WORKING PAPER SERIES

What do we know about immigrant seniors aging in Canada? A demographic, socio-economic and health profile

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Preface

The Public Health Agency of Canada (PHAC) has been addressing migration-related health issues such as international regulations, quarantine issues, travel vaccines as well as immigrants' health status and the social determinants that affect their health. The Agency uses a comprehensive interpretation of migration health including infectious and chronic diseases control, mental health, social determinants of health and human rights issues.

Since 2007, PHAC has been one of the federal funding partners of the Metropolis Project and contributed to its activities and products, such as this Working Paper. In the context of this partnership, the Agency has also produced research on immigrant populations and mental health, health literacy, racialization as a determinant of immigrant health, chronic disease and primary health, migrant farm workers, and social determinants of health. An example of this work is the co-edited issue 17 of the Health Policy Research Bulletin, which was entirely dedicated to immigrants' health (http://www.hc-sc.gc.ca/sr-sr/pubs/hpr-rpms/bull/2010-health-sante-migr/index-eng.php).

In 2010, following an internal research assessment, PHAC's Strategic Policy Research Division (SPRD) with the collaboration of the Division of Aging and Seniors decided to address a number of research gaps related to immigrant seniors' population, also known as foreign-born seniors in Canada. This population is expected to rapidly increase over the next years, and consequently, there is a need to explore immigrant seniors' demographic and socio-economic characteristics as well as health status.

The three Working Papers included in this set are part of this PHAC-supported research initiative that aims to fill some of the knowledge gaps relating to the health of immigrant seniors. Research based knowledge about how immigrant seniors are aging compared to the Canadian-born population in Canada could better inform policy decisions and the design and implementation of programs.

The first paper, authored by Edward Ng, is a profile of immigrant seniors in Canada. Its purpose was to examine selected demographic and socioeconomic characteristics of the immigrant seniors by period of immigration compared to the Canadian-born population in Canada, using the 2006 Canadian Census.

Daniel Lai's paper is based on a review of published research studies focusing on the health and well-being of the culturally diverse senior population. Related works such as social determinants of health have been included in this review. The review sheds light on the differences in health status between the Canadian-born and the immigrant seniors, as well as the community and individual level determinants that influence their health.

Finally, Rudner and Orpana's paper examines the health of older immigrants, as compared to older non-immigrant using Statistics Canada's 2008-2009 Canadian Community Health Survey (CCHS) – Healthy Aging. The paper presents research

findings related to the health status and health behaviours of a nationally representative sample of immigrants aged 65 and over.

Some of these research findings were presented at a PHAC organized workshop at the 13th National Metropolis Conference, held in Vancouver, March 2011. Last October, the research was presented at another PHAC organized workshop at the joint Canadian Association on Gerontology, 40th Annual Scientific and Educational Meeting/4th Pan-American Congress, International Association of Gerontology and Geriatrics.

The interest in the culturally diverse aging population is growing both in government as well as in academia. The authors of these papers have been invited to present at a number of interdepartmental networks on social policy and on seniors and aging.

We hope that readers will find these papers stimulating and useful in the development of further research on this topic.

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How immigrants are experiencing aging in Canada? A demographic and socio-economic profile of immigrant seniors

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Acknowledgement

This profile of immigrant seniors is the result of collaboration between the Strategic Policy Research Division (SPRD), Public Health Agency of Canada (PHAC) and the Health Analysis Division of Statistics Canada. PHAC provided financial support. The author wants to acknowledge the help of Solange van Kemenade, Ph.D (SPRD, PHAC) and Bill Flanagan in reviewing and providing comments to various versions of this paper.

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Executive Summary

With the anticipated rapid increase in the population of seniors and the continuing projected rise of immigration to Canada, there is a need to explore if immigrant seniors experience of aging is differently compared to the Canadian-born population in Canada. The purpose of this report is to examine selected demographic as well as socioeconomic aspects of the immigrant seniors' population by period of immigration compared to the Canadian-born population in Canada using the 2006 Canadian Census.

Key findings from this study include the following:

- Nearly ¾ of immigrant seniors arrived in Canada before 1976, in other words more than 30 years from Census 2006.
- Immigrant seniors, especially those arrived more recently, were more likely to live in the top three CMA's - Toronto, Montreal and Vancouver.
- Home countries for immigrant seniors have substantially changed over the last three decades. Almost half of recent immigrant seniors came from South Asia and East Asia instead of from West Europe countries.
- Slightly more than half of the seniors who arrived recently did not have knowledge of any of the official languages. However, they were also more likely to have post-secondary education than Canadian-born seniors.
- Among immigrant seniors who arrived recently, proportionately more stayed in the labour force than their Canadian-born counterparts.
- Immigrant seniors were more likely to be married or living in a common law relationship than Canadian-born seniors.
- Female immigrant seniors who arrived recently were less likely to live alone, but when they did live alone, they were at a higher risk of low-income.

Age is a social determinant of health regardless of immigration status. However immigrant seniors, especially those who came in most recently years, are more prone to ill health in the long run than Canadian-born seniors because of limited social networks, inadequate knowledge of official languages, and relatively low income, particularly if they live alone. More data on immigrant seniors' health status and more analyses of currently available data are needed to improve policies and practices.

Introduction

The 2006 census enumerated more than 6 million foreign-born in Canada, representing close to 20% of the total population (Chui, Maheux and Tran 2007). Canada annually admits more than 230,000 immigrants. As a result, the recent projections by Statistics Canada on population diversity show that the proportion of immigrants in Canada may grow to between 25% and 28% by 2031 (Statistics Canada, 2010). Overall, Canada's total population increased by 1.6 million between 2001 and 2006, a growth rate of 5.4%. Newcomers contributed 69% of this population growth. That is, if not for recent immigration influx, the population growth rate would be less than 2%.

At the same time, an aging population, or a shift in the age distribution of the population towards old age, is a current and highly relevant topic to many developed countries, including Canada. In 2009, 4.7 million (or 14% of the total population) were classified as seniors (aged 65 plus). This is expected to reach between 9.9 million (23%) and 10.9 million (25%) by 2036 according to Statistics Canada's projection of overall population (Malenfant, Lebel & Martel, 2010). In fact, according to this projection, the aging population in Canada is expected to accelerate rapidly, as the entire baby boom cohort will turn 65 during the period. The key issues of an aging society relate to the socioeconomic pressures generated by the increase in the absolute and relative size of the aging population, and the capacity of the society to meet the accompanying challenges in such adjustment (United Nations, 2001). For example, one far-reaching consequence concerns the future of the health care system as advanced age is accompanied with a greater likelihood of having chronic conditions (Dalziel, 1996; Romanow, 2002; Ramage-Morin, Shields and Martel, 2010).

One important consideration in population is the extent to which immigration can help slow the shift of the age structure of the Canadian society towards old age. We know, however, from population projection results that higher immigration levels would not be able to change the forthcoming population aging of the Canadian society (Statistics Canada, 2010). Conversely, while recent immigrants to Canada tend to be relatively young, immigration does contribute to overall population in two ways. First, a small proportion of immigrants did arrive as seniors. In 2004, for instance, some 2.3% or 5,526 out of 235,824 immigrants admitted into Canada were seniors (Turcotte and Schellenberg, 2007). Second, many from earlier immigration cohorts stayed, and aged in Canada. In the end, immigrants represent a considerably large group among seniors. In 2006, while 20% of the Canadian overall population were immigrants, the corresponding figure among seniors was 30%.

With anticipated rapid increase in senior population and the continuing projected rise of immigration to Canada, there is a need to explore if immigrant seniors experience or are experiencing aging differently compared to the Canadian-born population. Also, as a result of the recent changes in the immigration sources from traditional Anglo-Saxon European countries to more Asian, African and Latin American countries (Chui, Maheux and Tran, 2007), there may be a new kind of immigrant seniors with their unique needs joining in this age wave in Canada.

A review of the literature on population aging in Canada shows that while this is an ever-growing field, relatively few studies put emphasis on the understanding of immigrant seniors in Canada (*e.g.* National Advisory Council on aging, 2005; Durst, 2005). The most recent information on the demographic and social profiles of immigrant seniors in Canada can be found in a chapter dedicated to immigrant seniors in an earlier portrait of seniors in Canada conducted by Turcotte and Schellenberg (2007) who used censuses from various years up to 2001. The purpose of this brief report is to use the most recently available Census in Canada, namely, the 2006 Census to examine selected demographic as well as socioeconomic aspects of the immigrant seniors' population compared to the Canadian-born population.

This report starts by examining the size of the immigrant seniors population, the geographic distribution of these seniors across the urban-rural divide as well as whether they tend to congregate in the three gateway cities (Toronto, Montreal and Vancouver). We also consider the composition of Canada's immigrant seniors in terms of the following dimensions: age and sex distribution, place of birth, mother tongue and knowledge of official languages, marital status, living arrangement, housing situations, educational attainment. To understand the economic situation of these immigrant seniors, we explore labour force participation and low income status. Last but not least, we examine the health dimension of seniors in terms of activity limitation, which is the only health variable available in the 2006 Census.

Data sources

This report derives population-based information from the 2006 Census long form (2B) in which a variety of rich information is asked from 20% of Canadians living in non-institutional setting or settings. This long form includes questions on the various dimensions mentioned in the section above, among which the most important ones for this analysis of immigrant seniors are the immigrant status (immigrant versus Canadian-born) and the period of immigration.

Immigrant population (also known as the foreign-born population) is defined in the 2006 Census as persons who are, or who have been, landed immigrants in Canada. In this

analysis, the immigrant population does not include non-permanent residents, who are persons in Canada on employment or student authorizations, or are refugee claimants. This analysis also excludes persons born outside Canada who are Canadian citizens by birth.

For the purpose of comparison, the time of arrival or the period of immigration among immigrants is categorized in this report into four distinct periods:

1. Before 1976
2. Between 1976 and 1985,
3. Between 1986 and 1995,
4. Between 1996 and 2006.

Immigrants arriving in the first and second period will be called "established" and "medium term" immigrants, while those coming in during the last two periods will be called "recent" and "most recent" immigrants. In this study, the Canadian-born (non-immigrant) is the reference group.

Every dataset has its strengths and limitations. The major strengths of the Census dataset are the sample size and the richness of socioeconomic information available. The major limitation is that the Census long form surveys include only respondents living in non-institutional settings. As seniors are the majority of residents of most health-related institutions in Canada, there is a data gap. The usual Census short form and the census short form used for institutional settings did not ask for the citizenship status nor the place of birth of the respondents. Here, we lack the capacity to differentiate directly among the institutional residents whether they are immigrants or not. It is possible to use the mother tongue information collected in Census short forms to impute whether the institutional residents are immigrants or not. However, this is beyond the scope of this brief report. Therefore, this report provides only an overview of the non-institutionalized immigrant seniors in Canada.

Results

How many immigrant seniors were there in Canada in 2006?

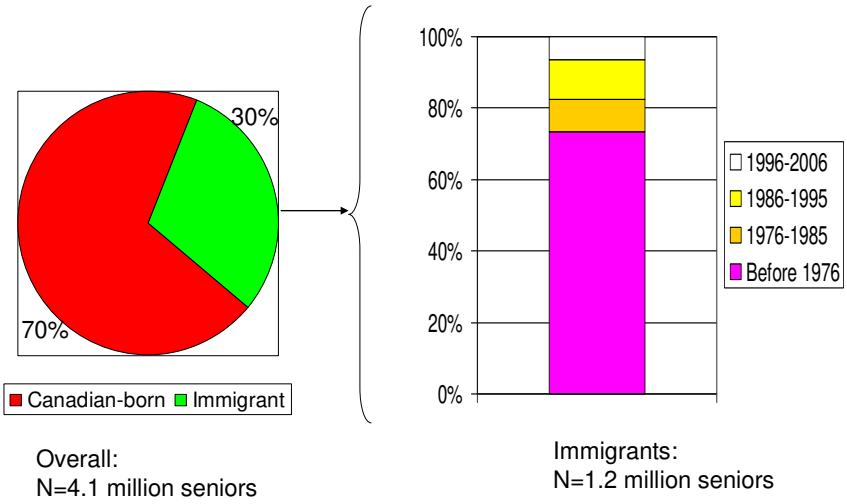
According to the 2006 Census, there were more than 4 million seniors living in non-institutional settings in Canada (see Appendix Table 1 and Figure 1). [1] Among them, 30% (1.2 million) of these seniors were immigrants. As only 20% of the overall

[1] Since appendix table 1 contains the background data of all figures, it will not be mentioned in the subsequent text, unless when necessary.

population in Canada were immigrants, the proportion of seniors among immigrants was 10 percentage points more than the figure for the overall population in Canada.

While relatively large shares of seniors in Canada were immigrants, most of them were established immigrants. Close to 900,000 (74%) of the immigrant seniors migrated to Canada before 1976. Just about 80,000 (6%) were most recent immigrants who arrived in Canada between 1996 and 2006. This reflects the fact that only a small proportion of the annual inflow of immigrants to Canada was seniors or close to becoming seniors.

Figure 1. Distribution of seniors by immigration status and period of immigration, Census 2006



Where do immigrant seniors live?

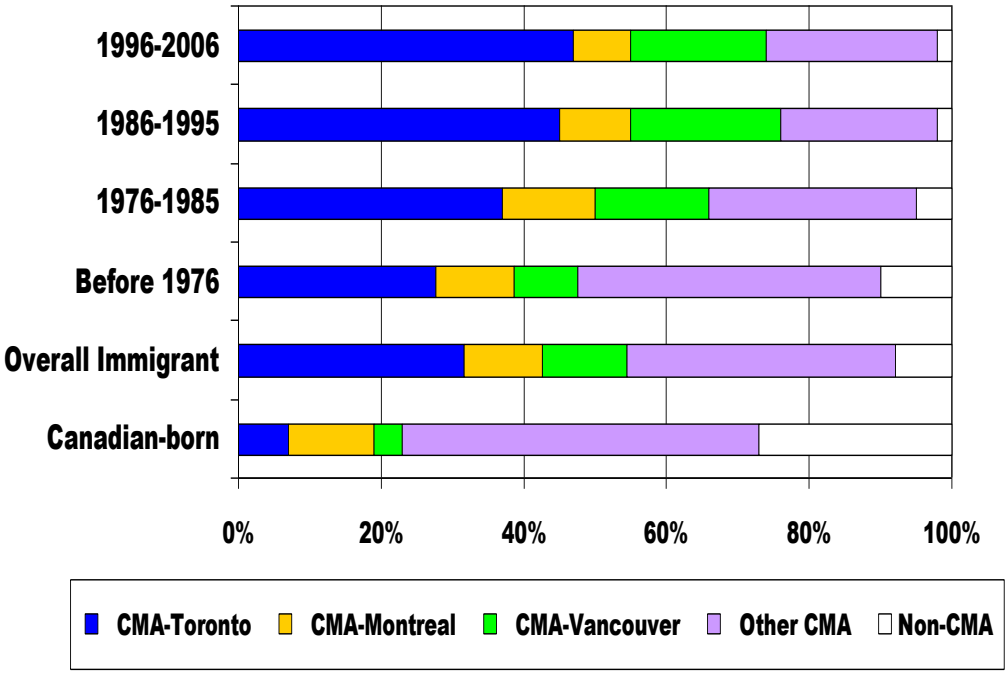
Proportionately, more immigrant seniors resided in a Census Metropolitan Area (CMA) than their Canadian-born counterparts.[2] More than 90% of immigrant seniors resided inside of Canada's 33 CMA's defined by Statistics Canada in the 2006 Census. This compared to 73% for the Canadian-born counterparts (see Figure 2).

Overall, a majority of immigrant seniors lived in the big three immigration gateway CMA's, namely, Toronto, Montreal and Vancouver (32%, 11% and 12%, respectively for a total of 55%). The tendency to reside in the big three increased by the period of immigration: from 48% among the established immigrant seniors to more than 70% among the recent and most recent immigrant seniors.

[2]Census Metropolitan Areas are defined as City with a population of 100,000 or more inhabitants where the enumerated person lived on Census Day (May 16, 2006)

Among the big three CMAs, Toronto attracted disproportionately more immigrant seniors, especially among the recent and most recent arrivals. Among those who arrived most recently, close to half resided in Toronto in 2006. Looking at this from another angle, almost 67% of seniors in Toronto were immigrants, and of these, about 64% were established immigrants.

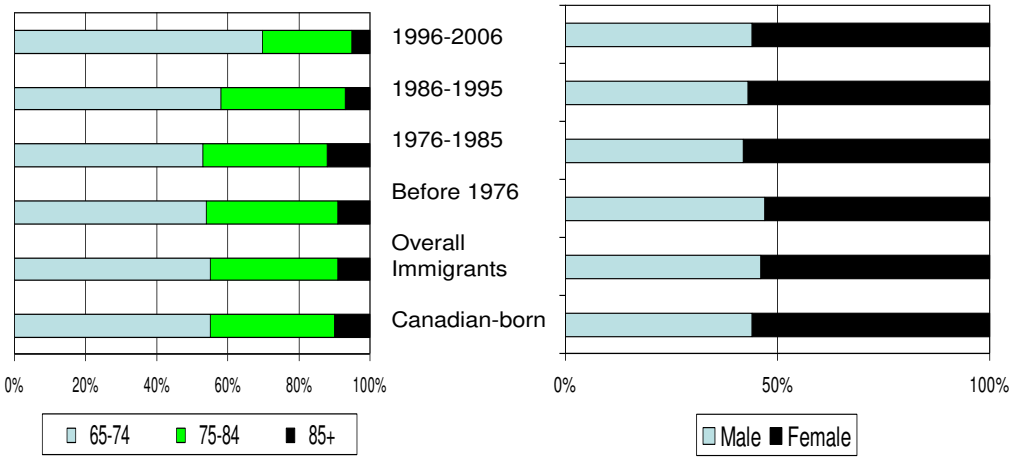
Figure 2. Distribution of seniors in major CMA's in Canada by immigration status and period of immigration, Census 2006



Selected demographic, socioeconomic and health characteristics of immigrant seniors by age group

Similar to all seniors, the majority of immigrant seniors (55%) were relatively "young seniors", in other words, between 65 and 74 years; however, this percentage varied slightly by period of immigration (Figure 3). Among established immigrants, the percentage of young seniors mirrored closely that of the overall Canadian population (54% and 55%, respectively). By contrast, the most recent immigrants had the highest percentage of these young seniors (69%).

