LONG-TERM DEMOGRAPHIC FORECASTS AND IMPLICATIONS FOR HEALTH CARE RESOURCES AND REPURPOSING

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Abstract

We examine long-term demographic forecasts to determine whether increases in the senior population will be followed by a decrease once the baby-boom generation passes. Planners may therefore need to flexibly assign resources to allow for future repurposing of investments. Forecasts in the U.S. and Canada indicate that the number of seniors in the population will plateau by the year 2045 with levels roughly maintained until at least 2060; thus, repurposing may be unnecessary. Increases in life-expectancy, immigration age structures, and echoes of the baby-boom generation in later years are expected to help maintain this plateau. While there is no observable decrease in the senior population by 2060, there is uncertainty around the expected rate of decline in health of this generation. Depending on this trajectory, community-level social supports could play a large role in maintaining senior health and independence as long as possible.

JEL Classification: J11

Keywords: demographics; seniors; social supports; health; human resources

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Note: The views expressed in this paper do not necessarily represent the views of the Ontario Ministry of Health and Long-Term Care and should not be construed as representing an official position

Introduction:

There have been many forecasts analyzing the potential impact of the aging Western baby-boom generation[1] on social services, health care budgets, and overall public finance. While the baby-boom generation began to turn 65 in 2011, the real effects on social and health care services are generally not expected to begin until this generation begins to turn age 75 in 2021. At this age, the gradient of dependency on social services and illness-associated-with-aging increases dramatically.[2,3]

On the one hand, there are those who have pointed to the reduced disability rates amongst this new generation of seniors in comparison to others, suggesting that this rise may not be as steep as with previous generations.[4,5] Alongside this reduction, some have suggested that productivity gains and increased tax revenue from older workers—no longer forced to retire at age 65—will offset the fiscal burden placed on governments.[6] An alternative scenario, proposed by some in the past, indicates that the social, health, and financial burdens of the aging baby-boomers will be great, with nearly a third of gross domestic product (GDP) dedicated to health care by 2030.[7] Additionally, the number of long-term care residents will more than triple by 2040.[8] Lastly, there is a real question of whether old-age pension and benefit programs will remain solvent, given

the growing number of individuals expected to rely on these funds.[9]

More than 20 years after some of these forecasts were made, the near future remains unclear; however, few have forecasted what may happen on the other side of the demographic curve when the baby-boom generation begins to die off. Given that the mid-point in the second decade of the 21st century has been crossed, it is important to examine what may occur particularly given that many in the 1990s were making forecasts 35 years into the future at that time. This paper examines long-term demographic data from the U.S. and Canada to determine the age-mix of the population in these two Western countries by 2060, at which time a large percentage of the baby-boom generation is expected to have passed away. It is natural to expect that there will be a reduction in the number of elderly vis-à-vis younger generations at that time given the large number of baby-boomers dying with fertility rates expected to remain at just below replacement (i.e., two children per family). Consequently, there could be excess capacity in goods and services that the baby-boom generation utilized during their senior years which may require repurposing. And unlike the famous novel that inspired the title of this paper, it is shown that the future trends in these two countries are likely to be marked by similarities rather than contrasts.[10]

Given that seniors are likely to live alone and increasingly without the support of family and friends, they are often highly dependent on various community level social supports such as meals-on-wheels, homecare agencies, faith-based organizations, and even healthcare providers. The risk to health from social isolation amongst seniors is also of concern; therefore, seniors may be the group most able to benefit from the presence of increased community-level social supports.[11,12] According to the 2006 Canadian Census, over 26% of households – one-third of them seniors – contained an individual living alone. Further, lone-person households increased by approximately 25% in Canada from 1996 to 2006—a growing trend that is likely to continue as the baby-boom generation ages further.[13] Thus, depending on the results of this examination of demographic data, increasing the availability of some goods and services might be necessary. In particular, those goods and services that are generally targeted at seniors may require increased funding over the next few years; but perhaps this could be done in a flexible way that also anticipates a day when these investments may need to be repurposed to serve other uses. This paper investigates whether this is a major concern that needs to be incorporated into present-day planning.

