policies (Government of Nova Scotia, 2005).

In conclusion we can say that federal and provincial government action plans show clear awareness and intentions with respect to people at advanced ages and experiencing loss of independence. On the other hand, there are still relatively few programmes which translate these intentions into responses to the needs of the oldest old. The Canadian Government provides information on the programmes and services aimed at older people and caregivers in the Canadian Provinces and Territories on the websites of Service Canada and Seniors Canada (Government of Canada, 2013a; Government of Canada, 2013b). It is important to have as effective means of diffusion of information as possible, with the aim of reaching the entire population and particularly those who are experiencing a loss of independence. In addition, encouraging partnerships between private and public sectors can stimulate and facilitate the creation of new support programmes which are better suited to the lifestyles, health service needs and incomes of older people at very old ages (Lavoie, 2014).

Oldest old policies in other countries

Population aging is happening at different rates across the world. In the developed countries, aging is already at an advanced stage, in countries where the population has relatively high living standards. In the countries of the South, the population will have gone through the aging process before attaining living standards comparable to those of the industrialised North (McDaniel, 2011). There are many western countries with population structures similar to those of Canada, and here aging in the short and medium term is also a leading demographic issue (McDaniel, 2011). Some of these countries are planning ahead for this better than others, and have begun to develop strategies and policies to anticipate the needs of their population at the most advanced ages (Rowland, 2009). In this section we provide an overview which aims to assess their applicability to Canadian society.

At the time of the International Year of Older People in 1999, many nations had their attention drawn to the needs of older people once they reach the age of 85 (Rowland, 2009). These countries were further mobilised at the UN Second World Assembly on Ageing in Madrid in 2002, where a *Policy Declaration* and an *International Plan of Action* were adopted. In the Plan of Action there were three main headings: "older people and development; advancing health and well-being into old age; and "enabling and supportive environments for older persons" (United Nations Population Fund and HelpAge International, 2011). These are the priorities under which governments, non-governmental organisations and other community organisations can develop their future policies for people whose independence is reduced.

Following the World Assembly in Madrid, the Vienna European Centre, a non-governmental organisation affiliated to the United Nations, was given the mandate to synthesise the implementation by participating nations of the International Plan of Action (Monitoring RIS, 2011). The report demonstrates the need to make information on the population at advanced ages and experiencing loss of independence available to all, and to pursue collection of data on this population (United Nations Population Fund and HelpAge International, 2011). Most of the documents reviewing the establishment of action plans on public policy cite Canada as one of the foremost nations in terms of planning for the imminent appearance of large numbers of oldest old. Besides this international movement towards awareness of the socio-economic issues related to population aging, there are also a number of research studies which are focused on the need for better knowledge of the oldest old. Many of these studies are centred in the neurological sciences, and make little use of the available demographic data. Taken together, this body of research internationally points to the same needs and concerns about the oldest old as those found in Canada, but without going into the details of the public policies of the countries involved. Some of these research studies are to be found in the partial literature review in Appendix 4.

Reviewing public policies on an international scale shows us clearly that the various government agencies and researchers interested in the oldest old phenomenon are also working to develop policy on the basis of the same principles as those we find in the National Framework on Ageing of 1998 of Health Canada, namely those of dignity, independence, participation, fairness and security (Shiner et al, 2010; Health Canada : Division of Ageing and Seniors, 1998; AgeUK, 2013; United Nations Population Fund and HelpAge International, 2011). A number of these policies are to be found in Appendix 3. To conclude this section we present an example of the challenges to be met and the solutions proposed to confront them in the case of France.

The French Government's dependency reform of 2013 introduced an additional mechanism alongside the four branches of the social security system dealing with sickness, work-related accidents and occupational diseases, old age and the family. The fifth is designed to ensure support for dependent persons, in particular those at advanced ages and experiencing loss of independence and for whom the state has a social responsibility. Further, it describes the profile of the oldest old and the mindset which informs the development of public policy towards them (Campeon et al., 2014). According to Campeon et al. (2014), the rapid increase in acute dependencies from the age of 85 onwards leads to the prediction that the proportions of dependent persons will rise as population aging takes place. One may suppose that programmes which exist to support such persons will probably also be those most likely to help develop services to meet the needs of the future oldest old. Furthermore, the oldest old of tomorrow will not have the same characteristics as those of today, and this reinforces the need

for continuous re-assessment by government bodies of their programmes and services, to ensure that they are responding properly to the needs of the oldest (McDaniel, 2011; United Nations Population Fund and HelpAge International, 2011). What is more, according to a study in England by the Smith Institute and the Genesis Narrative which took the form of round table discussions and interviews, national and local government need to move from awareness of the imminent changes in the population and their effects on the housing market towards better preparedness, which will require an integration of professional and private initiative into the development of social policy (Wheatley, 2015).

But will the structures be up to the challenge? Whatever the outcome, the generations which are now entering the Third and Fourth Ages are holders of significant capital. Campeon et al. (2014) suggest that on the one hand, a collaboration between the State and senior citizens should be designed, based on higher risk investments to encourage economic growth. On the other hand, when the mass entry into the labour market by the baby boomers took place in France, there was an adaptation of public policy to facilitate the transfer of resources between the generations (by means of tax, inheritance and gift measures). Furthermore, the public is aware of the situation and is ready to participate in possible solutions. An opinion poll by the Direction de la recherche, des études, de l'évaluation et des statistiques (DREES – France) (Grobon, 2014) suggests that in terms of the responsibility for the care of older people and also of the financing of this care, French people questioned in 2013 had opinions which were closely correlated with their standard of living. Among the better-off, six out of ten planned to delegate the care of their relatives either to an institution or to home caregivers, while among the less well-off, only three out of ten foresaw such solutions. Eight French people out of ten in the wealthier categories said that they would be prepared to save more to plan for future dependency, compared with six out of ten of the less wealthy.

Conclusion

Our overview of national, provincial and territorial, and international policies suggest that Canada is, in general, aware that new social issues are created by the entry of the baby boomers into the very old age categories (the oldest old). Canadian society will have to ensure that it has appropriate structures in place to meet these new challenges. Advance planning for their needs will enable public policy to be better grounded. Given the changes in behaviours and characteristics of the oldest people today, it is vitally important to design policies which take account of their degree of independence, rather than to base policy simply on age thresholds. At the same time effort should continue to be invested in developing the kind of policy which will enable these older people to remain independent for as long as possible. The need for government commitment to funding of social programmes and services should not be overlooked. And promoting healthy and positive attitudes towards older people will contribute to good relations between the generations.

General conclusion

The conclusion of this review of the state of knowledge about the oldest old is that, despite some gaps in the surveys aiming to capture the facts about this sub-population, we have in Canada a considerable amount of information about people aged 85 and over. It is unfortunate that the over-65 age group is too often treated as a homogenous group, and that insufficient attention is given to the particular characteristics of the oldest old. There are two possible reasons for this. Firstly, reaching the age of 85 is sometimes considered a marginal event; but as this report has shown, the numbers and the proportion of the 85+ will increase strongly in the coming decades. Secondly, the samples of those 85 and over in surveys are sometimes too small to enable researchers to carry out specific analyses of this sub-population. And further, the 85 year-old point itself, which is generally accepted as a threshold, and which has been used throughout this report, needs to be considered not so much as immutable as a variable one which is dependent on the particular characteristics of the individual. As we showed in section III, social policies are not established to be applicable to individuals of a given age (with some exceptions) but are dependent on their health status and income level. It is also possible to think about an evolving threshold for the oldest old, which could be related to life expectancy or to healthy life expectancy.