Figure 3. Age and sex distribution of seniors by immigration status and period of immigration (in %), Census 2006



Proportion of men and women among immigrant seniors

Among immigrants, as in the total population, women represented a greater proportion of seniors than men (see Figure 3). However, women were slightly less represented among immigrants than in Canadian-born seniors (54% among immigrant seniors compared to 56% among Canadian-born counterparts). By period of immigration, the proportion was highest among those medium-term immigrants (58%), compared to the established immigrants with the lowest proportion (53%).

Changing source countries

The source countries among immigrants to Canada have changed over the years from traditional European sources to non-European countries. This is also true for the seniors. While some 63% of those established immigrant seniors were from Western European sources, more than 60% among those who immigrated more recently came from Asia (see Table 1).[3] These trends are likely to have implications such as on language ability of immigrant seniors in Canada.

[3] Appendix table 1 shows that among the most recent cohort of immigrant seniors, 22%, 10% and 27% were from South Asia, SE Asia and East Asia, respectively. Among the established immigrants, the corresponding percentages were 2%,1% and 4%.

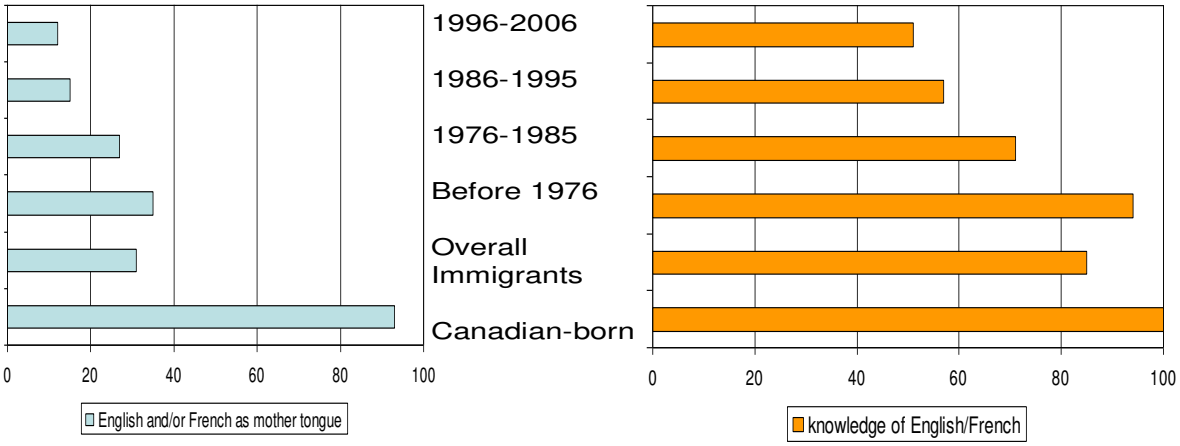
Table 1. Place of birth (top sources by period of immigration), Census 2006

Order	Before 1976	1976-1985	1986-1995	1996-2006
	Period of immigration			
1	Western Europe (63%)	Western Europe (22%)	East Asia (31%)	East Asia (27%)
2	Eastern Europe (16%)	East Asia (21%)	South Asia (18%)	South Asia (22%)
3	Latin America (5%)	Latin America (13%)	Southeast Asia (12%)	E Europe (14%)
Cumulative % total:	84%	56%	61%	63%

Immigrant seniors and language

In terms of mother tongue, while 93% of Canadian-born reported having English and/or French as mother tongue (see Figure 4); the corresponding figure for immigrant seniors was only 31%. This further varied by period of immigration, ranging from 12% among those who came in the most recent period to 35% among those established immigrants.

Figure 4. Mother tongue and knowledge of official languages of seniors by immigration status and period of immigration (in %), Census 2006

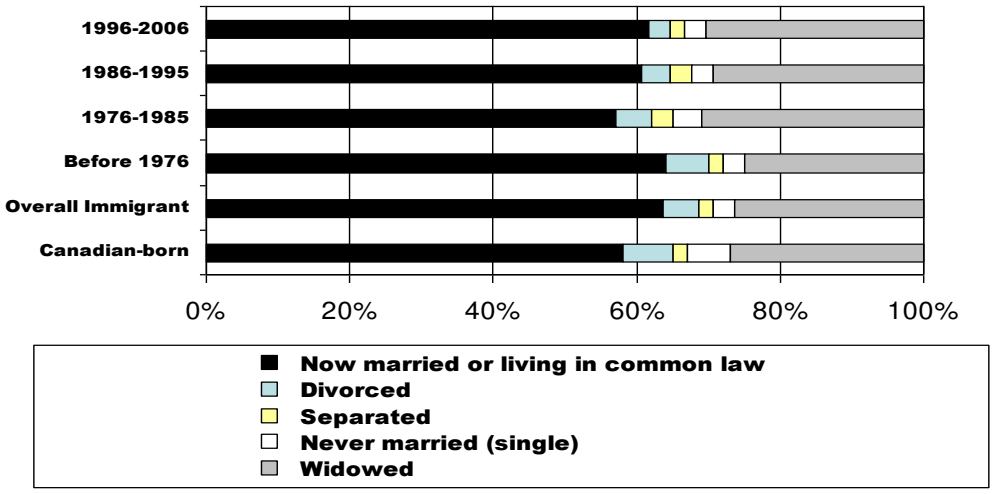


However, not having English or French as mother tongue does not mean that someone could not converse or understand either or both of those official languages. The vast majority of immigrant seniors have spent most of their lives in Canada, and hence were able to speak at least some English, French or both official languages. In 2006, 94% of the established seniors reported the ability to speak English and/or French (see Figure 4). Among those seniors who immigrated more recently, the percentage was lower (at 51%).

Marital status of immigrant seniors

The majority of seniors in Canada were married or living in common-law (60%). However, the proportion was slightly higher among immigrant seniors than among their Canadian-born counterparts (63% and 58%, respectively) (see Figure 5). Conversely, only 3% of immigrant seniors were single (never married), compared to 6% for the Canadian-born seniors population. These differences varied only slightly over the period of immigration.

Figure 5. Marital status of seniors by immigration status and period of immigration (in %), Census 2006

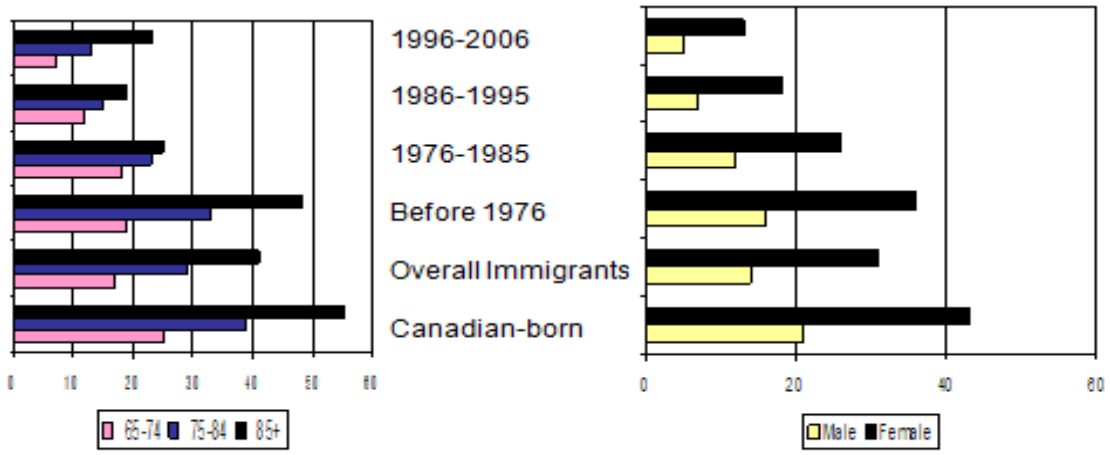


Living arrangements of immigrant seniors

With the higher proportion of immigrant seniors being married than Canadian-born seniors, it is not surprising that relatively less of them were living alone (only 24% compared to 33% among the Canadian-born counterparts) (see appendix Table 1). This percentage among immigrant seniors varied by period of immigration, from only 10% among those arrived in the most recent period (from 1996 to 2006) to 27% among those established immigrants.

By sex, higher proportion of females than males lived alone (39% and 20%, respectively), partly a result of the longer life expectancy among females (see Figure 6). This sex difference in living alone persisted regardless of immigration status, and also by period of immigration. Specifically, 31% of female immigrant seniors lived alone, compared to 14% among males. The corresponding figures among established immigrant seniors were 36% and 16% for females and males. Among most recent immigrants, the proportions were much lower, at 13% and 5%, respectively.

Figure 6. Living alone by age and sex of seniors by immigration status and period of immigration (in %), Census 2006



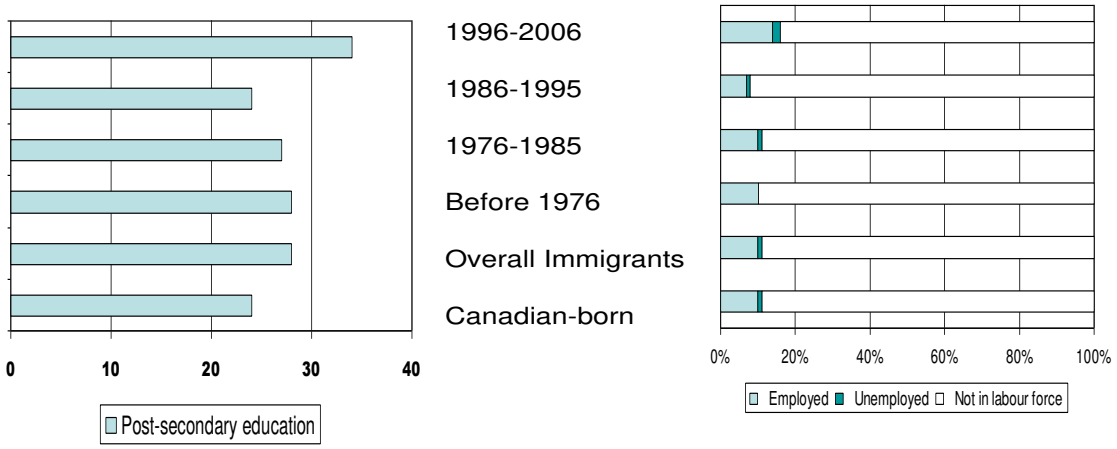
Considered by age groups, the proportion of those living alone increased by age, from 23% among the young seniors (between 65 and 74) to 51% among those aged 85 and over. Proportions were systematically higher among Canadian-born than for the immigrant population. For example, among young seniors, 25% of the Canadian-born seniors lived alone, compared to 17% among immigrants. This proportion of young immigrant seniors living alone also varied by period of immigration, from 7% among the most recent immigrant cohort to 19% among those established immigrant cohort.

Educational levels of immigrant seniors

Immigrants in general had higher educational level than their Canadian-born counterparts (see Figure 7). While 28% of immigrant seniors had post-secondary certificate or university education, only 24% of the Canadian-born counterparts had such level of education. The proportion with higher educational level among immigrant seniors varied

only slightly by the period of immigration; however, proportionately more of the most recent immigrant seniors had the higher education level (34%).

Figure 7. Education and labour force participation of seniors by immigration status and period of immigration (in%), Census 2006



Labour market participation of immigrant seniors

Overall, 89% of the seniors were not in the labour force, that is, most of them were retired and were not actively searching for job (see also Figure 7). Only 10% in this senior population were still employed. This did not vary by immigration status, but for those who arrived most recently, however, the percentage of employed seniors was slightly higher (14%). A look at the financial well-being of immigrant seniors would be helpful in understanding the unique pattern related to labour market participation that was observed here.

Immigrant seniors' financial well-being

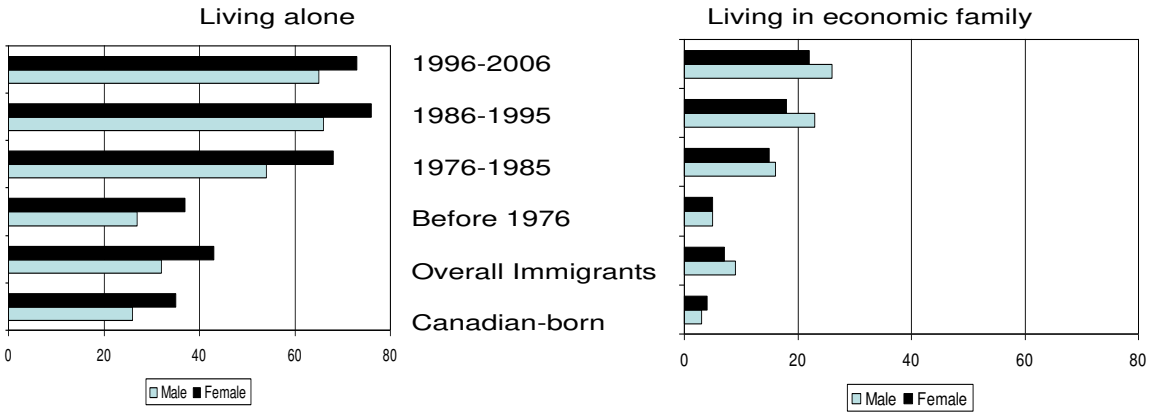
A slightly higher percentage of immigrant seniors lived in low income situation, compared to their Canadian-born counterparts (16% and 13%, respectively) (see appendix Table 1). This percentage varied by the period of immigration; for example, only 13% of the established immigrant seniors lived in low income, while 28% were so among those who arrived most recently.

Low income situation is highly related to living arrangement and by sex. In terms of living arrangement, seniors living alone were more vulnerable to be in a low income

situation than those living with someone else in economic family situation.[4] While female seniors were more likely to live alone than male seniors, those female seniors who lived alone were also more likely to be in a low-income situation. This was true for the Canadian-born, even more so for the immigrants, and especially those who arrived most recently.

For example, among the Canadian-born seniors living alone, the corresponding proportions were lower (at 35% and 26% for female and male, respectively). Female immigrant seniors living alone had the highest proportion of being in low income (43%), compared to their male immigrant counterparts (32%) (see Figure 8). By period of immigration, more than 70% of those female seniors who arrived in the most recent period were in a low-income situation.

Figure 8. Low income among seniors by immigration status, period of immigration and by living arrangement (in %), Census 2006



It should be noted though that male and female seniors living alone who immigrated recently represented a very small number of individuals. In 2006, the total number of female immigrant seniors who arrived in Canada between 1996 and 2006 was 5,600 (4,100 of whom were in low-income situation). By comparison, there were 681,000 Canadian-born women aged 65 and over who lived alone (240,500 of whom were in low-income situation).

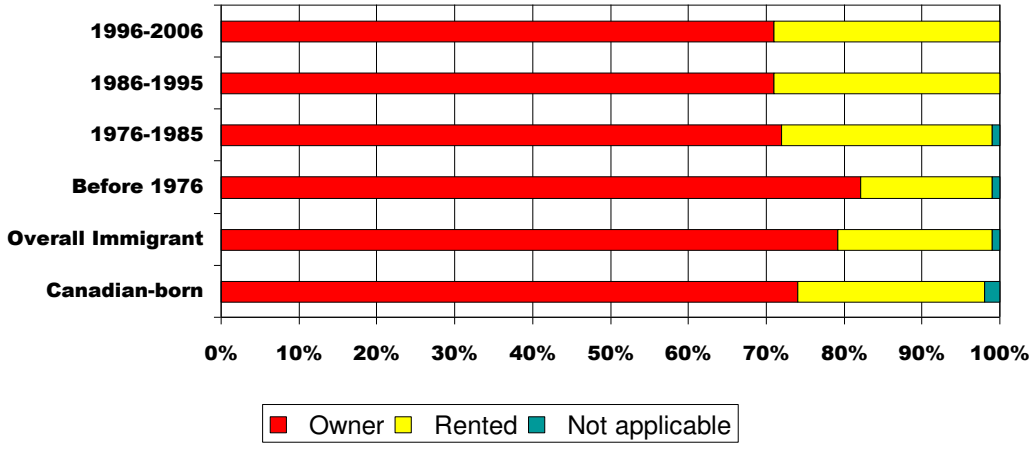
[4]According to the Canadian Census, an economic family includes all persons related by blood, marriage, common-law or adoption, and living in the same dwelling. For example, a brother and a sister living together would constitute an economic family, but not a census family.

In contrast, among those seniors who lived in an economic family, the proportions in low-income situation were much lower (at 5% for both males and females). Even though the percentages were higher among immigrant seniors than for the Canadian-born counterparts (for example, 9% and 3% among males, respectively), the situation was much better than for those who lived alone. Interestingly, the sex difference in low income seems to be reversed by living arrangement among immigrant seniors. While females living alone were more likely to be in low income situation, males living in economic family were more likely to be in low income situation. Further analysis may be needed to understand this particular observation.

Housing of immigrant seniors

Immigrant seniors were slightly more likely than Canadian-born seniors to be owners or living with a member of the household who owns the dwelling (80% and 74%, respectively) (see Figure 9). This proportion varied by period of immigration, with 83% of established immigrant seniors owning, compared to just 71% among the seniors arriving in most recent period.

Figure 9. Housing tenure of seniors by immigration status and period of immigration (in%), Census 2006



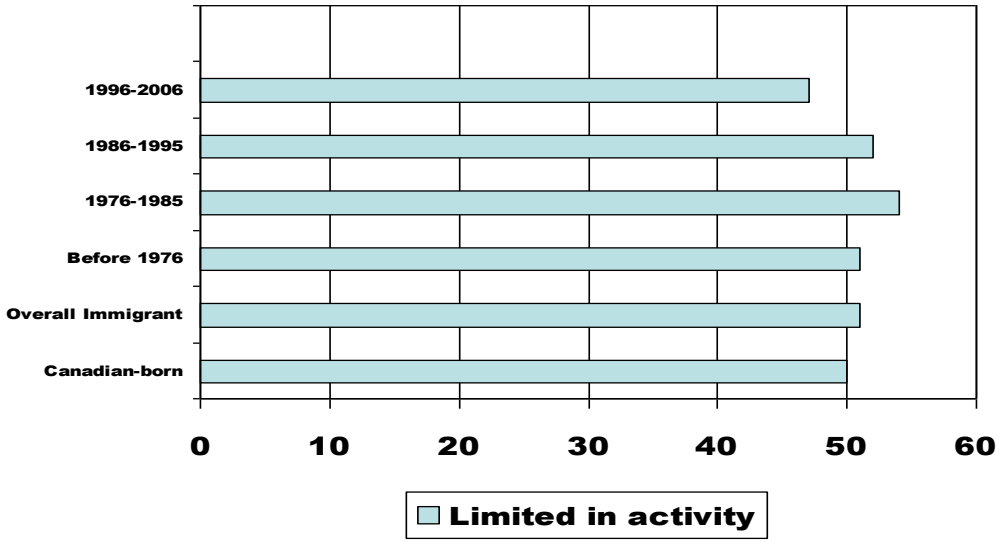
Activity limitations among immigrant seniors

While health surveys may be a better means to understand the health condition of seniors in Canada, activity limitation, the only health variable available in the 2006 Census, may give us a glimpse of the health situation of the seniors, by immigration status.[5] The

[5]This activity limitation variable is constructed from a set of disability screening questions available in the 2006 Census, used to select respondents into a post-censal survey called Participation and Activity

percentage having activity limitation was virtually the same by overall immigration status (50% and 51% among Canadian-born and immigrant counterparts) (see Figure 10). Among those arrived in the most recent period, the percentage was slightly lower, at 47%.[6] This percentage rose gradually to 54% among those medium term immigrant seniors. Among those established immigrants, this percentage was almost the same as those for the Canadian-born counterparts. As seen in figure 3, it is those medium term immigrants who had the relatively higher proportion over 85 in their midst (12% vs 9%, for the medium term and the established immigrants respectively).

Figure 10. Activity limitation of seniors by immigration status and period of immigration (in %), Census 2006



Limitation Survey. Having activity limitation is defined as anyone who responded affirmatively to any of the questions related to having difficulty hearing, seeing, communicating, walking, climbing stairs, bending, learning or doing any similar activities or having a physical condition, mental problem or health problem that reduce the amount or kind of activity this person can do at home, at school or at work or in other activities, for example, in transportation or leisure.

[6] As activity limitation defined here can be due to one's inability to communicate, and as more than half of the most recent immigrant seniors did not have knowledge of official languages (and thus were limited due to reason unrelated to health), we would expect the activity limitation rate for the recent immigrants to be higher, not lower than other immigrant seniors as observed. Regardless, we need to be careful in interpreting the activity limitation data from Census by immigration characteristics as it may be confounded by non-health related factors such as knowledge of official language.

Concluding remarks

This report examines the socioeconomic and demographic characteristics of immigrant seniors compared to Canadian-born seniors using the 2006 Census. The comparison is conducted from the lens of the period of immigration. The length of the stay in Canada may influence the kind and level of needs of the immigrant sub-groups, especially in view of the changing sources of place of origin of this specific group of seniors. What we learned from this descriptive analysis of immigrant seniors from the 2006 Census are as follows:

- Nearly ¾ of immigrant seniors arrived in Canada before 1976, in other words more than 30 years from Census 2006.

- Immigrant seniors, especially those arrived more recently, were more likely to live in the top three CMA's - Toronto, Montreal and Vancouver.

- Home countries for immigrant seniors have substantially changed over the last three decades. Almost half of recent immigrant seniors came from South Asia and East Asia countries, instead of from West Europe.

- Slightly more than half of the seniors who arrived recently did not have knowledge of official language. However, they were also more likely to have post-secondary education than Canadian-born seniors.

- Proportionately more immigrant seniors who arrived recently stayed in the labour force than their Canadian-born counterparts.

- Immigrant seniors were more likely to be married or living in common law than Canadian-born seniors.

- Female immigrant seniors who arrived recently were less likely to live alone, but when they did live alone, they were at a higher risk of low-income.

The situation of immigrant seniors is a complex phenomenon that requires further analysis. In terms of health, what we observed that the activity limitation variation by period of immigration seems to coincide with the healthy immigrant effect, which means that immigrants tend to arrive in good health, but that health advantage disappears over time upon arrival in the host country. However, as this activity limitation variable was a tool to select Census respondents into a post-censal survey called Participation and

Activity Limitation Survey (PALS), a more in depth analysis using PALS is needed to confirm and understand this observation. As well, the fact that the dataset we used only covered the non-institutional population in Canada, there is a data gap to understand the characteristics and needs of those seniors who resided in institutions in Canada, regardless of immigration status.

Age is a social determinant of health, and not having social networks can increase the risk of being unhealthy (see Lai, 2011 for a comprehensive literature review). Future research could examine risk and protective factors for health of immigrant seniors as well as vulnerable groups within this population, compared to the Canadian-born population. Factors such as no knowledge of official languages, low income, and living alone may be associated with vulnerability to health (see, for example, Ng, Pottie and Spitzer, 2011). The recently available Canadian Community Health Survey (cycle 4.2) has been used to study the factors related to healthy ageing for the overall non-institutional population (Ramage-Morin, Shields and Martel, 2010; Rudner and Orpana, 2011). Further analysis from the lens of immigration status and by period of immigration would be a step to understand factors for healthy aging in a foreign land.

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Table 1. Characteristics of Canadian-born and immigrant populations by period of immigration, non-institutional population aged 65 and up, Canada, 2006*

	Total**	Canadian-born	immigrants				
				Period of Immigration			
			Overall	Before 1976	1976-1985	1986-1995	1996-2006
Total (in number)	4,066,300	2,851,000	1,215,300	893,000	110,000	134,000	78,300
			in percentage (%)				
Age group							
65-74	55	55	55	54	53	58	69
75-84	35	35	36	37	35	35	25
85+	10	10	9	9	12	7	5
Sex							
Male	45	44	46	47	42	43	44
Female	55	56	54	53	58	57	56
Place of birth							
Canada	70	100	-	-	-	-	-
USA	1	-	4	4	4	2	2
Latin Am	2	-	6	5	13	11	6
W. Europe	15	-	50	63	22	7	6
E Europe	4	-	14	16	8	7	14
Sub-Saharan Africa	0	-	2	1	3	3	3
SW Asia/Middle	1	-	3	2	6	8	9
S Asia	2	-	6	2	10	18	22
SE Asia	1	-	4	1	13	12	10
E Asia	3	-	10	4	21	31	27
Oceania and others	0	-	1	1	1	1	0
Marital status (historical)							
Divorced	6	7	5	6	5	4	3
Now married or living in con	60	58	63	64	57	60	61
Separated	2	2	2	2	3	3	2
Never married (single)	5	6	3	3	4	3	3
Widowed	27	27	26	25	31	29	30
Living alone							
Total	30	33	24	27	20	13	10
Males	20	21	14	16	12	7	5
Females	39	43	31	36	26	18	13
65-74	23	25	17	19	18	12	7
75-84	36	39	29	33	23	15	13
85+	51	55	41	48	25	19	23
Mother tongue							
English and/or French	74	93	31	35	27	15	12
Knowledge of official languages							
Yes	95	100	85	94	71	57	51
Post-secondary Certificate or University Education							
Yes	25	24	28	28	27	24	34
Labour force							
Employed	10	10	10	10	10	7	14
Unemployed	1	1	1	0	1	1	2
Not in labour force	89	89	89	89	89	93	84
Low-income							
Total	14	13	16	13	25	27	28
Among those living alone							
Male	27	26	32	27	54	66	65
Female	37	35	43	37	68	76	73
Living in Economic Family							
Male	5	3	9	5	16	23	26
Female	5	4	7	5	15	18	22
Housing tenure							
Owner***	76	74	80	83	72	71	71
Rented	23	24	20	17	27	29	29
Band housing	0	0	0	0	0	0	0
Not applicable	2	2	1	1	1	0	0
Activity limitation							
Yes	50	50	51	51	54	52	47
Not stated	1	1	2	2	2	2	3
Urban-Rural							
CMA-Toronto	14	7	32	28	37	45	47
Montreal	11	12	11	11	13	10	8
Vancouver	6	4	12	9	16	21	19
Other CMA	47	50	38	43	29	22	24
Non-CMA	21	27	8	10	5	2	2

Source: 2006 Census of Canada

*Percentages may not add up to 100% due to rounding.

** This table excludes the institutional population for whom no place of birth nor immigrant status information is available and a small number of immigrants who were born in Canada. Temporary residents are also excluded.

***Ownership refers to whether a member of the household or the senior person owns the dwelling.

Health status and social determinants of health of immigrant seniors in Canada

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Introduction

Immigrant seniors represent a significant and growing share of the Canadian population. A Statistics Canada report on seniors in Canada showed that 28% of seniors 65 years or older were immigrants in 2001 (Turcotte & Schellenberg, 2007). In 2006, 13% of the Canadian population was 65 years of age and over. Among these 4 million seniors, 30% (1.2 million) were immigrants (Ng, 2011). The proportion of immigrants and visible minorities within the aging cohorts was quite substantial. For people between 65 and 74 years of age, 29.8% were immigrants and 10.3% were visible minorities. Among those 75 years of age and older, 29.8% were immigrants, and 7.5% were visible minorities (Statistics Canada, 2010b).

As the immigrant population grows, the number of immigrant seniors is expected to increase in the years to come. Such population trends indicate that service providers and policy makers need to prepare for meeting the growing health, social, and economic needs of an increasingly culturally diverse immigrant seniors population.

The research community and the policy sector have indicated an interest in examining issues related to the health of culturally diverse immigrant seniors and older adults. However, empirical research findings on this aging population subgroup are limited.

Scope of the Study

This paper, based on an intensive review of published research studies, addresses the following research questions:

1) How are immigrant seniors defined in existing research studies?
2) How does immigrant seniors' health status compare to that of Canadian seniors?
3) What community and individual level determinants influence the health status of immigrant seniors in Canada?

This report summarizes research findings obtained from a review of academic research (not including grey literature) published between 2000 and 2010. The focus of this review is on Canadian research studies only. Key terms such as "," "old age," "senior," "elderly," "health," "health outcome," "well-being," "immigrant," "ethnic minority," "visible minority," "Canada," and "Canadian" were used in the literature search. Online databases used for conducting the searches included AARP Ageline, Abstracts in Social Gerontology, Academic Search Complete, Academic Search Elite, CINAHL Plus with Full Text, Family & Society Studies Worldwide, Google Scholar, MEDLINE, Psychology and Behavioral Sciences Collection, PsycARTICLES, Psyinfo, PubMed, Social Services Abstracts, Social Work Abstracts, SocINDEX with Full Text, and Sociological Abstracts. Only studies focusing on the health and well-being or related topics fell into the scope of this review. Academic journal papers and published research reports only were included. While attempts were made to capture as many published research studies as possible, the ones identified did not necessarily represent an exhaustive list of all relevant literature.

Definitions of immigrant seniors

The immigrant population is also known as the "foreign-born" population in Canada. It is defined in the 2006 Census as persons who are, or who have been, landed immigrants in Canada. The immigrant population does not include non-permanent residents, people in Canada on employment or student authorizations, refugee claimants, or persons born outside Canada who are Canadian citizens by birth. The latter are considered part of the Canadian-born or non-immigrant population (Statistics Canada, 2006). According to Statistics Canada (Turcotte&Schellenberg, 2007), immigrant seniors include those who are 65 years and older who were not born in Canada and/or did not have Canadian citizenship at birth.

Published studies indicate that there is no universal inclusion criterion for research on immigrant seniors. In some studies, immigrant seniors, disregarding their country of origins or ethno-cultural backgrounds, were all grouped as one group for analysis (Durst, 2005a, 2005b).

Ethnic origin refers to the ethnic or cultural origin of a person's ancestors, which should not be confused with citizenship or nationality (Statistics Canada, 2006). In some studies, immigrants from a single ethno-cultural group or country of origin were included (Lai &Surood, 2008a, 2008b, 2009; Lai, Tsang, Chappell, Lai, &Chau, 2007). Research participants from a particular ethno-cultural group may also consist of people from different countries or those with different nationalities. For example, one study of South Asian older adults by Lai &Surood (2008a, 2008b) refers to South Asians as people originating from several countries, including Bangladesh, India, Pakistan, Sri Lanka, and Nepal (Lai &Surood, 2008a, 2008b). A study on Chinese older adults in Canada (Lai *et al*., 2007) included immigrants of Chinese ethnic background from Mainland China, Hong Kong, Taiwan, and other countries. There are also studies in which immigrant groups from different countries or cultural background have been compared (Garcia & Johnson, 2003).

Some studies on specific ethno-cultural groups may include immigrants and those born in Canada in their sample participants (Lai *et al*., 2007). However, the vast majority of the samples in these studies were first-generation immigrants (Lai et al., 2007; Lai &Surood, 2008a, 2008b).

The age criteria used by these studies also varies. In some studies, seniors 65 years and older were included (Boyd, 1991; Chappell, 2003; Gee, 1999; Moore & Rosenberg, 2001). In some other studies, people 55 years and older were included (Chappell, 2005; Kaida, Moyser& Park, 2009; Lai, 2009; Lai &Surood, 2009; Streiner, Cairney&Veldhuizen, 2006). Studies with participants 55 years and older do not usually refer to the participants as "seniors," but rather as "older adults" or "the population."

Health Status of Immigrant Seniors

Two perspectives co-exist when it comes to understanding the health status of immigrants, including immigrant seniors. One is that immigrant seniors, given various adjustment challenges and socio-cultural barriers, tend to be less healthy compared to Canadian-born seniors (Lai, 2004c). Another perspective, often called the "healthy immigrant effect," is that recent immigrant seniors are usually healthier than Canadian-born seniors as well as the immigrant seniors who have been settled in Canada for many years. However, as recent immigrants start to settle in, their health advantage declines to

a level that may be worse than those who are Canadian-born (Gee, Kobayashi, &Prus, 2004).

There are several probable reasons for the "healthy immigrant effect." First, the highly selective Canadian immigration policy admits the healthiest people, using a health examination as a screening mechanism. Second, immigrants may alter their habitual lifestyle and health behaviours as they settle into the country, such as taking up smoking, changing their diet, or increasing their consumption of alcohol. Third, health changes may be the result of systematic barriers and discrimination in the systems, as recent immigrants pass the initial "honeymoon adjustment period" (Ali, 2002; Lai &Chau, 2007; Lai &Surood, 2010; Perez, 2002; Oxman-Martinez, Abdool, &Loiselle-Leonard, 2000).

In this study, we examine two health-related areas. One area is general health status, which often includes findings resulting from subjective general physical and mental health measures, life satisfaction and/or quality of life, and general oral health. The second is specific health conditions or diseases.

General physical health

In the 2003 Canadian Community Health Survey, 28% of immigrant seniors who settled in Canada between 1981 and 2003 rated their health as either excellent or very good, compared to 38% of Canadian-born seniors and 36% of long-term immigrant seniors who had landed in Canada before 1981 (Statistics Canada, 2006). Recent immigrant seniors who had arrived in Canada in or after 1981 were also more likely to need help preparing meals, to do everyday housework and heavy household chores, to get to an appointment or to run errands, and to look after their personal finances than non-immigrants and long-term immigrants who had arrived in Canada before 1981. For example, about 23% of recent immigrant seniors indicated that they needed help to do their everyday housework, compared with 15% of non-immigrant seniors and 17% of long-term immigrant seniors.

Using the data of the 2000–2001 Canadian Community Health Survey, Gee, Kobayashi and Prus (2004) examined how the age at which immigration occurs affected the health of mid- to later-life immigrants, compared with Canadian-born persons. The findings showed that the 45- to 64-year-old new immigrants who had had been in Canada for less than 10 years reported having better health than their longer-term counterparts who had immigrated to Canada 10 or more years previously. The health of longer-term immigrants was similar to that of Canadian-born persons.

Interestingly, a different picture emerged among recent immigrant seniors 65 years and older; these immigrants reported having poorer overall health when compared with Canadian-born persons of the same age range. When controlled for socio-demographic, socio-economic, and health behaviour factors, this health disadvantage largely disappeared, however. According to the authors, the healthy immigrant effect did exist, but mainly among those under 65 (Gee, Kobayashi, &Prus, 2004).

The 2009 Canadian Community Health Survey (CCHS) – Healthy Survey reported that although the general health of seniors (65 years and older) tended to decline with age, the decline appeared to be faster for immigrant seniors, with fewer immigrant seniors reporting their general health as good or better when compared with non-immigrant seniors. Older immigrant seniors reported lower overall functioning compared with non-immigrant seniors in a similar age range (Rudner, 2011).

When assessing the perceived health status of a sample of 140 older Chinese in Toronto, Lam (1994) found that 80.4% were satisfied with their health. Only 13.7% reported being dissatisfied and 5.8% had mixed feelings about their health. Similar research findings were reported by Chow (2010) in his study of 147 Chinese immigrant seniors from Hong Kong and the People's Republic of China who were living in seniors' housing facilities. Most of the seniors in the study described their physical health as good or very good. However, neither of these studies noted whether the older Chinese reported better perceived health than the general Canadian senior population.

The health status of older Chinese immigrants has been compared to that of the Canadian population, with mixed results as to which population has better health. According to data from 2,272 randomly selected older Chinese in seven Canadian cities (Lai *et al*., 2003), 92.8% of older Chinese indicated that they had at least one health condition, higher than the 81.7% reported by the general population of adults 55 years and older surveyed in the 1998 National Population Health Survey. The older Chinese in this study also reported a higher prevalence of certain health conditions, including high blood pressure, stomach problems, eye problems, and diabetes, compared with those in the general population in the same age range, with the former group reporting having 3.3 types of health conditions, greater than the 2.2 types reported by the latter group. More of the older Chinese required assistance with Instrumental Activities of Daily Living, such as heavy household chores, shopping, and meal preparation. With respect to self-rated heath, 79.4% of the general population reported a good to excellent health, while only 59.5% of older Chinese reported the same.