Meanwhile, as Appendix 2 makes clear, most industrialised countries have established specific surveys of older people, whereas in Canada there are relatively few which deal directly with the problems associated with population aging. Internationally, although there are many cases of socio-economic surveys with a particular focus on the oldest old, there are very few examples of specific studies of those aged 85 and over.

At a time when the older persons age group, and particularly the oldest old, are becoming more and more important, it is regrettable that a large scale Canadian programme dealing with the socio-economic implications of aging, the Social and Economic Dimensions of an Aging Population (SEDAP), no longer exists. We believe it is important for Canada to have a panel composed of a multidisciplinary team of researchers and policy makers with shared interests in the repercussions of population aging for the society of today and tomorrow. Although these types of research teams are quite rare, there are some examples, such as the New Dynamics of Ageing in the UK which has set up the programme known as Modeling Ageing Population to 2030 (MAP 2030). This research programme brings together a multidisciplinary team of academics and civil service specialists with a shared interest in the consequences of population aging, where demographic projections, and particularly micro-simulation models, take centre stage. A similar research programme would be very valuable for Canada.

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Appendix 1

Supplementary figures and tables

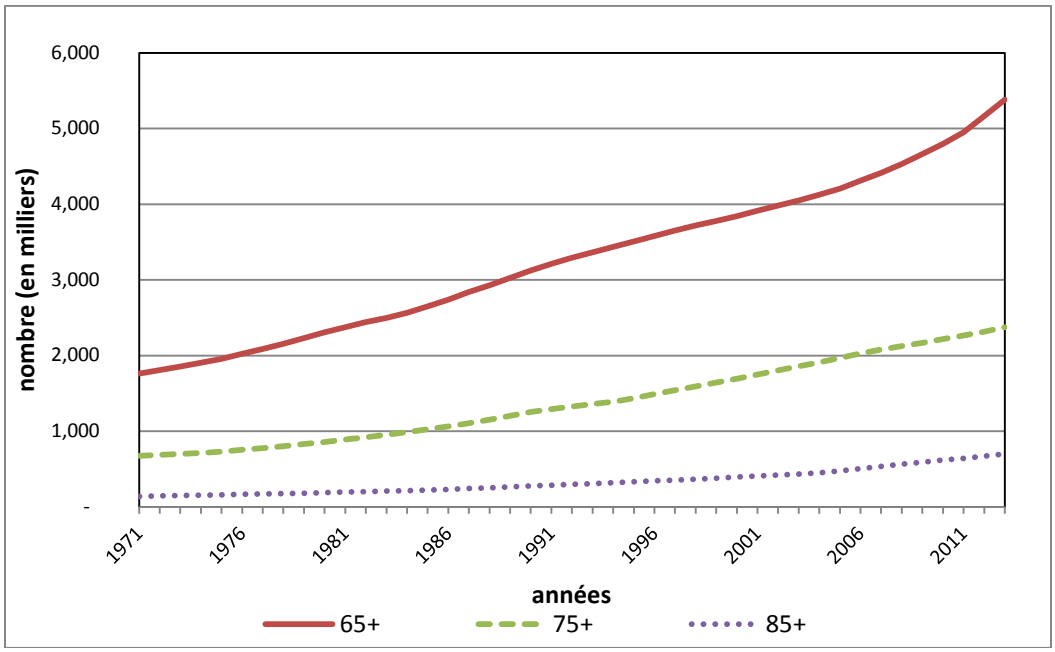


Figure A.1: Population aged 65 and over, Canada, by age group
Source: Statistics Canada, Table 051-0001 Estimates of population, by age group and sex for July 1, Canada, provinces and territories, annual, CANSIM (database).

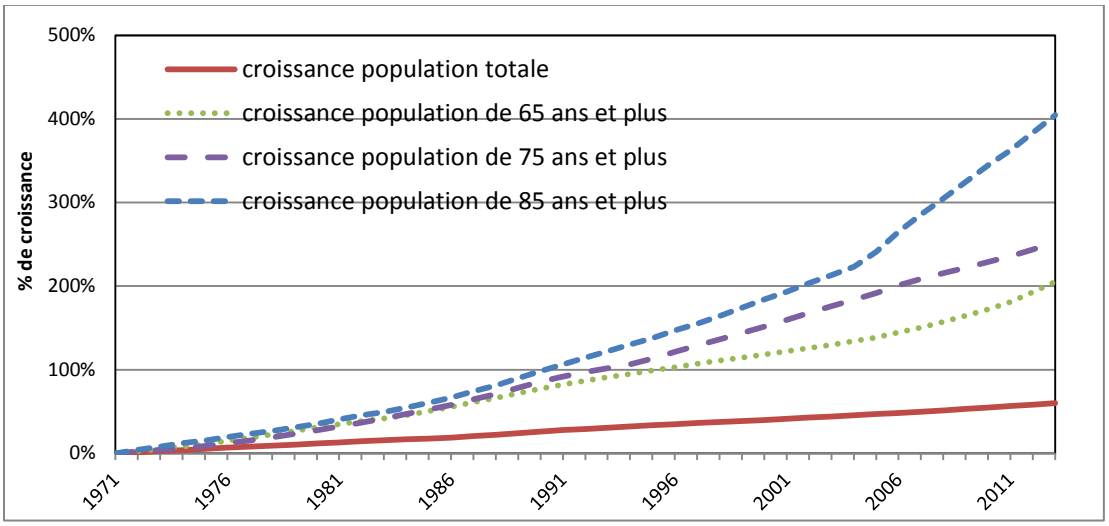


Figure A.2: Percentage population growth, Canada, by age group
Source: Statistics Canada, Table 051-0001 Estimates of population, by age group and sex for July 1, Canada, provinces and territories, annual, CANSIM (database)