On the other hand, using the data collected by the Medical Outcomes Study's 36-item Short Form (SF-36) in the same study (Lai *et al*., 2003), Lai (2004c) further examined

eight physical and mental health domains for older Chinese people, in three age groups of 55 to 64 years, 65 to 74 years, and 75 years and older. The findings indicated that older Chinese, regardless of their ages, reported better overall physical health than all the older adults in the general Canadian population.

Another study obtained contradictory results. Using a purposive, overdrawn, and telephone screening sample of 830 Chinese seniors 65 years and over in the Greater Vancouver and Greater Victoria areas, Chappell and Lai (1998) found that Chinese seniors did not perceive themselves as healthy when compared with seniors in the general Canadian population. In terms of chronic conditions, the same proportion of Chinese seniors reported having health problems as seniors in the general Canadian population. However, Chinese seniors were much more likely to report functioning problems related to Activities of Daily Living and Instrumental Activities of Daily Living (Chappell & Lai, 1998).

To conclude, inconsistent findings have been reported on the general physical health of aging immigrants. While some researchers have noted that immigrant seniors enjoy a similar physical health status as Canadian-born older adults, some findings point to a less favourable health status for specific ethno-cultural minority immigrants.

General mental health

While some studies indicate that recent immigrant seniors are less likely than Canadian-born seniors to suffer psychological distress, others show that some aging immigrants reported a lower level of general mental health than the older adults in general.

According to data in the 2002 Canadian Community Health Survey, recent immigrant seniors who came to Canada in 1981 and after reported lower levels of psychological distress than longer-term immigrant seniors and Canadian-born seniors. On the various dimensions of well-being, recent immigrant seniors had slightly less positive answers than Canadian-born seniors. In summary, recent immigrant seniors were slightly less likely than Canadian-born seniors to suffer from psychological distress, but they are also slightly less likely to report a higher level of well-being (Statistics Canada, 2006).

In an analysis of the data collected in the 2003 Canadian Community Health Survey: Mental Health and Well-being, Streiner, Cairney, and Veldhuizen (2006) compared people born in Canada and people who had immigrated to Canada after the age 18 to determine the prevalence of mood, anxiety, and other disorders in the population of Canada 55 years and over. The findings showed that there was a linear decrease for all disorders after the age of 55 years, for both men and women, as well as for anglophones,

francophones, and allophones, and for both those born in Canada and those who had immigrated to Canada after the age of 18. Immigrants reported fewer problems than non-immigrants, but the differences decreased with age (Streiner, Cairney, &Veldhuizen, 2006).

In the 2009 CCHS Healthy Aging Survey, however, fewer immigrant seniors reported positive mental health, when compared with non-immigrant seniors. Non-immigrant seniors were also less likely to have a mental health disorder than immigrant seniors. The emotional functioning of immigrant seniors declined with age, but remained stable for non-immigrant seniors (Rudner, 2011).

Although the psychological well-being of Chinese immigrant seniors in a localized study in Calgary was considered positive (Chow, 2010), findings from a national study on older Chinese in Canada (Lai, 2004c) showed other results. The findings on mental health of older Chinese people in Canada also differ from those reported for all immigrant seniors in a study by Statistics Canada (2006) and the study by Streiner, Cairney, &Veldhuizen (2006) reviewed above. When analysing the general health status of older Chinese in Canada, Lai (2004c) noted that older Chinese in all age and gender groups reported lower levels of overall mental health, as measured by the Mental Component Summary.
In an international comparison, Lai (2009) found that older Chinese people in Canada reported the worst mental health, as determined by the Mental Summary Component of the Medical Outcomes Study 36-item Short Form (SF-36), compared with the mental health of older Chinese people in Mainland China, Hong Kong, and Taiwan. Another study examining Chinese seniors who lived alone (Lai, 2007) showed that those who live alone reported poorer mental health than those who did not live alone.

Some qualitative studies have explored the immigration experience of elderly immigrants; the findings provide insight into the mental health status of this population. In one study examining the challenges encountered by elderly women from India, participants reported experiencing isolation, loneliness, family conflict, economic dependence, a loss of control, difficulties in coping, and struggles to maintain a sense of interdependence (Choudhry, 2001). Another study examined the potential mental health outcomes among older Chinese immigrants who were dependent on adult children (Mackinnon, Gien, & Durst, 2001). Among all ten participants 60 years and older who were born outside Canada, six reported that loneliness was pervasive in their lives and that they felt emotionally isolated. Such feelings were increased by the Westernized values and lifestyles of their children and grandchildren. All Chinese immigrant seniors described having long days with little to do, a denial of their emotional needs, diminishing power in family decisions, and feelings of helplessness or hopelessness. These feelings affected their general mental health in a negative way. These findings

indicated a low level of satisfaction with life and less than optimal mental health for these seniors (Mackinnon, Gien, & Durst, 2001).

Life satisfaction & quality of life

Life satisfaction and the quality of life are the main indicators of an individual's well-being. A number of Canadian studies have addressed these indicators in immigrant seniors and older adults. Studies on aging immigrants tend to show consistently that they enjoy a relatively high level of life satisfaction.

Lai and McDonald (1995) explored life satisfaction among 81 Chinese immigrant seniors (58 females and 23 males; mean age: 76) randomly selected from residents living in senior housing facilities for Chinese people in Calgary. Most participants had been born in Mainland China and half had migrated from Hong Kong. The results indicated that most immigrant Chinese seniors were satisfied with their life and scored high on the scale of LSI-A, the Life Satisfaction Index-A.

In another large-scale study (Lai *et al*., 2003) examining the health and well-being of 2,272 randomly selected Chinese people aged 55 years and older in seven Canadian cities, life satisfaction was measured using a single-item global life satisfaction measure and the Terrible-Delightful Scale (Andrews &Withey, 1976) consisting of 14 different domains of life and living circumstances. The findings showed that in general, respondents were satisfied with their lives. Women reported significantly lower levels of satisfaction than men in the domains of heath, living partner, recreational activity, transportation, and global life satisfaction. Those who were under 65 and those who lived alone also reported a lower level of life satisfaction than those who were older and lived with others. Using the same dataset, Chappell (2005) further identified the role of cultural variables on the life satisfaction and well-being of older Chinese people in Canada.

A few studies have compared the level of life satisfaction of older Chinese in Canada and older Chinese in other places, including those in Mainland China and Hong Kong (Chappell, 2003; Chappell & Lai, 2001; Chappell *et al*., 2000). All of these studies reported that older Chinese people in Canada had a higher level of life satisfaction than their counterparts in other jurisdictions. However, these studies did not offer information about the level of life satisfaction of Chinese immigrants and Canadian seniors in general.

While most of the current studies on life satisfaction among older immigrants have focused on the Chinese in Canada, one study examined the life satisfaction of aging Japanese Canadians. Using data from a sample of 374 aging Japanese Canadians living in four major urban cities and four relatively rural communities, Ujimoto (1987) examined

their organizational activities, cultural factors, and well-being, and life satisfaction in relation to an individual's financial situation. The findings indicated that aging Japanese Canadians who stressed discipline, perseverance, and self-reliance were satisfied or very satisfied with respect to their financial situation, family relations, and health. They also reported a generally high level of satisfaction with family life. However, they reported less satisfaction in regards to their health.

According to the 2009 CCHS Healthy Aging Survey, fewer immigrant seniors (82%) reported being satisfied with their lives in general than non-immigrant seniors (89%). As immigrant seniors age, they are less likely to be satisfied with their lives, while the life satisfaction of non-immigrant seniors tends to remain the same (Rudner, 2011).

General oral health

Very little research is available on the oral health of aging immigrants; and no findings have compared their oral health status with that of Canadian-born older adults. The only major study on the oral health of ethno-cultural minority seniors was conducted by Swoboda, Kiyak, Persson, Yamaguchi, MacEntee, and Wyatt (2006). A group of 733 low-income elders (mean age 72.7, 55.6% women, 55.1% members of ethnic minority groups, including Chinese, Punjabi, African American, and other Asian groups) in the United States and Canada were interviewed to examine the relationship between an older person's oral health-related quality of life (OHQOL) and their functional dentition, caries, periodontal status, chronic diseases, and certain demographic characteristics. OHQOL was measured by the Geriatric Oral Health Assessment Index (GOHAI). Functional dentition was a less significant predictor of oral health than ethnicity and being foreign-born. These variables, together with gender, years since immigrating, number of carious roots, and periodontal status, could predict 32% of the variance in total GOHAI. The findings suggested that functional dentition and cavities influence older adults' OHQOL, but ethnicity and immigrant status play a larger role.

Diet and nutrition

Several studies examined diet and nutrition among older ethno-cultural minorities and immigrants. Research findings generally show that immigrants are often at greater risk of poor dietary habits when compared with their Canadian-born counterparts.

For example, based on the cross-sectional Ontario Health survey, researchers concluded that immigrants were more likely to meet the Canadian recommendations for carbohydrates and fat intake and less likely to have adequate intakes of protein, iron, and calcium, compared with non-immigrants (Pomerleau *et al*., 1998a; 1998b). In another

study, using a sample of 54 older immigrants from Cambodia, Latin-America, Vietnam, and Poland, Johnson and Garcia (2003) examined diet and physical activities. The majority of the older immigrants were women with a mean age of 68 years. This research found that 72.5% of the older immigrants were at moderate to high risk of poor nutrition. Older Cambodians and Vietnamese were the two groups with the highest nutritional risk. Unfortunately, the authors didn't compare the findings with studies on the general Canadian aging population (Johnson & Garcia, 2003). Another qualitative ethnographic study by Oliffe and associates (2010) examined diet among senior Punjabi Sikh immigrant men. This study also examined the connections between masculinity and dietary practices. Most of the participants originated from farming communities in Punjab. The findings showed that participants' masculine ideals and their alignment to those ideas were deeply rooted in spirituality and traditional cultures, which influenced their use of specific foods and beverages. The availability and affordability of foods and beverages in Canada also influenced the participants' diet. Furthermore, the authors stated that links between the participants' masculine ideals and dietary practices were both similar and discordant with the findings reported in studies of Western men (Oliffe *et al*., 2010).

Sexual health

Sexual health is often seen as a taboo area for ethnic groups, particularly for older people. This issue has been neglected in literature, because little research has addressed this issue. One exception was a study by Lai and colleagues (2003), which explored sexual health based on data from a randomly selected 2,272 older Chinese 55 years and older in seven cities in Canada. Close to two-thirds (65.2%) of participants thought that older people should continue to stay sexually active and close to half (42.7%) of this group indicated that they were still interested in sex. Nevertheless, over half (57.9%) of the older Chinese reported that they did not have sex and only 7.2% of the participants reported having sex once a week. No comparison of these findings with those for older adults in the general Canadian population was made in this study.

Health Conditions or Diseases

Little research has been dedicated to examining the differences in specific health conditions or diseases between immigrant seniors and Canadian-born seniors in Canada. The small number of immigrant seniors included in the national health survey, particularly those who have arrived in Canada in recent years, makes comparisons methodologically challenging, if not impossible.

In the general Canadian population, arthritis or rheumatism is the most frequently reported chronic condition among seniors, followed by high blood pressure and eye-related problems (Turcotte&Schellenberg, 2007). Within the senior population, in 2003, the proportion of immigrant seniors affected by a chronic health condition was no different from that of non-immigrants (90.5%) (Turcotte&Schellenberg, 2007). Using existing empirical research on immigrant seniors and older adults from different ethno-cultural backgrounds, this section presents the available findings on selected diseases or health conditions.

Depression

Researchers have reported that depression is quite prevalent among older immigrants (Kuo, Chong & Joseph, 2008). Studies have reported that Chinese and South Asian immigrants are more likely to suffer from depression than the general aging population.

Based on data from a random sample of 96 elderly Chinese in a seniors' centre in Calgary, Lai (2000a, 2000b, 2000c) reported a depression prevalence rate of 20.9% measured by a 15-item Chinese version of the Geriatric Depression Scale in which 9.4% was "mildly depressed" and 11.5% was "moderately to severely depressed." The mean age of the group was 71.7 years. Most were born outside Canada and had an average of 14.16 years of residency in Canada. Lai (2000a) indicated that the rate of depression among the elderly Chinese in this group was higher than the 10% to 15% for the overall elderly population in Canada.

In a larger study (Lai, 2004a), data from 1,537 Chinese immigrant seniors who took part in a randomized national multi-site study on the health and well-being of older Chinese in seven Canadian cities (Lai *et al*., 2003, 2007) were used to examine depressive symptoms. All participants in this study (Lai, 2004a) were 65 years or older and born outside Canada. A Chinese revised version of the 15-item Geriatric Depression Scale (Mui, 1993) was used to measure the depressive symptoms of the Chinese immigrant seniors. The results showed that close to a quarter (24.2%) of Chinese immigrant seniors reported having at least a mild level of depressive symptoms (i.e. GDS score ≥ 5). The authors noted that the prevalence of depressive symptoms reported by Chinese immigrant seniors was also much higher than the 10% to 15% reported by the general elderly population (Lai, 2004a).

Further studies on the depressive symptoms of older Chinese immigrant subgroups are also available. In the study on a subsample of 444 older Chinese immigrants from Mainland China, 23.2% reported various levels of depression, with 16.7% being mildly depressed and 6.5% being moderately to severely depressed (Lai, 2004b). In another

study of 98 older Chinese immigrants from Taiwan (Lai, 2005a), 21.5% reported depression, with 13.3% being mildly depressed and 8.2% being moderately to severely depressed. These findings indicated that the overall prevalence rates of these two subgroups were also higher than the estimated prevalence of 10% among the general population 65 and over in Canada (McEwan, Donnelly, Robertson, &Hertzman, 1991).

In another study examining depressive symptoms among older Chinese in Toronto, Kuo and Guan (2006) reported a higher prevalence of depressive symptoms than in the previous studies (Lai, 2004b, 2005a), with 24% in this group being mildly depressed and 4.2% being severely depressed. The depressive symptoms of aging South Asian immigrants were also examined (Lai &Surood, 2008b), with 21.4% of participants (55 years and over) reporting mild symptoms of depression.

Alzheimer's disease

Alzheimer's disease is common in older people, although there is a lack of empirical studies examining the prevalence of Alzheimer's disease among older immigrants in Canada. It is unknown whether older immigrants are more likely to be affected. However, a few studies did examine Alzheimer's disease in some immigrant senior communities.

One study (Chertkow, Whitehead, Phillips, Wolfson, Atherton and Bergman, 2010) examined the relationship between language and the onset of Alzheimer's Disease. Participants of this study included 135 bilingual or multilingual immigrant seniors and 23 unilingual immigrant seniors in Montreal. Other participants were 474 Canadian-born seniors, including 356 unilingual and 108 bilingual or multilingual. The findings showed that seniors who speak two or more languages may delay the onset or diagnosis of Alzheimer's disease by almost five years.

Another study by Fornazzari, Fischer, Hansen and Ringer (2009) examined the knowledge level of Alzheimer's disease in Latin American older adults in the Greater Toronto Area. Based on a sample of 125 mostly female Spanish-speaking adults aged 55 and older, the authors found a lack of knowledge about Alzheimer's disease among the participants.

Diabetes

Unlike research on younger age cohorts, little research is available comparing specific health conditions among immigrant seniors and non-immigrant seniors. Detailed studies on how immigrant and ethno-cultural minority seniors are affected by different specific diseases are scant.

One study, however (Lai *et al*., 2003), did find that the prevalence rates among older Chinese in selected health conditions such as high blood pressure, stomach problems, and eye problems are higher than general population within the same age range.

Diabetes is a common chronic disease for older people. Some researchers have suggested that diabetes represents a major health concern in the Chinese-Canadian population (Cheng, Tsui, Hanley &Zinman, 1999), and developed a Chinese version of the Diabetes Quality of Life measure (DQOL) for elderly Chinese immigrants with Type 2 diabetes in their studies. Unfortunately, insufficient data was available to understand the prevalence of the disease among Chinese older adults in comparison with older adults in the general population.

Substance use and addictions (tobacco, alcohol, and gambling)

Very little research has been done on substance use among older immigrants in Canada. However, the available findings appear to indicate that immigrant seniors are less likely to be involved in substance use.

Recent immigrant seniors are less likely to be daily smokers than non-immigrants and proportionally more have never smoked (Turcotte&Schellenberg 2007). In 2003, the proportion of recent immigrant seniors who had never smoked in their life was twice that of the Canadian-born (63% versus 31%). Long-term immigrant seniors were also less likely to be daily smokers than non-immigrants.

Recent immigrants are also less likely to be heavy drinkers than non-immigrants. The difference between long-term immigrants and non-immigrant seniors is not statistically significant. These differences between immigrants and non-immigrants have also been reported in previous studies (Pérez, 2002).

Similarly, according to the 2009 CCHS Healthy Survey, immigrant seniors are less likely than non-immigrant seniors to smoke (66% vs. 73%) or to drink alcohol (66% vs. 72%) regularly (Rudner, 2011)

Several other studies have reported on substance use by older adults in specific ethno-cultural minority immigrant groups. Lai (2004e) reported that 16.7% of Chinese of 55 years and older in Canada reported drinking. Age, gender, living arrangements, country of origin, income, and attitude toward aging were the significant factors that increased the probability that older Chinese people would drink. Kim (2009) explored the drinking culture of elderly Korean immigrants in Canada through focus group interviews with 19

elderly Korean immigrants (14 men and 5 women). The study found that elderly Korean immigrants did not dramatically change their understanding of drinking or their ways of drinking after immigrating to Canada. However, the prevalence of drinking among this ethnic group and the difference in the prevalence with the general Canadian aging population has not been examined.

In another qualitative ethnographic study examining the relationship between masculinity and diet among senior Punjabi Sikh immigrants, Oliffe, Grewal, Bottorff, Dhesi, Kang *et al*. (2010) identified that many Sikh men drank alcohol, even though the Sikh religion does not allow its followers to use any mind-altering substances. Alcohol consumption was strongly connected to masculine ideals and their intersections with culture and social class.

Lai (2006a) also examined gambling among older Chinese in Canada and found that 26.6% of the older Chinese reported that they gambled. Lai (2006a) pointed out that the overall gambling rate of the general aging population was generally higher than that of the older Chinese in this study, despite the myth that the Chinese belong to a "gambling culture." Being male, having lived in Canada for longer, having a higher level of social support, having more service barriers, and having a stronger level of Chinese ethnic identity would increase the probability that an older Chinese person would participate in gambling.

Social Determinants of Health

The social determinants of health are the economic and social conditions that shape the health of individuals, communities, and jurisdictions as a whole (Raphael, 2004). The social determinants of health are about the quantity and quality of a variety of resources that a society makes available to its members. Some examples of these resources include conditions of childhood, income, availability and quality of education, food, housing, employment, working conditions, and health and social services. Through an understanding the social determinants of health, attention can be directed to economic and social policies as means of improving it.

Research findings have provided examples on how these social determinants have affected the health of the general population of seniors in Canada. For example, previous research studies on Canadian seniors have shown that age (Locker &Leake, 1993), gender (Chen, Dales, Krewski, &Breithaupt, 1999; Plouffe, 2003), education (Veenstra, 2000; Wanless, Mitchell, and Wister, 2010), living arrangements (Plouffe, 2003; Tierney, Snow, Charles, Moineddin& Kiss, 2007), income (Gadalla, 2009; Veenstra, 2000;

Wanless, Mitchell, and Wister, 2010), and social support (Gadalla, 2009; Wanless, Mitchell, and Wister, 2010) can affect individuals' health.

As for immigrant seniors, the social determinants of health are similar to those identified above. Research studies have indicated different individual and community-level social determinants. Individual social determinants of health include age, gender, marital status, education, financial status, living arrangements, language, ethnicity, religion, values and beliefs, length of residence, social support, life transitions and coping strategies. At the community level, the social determinants of health include the influence of service barriers and physical environments.

Age

Age has been identified as an important predictor of self-assessed health (Pennings, 1983). Most of the Canadian studies that have examined the correlates of health have indicated that immigrant seniors who are older tend to be less healthy or more likely to be affected by a specific disease or chronic condition than younger immigrants.

The negative effects of aging were identified among South Asian immigrants aged 55 years and older (Lai & Surood, 2008a). Chappell (2003, 2005) reported that aging Chinese who were younger tended to report a higher level of life satisfaction. However among the older Chinese in Toronto (Kuo & Guan, 2006) and Chinese immigrant seniors from Mainland China (Lai, 2004b), being older was not correlated with depression.

Being older was also a predictor of poorer physical health, more chronic illnesses, and more limitations in the Activities of Daily Living and the Instrumental Activities of Daily Living among older Chinese in Canada (Lai *et al*., 2007). Age is also linked to health behaviours. In a study on alcohol drinking among aging Chinese in Canada, age was one of predicting factors (Lai, 2004e). Those who were older reported less likely to drink alcohol (Lai, 2004e).

Among these studies, age was often treated as a correlate for the full sample. Most studies did not examine age cohort differences, except for the one by Lai and Surood (2008a), in which older South Asian immigrants 55 to 64 years old were compared with those 65 years and older. The findings indicated that the older age cohort reported higher prevalence rates for two frequently reported symptoms (i.e. "often get bored" and "dropped many activities and interests") than those under 65. However, no significant differences in other symptoms were reported between these two age groups.

Gender

Most of the studies examining determinants of health of immigrant seniors reported gender differences in the health and health behaviours. Consistently, female immigrant seniors report lower rates of health and well-being than their male counterparts (Penning, 1983).

In a study of Chinese people 55 years and older in Canada (Lai *et al*., 2007) women reported poorer physical health, more chronic illnesses, and more limitations in the Instrumental Activities of Daily Living compared with their male counterparts. Similarly, in a few other related studies on depression among older Chinese immigrants, women reported more depressive symptoms than men (Lai, 2000a; 2004a, 2005a; Lai & Yuen, 2003).

Among older South Asian immigrants, more female participants reported depressive symptoms than their male counterparts (Lai &Surood, 2008a) while the probability of male participants suffering from depression was 0.26 times that of women (Lai &Surood, 2008b). With respect to general physical and mental health status, Chinese older women in Canada reported poorer health than the Chinese older men in eight health domains of the SF-36, a standardized health measure (Lai, 2004c).

In terms of life satisfaction, a commonly used indicator of general health, the comparative study by Chappell (2003) on Chinese seniors in Mainland China and Chinese immigrant seniors in Canada showed that male Chinese immigrant seniors in Canada reported higher life satisfaction than their female counterparts. There is also a gender difference in alcohol consumption. For example, a study examining the predictors of alcohol consumption among older Chinese in Canada indicates that older Chinese men were 3.85 times more likely than older Chinese women to drink alcohol (Lai, 2004e). A study by Chow (2010), however, reported a different result. Elderly Chinese female immigrants exhibited a higher level of psychological health than their male counterparts.

While gender has been identified as a significant predictor of health, there is a lack of gender analysis in most of the research. In general, although female-male differences are identified in most studies on immigrant seniors, the unique differences between female and male immigrant seniors have not been adequately addressed, except for one study. Lai &Surood (2008b) reported gender differences in depressive symptoms in South Asian immigrants. A significantly higher proportion of women than men reported depressive symptoms related to “dropped many activities and interests,” “often get

bored," and "frequently worry about the future." Gender differences were also observed in other symptoms, including "often get restless and fidgety," "having more problems with memory," "frequently get upset over little things," and "frequently feel like crying," with more women than men reporting these symptoms.

Marital status

Marital status is identified as a significant factor in the psychological well-being of elderly Chinese in Canada (Chow, 2010; Lai, 2005a). In general, being married is associated with more positive health outcomes.

For example, Lai's (2005a) study on older Taiwanese immigrants indicated that being single was a predictive factor for someone reporting more depressive symptoms. Married Chinese older adults in Canada also reported fewer chronic illnesses and higher levels of limitation in the Activities in Daily Living and Instrumental Activities of Daily Living, when compared with those who were not married (Lai *et al*., 2007).

Education

Level of education has consistently been found to be a significant predictor of physical and mental health for many immigrant seniors in Canada. However, contradictory results about the effects of education on health have been reported, with higher levels of education associated with both positive and negative health outcomes.

With respect to physical health, Chow (2010) found that older Chinese immigrants who had lower levels of education reported a higher level of physical mobility. In terms of the psychological and mental health of immigrant seniors, some studies indicated that a higher education level was significantly associated with better psychological well-being and better mental health (Lai, 2009; Chow, 2010).

Some researchers have examined the relationship between education level and depression. Lai (2004a) found a greater number of individuals with lower education attainment among the depressed group of older Chinese in Canada than in the non-depressed group. Despite these findings, education was not found to have any significant association with depression among South Asian immigrant older adults (Lai &Surood, 2008b).

In one study, a higher level of education was also significant in a predicting better mental health among aging Chinese in Canada (Lai *et al*., 2007). However, when controlled for the effects of other cultural factors, the influence of education level disappeared.

However, older Chinese who reported higher levels of education reported fewer limitations in the Instrumental Activities of Daily Living.

Financial status

Generally speaking, most studies on immigrant seniors' health have indicated that a poorer financial status increases one's risk of ill health or the likelihood of suffering from a specific illness or chronic condition. For example, research on older Chinese in Canada has indicated that a higher level of perceived financial adequacy was associated with better physical and mental health status (Chow, 2010; Lai, 2009). Several research studies have also reported that poorer financial status (i.e., lower incomes, less satisfaction with economic status) was a significant predictor of depression among immigrant older seniors and older adults in Canada (Kuo& Guan, 2006; Lai, 2004a; 2004b; 2005a). Specifically, older immigrants reporting depression tend to have a less favourable financial status than those who were not depressed.

Financial adequacy was significant in predicting all the health variables in the study on older Chinese in Canada (Lai *et al*., 2007). A higher level of financial adequacy was associated with better physical and mental health, fewer illnesses, and fewer limitations in the Activities of Daily Living and the Instrumental Activities of Daily Living. Personal monthly income was significant in predicting the number of illnesses and limitations in functioning capacities. Older Chinese who reported higher incomes also reported fewer illnesses and a lower level of limitation in the Activities of Daily Living and the Instrumental Activities of Daily Living.

Financial status not only influences the health of immigrant immigrants, but also their health behaviours. In a study exploring masculinity and physical activity among male Punjabi Sikh immigrant seniors, the researchers found that economic hardship influenced these immigrant seniors' preference for walking to socially connect with other men (Oliffeet a., 2009). Chappell (2003) also reported that for both Chinese seniors and non-Chinese seniors, owning a dwelling, which is one indicator of adequate financial status, was significantly related to higher levels of life satisfaction (Chappell, 2003).

In her further study on life satisfaction among older Chinese in Canada, Chappell (2005) also found that older Chinese with a higher perceived financial adequacy were more likely to perceive an improvement in life satisfaction and in life after the age of 55. Having inadequate financial resources also increases nutrition risks among elderly immigrants (Johnson & Garcia, 2003), as well as the likelihood of drinking (Lai, 2004e).

However, there is probably a variation in the influence of financial status on different age groups. For example, Penning (1983) reported that perceived economic security was an important predictor of perceived life satisfaction of seniors in different ethnic communities in Canada. Those who perceive themselves to be more economically secured, tend to report a higher level of life satisfaction.

While finance status is often found to be related to the health of immigrant and ethno-cultural minority seniors, most research studies did not take into consideration the actual income level of the seniors. Research findings on the relationship between public pension eligibility (i.e. Canada Pension Plan or Quebec Pension Plan) and health outcomes of immigrant seniors are scant.

Elder abuse and neglect

Although elder abuse and neglect have profound effects on the health and quality of life of older people, relatively little research has been done on this issue among members of ethno-cultural minorities and immigrants. No comparative data are available on whether these older adults face more or fewer challenges relating to elder abuse and neglect.

Recently, however, interest in elder abuse and neglect among older immigrants from culturally diverse background has increased. For example, Walsh and her colleagues (2007) explored the experiences of marginalized elders (women, those diagnosed with mood disorders, lesbians, immigrants and Aboriginals, or survivors of abuse) and their care providers. In this study, 77 older adults and 43 formal and informal caregivers of older adults attended focus groups in Ontario and Alberta. Research findings demonstrated that victims of elder abuse often suffer in silence, and culture, ageism, and gender were factors in elder abuse. Among the participants, 36% percent were Farsi-speaking, Punjabi-speaking, and Chinese-speaking older immigrants. Unfortunately, no information was available in the study to compare the differences between the immigrant seniors and the general Canadian aging population.

In another study, Tam and Neysmith (2006) examined the relationship between cultural factors and elder abuse in Chinese communities, based on focus groups conducted with home care workers. Disrespect was the key form of elder abuse in the Chinese community. As it was culturally specific, it remained invisible to Western definitions of elder abuse. According to the authors, social exclusion and marginalization put Chinese immigrant seniors in vulnerable conditions. While the comparative view from general Canadian-born seniors was not examined, another limitation of this study is that the findings mainly reflected the perspectives of home care workers; the voices of older people were not included.

Another study conducted by Hyman *et al*. (2006) examined cultural perceptions and responses to female abuse among Tamil women in Toronto using a focus group. This study included 18 women aged from 60 to 77 years of age, with most being Hindu and attending college or university. The authors found a great deal of consensus among Tamil women of all ages that responses to intimate partner violence must consider community norms, especially those related to respect and children. This is similar to the definition of intimate partner violence provided by women from the general population.

Although the qualitative studies above identified some of the roles and effects of culture on elder abuse, these studies did not provide information on the prevalence of elder abuse among immigrant seniors. Another study by Lai (in press) attempted to examine the proportion of older Chinese experiencing neglect or abuse in Canada, using some of the data collected in the study of Health and Well-being of Older Chinese in Canada (Lai *et al*., 2003). The findings indicate that only 2% of older Chinese reported having experienced at least one type of elder neglect or abuse. No comparison was made in this study with older adults from other ethnic or immigrant backgrounds.

Living arrangements

Several studies examined the association between living arrangement and health status of immigrant seniors in Canada, particularly the effects of living alone. In general, most studies found that living alone was a significant predictor of less favourable mental health among older immigrants.

For instance, Lai (2009) reported that in Canada, older Chinese who lived alone were more likely than those who lived with others to experience social isolation, depression, and poorer mental health. In a study on elderly Chinese immigrants (Lai, 2007), which compared those living along with those who living with others, those who reported living alone tended to have fewer limitations in the Instrumental Activities of Daily Living but poorer mental health.

Living alone also has been linked to specific illnesses or chronic conditions, such as depression. One study (Lai, 2004a) reported that living alone was a positive predictor for depression in Chinese immigrant seniors in Canada.

Moreover, living arrangements can also influence the health behaviours of older immigrants. For example, living alone was found to reduce the odds of drinking among elderly Chinese immigrants (Lai, 2004e).

Johnson and Garcia (2003) reported that elderly immigrants were at a higher risk of poor nutrition in their study on the dietary and activity profiles of the elderly from Cambodia, Latin America, Vietnam, and Poland. They further identified that living alone contributed to nutritional risk among the Latin-American and Polish elderly (Johnson & Garcia, 2003).

Gee (2000) studied the relationship between living arrangement and the quality of life of 830 Chinese seniors in British Columbia, among whom 90% were foreign-born. The findings showed that living alone was not a significant predictor of life satisfaction or well-being for married men and women. However, living alone determined well-being, but not life satisfaction for widows.

Language

The findings from studies on immigrant seniors indicate that language skills are a significant factor in mental and physical health status. Immigrants who are more proficient in English and more acculturated into the new host culture suffer less from cultural and other adjustment-related stressors, and therefore report better health outcomes, such as lower levels of depression (Lai, 2004a). A study on older immigrants also revealed a significant negative correlation between speaking English and depression scores (Lai, 2005a). The perceived English competency of older Chinese immigrants was significant in predicting the number of chronic illnesses, but its effect disappeared after controlling for the effects of other cultural variables (Lai *et al*., 2007).

Some studies have also examined the relationship between language and specific health conditions or diseases among immigrant seniors. For example, a study suggested a small but significant protective effect of multilingualism (more than two languages spoken, but not necessarily to the level of bilingualism) on age, at the diagnosis or age of the onset of Alzheimer disease (Chertkow *et al*., 2010). Lack of proficiency in English also led to an increasing distance between immigrant seniors and their grandchildren, causing additional strain for the elderly immigrant (Choudhry, 2001).

Ethnicity and religion

A religious interpretation of stressful life events may bring believers to a state of inner peace or acceptance of a situation that is beyond their control (Idler *et al*., 2003), resulting in a positive effect on well-being. Some studies on immigrant seniors have examined the relationship between ethnicity, religion, and the health of senior immigrants. In general, being an older person who is a member of an ethno-cultural minority is associated with a less favourable health status compared with older people in

the general population. However, having a strong identification with one's own ethno-cultural and religious identity is associated with better adjustment and coping for immigrant seniors.

For example, Chinese seniors reported a less favorable mental health status compared with that of the general elderly population in Canada (Lai, 2004c). A study on depression among aging South Asians also indicated that Muslims tended to report more frequent responses to states that include "often getting bored" and "feeling pretty worthless" (Lai &Surood, 2008a). Ethnicity was also found to be a stronger predictor of oral health quality of life in ethnic low-income older adults (Swoboda et al., 2006). Specifically, being Chinese rather than another ethnicity was significantly associated with total GOHAI.

A study by Gee (1999) noted that maintaining a stronger ethnic identity resulted in Chinese immigrant seniors having better access to ethnic networks that assist them with adjustments and challenges. Some studies have reported that ethnicity and religion have a buffering effect on the health of immigrant seniors. Two qualitative studies on the experience of immigrant life in Canada of elderly Indian women showed that religion was a powerful spiritual coping resource for these women (Acharya&Northcott, 2007; Choudhry, 2001).

Values and beliefs

A number of studies indicate that cultural values and beliefs are associated with a positive health status for seniors. For example, in a study on older Chinese in Canada (Lai *et al*., 2007), cultural variables such as country of origin, length of residence in Canada, religion, Chinese cultural values, and Chinese health beliefs were significant in explaining variances in physical health, mental health, number of illnesses, and limitations in the Instrumental Activities of Daily Living.

One study examining the impact of culture on depressive symptoms of elderly Chinese immigrants shows that having more cultural barriers and a higher level of identification with Chinese cultural values resulted in a higher probability of experiencing depression (Lai, 2004a). Another study examining depression among aging South Asians in Canada reported that a stronger identification with South Asian cultural values was significantly related to a higher probability of being depressed (Lai &Surood, 2008b). In a study of older Taiwanese immigrants to Canada, Lai (2005a) found that the level of identification with Chinese health beliefs was also a significant predictor of the number of depressive symptoms, in that older Taiwanese with stronger Chinese health beliefs reported fewer depressive symptoms.

Another study adopted a bi-dimensional theoretical model of acculturation to study older Chinese Canadians' levels of depression, in terms of their cultural identification with Canadian values versus Chinese values (Kuo& Guan, 2006). The authors identified differential effects found on depression, depending on the cultural orientation of the participants.

Using data from a sample of 374 aged Japanese Canadian living in Vancouver, Winnipeg, Toronto, and Montreal and four relatively rural communities, an earlier study by Ujimoto (1987) indicated the role of culture on perceived well-being. In particular, the lack of fluency in expressing oneself, the lack of aggressiveness in stating one's true feelings, and false modesty influenced one's well-being. The findings indicate the importance of recognizing the generational and cultural variations within a given ethnic minority group, that of aged Japanese Canadians, in assessing perceived well-being (Ujimoto, 1987).