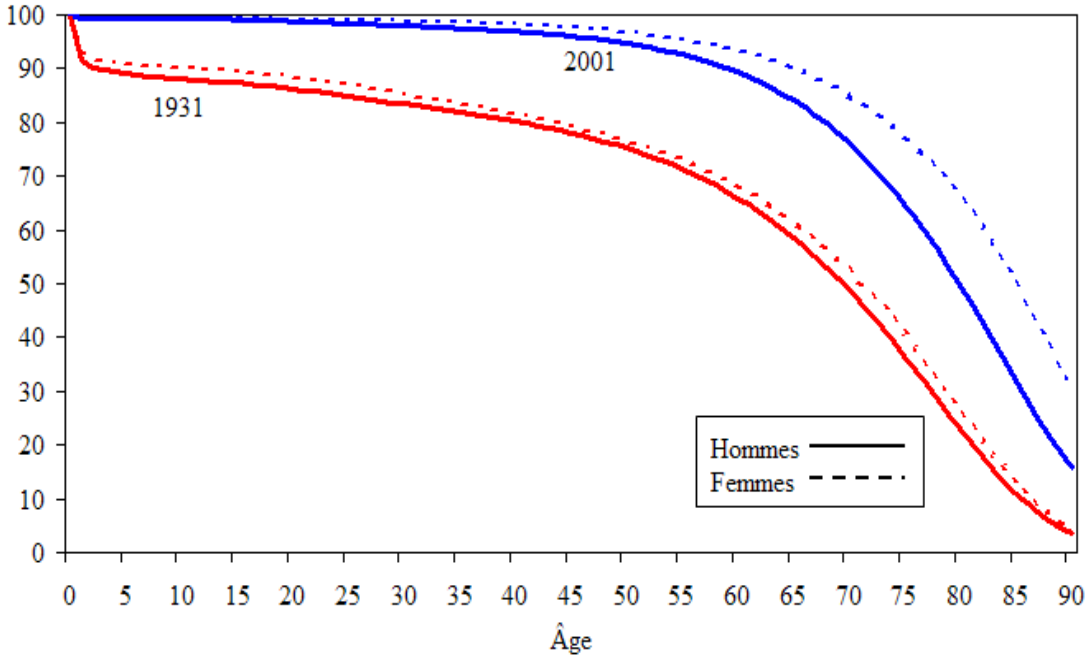


Figure A.8: Survival curve by sex, Canada, 1931 and 2001
Source: Statistics Canada (2008). Canadian Demographics at a Glance, Catalogue No. 91-003-X

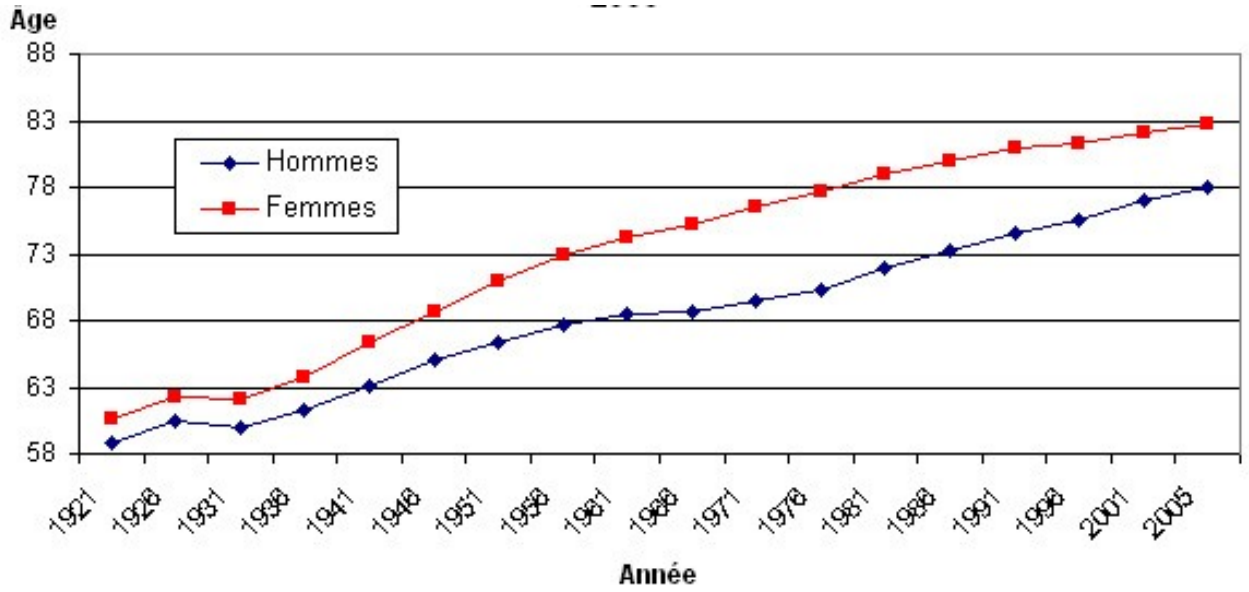


Figure A.4: Life expectancy at birth, by sex, Canada, 1921-2005
Source: Statistics Canada (2010), Healthy People, Healthy Places, Catalogue N° 82-229-X2009001

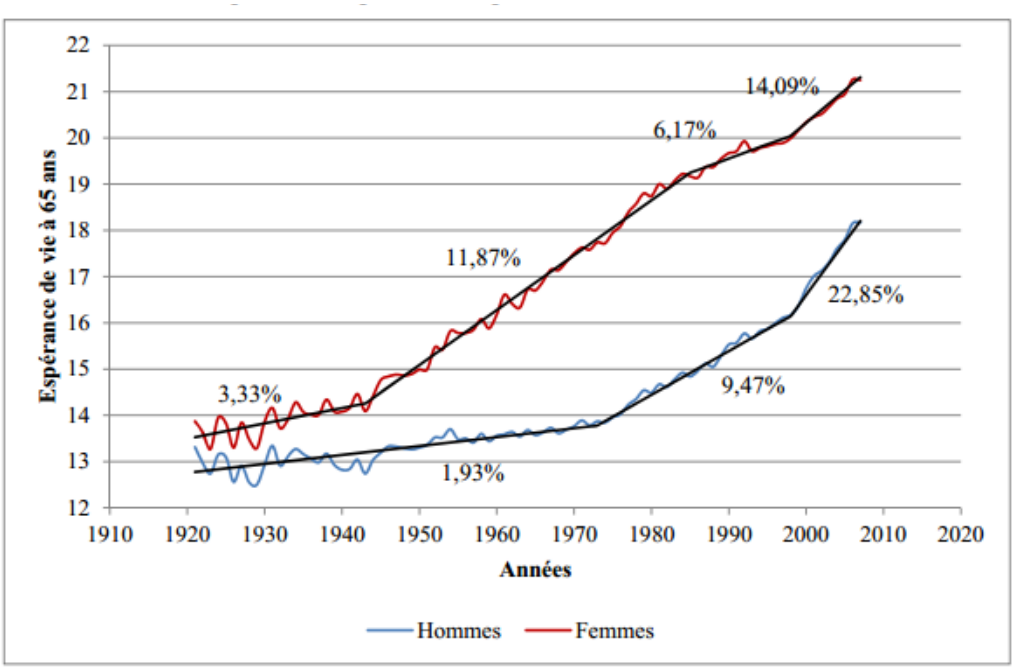


Figure A.5: Life Expectancy at age 65, Canada, 1921-2007
Source: Bergeron- Boucher, Marie-Pier, (2012). "Changements épidémiologiques au Canada : Un regard sur les causes de décès des personnes âgées de 65 ans et plus, 1979-2007", SEDAP Research Paper no 299

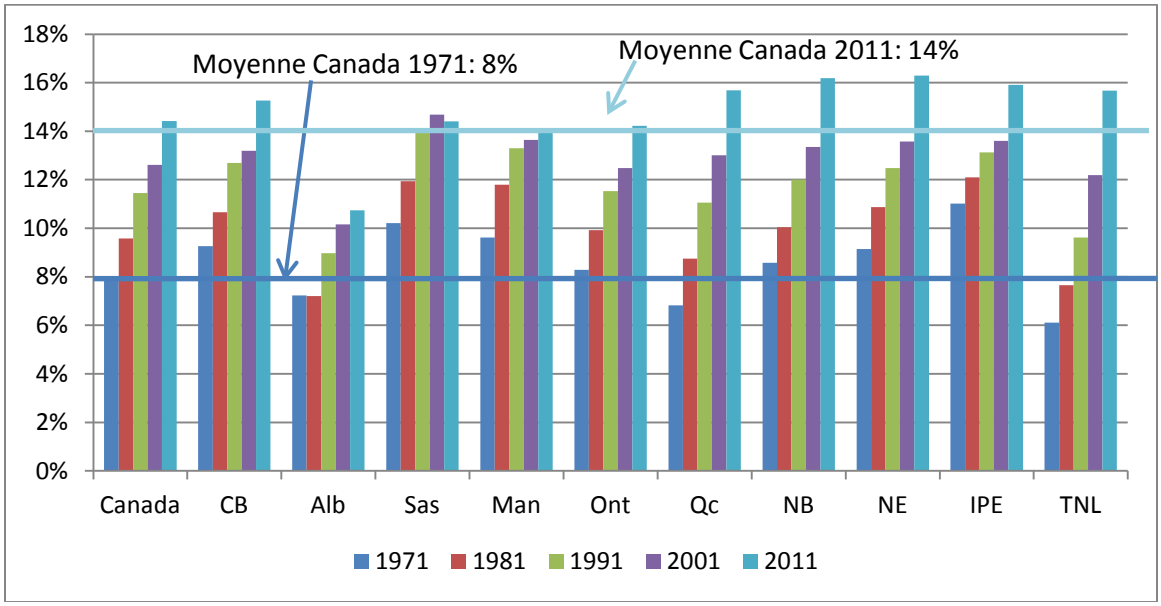


Figure A.6: Proportion of 65+, Canada, by province, 1971-2011
Source: Statistics Canada, Table 051-0001 Estimates of population, by age group and sex for July 1, Canada, provinces and territories, annual, CANSIM (database).

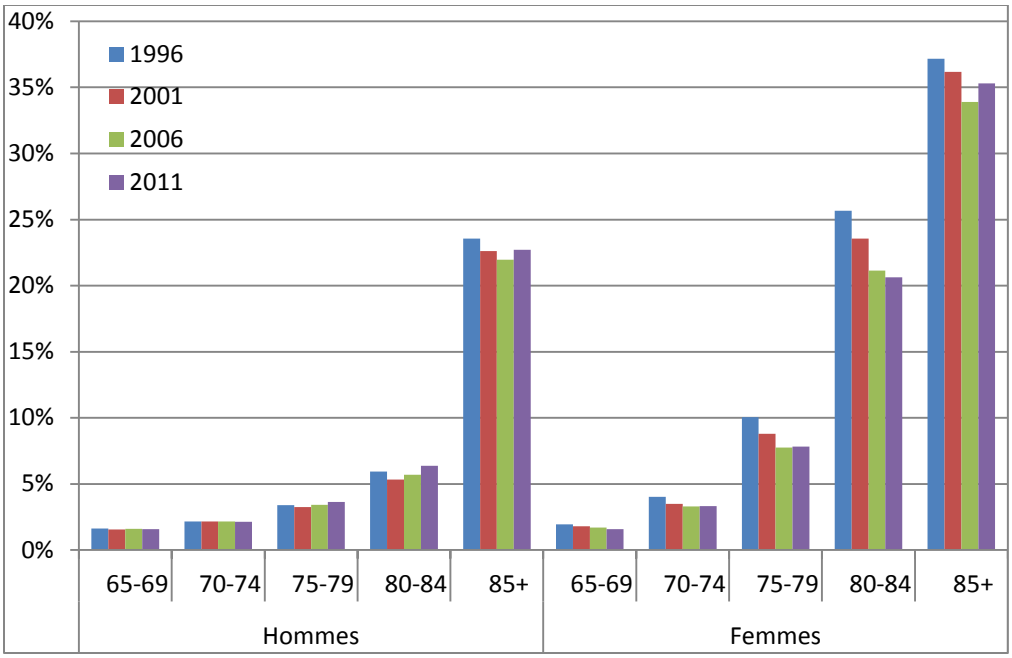


Figure A.7: Proportion of the population in collective households, Canada, by age group and sex
Source: Légaré, J., Boissonneault, M. et Décarie, Y. (2014). Un défi non-étudié pour les baby-boomers, relié à une éventuelle non-disponibilité de soins et services. Research report for the Applied Resarch and Analysis Directorate, Health Canada

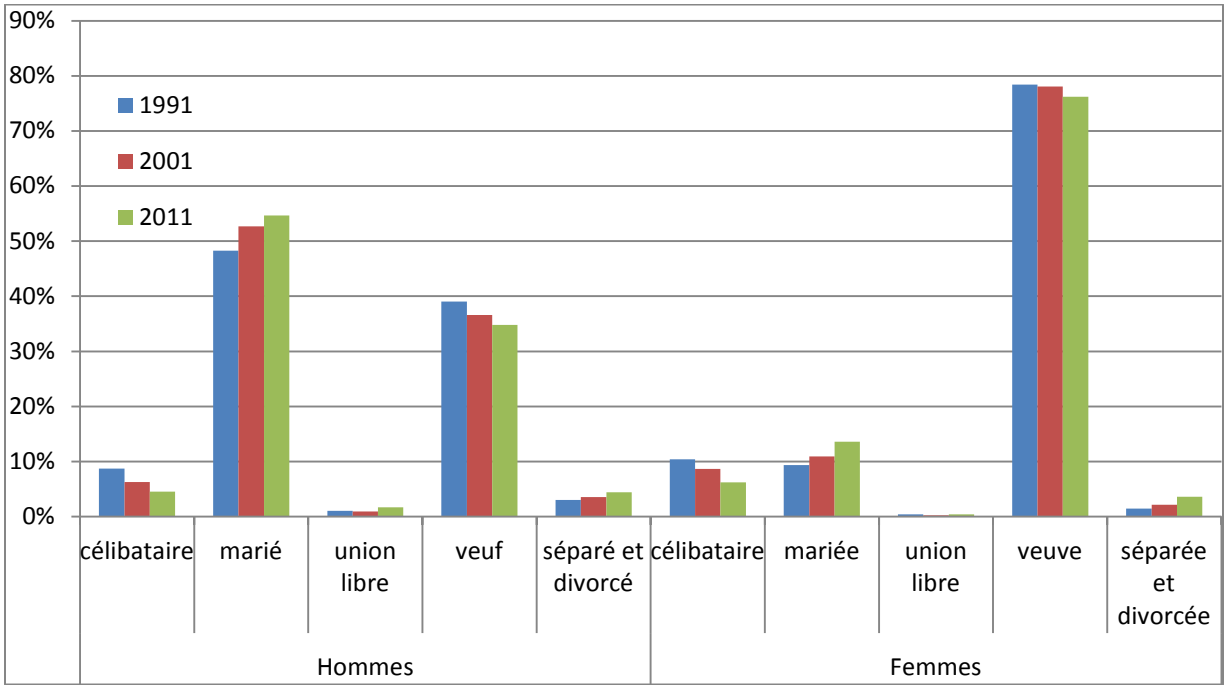
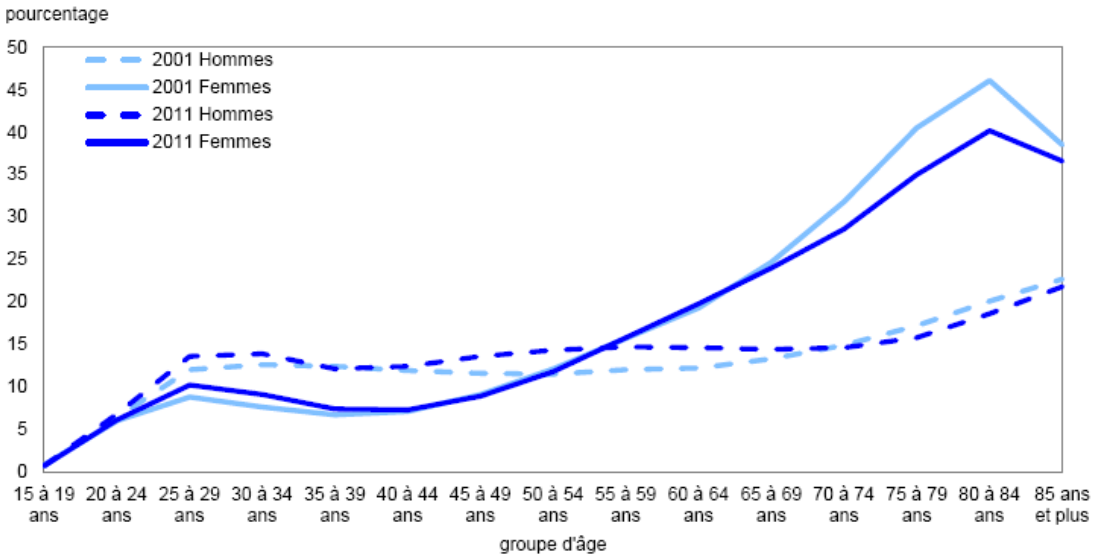