Chappell (2005) also examined the relationship between traditional culture among older Chinese in Canada and their perceived change in quality of life. The findings showed that involvement in traditional culture, return visits to the homeland, immigration due to family reunion, and ancestor worship were significant predictors of quality of life, but differentially, depending according to overall quality of life or specific domains (Chappell, 2005).

Experience of elder abuse is also affected by cultural values. In the study by Walsh and her colleagues, focus group interviews were conducted with older immigrants from the Chinese, Punjabi, and Farsi communities (Walsh *et al*., 2007). The findings indicated that culture played an important role in the experience of elder abuse. Specifically, according to these immigrant seniors, culture affects how elder abuse is revealed, given the reluctance among the members of certain cultures to openly address the issue. The culture of patriarchy plays a key role in whether some immigrant communities speak out against elder abuse. Culture also influences whether and how victims get help from professionals.

Cultural values also influence health behaviours. For example, in one study examining the drinking culture of Korean elderly immigrants, Kim (2009) found that drinking was considered a necessity at social gatherings, an appetizer, or a mood tranquillizer. The findings indicated that elderly Korean immigrants did not dramatically change their understanding of drinking or their ways of drinking in their life as an immigrant. Furthermore, Oliffe *et al*. (2007) studied the connection between masculinity, culture and health among male Punjabi Sikh immigrant seniors. The findings revealed a complex cultural connection that informed and influenced health behaviours and beliefs.

Acharya and Northcott's qualitative study (2007) reported that elderly Indian women used different cultural ways of "staying busy" to reduce the risk of mental distress. These ways included engagement in familial, household, and community affairs, maternal domestic chores, giving financial advice and support, providing cultural guidance, and performing various duties. Another study on older Iranian women who immigrated to Canada in later adulthood found that cultural identity (i.e., social class, education, religious affiliation, and immigration status) offered a valuable cloak for counteracting the negative effects of the process (Shemirani& Connor, 2006).

In addition to culturally related values and beliefs, a positive attitude toward was also found to be a significant determinant of better mental health status, at least for a few subgroups of older Chinese immigrants. Lai's (2009) study examined the predictive effect of attitudes toward aging on the mental health of aging Chinese in Canada. The results indicated that the effect of attitudes toward aging on mental health was stronger than most other predictive factors (Lai, 2009). This finding was consistent with those reported in an earlier analysis showing that negative attitudes towards aging were predictive for more depressive symptoms among older Taiwanese immigrants in Canada (Lai, 2005a). Positive attitudes toward aging were also found to reduce the likelihood of drinking among older Chinese (Lai, 2004e).

Length of residence in Canada

Some studies have found a significant relationship between the length of residence in Canada and health among immigrant seniors and older adults. Research findings generally show that longer residence in the host country is usually associated with better mental health.

An earlier study (Lai, 2000a) exploring depression in elderly Chinese immigrants found that those who had lived in Canada longer reported a higher level of depression, probably because support services for longer-term immigrants were underdeveloped. However, in another study, the same author found that a shorter length of residence predicted depression in a sample of older immigrants from Mainland China to Canada (Lai, 2004b). Similarly, the length of residence in Canada was found to be significantly associated with psychological well-being among elderly Chinese immigrants; those who had lived in Canada longer reported better psychological well-being (Chow, 2010).

Similarly for aging South Asian immigrants, those who had resided in Canada for a shorter period reported a higher prevalence of two depressive symptoms: "not in good spirits most of the time" and "not feeling happy most of the time." However, the length of

residence in Canada did not have significant effect on other depressive symptoms in this study (Lai &Surood, 2008a).

Length of residence also affects the use of Western health services. For aging South Asian immigrants, those who had lived in Canada longer reported using more Western health services (Surood& Lai, 2010). The authors posited that this was probably because those who had been in Canada longer had more knowledge of and receptiveness toward the Western health care system, particularly in the use of preventive health services in primary care. Another potential reason is the "healthy immigrant effect." Upon arrival in Canada, immigrants are relatively healthy, but their health status deteriorates over time, due to the adoption of a less healthy lifestyle in diet, lack of exercise, or stresses such as discrimination. As a result, the longer they live in the host country, the more their health needs related to service use increase (Surood& Lai, 2010).

Social support

An extensive body of research has shown that social support is an important predictor of good physical and mental health. In general, research findings on immigrant seniors in Canada indicate that social support is associated with better health.

For example, in a study using regression analysis, social support was found to be a strong predictor of life satisfaction among Chinese elderly immigrants (Gee, 2000; Lai & McDonald, 1995) and lower social support increased the risk for depressive symptoms of elderly Chinese (Lai, 2004a). Lai (2003) also found that older Chinese Canadians who reported low levels of perceived satisfaction with family care were likely to experience higher levels of depression.

In another Canadian study, Kuo and Guan (2006) also reported that older Chinese Canadians' rating of the quality of their relationships with adult children was a significant predictor of depression. Chappell (2003) indicated in a comparative study on aging in Shanghai and Canada that the more social support one had, the more likely one was to report high life satisfaction.

Some research has identified negative correlations between extra-familial support (*e.g.* community or seniors' services) and depression (Lai, 2004b). Family conflicts among elderly immigrants and the younger generation increases the stress for seniors. In particular, conflicts with a daughter-in-law are the most frequent sources of strain and stress for elderly people (Choudhry, 2001). These studies suggest that the buffering effect of social support on aging immigrants should be understood within the context of the

cultural values of various immigrant and ethno-cultural communities (Kuo, Chong, & Joseph, 2008).

Life transitions and coping strategies

Little research is available to indicate a consistent pattern of the effect of life transitions and coping strategies on the health status of immigrant seniors in Canada. Only a few studies have examined interactions among stressful life events, coping strategies, and health. Findings have shown that sudden changes or life transitions are related to less favourable health and well-being outcomes, but a stronger coping capacity serves to reduce depression.

For example, Kuo and Guan (2006) studied how older Chinese Canadians would cope with a hypothetical life scenario. The study found that effective coping strategies were significantly correlated with lower depression scores. A study by Mackinnon, Giuen& Durst (2001) examined Chinese immigrant seniors' perceptions of how the care-receiving situation affected their health and adjustment to Canada. Their findings indicated that a sudden transition from living an independent life to becoming a care-receiver might affect the health outcomes of the seniors. For these Chinese-born immigrant seniors, being the ones to be taken care of by their family members was often followed by unexpected and sudden illnesses, threatening their security and independence.

Service barriers

In general, existing research findings, thought scant, point to the fact that older immigrants who report more service barriers tend to report lower levels of physical and mental health. Using regression analyses, three separate studies have found that the perception of service barriers to health and social services was a significant predictor of depression in Chinese older adults in Canada (Kuo& Guan, 2006; Lai, 2004b, 2005a). The findings in Lai and Chau's (2007) study on health service barriers affecting older Chinese also confirmed that service barriers were significant predictors of physical and mental health problems for immigrants.

Physical environments

There is little research on the effect of physical environments on the health of immigrants and culturally diverse seniors in Canada, but Canada's harsh climate did present challenges to physical activities for some immigrant seniors. For instance, one study has identified climate as an important correlate of health. An ethnographic qualitative study,

using fieldwork, participant observation, and individual, on male Punjabi Sikh seniors in British Columbia examined how masculinity (as it intersects with culture, social class and age) informed and influenced men's physical activity. The findings indicated that age-induced musculoskeletal impairment and the cold, wet Canadian climate were the main restrictors of men's physical activity (Oliffe *et al*., 2009).

Discussion

Based on the social determinants of health identified from the research findings reviewed, it appears that there are three types of factors that protect the health of senior and older adults immigrants. The first type is related to innate personally characteristics. These characteristics are those possessed by an individual throughout different stages of life for an extended period of time. They include: younger age, being a man, having a stronger ethnicity and religious belief, having a lower level of identification with traditional cultural values and beliefs, and having the kind of personality or temperament that makes it easier to cope with life stresses and transitions.

The second type of protective factors is related to personally acquired characteristics or resources. These protective factors are usually related to both tangible and intangible resources that one can achieve through socio-economic status and social roles. These include being married, having a better financial status, living with someone, knowing the official language of the host country, residing for a longer period of time in the host country, and having stronger social supports.

The third type of protective factors is related to circumstantial and structural advantages that one can enjoy. These include a lack of service barriers and having a more accessible physical environment.

As indicated above, research findings on specific protective factors of health of immigrant seniors and older adults are relatively scant. For most of the social determinants identified, empirical support was available from only a few research studies. Quite a number of social determinants identified from these studies on culturally diverse immigrant seniors and older adults are similar to those found in research on general Canadian seniors. These determinants including age, gender, education, marital status, living alone, and social support, and their effects on health are similar for both immigrant seniors and general Canadian seniors.

Determinants unique to immigrant seniors and older adults are those related closely to their immigrant status and ethno-cultural background. These determinants include length of residence, language, ethnicity and religion, values and beliefs, service barriers, and physical environments. The research studies reviewed suggest that determinants related

to cultural values, beliefs, and service barriers are logical and important ones to be addressed when dealing with health issues of immigrant seniors.

It is difficult to compare and determine which determinants have the strongest impacts. The methodological variation across different studies makes such comparison infeasible. Some of the studies conducted presented only descriptive data, while some had made use of more robust statistical techniques such as multiple regression and logistic regression analysis. Moreover, the research reviewed consists of both quantitative and qualitative studies, making any comparison of the importance of the social determinants even more challenging.

However, immigrants themselves may subjectively consider service barriers and language issues as challenges that affect their health. The actual effect of these determinants has to be verified in the context of comparisons with other social determinants. To date, no comprehensive study is available that examines the simultaneous effects of various social determinants on health of all immigrant seniors using a national data set. The study by Lai *et al*. (2007), which used a representative sample of older Chinese in seven Canadian cities, probably comes closest to providing a comprehensive understanding of the effects of some social determinants of health of selected dependent health measures.

In the study, the researchers examined the effects of various cultural variables on several dependent health measures, using multiple regression analysis. Although all the culture-related variables, such as Chinese health beliefs, Chinese cultural values, country of origin, religion, and length of residence were significant in predicting some of the health measures, the standardized coefficients reported were quite low, ranging only from 0.05 to 0.16. Financial status was the only social determinant that significantly predicted all five dependent health measures in a consistent direction in the study. With its standardized coefficients ranging from 0.06 to 0.19, financial status was also the one determinant with the strongest effect on four of the five dependent health measures (Lai *et al*., 2007).

Similarly, in the study examining depressive symptoms among Chinese immigrant seniors (Lai, 2004a), financial status remained the strongest predictor for depression. The parameter estimate of -0.62 in the logistic regression conducted was the highest among all the seven significant predictors, meaning that this is the determinant with the strongest effect on rates of depression. Other than financial status, Chinese cultural value and cultural barriers were also significant predictors of health status; with the estimates of Chinese cultural value (0.32) being much stronger than social support (-0.11) and a number of chronic illnesses (0.15).

Cultural values also turned out to be the most significant predictor of depression in the study on aging South Asian immigrants (Lai &Surood, 2008b). In this study, a parameter estimate of 1.07 was reported for cultural values in the logistic regression analysis conducted. This finding made it become the most important social determinant (other than self-perceived health) of depression for the older South Asian immigrants.

Another social determinant of health was attitude toward aging. Using the data from the study on older Chinese in Canada by Lai *et al*. (2007), Lai (2009) further analyzed the effect of attitudes towards aging on general mental health status for the 2,272 older Chinese in Canada, using the Mental Summary Component of the Medical Outcome Study SF-36 as the dependent measure. Among the four significant predictors identified, attitude towards aging was the most influential predictor, with a standardized coefficient of 0.23, the highest of all.

Although researchers may argue that service barriers are very important in affecting the health outcomes of immigrants, the effects of service barriers as social determinants of general physical and mental health were not as strong as expected. In the study that examined the effects of service barriers on the health of older Chinese immigrants (Lai &Chau, 2007), the standardized coefficients reported for the service barrier variables were significant in predicting the dependent health measures. However, financial status remained the strongest predictor, with the highest standardized coefficient among all other predictors of physical health and mental health.

Based on these research findings, a general pattern emerged, at least for older Chinese and South Asian immigrants. While variables related to cultural values and beliefs consistently stood out as significant predictors of health, and the effect of service barriers on health were also significant, financial status was actually the single strongest social determinant reported in all studies.

Finally, as mentioned earlier, although the length of residence was found to be significant in predicting two dependent health measures reported by older Chinese in Canada (Lai *et al*., 2007), this social determinant was rarely reported. Language (proficiency in English) was also tested in the same study as well as in the study on depression of older South Asian immigrants (Lai &Surood, 2008b) and was not a significant social determinant in either study.

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The health status and health behaviours of immigrant and non-immigrant seniors

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List of tables and figures:

[7] "The opinions expressed by the authors do not necessarily represent the opinions of the Public Health Agency of Canada".

Introduction

This paper is part of a larger study that developed a national portrait of the health of immigrant seniors (65 and over), as compared with non-immigrant seniors in Canada. The study uses Statistics Canada's 2008–2009 Canadian Community Health Survey (CCHS) – Healthy Aging. The full study, which includes both descriptive analysis and modelling of the predictors of good health, is a part of a larger research initiative supported by the Public Health Agency of Canada intended to fill some of the knowledge gaps relating to the health of immigrant seniors.

Immigrants comprise 30% of the Canadian population of adults aged 65 and over . While a body of research describes the contributors of good health for seniors, including a model of drivers of good health (Ramage-Morin *et al*., 2010), only a few small-scale studies examine the health status of selected immigrant seniors (Lai, 2011).

This paper reports on the research findings relating to general health and life satisfaction, health behaviours, chronic conditions, and mental health of immigrants aged 65 and over.

Methodology

The 2008–2009 *Canadian Community Health Survey – Healthy Aging* is a cross-sectional survey designed to collect new information about the factors, influences, and processes that contribute to healthy (Statistics Canada, 2010a). The survey sampled people aged 45 and older living in private dwellings in the ten provinces; it excluded full-time members of the Canadian Forces, those living in institutions, those living on Crown lands or reserves, residents of the three territories, and those in some remote regions (Statistics Canada, 2010a).

The *CCHS–Healthy Aging* survey focuses specifically on healthy aging, and thus it is a rich source of information that can be used to expand knowledge gleaned from the small single-ethnic-group studies (Statistics Canada, 2010a). This study is one of the few Canada-wide portraits of how immigrant and non-immigrant seniors' health differs.

In this study, the data were weighted using the sample weights provided by Statistics Canada, so that the estimates are representative of the Canadian population. All statistical analyses were conducted using SPSS 15 for Windows and with Microsoft Excel 2003 for Windows. The bootstrap method was used to estimate variances and calculate confidence intervals, in order to account for the effects of the survey's multi-stage clustered sample design (Statistics Canada, 2010a). Differences between groups were considered to be statistically significant when their 95% confidence intervals did not overlap. The sample examined in this paper consists of 9,010 seniors, of whom 2,463 are immigrants.

Immigrant status was defined as respondents who were not born as a Canadian citizen and provided the year in which they first came to Canada. Non-immigrants were defined as someone who was born a Canadian citizen, whether or not they were born in Canada.

Findings

General health

Research has shown that self-rated health (SRH) is a reliable predictor of mortality, even after health risk factors have been taken into account (Idler &Benyamini, 1997). It integrates health status in multiple health-related domains and has independent effects on mortality, morbidity, functional ability, health care utilization and hospitalization, and recovery from illness (Benyamini *et al*., 2004). Individuals use different factors to rate health compared to physicians, yet there is high concordance between physicians' rating of patients' health and the patients' self-rating (Benyamini *et al*., 2004).

Most Canadian seniors, whether immigrant or not, rate their health positively, although this rating declines with age. For both immigrants and non-immigrants, seniors aged 65–74 were more likely than seniors aged 75–84 to feel they had good, very good, or excellent SRH. Younger seniors were also significantly more likely than those 85 and older to perceive their health as good or better ($p<0.05$). For the oldest age group, fewer immigrants reported good or better self-perceived general health compared with non-immigrants ($p<0.05$).

For the youngest age group, the percentages with good or better SRH for immigrant seniors and non-immigrant seniors were similar. Among those aged 75–84 years, 70% of immigrant seniors and 75% of non-immigrant seniors rated their health positively. Among those 85 and older, only 60% of immigrant seniors, compared to 70% of non-immigrant seniors, rated their health positively.

In 1976, with the introduction of a new *Immigration Act*, Canadian immigration patterns shifted. Before 1976, three-quarters of today's immigrant seniors who arrived in Canada came from Europe (including eastern and southern Europe), and another 10% came from Asia (including all countries from the Middle East to Southeast Asia). Of those who immigrated after 1976, and were 65 and over at the time of the survey, only 23% came from Europe, 63% came from Asia, and 9% came from Central and South America and the Caribbean.

Table 8 shows the proportion of seniors who reported very positive SRH ("very good" or "excellent"), by their region of origin and by time of immigration, that is, before or after the passage of the 1976 *Immigration Act*. The proportion of immigrants in this group who came from Europe before 1976 and after 1976 differ significantly ($p<0.05$); similarly for immigrants from Asia. In addition, the differences in proportion reporting very positive general health were also significant, for immigrants from Europe and from Asia ($p<0.05$).

Table 8: Comparison of pre-1976 and post-1976 immigrants' reporting positive general health (percent)

Region of origin	Pre-1976 Proportion of immigrants	Pre-1976 Proportion with very positive general health	Post-1976 Proportion of immigrants	Post-1976 Proportion with very positive general health
Europe	75	76	22	32 [E]
Asia	13	12	64	52
Latin America	5	5 [E]	9 [E]	9 [E]
Other North America, Africa and Oceania	8	9	7 [E]	8 [E]

E A high sampling variability is associated with these estimates

Health behaviours and health improvements

Good health behaviours are associated with long-term positive health outcomes, and with healthy aging (Khaw *et al*., 2008). These health-promoting factors are modifiable behaviours, and research has indicated that improvements can have positive impacts, even after many years of less-healthy behaviours, regardless of how old a person is. As a result, fruit and vegetable consumption, physical activity, not smoking, and moderate alcohol consumption were examined in this study, given the extensive evidence that these behaviours promote health and longevity (Khaw *et al*., 2008).