Figure A.8: Proportion of 85+ by marital status and sex, Canada, 1991-2001-2011
Source: Statistics Canada, Table 051-0042 Estimates of population, by marital status or legal marital status, age and sex for July 1, Canada, provinces and territories, annual, CANSIM (database).



Note :

1. Les personnes vivant seules se limitent aux personnes en ménages privés. Toutefois, le dénominateur combine à la fois la population vivant en ménages privés et celle vivant en ménages collectifs.

Figure A.9: Percentage of the population aged 15 and over living alone by age group, Canada, 2001 and 2011

Source: Statistics Canada (2012). Families, Households and Marital Status – Living arrangements of seniors, Catalogue No. 98-312-X2011003

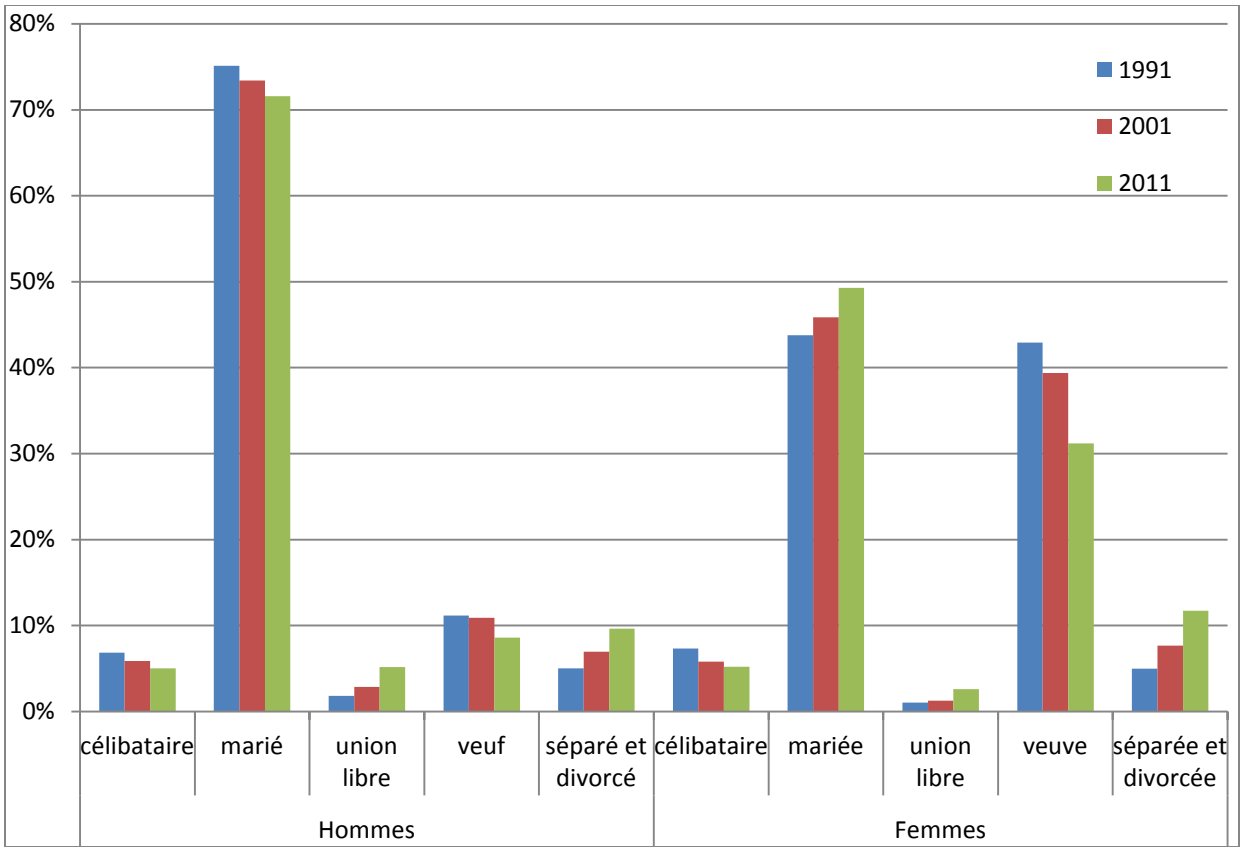


Figure A.10: Proportion of 65-84 year olds by marital status, Canada, 1991-2001-2011
Source: Statistics Canada, Table 051-0042. Estimates of population, by marital status or legal marital status, age and sex for July 1, Canada, provinces and territories, annual, CANSIM (database).

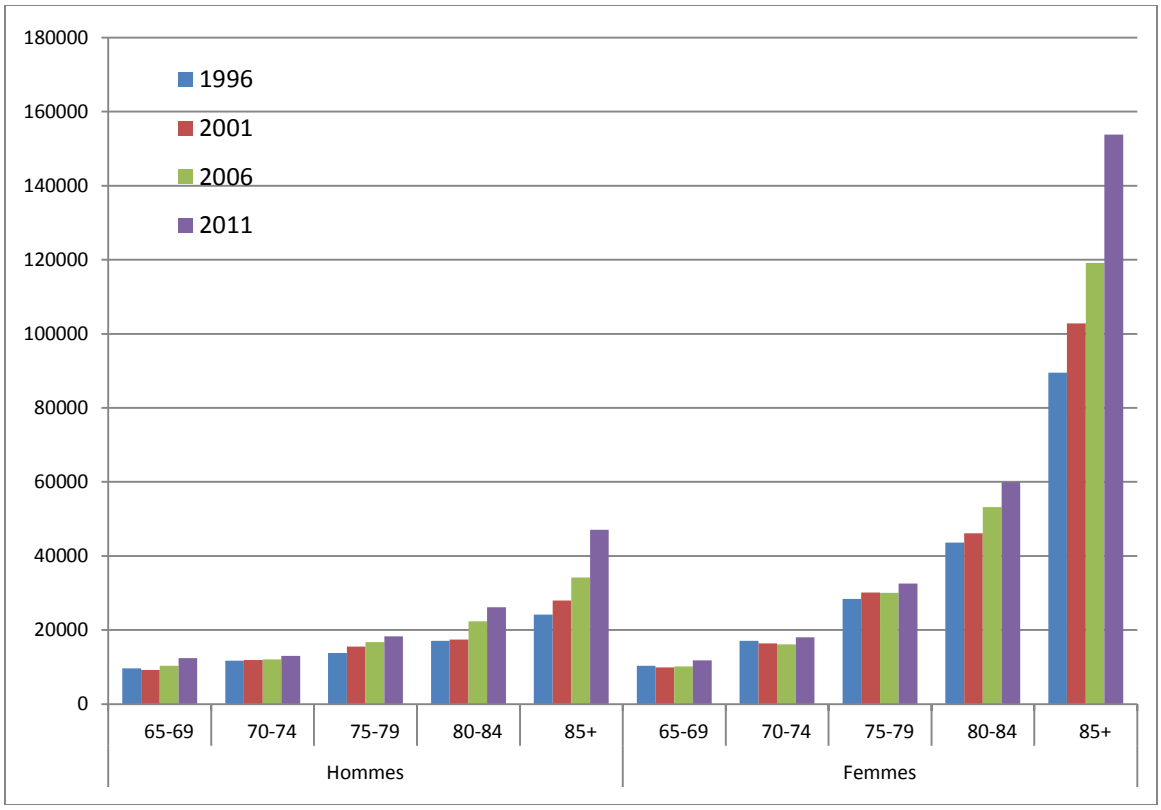


Figure A.11: Population in collective households, Canada, by age group and sex
Source: Légaré, J., Boissonneault, M. et Décarie, Y. (2014). Un défi non-étudié pour les baby-boomers, relié à une éventuelle non-disponibilité de soins et services. Research report for the Applied Resarch and Analysis Directorate, Health Canada

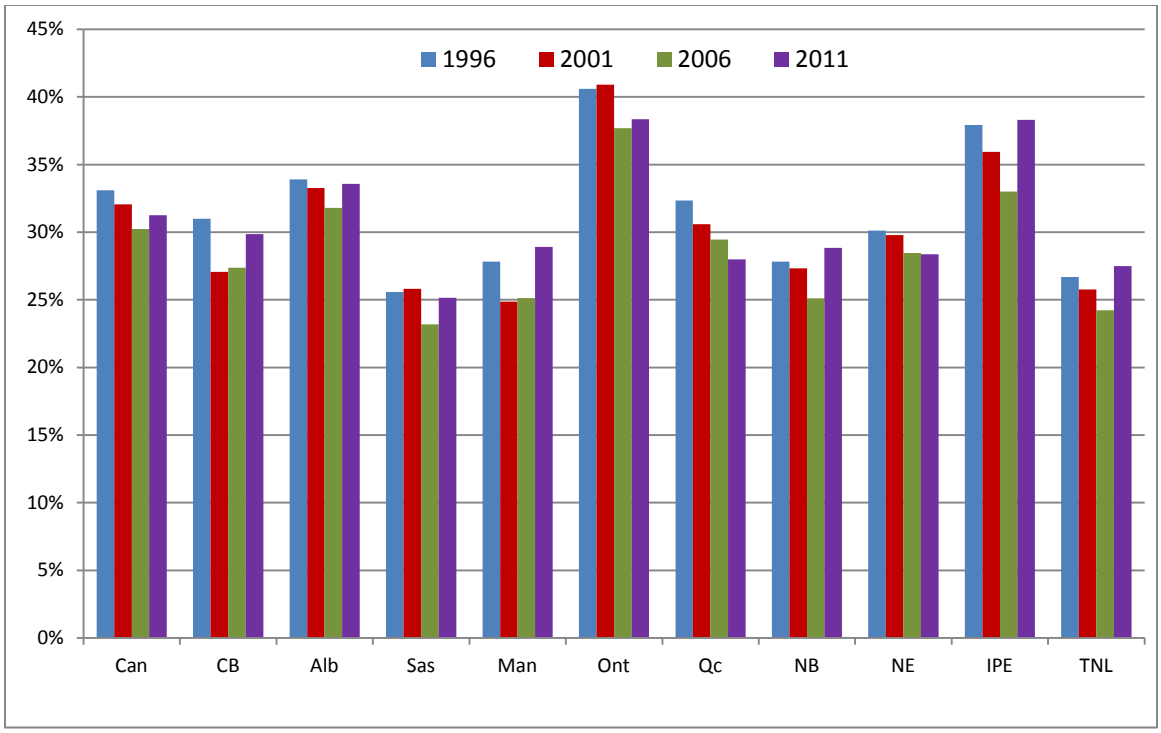


Figure A.12: Proportion of 85+ living in collective households, by province
Source: Légaré, J., Boissonneault, M. et Décarie, Y. (2014). Un défi non-étudié pour les baby-boomers, relié à une éventuelle non-disponibilité de soins et services. Research report for the Applied Resarch and Analysis Directorate, Health Canada

Table A.13: Distribution (in percentages) of the household situation of individuals aged 65 and over living in old persons' homes, by age group and sex, Canada, 2011

Groupe d'âge	Sexe	Vivant seule	Vivant en couple[1]	Vivant avec d'autres[2]
			pourcentage	
65 ans et plus	Total	83,9	15,0	1,1
	Hommes	71,8	27,3	0,9
	Femmes	88,6	10,3	1,1
65 à 74 ans	Total	82,1	16,3	1,7
	Hommes	81,3	17,2	1,5
	Femmes	82,5	15,7	1,7
75 à 84 ans	Total	80,5	18,4	1,1
	Hommes	69,7	29,2	1,1
	Femmes	84,9	14,0	1,1
85 ans et plus	Total	86,9	12,2	0,9
	Hommes	70,6	28,8	0,6
	Femmes	92,2	6,7	1,0

Notes :
1. Comprend les conjoints mariés et les partenaires en union libre.
2. Comprend les personnes vivant avec des enfants adultes, avec des personnes apparentées et/ou non apparentées. Aucun conjoint marié ou partenaire en union libre n'habite avec la personne.