Nutrition

Fruit and vegetable consumption is a marker of good nutrition (Ramage-Morin, 2010). According to *Canada's Food Guide*, adults over the age of 50 should consume seven servings of fruits and vegetables each day (Health Canada, 2007). However, as only 11% of all seniors reported this optimal level of consumption, this analysis treats eating fruits and vegetables five or more times each day as good nutrition; this follows the precedent set by Ramage-Morin, Shields and Martel (2010), and also by Khaw *et al*. (2008).

Only 38% of seniors consumed fruits and vegetables five or more times daily. Table 9 shows that about 40% of the youngest seniors, a little more than a third of older seniors, and less than a third of the oldest seniors consumed this amount of produce daily.

Table 9: Daily consumption of fruits and vegetables five or more times daily

Age group	Quantity	Immigrant	Non-Immigrant	All seniors
65-74 years	5 or more	39%	40%	40%
	3-4	41%	35%	37%
	2 or fewer	17%	23%	21%
75-84 years	5 or more	33%	38%	36%
	3-4	42%	37%	39%
	2 or fewer	20%	22%	22%
85+ years	5 or more	30%	33%	32%
	3-4	38%	42%	41%
	2 or fewer	19%	18%	19%

Physical Activity

Regular, moderate-intensity physical activity offers many physical and mental health benefits. It reduces the risk of cardiovascular diseases, diabetes, certain cancers (colon and breast in particular), hypertension, bone and joint diseases (osteoporosis and osteoarthritis in particular), depression, anxiety, and obesity (Pate *et al*., 1995; Warburton *et al*., 2010). Physical activity not only reduces disease risk, but also mortality risk and it improves survival even in those already diagnosed with chronic conditions (Pate *et al*., 1995; Warburton *et al*., 2010). Furthermore, musculoskeletal fitness helps seniors maintain their functional independence, and prevent falls and fractures (Warburton *et al*., 2010). In addition, there is a dose-response relationship between physical activity and psychosocial well-being in adults. For older adults, physical activity is related to life satisfaction (Strine *et al*., 2008).

Nearly one-quarter of all immigrant seniors and 29% of non-immigrant seniors exercise less than twice a week, or never engage in physical activity. Table 10 shows that 22% of the youngest seniors, 30% of older seniors, and 42% of the oldest seniors do not engage in any physical activity two or more times a week.[8] Of those who are active three or more days a week, 67% of immigrant seniors and 56% of non-immigrant seniors walk. Very few seniors frequently participate in light or moderate sports (1% each) or in strength training (2%) or strenuous exercise (3%). See Appendix A for examples of each category of physical activity. In fact, a similar percentage of seniors in each age group regularly engage in non-walking physical activity, and the prevalence of those activities is quite similar for both immigrants and non-immigrants.

[8] This analysis is for participation often (5–7 days each week) or sometimes (3–4 days each week), based on the literature which recommends physical activity of 30 minutes or more for most days of the week, preferably daily (Pate *et al*., 1995).

Table 10: Physical activity engaged in 'sometimes' or 'often' (percent)

Age group	Level of activity	Immigrant	Non-Immigrant	All seniors
65-74 years	Inactive	17	24	22
	Walks	72	64	67
	Light exercise	7	8	8
	Moderate exercise	6	5	6
	Strength training	15	12	13
	Strenuous exercise	14	11	12
75-84 years	Inactive	28	31	30
	Walks	65	60	61
	Light exercise	7	5	6
	Moderate exercise	3	2	2
	Strength training	12	9	10
	Strenuous exercise	7	7	7
85+ years	Inactive	40	42	42
	Walks	47	50	49
	Light exercise	10[E]	6	7
	Moderate exercise	—	—	1
	Strength training	7[E]	8	8
	Strenuous exercise	6[E]	4	4

— Cell size too small to include in table
E A high sampling variability is associated with these estimates
Note: Columns do not add to 100%, since some respondents engage in more than one activity with this frequency

The research has identified a dose-response relationship for exercise and health, whereby if the completely sedentary become more physically active, they reap some health benefits, even if they do not meet the recommended levels of frequency or intensity (Warburton *et al*., 2010). Thus, seniors who seldom (1–2 days a week) participate in physical activity likely experience some positive health effects.

Smoking

Smoking increases the risk of several cancers, as well as cardiovascular disease. The 1982 U.S. Surgeon General's report demonstrated that quitting smoking, even after many years of smoking, improves health prospects, and after 15 years of living smoke-free, individuals' health risks are only slightly higher than those of people who have never smoked (U.S. Department of Health and Human Services, 1982).

Most seniors either never smoked, or stopped smoking more than 15 years ago (Table 11), and this proportion increases with age. The results reveal that 78% of the oldest seniors are non-smokers or quit more than 15 years before, and 62% of the youngest seniors are non-smokers or former smokers who quit more than 15 years before the survey.

Table 11: Current (or recently quit) and non-smokers (or long-time quit)

Age group	Smoking status	Immigrant	Non-Immigrant	All seniors
65-74 years	Never smoked or quit >15 years earlier	69%	60%	62%
	Current smoker or quit recently	31%	40%	38%
75-84 years	Never smoked or quit >15 years earlier	77%	71%	73%
	Current smoker or quit recently	23%	29%	27%
85+ years	Never smoked or quit >15 years earlier	77%	79%	78%
	Current smoker or quit recently	23%	21%	22%

Alcohol consumption

Table 12 shows that 66% of immigrant seniors and 72% non-immigrant seniors are regular or occasional drinkers. Among seniors aged 65–84, immigrants are less likely than non-immigrants to drink alcohol regularly ($p < 0.05$).

Table 12: Type of drinker

Age group	Frequency	Immigrant	Non-Immigrant	All seniors
65-74 years	Regular	55%	59%	58%
	Occasional	16%	19%	18%
	Never	28%	22%	24%
75-84 years	Regular	44%	49%	47%
	Occasional	17%	19%	19%
	Never	39%	32%	34%
85+ years	Regular	35%	37%	36%
	Occasional	15%	19%	18%
	Never	50%	44%	46%

Overall, alcohol consumption declines with age. More young seniors than older seniors (both immigrant and non-immigrant) consumed alcoholic drinks regularly or occasionally, and more older seniors consumed alcohol than the oldest seniors (significant for non-immigrant seniors, $p<0.05$).
However, breaking down these figures into occasional and regular drinking produced some subtle differences. While the proportion of seniors who are occasional drinkers stays stable with age, 58% of young seniors consumed alcohol regularly, and only 36% of the oldest seniors did so.

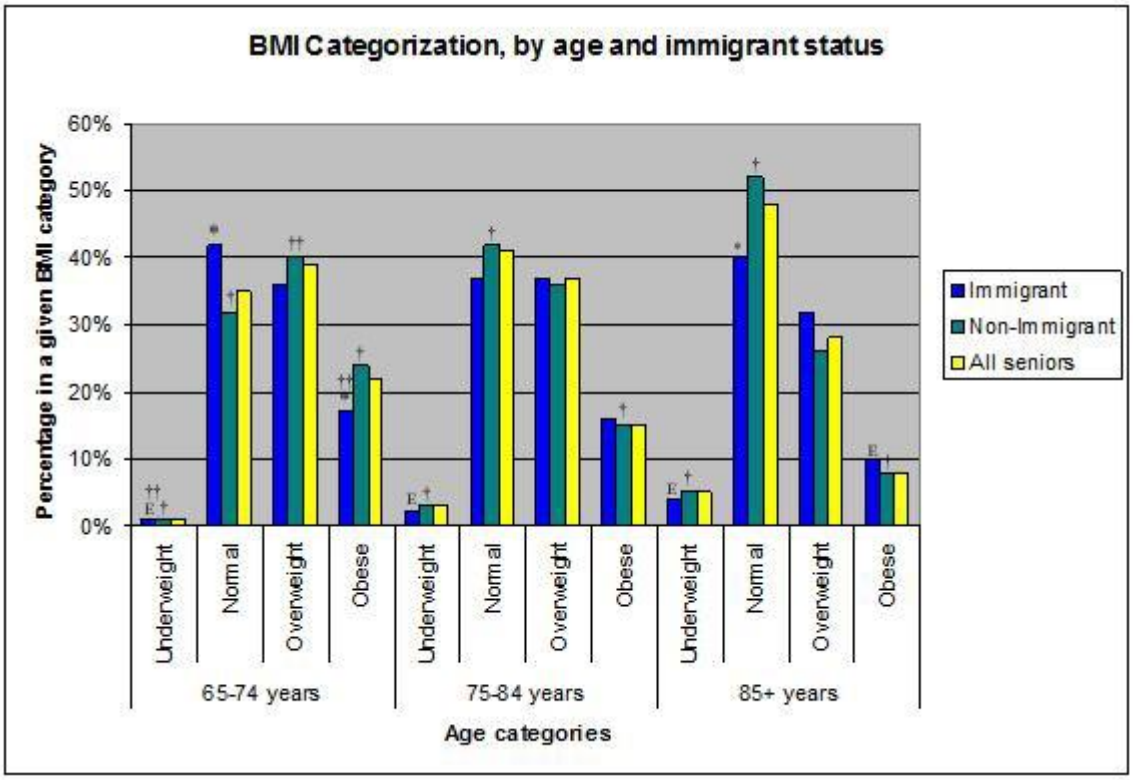
Obesity

Obesity is an important marker for increased risk of mortality and morbidity, and a risk factor for multiple chronic conditions, including type 2 diabetes, hypertension, cardiovascular disease, osteoarthritis, some cancers, psychiatric conditions, and more (CIHI and PHAC, 2011). Obesity classes II and higher, as well as underweight, are associated with increased all-cause mortality, while those who are at a normal weight or are overweight are at lower risk (CIHI and PHAC, 2011; Orpana *et al*., 2009). Physical activity and diet, as well as socio-economic status, gender and other factors, including immigrant status, are determinants of obesity (CIHI and PHAC, 2011).

More than half of all seniors (51% of immigrants and 56% of non-immigrants) are overweight or obese. Of those, most are overweight (37%), with only 16% of immigrants and 19% of non-immigrants being obese.

Figure 1 shows that significantly more young immigrant seniors compared with non-immigrant seniors are of normal weight ($p<0.05$), and significantly fewer are obese ($p<0.05$). For the oldest age group, significantly fewer of the immigrant seniors, compared with non-immigrant seniors, are of normal weight ($p<0.05$).

Figure 3: BMI Categorization by age and immigrant status



* Significantly different from estimate for non-immigrant seniors ($p<0.05$).
† Significantly different from estimate for seniors aged 75-84 years ($p<0.05$)
†† Significantly different from estimate for seniors aged 85 and over ($p<0/05$).
E A high sampling variability is associated with the estimates for underweight immigrant seniors (all ages), and for obese immigrant seniors aged 85 and over.

The BMI scale was not developed specifically for seniors; the loss of muscle mass and bone density and the increase and redistribution of fat mass common with aging can skew the categorizations, leading to the erroneous conclusion that individuals have less adipose tissue than may be the case (Vasconcelos *et al*., 2010). The BMI cut-offs can also vary as body compositions differ among ethnic and cultural groups, which can also lead to misclassifications (Vasconcelos *et al*., 2010). However, BMI is still used for seniors, since there is no accepted alternative (Public Health Agency of Canada, 2010).

Sleep

Poor sleep is associated with chronic diseases such as increased risk of diabetes, cardiovascular disease, and hypertension as well as mental disorders, health-risk behaviours, limitations to functioning, injury, and mortality (Centers for Disease Control, 2011; Knutson, 2010). While additional research is needed, difficulty falling asleep or maintaining sleep or short total sleep duration appears to be associated with increased risk of obesity, changes in the amount and type of body fat, and possible changes in the hormones that regulate appetite. There has been a population-wide shift to less sleep, coinciding with increased obesity rates (Knutson, 2010).

Some 41% of immigrant seniors and 45% of non-immigrant seniors have difficulty getting or staying asleep. The proportion of seniors who experienced no difficulty going to sleep or staying asleep stayed essentially constant through each of the age groups (see Table 13). Among those aged 65–84, 37% of immigrant seniors and 32% of non-immigrant seniors have no difficulty attaining or maintaining sleep, while 41% of the immigrant seniors and 46% of the non-immigrant seniors experience difficulties with sleep some most or all of the time.

Table 13: Difficulty attaining or maintaining sleep

Age group	Frequency	Immigrant	Non-Immigrant	All seniors
65-74 years	None of the time	36%	33%	33%
	Little of the time	18%	20%	20%
	Some, most or all of the time	42%	46%	46%
75-84 years	None of the time	39%	31%	31%
	Little of the time	16%	21%	21%
	Some, most or all of the time	40%	45%	45%
85+ years	None of the time	33%	35%	35%
	Little of the time	15%	19%	19%
	Some, most or all of the time	41%	40%	40%

With age, it is possible that fewer non-immigrant seniors experience difficulty sleeping; for immigrant seniors, the proportion of those who report difficulty sleeping stays relatively constant across all three age groups.

Attitude towards health improvement

Less than half of all seniors (46%) think that there is something they should do to improve their physical health, with 42% of immigrant seniors and 48% of non-immigrant seniors feeling this way. As seniors age, 56% of all young seniors and 20% of the oldest seniors think they should do something to improve their health.

Not surprisingly, only 33% of immigrant seniors and 37% of non-immigrant seniors did something in the previous year to improve their health. Again, 39% of young immigrant seniors (44% of young non-immigrant seniors) and only 14% of the oldest immigrant seniors (and 20% of the oldest non-immigrant seniors) are acting to improve their health.

Of those who took action to improve their health, the most common response was to exercise more (16% of all seniors), followed by improving their eating habits (7%), then losing weight (5%), and lastly receiving medical treatment (3%).

Of those who thought that there was something they should do to improve their health, only 28% of immigrant seniors and 32% of non-immigrant seniors intend to do something to improve their physical health in the following year. Again, 36% of the youngest immigrant seniors, and 42% of the youngest non-immigrant seniors have these intentions, compared with 11% of the oldest seniors (both immigrant and non-immigrant).

Oral Health

Oral health is a contributing factor to general health and health-related quality of life (Benyamini *et al*., 2004). Poor oral health can lead to pain and discomfort, which in turn can lead to problems in eating, communication, and appearance and this can impact social activity and self-esteem (Benyamini *et al*., 2004). Oral diseases are among the most common chronic diseases (Petersen *et al*., 2005; Sheiham, 2005).

Self-rated oral health, like self-rated general health, is a summary measure that integrates several scales of information and takes a holistic perspective, rather than just equating health with the absence of disease (Benyamini *et al*., 2004). Self-rated oral health contributes to self-rated general health, even after taking into account demographics, medical history, recent chronic illness or flare-up, medication usage and functional disability. It also predicts future self-rated general health (Benyamini *et al*., 2004). Further, oral health is associated with chronic diseases (Benyamini *et al*., 2004; Petersen *et al*., 2005; Sheiham, 2005).

Most Canadian seniors (89%) report that the health of their mouth is at least good; this ranges from 90% of young seniors to 88% of older seniors to 84% of the oldest seniors. Nearly 60% of young seniors and 45% of the oldest seniors report very good or excellent oral health (Table 14).

Table 14: General self-perceived oral health

Age group	Condition	Immigrant	Non-Immigrant	All seniors
65-74 years	Excellent or Very Good	52%	61%	59%
	Good	35%	30%	31%
	Fair or Poor	14%	9%	10%
75-84 years	Excellent or Very Good	44%	55%	52%
	Good	37%	35%	36%
	Fair or Poor	19%	10%	12%
85+ years	Excellent or Very Good	37%	48%	45%

	Good	42%	39%	40%
	Fair or Poor	22%	13%	16%

While 84% of immigrant seniors report good or better oral health, 90% of non-immigrants report the same. Fewer immigrant seniors than non-immigrant seniors in each age category report very good or excellent oral health ($p<0.05$). Fewer of the oldest seniors, compared to the youngest seniors, report very good or excellent oral health ($p<0.05$).

Most seniors (89%) reported that over the previous year, they rarely or never had to avoid eating particular foods, with 84% of immigrant seniors and 91% of non-immigrant seniors reporting this. Among immigrant seniors, 88% of the youngest report that they rarely or never had to avoid particular foods and 72% of the oldest report this. For non-immigrant seniors, the comparable figures were 91% for youngest and 87% for the oldest seniors.

Health care provisions

Nearly all seniors (97% of immigrants and 95% of non-immigrants) have a regular medical doctor, and 98% of seniors (immigrants and non-immigrants) have consulted with a health professional in the previous year.

Only 10% of seniors reported using complementary or alternative medicine, such as acupuncture, homeopathy, or massage therapy.[9] This response ranged from 11% of young seniors to 9% of older seniors (8% of immigrants, 9% of non-immigrants in this age group) to 5% of the oldest seniors (6% of immigrants and 4% of non-immigrants).

Age-related chronic conditions

Two-thirds of seniors have two or more age-related chronic conditions,[10] and a quarter have four or more.
Figure 4 illustrates the number of conditions across the three age categories, for immigrant and non-immigrant seniors.