Source: Statistics Canada (2012). Families, Households and Marital Status – Living arrangements of seniors, Catalogue No. 98-312-X2011003

Table A.14: Population of 65+ by level of education and sex, Canada, 2011

	SLID 2011							
	Men				Women			
	65-69	70-74	75-79	80 and over	65-69	70-74	75-79	80 and over
Less than 13 yrs primary and secondary (no diploma)	195 145	195 445	197 668	244 257	252 300	225 247	260 077	359 544
Completed secondary	151 057	96 488	87 252	83 926	206 838	154 088	112 392	156 571
Postsecondary	361 058	256 409	145 418	157 646	326 678	241 449	154 551	154 806
Total	707 260	548 342	430 338	485 829	785 816	620 785	527 020	670 920

Source: Author's calculations based on public data from SLID 2011

Table A.15: Median income of persons aged 65 and over by source of income and sex

	Median income, SLID 2011							
	Men				Women			
	65-69	70-74	75-79	80 and over	65-69	70-74	75-79	80 and over
Total pre- tax income	33 400	31 100	27 050	27 975	20 325	19 375	19 850	20 750
Pension benefits CPP and RRQ	7 250	7 750	7 750	8 000	5 000	5 500	5 750	6 250
Governmental transfers	14 250	15 250	15 750	15 675	12 500	14 000	14 475	15 950
Total old age security benefits	6 250	6 500	6 500	6 500	6 500	6 500	6 500	6 500
Private pension income	5 250	9 250	8 750	8 250	0	2 600	2 200	2 100
Income after tax	31 260	29 280	26 610	26 925	19 550	18 875	19 475	20 550

Source: Authors' calculation based on public data from SLID 2011

Table A.16: Prevalence of positive self-reported state of health, isolation and unhappiness with life, by age, population living at home, Canada not including Territories 2008-2009

Caractéristiques	Autoévaluation positive de l'état de santé	Solitude	Insatisfaction à l'égard de la vie
Total	**76,5**	**19,6**	**17,0**
Nombre d'activités sociales fréquentes			
Aucune†	63,1	29,0	27,8
Une	71,3*	20,2*	21,2*
Deux	78,5*	18,1*	15,2*
Trois	84,0*	17,0*	13,0*
Quatre	86,2*	14,3*	10,0*
Cinq	88,3*	14,5*	6,6*
Six ou plus	89,6*	12,8*	5,7E*
Groupe d'âge			
65 à 74 ans†	80,3	18,7	15,3
75 à 84 ans	73,2*	19,5	18,1*
85 ans et plus	67,7*	25,1*	22,7*

Source: Gilmour, H. (2012). Social participation and the health and well-being of Canadian seniors, Statistics Canada, Health Reports, Catalogue No. 82-003-X

Table A.17: Répartition en pourcentage des personnes âgées fragiles, basée sur un seuil d'indice de fragilité (IF) de >0,21, selon le groupe d'âge, population à domicile, Canada, 2009-2010

	Population estimée (en milliers)	%	Intervalle de confiance de 95 %	
			de	à
Total	1 046	23,5	22,8	24,3
Groupe d'âge				
65 à 74 ans†	407	16,0	15,2	16,8
75 à 84 ans	430	28,6*	27,1	30,1
85 ans et plus	209	52,1*	49,2	55,0

Source: Hoover, M., Rotermann, M., Sanmartin, C. and Bernier, J. (2013). Validation of an index to estimate the prevalence of frailty among community-dwelling seniors, Statistics Canada, Health Reports, Catalogue no.82-003-X

Table A.18: Average length of stay by type of care, older people and other adults, 2009-2010

Type de soins	Durée moyenne (médiane) globale du séjour				
		Personnes âgées			
	Adultes 20 à 64 ans	Ensemble des personnes âgées	65 à 74 ans	75 à 84 ans	85 ans ou plus
Patients hospitalisés, soins de courte durée*,§ (jours)	6 (3)	9 (5)	8 (4)	9 (5)	10 (6)
Patients hospitalisés, santé mentale†,§ (jours)	20 (8)	26 (16)	28 (15)	26 (18)	21 (18)
Patients hospitalisés, soins continus complexes (jours)**	149 (31)	79 (29)	84 (29)	85 (30)	70 (28)
Patients hospitalisés, réadaptation†† (jours)	34 (23)	27 (20)	26 (17)	26 (19)	29 (23)
Consultation externe‡,§ (heures)	5,0 (4,0)	4,6 (3,1)	4,7 (3,1)	4,6 (3,0)	4,5 (3,0)
Services d'urgence‡,‡‡ (heures)	n.d. (2,5)	n.d. (4,0)	n.d. (3,3)	n.d. (4,2)	n.d. (5,3)

Source: Canadian Institute of Health Information (CIHI) (2011) Health Care in Canada, 2011: A Focus on Seniors and Aging. Ottawa, Canada.

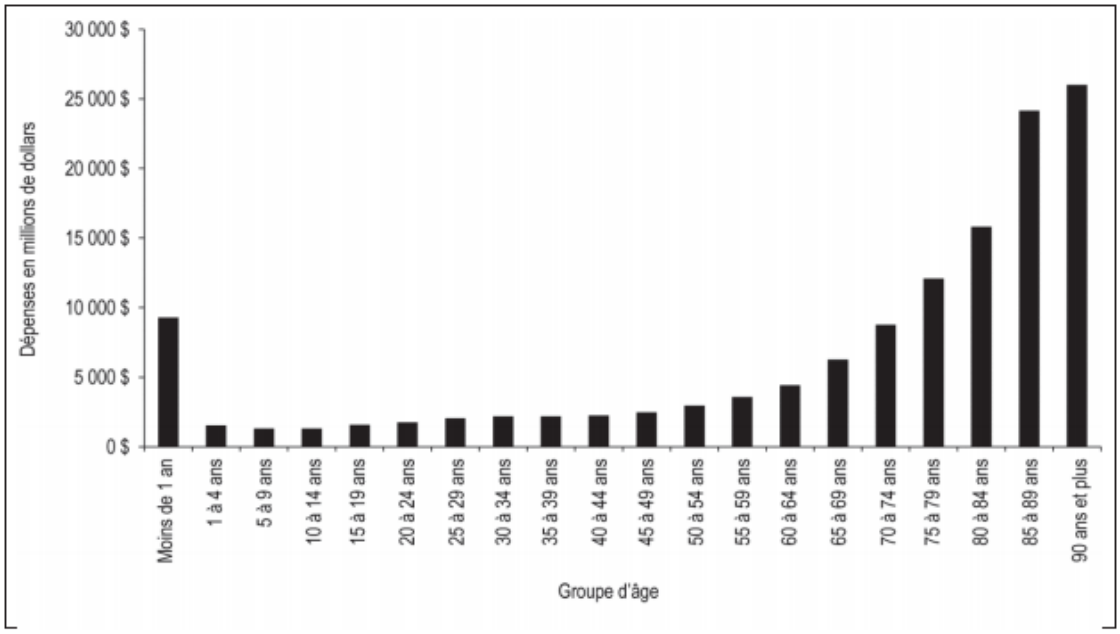


Figure A.19: Health expenditure by provinces and territories per head of population by age group, 2010 Source: Canadian Institute of Health Information (CIHI) (2012). Trends in national health expenditure, 1975 to 2012, Ottawa, Canada.

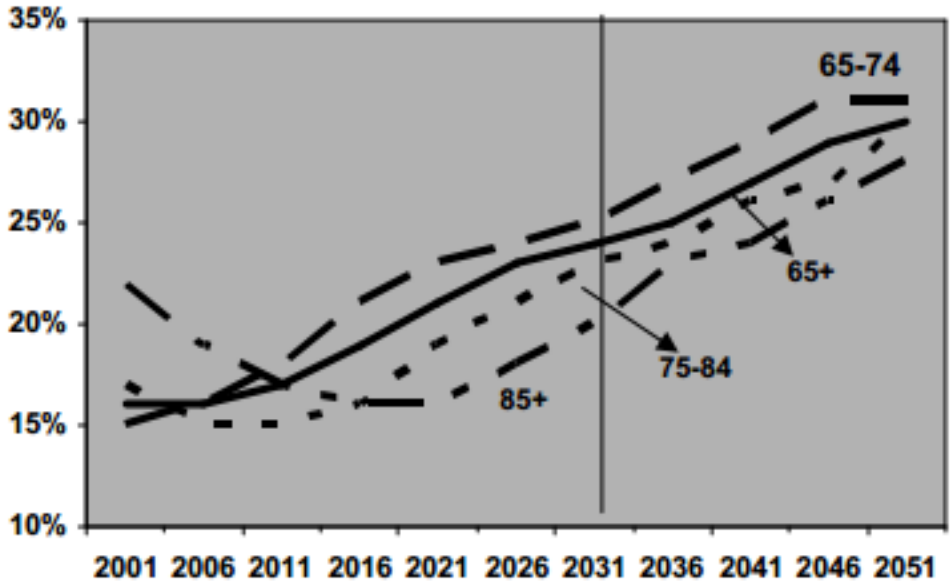


Figure A.20: Proportion of women, in private households, without surviving children by age group, Canada, 2001-2051

Source: Carrière, Y., Keefe**, J**., Légaré, J., Lin, X. et Rowe, G. (2007). Population aging and immediate family composition: Implications for future home care services. *Genus, LXIIII*(1-2), 11-31.

Appendix 2

Specific surveys of the oldest old, and studies including the oldest old

In some countries there have been specific surveys of the living conditions of the oldest old, but few analytical studies and research studies of the effects of public policy have made use of these databases. Their main use has been in the field of geriatric medicine.

Specific surveys of the oldest old

Canadian surveys

- Fredericton 80+ - Studu of almost 400 participants aged over 80.
  http://www.stthomasu.ca/research/80plus/index.htm

National surveys

- Swedish Panel Study of Living Conditions of the Oldest Old (SWEOLD) – Sample of individuals from the Swedish Level of Living Survey (LNU) aged over 75 (1992, 2002, 2004 and 2010).
  http://www.sweold.se/start.htm

- Berlin Ageing Study (BASE) – 1990-1993 in Germany, of those aged 70 and over (initially 2,297 participants, and 516 participants in a longitudinal study) – emphasis on their state of health
  https://www.base-berlin.mpg.de/en/project-information

- Leiden 85+ - Study started in 1987, with the addition of a second sample in 1997
  https://www.lumc.nl/org/health-prevention/studies/120625013037351/

- Asset and Health Dynamics Among the Oldest Old (AHEAD) (also known as Aging and Health in America)

  https://www.aeaweb.org/rfe/showRes.php?rfe_id=72&cat_id=5

- 90+ Study –University of California Irvine study of the oldest old aged 90 and over. The sample at the beginning of the study period in 2003 was 1600 individuals, mainly focused on neurological science aspects.
  http://www.mind.uci.edu/research/90plus-study/

- Newcastle 85+ Study – Study begun in 2006 of more than 1000 participants aged 85 and over.
  http://www.ncl.ac.uk/ageing/research/better-ageing/living-well/eightyfiveplus.htm

Other research on older people

Canadian surveys

- Canadian Longitudinal Study of Aging (CLSA)

- Aging in Manitoba (AIM). Manitoba Longitudinal Study of Aging
  http://umanitoba.ca/centres/aging/research/funded_projects/1068.html

- Canadian Study of Health and Aging
  http://www.csha.ca/default.asp

- Health Quality Council of Alberta – Committee aiming to monitor the security and quality of health services within Alberta, using small scale research, which is becoming known in other regions and provinces of Canada in terms of continuous adaptation to the needs of an aging population.
  http://hqca.ca

Multi-country surveys

- Survey on Health, Ageing and Retirement in Europe (SHARE) – Surveys started in 2004 – participants aged 50 and over in a number of European countries, examinng how people age.
  http://www.share-project.org

- Study on Global Ageing and Adult Health (SAGE) – Study by the WHO of 2 groups - the over 50s and the over 18s, in China, Ghana, India, Mexico, Russian Federation and South Africa.
  http://www.who.int/healthinfo/sage/en/#

National surveys

- Swedish National Study on Aging and Care (SNAC)

- Longitudinal Ageing Study Amsterdam (LASA) – Study started in 1992 to determine the predictors and consequences of aging.
  http://www.lasa-vu.nl/index.htm

- Health and retirement survey (HRS) – Precursor of SHARE located at the University of Michigan – begun in 1992, of Americans aged 50 and over, repeated every 2 years.
  http://hrsonline.isr.umich.edu

- New Dynamics of Ageing – Alliance of programmes and research on older people
  http://www.newdynamics.group.shef.ac.uk

English Longitudinal Study of Ageing (ELSA) – Multidisciplinary study of 11,000 individuals aged 50 and over since 2002. *http://www.elsa-project.ac.uk*

- AgeUK – Charitable organisation applying part of its funds to research into the conditions and needs of individuals in later life
  http://www.ageuk.org.uk/professional-resources-home/research/

- Australian Longitudinal Study of Ageing (ALSA) – 2087 participants aged 70 and over, interviewed since 192 in South Australia
  http://www.flinders.edu.au/sabs/fcas/alsa/

Appendix 3

Additional examples of public policies internationally

Community and mutual help

- In Argentina, the *Experience Counts* programme has facilitated the transfer of knowledge and experience from older to younger members of communities. In New Zealand, the *Connecting Young and Old* forum brings together ten older people and ten young people to discuss inter-generational issues. The forum supports the holding of regular meetings and encourages mutual assistance.
- In the United States, programmes of inter-generational solidarity via fairness and reciprocity such as the *Older Americans Act* enable older persons to act as mentors, mediators and counsellors to young people, and to participate in voluntary activities.
- In China in the same sort of approach, the *Golden Sunshine Programme* encourages young people to look after older people in need of assistance.

Mobility

- In New Zealand and Mozambique, older people have access to subsidised public transport, extending to free entitlement for some of those on low incomes.

Housing conversion

- In Singapore, conversion and adaptation of housing and installing lifts in public housing to assist those with disabilities are subject to state subsidy (as is done in Canada through the CHMC programme and the tax credit system of the Canadian Government). These initiatives enable older people who are more independent to remain longer in their own homes (United Nations Population Fund and HelpAge International, 2011).
- Also in Singapore, the Building and Construction Authority has adopted the *Universal Design Principles* to make cities more accessible and to facilitate the journeys of older people.
- To avoid isolation and the development of health problems among older people in France, , Campeon et al. (2014) suggest a system of alternative living environments with a view to reducing the numbers of people who have grave health conditions living in establishments providing partial care.

Health and informal caregivers

- In France, extra holidays enable family helpers to be more available to look after sick or older parents (Campeon et al., 2014).
- Making dental care and treatment more affordable is a way of improving the nutrition of some older people who suffer from dental problems which can be a cause of malnutrition or deficiency in diet (United Nations Population Fund and HelpAge International, 2011).
- Provision of training to workers in health care services and to social workers in gerontology and geriatrics and increasing the number of specialists (United Nations Population Fund and

HelpAge International, 2011). Canada plans to increase the numbers of medical specialists[4] through Health Canada's Pan-Canadian Strategy for human resources in health. (Health Canada, 2008).

- In Kirghizstan, bonuses are paid to helpers, and more generous pensions when they reach the age of 80.

[4] In all domains, not only geriatric medicine or gerontology.

Appendix 4

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