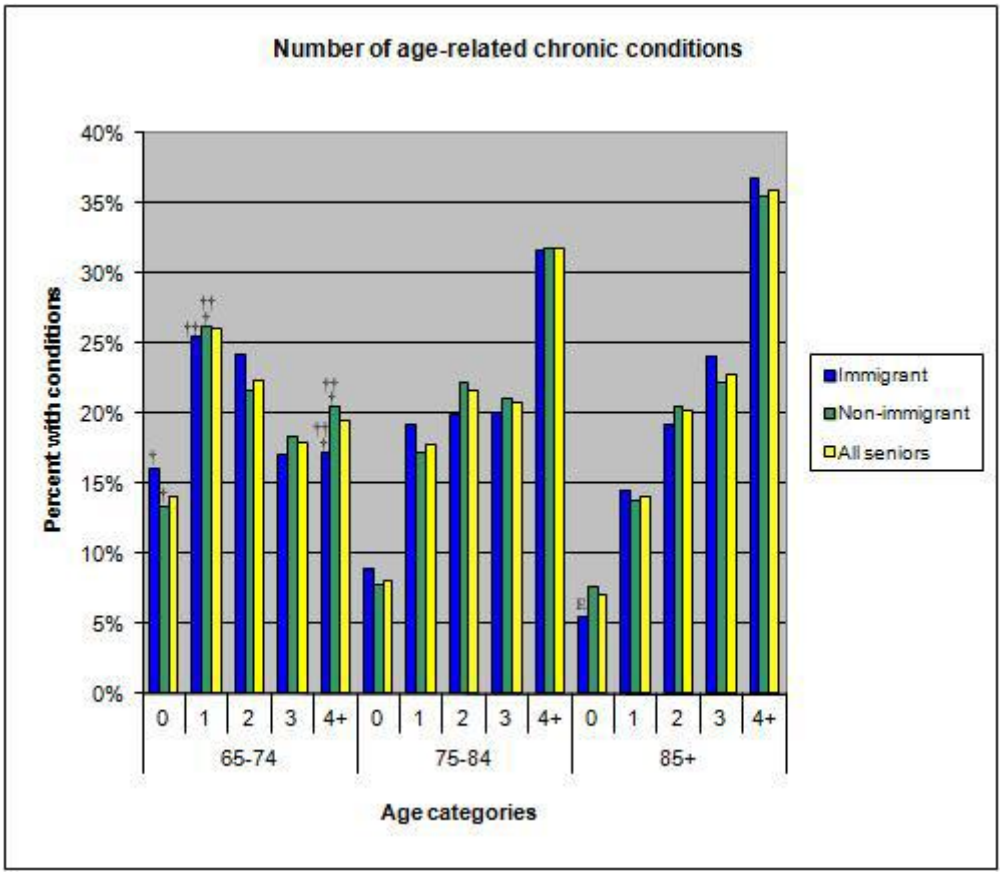
As expected, there were several age-related trends. Significantly fewer of the oldest seniors, compared to the youngest seniors, had none or only one age-related chronic disease ($p<0.05$), and this was true for both immigrant and non-immigrant seniors.

[9] The interviewer could then suggest other alternative health care providers, such as naturopaths, Feldenkrais or Alexander teachers, relaxation therapists, biofeedback teachers, rolfers, herbalists, reflexologists, spiritual healers and religious healers. [recommend keeping the original, since it reflects the structure of the questionnaire]

[10] These health professional–diagnosed conditions include Alzheimer's or other dementia, arthritis/rheumatism, back problems, bowel disorders (such as Crohn's disease, ulcerative colitis, irritable bowel syndrome and bowel incontinence), chronic obstructive pulmonary disease (including chronic bronchitis and emphysema), diabetes, eye problems (cataracts or glaucoma), heart disease (including angina and ever having had a heart attack), high blood pressure, urinary incontinence, osteoporosis, and suffering from the effects of a stroke (Ramage-Morin *et al*., 2010).

Likewise, the proportion of immigrant and non-immigrant seniors with four or more age-related chronic diseases increased from 17% and 20% of the youngest seniors to 37% and 36% of the oldest seniors ($p<0.05$).

Figure 4: Number of age-related chronic conditions



† Significantly different from estimate for seniors aged 75-84 years ($p<0.05$)
†† Significantly different from estimate for seniors aged 85 and over ($p<0/05$).
E A high sampling variability is associated with the estimate for immigrant seniors 85 years or older

As can be seen in Appendix B: Percent age-related and selected other chronic diseases that are common among the elderly, more than half of all seniors experience high blood pressure: this includes 53% of young immigrant seniors (51% of young non-immigrant seniors) and 64% of the oldest immigrant seniors (59% of the oldest non-immigrant seniors). Heart problems are experienced by 15% of young immigrant seniors (19% young non-immigrant seniors), and 31% of the oldest immigrant seniors (33% of oldest non-immigrant seniors). Nearly one-third of all seniors 85 years and over and been diagnosed with angina, heart disease, or have had a heart attack.

For non-immigrant seniors, the percentage reporting a diagnosed lung problem holds steady across all age groups at about 9–10%. For immigrant seniors, 4% of the young

seniors experience lung problems, and 10% of the oldest seniors have chronic bronchitis, emphysema, or chronic obstructive pulmonary disease.

Osteoporosis (thinning of the bones) puts seniors at risk of fractures, which in turn increases the risk of both dependency and mortality (Public Health Agency of Canada, 2010; Warburton, Nicol, &Bredin, 2006). For the two youngest age groups, 15% of immigrant and non-immigrant seniors reported a diagnosis of osteoporosis; for the oldest seniors, the prevalence is 26% of immigrant seniors and 23% of non-immigrant seniors.

While arthritis, rheumatism, cataracts, glaucoma, and urinary incontinence do not increase mortality rates, they are important for the quality of life and independence of a senior. Arthritis and rheumatism are quite common, affecting 42% of immigrant seniors and 44% of non-immigrant seniors. While only 21% of young immigrant and non-immigrant seniors have eye problems, 46% of the oldest immigrant seniors and 39% of the oldest non-immigrant seniors do. The prevalence of urinary incontinence is 8% of the youngest immigrant and non-immigrant seniors, 20% of the oldest immigrants, and 22% of the oldest non-immigrant seniors.

While only 2% of immigrant seniors and 1% of non-immigrant seniors have been diagnosed with Alzheimer's or other dementias, it is likely that the more severe cases would be institutionalized and thus not included in this sample. Further, researchers estimate that less than 25% of those who have moderate to severe dementia are diagnosed as such by their primary care physicians (Jeste *et al*., 1999).

Two important chronic diseases that are not considered age-related are diabetes and cancer. Both affect mortality rates, and quality of life. Appendix B provides the prevalence of these diseases for the three age groups.

Functional health

Many seniors living with chronic diseases remain capable of caring for themselves. However, certain chronic diseases can limit functioning, particularly if the disease is severe, if there are co-morbid conditions, and the presence of certain psychological or non-medical factors (Rozzini, 1997).

Conditions that can lead to dependency include cognitive deterioration, depression, poor hearing (Rozzini, 1997), cardiovascular disease, stroke, arthritis, diabetes, cancer, social isolation, and physical inactivity (Boult *et al*., 1994). Conditions such as stroke, Parkinson's, heart disease, poor vision, and cancer are associated with functional limitations, but sometimes not to the point of restricting self-sufficiency (Rozzini, 1997). Hypertension, cardiovascular disease, stroke, diabetes, arthritis, bone fractures, joint/back pain, some respiratory problems (*e.g.* COPD), and cancer were most commonly associated conditions (Stuck *et al*., 1999).

Risk factors associated with functional decline in longitudinal studies include depression, heavy alcohol consumption, cognitive impairment, multiple chronic conditions, a history

of falls, functional limitations, taking five or more medications, underweight or obesity, lack of physical activity, being a current and former smoker , low levels of social activity and support, poor vision, and (to a lesser extent) poor hearing (Stuck *et al*., 1999). Chronological age, poverty, and low educational attainment are also associated with functional decline.

Functional health is associated with self-rated health, and independence in the use of stairs, walking, ability to handle finances, laundry, and transportation were the most strongly associated with self-rated health (Valderrama Gama *et al*., 2000).

Most Canadian seniors (86%) have excellent or very good overall functional health, which translates to no problems or only slight problems (for example, some memory loss, the need for glasses or a hearing aid, the ability to walk distances unaided but with difficulty). However, this functioning declines with age, going from a high of 93% of young immigrant seniors to only 57% of the oldest immigrant seniors ($p<0.05$) (for non-immigrant seniors, the comparable figures are 92% of the youngest seniors to 68% of the oldest seniors, and this difference was also significant).

While for the two younger age groups, a similar percentage of immigrant and non-immigrant seniors had very good or excellent functional health, for the oldest age group, the difference (57% of immigrant seniors and 68% of non-immigrant seniors) was statistically significant.

Mental health

Mental health is important for quality of life, reaching aspirations, and social participation (GermAnn&Ardiles, 2009), and as a result is fundamental to general health (Satcher, 2000). It exists along a continuum, and differs from diagnosable mental illnesses; mental illness can co-exist with mental health, and a person can have poor mental health with no diagnosable mental illness (CMHA, 2011; Keyes, 2002).

Mental illness, including suicide, accounts for 15% of the total number of years lost to premature death and years lived in disability in developed countries; it accounts for slightly more of this disease burden than cancer and is second only to cardiovascular conditions (Satcher, 2000). Mental health and mental illness are dynamic, as the brain interacts with and responds to biological, psychological, and social factors across the life span. As a result, mental disorders can arise among the elderly due to a decline in certain mental capacities, the onset of dementia, and stressors such as declining health, or the loss of spouses, friends, and family members (Satcher, 2000).

Cognitive or mental disorders are not a part of normal aging (Satcher, 2000), yet the signs and symptoms of mental disorders are commonly misattributed, diagnosed, and underreported (Jeste *et al*., 1999). Further, with both the population and the improved treatments that result in reduced mortality of younger adults suffering from severe mental illnesses, it is anticipated that the prevalence of mental illness among seniors will increase by at least 10% by 2030 (Jeste *et al*., 1999).

The majority of Canadian seniors rate their mental health as good, very good, or excellent, with 88% of immigrant seniors and 93% of non-immigrant seniors experiencing positive mental health. Positive mental health declines with age, from 91% of young immigrant seniors to 81% of the oldest immigrant seniors (for non-immigrant seniors, the decline is from 95% of young seniors to 90% of the oldest seniors; both declines are statistically significant). For each age category, immigrant seniors report lower positive mental health than non-immigrant seniors ($p<0.05$).

One factor linked to positive mental health is self-perceived life stress. In the youngest age group, slightly more than half of seniors (54%) reported no or minimal life stress, and the results for immigrants and non-immigrants were similar. However, for the oldest age group, 57% of immigrant seniors and 66% of non-immigrant seniors reported little or no life stress. Among the seniors who were quite or extremely stressed, the figures ranged from 12% of the youngest seniors (with similar percentages for immigrant and non-immigrant populations) to 15% of the oldest immigrant seniors and 8% of the oldest non-immigrant seniors.

A sense of belonging is a basic human need, and a key factor linking relationships to mental health. It involves a feeling that one is part of one's environment, and is valued or needed by other people or groups, and fits in with them. While there are numerous theories describing the importance of this concept, there is little high-quality empirical research (Hagerty *et al*., 1996).

Many seniors felt a sense of belonging to their local community, with 66% of the youngest immigrant seniors and 70% of the youngest non-immigrant seniors feeling a sense of belonging, and 53% of the oldest immigrant seniors, 66% of the oldest non-immigrant seniors feeling the same.

The above analysis reports on findings relating to mental health in general. As discussed at the beginning of the section, mental health is different from a diagnosed mental illness. Diagnosed mental disorders are not common among seniors, possibly due to the reasons discussed above. Among immigrant seniors, the proportion with an anxiety or mood disorder remains around 8% for all age categories. For non-immigrant seniors, the proportion is 9% of the youngest seniors, and 5% of the oldest seniors.

Life satisfaction

Life satisfaction is a self-evaluation of one's life (Strine *et al*., 2008). As with self-perceived general or mental health, the construct incorporates multiple domains, and emphasizes mental health, while self-perceived health emphasizes physical functioning (Smith, Avis &Assmann, 1999). Life satisfaction is a predictor for psychiatric diagnoses, all-cause disease injury and mortality. However, it may be mediated by cultural and social factors (Strine *et al*., 2008). Life dissatisfaction is related to obesity and health-related behaviours such as smoking, heavy drinking, and physical inactivity. It is also

associated with chronic conditions such as asthma, arthritis, diabetes, and heart disease (Strine *et al*., 2008).

Most seniors are satisfied with their lives. Among the two older age groups, non-immigrant seniors were more satisfied with their lives; for example, 84% of the oldest non-immigrant seniors were satisfied, compared with 73% of the oldest immigrant seniors. However, life satisfaction declines over time for immigrant seniors; while 84% of young immigrant seniors were satisfied with their lives, only 73% of the oldest were satisfied with their lives ($p<0.05$). Among non-immigrant seniors, there were no significant age trends. While 25% of all non-immigrant seniors reported being extremely satisfied with their lives, only 19% of immigrant seniors felt the same way.

Discussion

Most seniors are generally healthy, satisfied with their lives, rate their physical and mental health positively, and function well. They have some good health behaviours, although there is room for improvement, such eating more fruits and vegetables or losing weight. However, most seniors do not think they need to improve their health behaviours, and so most are not taking any such action. They have some age-related chronic conditions, but most of those who reside in the community do not have functional or quality of life impairments, nor dependency.

Immigrant seniors report poorer health status than non-immigrant seniors, despite having better health behaviours, fewer chronic conditions, and more functional impairments. Because of this poorer health status, immigrant seniors reported less positive mental health, less good oral health, and more stress and a larger proportion of them reported having high blood pressure, cataracts, or glaucoma. They also reported having less of a sense of community belonging and less satisfaction with their lives. The data also showed that they consume fewer fruits and vegetables.

At the same time, immigrant seniors get more exercise, smoke less, drink less regularly, are less likely to be obese, have fewer chronic conditions, and have fewer difficulties attaining or maintaining sleep.

These findings offer several opportunities for further research. A key starting point would be to survey both institutionalized and community-dwelling seniors, to see whether older immigrant seniors are in fact in poorer health compared with their non-immigrant peers, or whether certain cultural factors result in immigrant seniors remaining in the community longer and in poorer health, or whether a combination of these factors contribute to the observed results.

Another area for investigation could focus on several health indicators (*e.g.* general health, fruit and vegetable consumption, overall functional health, positive emotional health) for which young immigrant and non-immigrant seniors report quite similar results, while the older age groupings differ. Such a study could explore whether changing health practices earlier in life, assimilation, differences in countries of origin,

insufficient time for certain health consequences to present, or other explanations account for these differences.

This analysis categorized respondents by age group. Future research could categorize respondents by gender, region of origin, length of stay in Canada, or compare those who arrived before and those who arrived after the 1976 changes to Canada's immigration policies. Earlier immigrants have different health profiles compared with those who arrived after 1976.

The limitations of this research include the under-reporting of some factors related to dependency and functional health, since those with the poorest health are more likely to be institutionalized (7% of seniors; Ramage-Morin *et al*., 2010). This survey is also cross-sectional and thus does not establish causality. Chronic conditions were self-reported, and have not been verified with an external source.

While this has been a first examination of health issues regarding immigrant and non-immigrant seniors in Canada, there is still much to be learnt from this data, as outlined above.

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Appendix A: Physical Activity Intensity

Table 1: Examples of physical activities, by intensity of effort required*

Light	Moderate	Strength and endurance	Strenuous
"Can easily have a conversation while engaged in the activity"	"A small increase in breathing while eng in the activity"		"Having a conversation is very difficult"
Archery, rifle shooting Badminton Billiards, darts, table tennis Boating, Bocci, bowling Catch, Frisbee Golf (with power cart) Fishing Shuffleboard, croquet Yoga, stretching	Barn chores Dancing (ballroom, ballet, disco) Fencing Football Golf (without cart) Horseback riding Hunting Pilates, tai chi Scuba diving, snorkelling Skating (ice, roller) Sledding, snowmobiling Softball, baseball, cricket Surfing, snowboarding Tennis (doubles) Trampoline Volleyball	Callisthenics Physical therapy with weights Push-ups Sit-ups Weight lifting, hand weights	Aerobic dance, water aerobics Backpacking, hiking Basketball Bicycling, exercise bike Board sailing Handball, paddleball, squash, racquetball, tennis (singles) Hockey (ice, field), lacrosse Jogging Mountain climbing, running Rope skipping Rowing, canoeing (competition), rowing machine Skiing (cross country, downhill, water), snowshoeing Soccer Stair climbing Swimming (laps)

* Walking (light), gardening (moderate), lawn care (moderate), and housework and maintenance (light-moderate) are recorded separately.
Source: CCHS-Healthy Questionnaire, 2010

Appendix B: Percent age-related and selected other chronic diseases that are common among the elderly

Variable	Seniors (65 and over)			65-74 years		75-84 years		85 and older	
	All	Immigrant	Non-Immigrant	Immigrant	Non-Immigrant	Immigrant	Non-Immigrant	Immigrant	Non-Immigrant
Alzheimer's or other dementia	1.5	2	1	—	—	3 E	2 E	6 E	4 E
Arthritis/ rheumatism	44	42	44	37	41	48	48	51	51
Bowel disorders	6	5	7	4 E	7	5	7	7 E	8
Diabetes	17	18	17	18	17	20	17	16	12
Eye problems	28	29	28	21	21	37	34	46	39
Heart problems	22	20	23	15	19	24	28	31	33
High blood pressure	56	57	56	53	51	61	62	64	59
Lung problems	9	6	10	4	10	8 E	10	10 E	9
Osteoporosis	18	18	18	15	15	21	21	26	23
Suffering from the effects of a stroke	4	4	4	3 E	3	6	6	7 E	6
Urinary incontinence	12	11	12	8	8	13	15	20	22
Has, or have had, cancer	19	14	21	13	18	15	23	18	24

— Cell size too small to include in table

E A high sampling variability is associated with these estimates

CERIS - The Ontario Metropolis Centre

CERIS - The Ontario Metropolis Centre is one of five Canadian Metropolis centres dedicated to ensuring that scientific expertise contributes to the improvement of migration and diversity policy.

CERIS - The Ontario Metropolis Centre is a collaboration of Ryerson University, York University, and the University of Toronto, as well as the Ontario Council of Agencies Serving Immigrants, the United Way of Greater Toronto, and the Community Social Planning Council of Toronto.

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• Focus academic research on critical policy issues and policy options;

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