Data and Methods:

Demographic data and forecasts were obtained from both Statistics Canada and the U.S. Census Bureau.[14-16] Forecasts to 2060 were obtained for both countries with the Canadian forecasts providing annual data while the U.S. forecasts providing estimates every five years. Analysis assumed that change occurred in equal increments in the interim years between forecasted points in the U.S. data in order to obtain a comparable data series to the Canadian data. For both countries, the data for each country were split into four different age groups: 20-64,[17] 65+, 75+, and 85+. Then, percentages of the total forecasted population falling into the various senior age-groupings were calculated and graphed over time until 2060—the last year for which both countries had produced forecasts. To examine the changing balance between older and younger generations and associated increase in societal financial burdens, a second set of calculations were performed. These produced an old-age dependency ratio of the population for each of these senior age-groups by dividing the population in each of these age-groups by the population age 20 to 64.

Data were also obtained regarding current life expectancy at birth and forecasted life expectancy at birth to 2062/63 for Canada and to 2060 for the U.S., as well as forecasts on immigration and fertility rates for both countries.[18] All of these factors may be mediators of demographic shifts with regard

to the baby-boom generation; therefore, an examination of these data may help to explain the trends observed. All calculations and graphs were produced using Microsoft Excel 2010.

Results:

The percentage of seniors, those aged 65+, is expected to grow from 16.3% in 2016 to 25.4% by 2060 in Canada and from 15.3% in 2016 to 23.6% by 2060 in the U.S. (Exhibit 1). The corresponding figures for those over age 75 are from 7.0% in 2016 to 14.4% by 2060 in Canada and from 6.4% in 2016 to 12.6% in the United States. With regard to those aged 85+, the corresponding percentages are from 2.2% in 2016 to 5.7% by 2060 in Canada and from 2.0% in 2016 to 4.8% by 2060 in the United States. It should be noted that the percentage of seniors increases and plateaus shortly after 2040. The plateauing effect occurs later for the older cohorts, but decreases were not observed during the examined forecasted years. Furthermore, the trends suggest that Canada is forecasted to have a higher percentage of seniors than the U.S. in each age category with the difference narrowing in later years owing to resurgence in the rate of growth in the U.S. senior population leading up to 2060.

Insert Exhibit 1 here

With regard to the old-age dependency ratios, the ratio of age 65+ to age 20-64 increased from 0.26 in 2016 to 0.47 by 2060 in Canada and from 0.25 in 2016 to 0.42 by 2060 in the United States. Regarding the dependency ratio of age 75+ to age 20-64, the estimate increased from 0.11 in 2016 to 0.27 by 2060 in Canada and from 0.10 in 2016 to 0.22 by 2060 in the United States. Lastly, with regard to the oldest cohort of seniors, the ratio of age 85+ to age 20-64 increased from 0.04 in 2016 to 0.11 by 2060 in Canada and from 0.03 in 2016 to 0.08 by 2060 in the United States. Closely resembling the results on the percentages of population in each of the three senior age-groups (Exhibit 1), these results plateau beginning after 2040 with the Canadian data showing a higher dependency ratio than for the U.S. with the magnitude of difference growing and then narrowing somewhat by 2060 (Exhibit 2).

Insert Exhibit 2 here

With regard to life expectancy at birth, Canadian males are currently presumed to live 80.7 years, a figure which is expected to increase by 6.9 years to 87.6 years by 2062/63.[18] Canadian females are currently expected to live 84.5 years increasing to 89.2 years by 2062/63.[18] There is also some indication that a substantial portion of this increase in life expectancy in Canada is due to a decreasing probability of death at any particular age.[18] In the U.S., life expectancy at birth

for males is currently 77.1 years increasing to 84.0 years by 2060.[19] For American females, life expectancy at birth is currently 81.7 increasing to 87.1 by 2060.[19]

Insert Exhibit 3 here.

For both countries, fertility rates are both expected to stay relatively stable or slightly decline for most ethnic groups up to 2060, with the exception of modest increases in fertility rates up until 2030 from individuals who originated from Asian countries.[18,21] With regard to immigration, the patterns diverge slightly between countries with the age structure of Canadian immigration serving to lower the average age of the population while the age structure of American immigration serves to increase the average age of the population over time.

Thus, immigration in the U.S. helps to maintain or increase the percentage of seniors over time while immigration in Canada serves to contain growth in this percentage by 2060.[20,21] In 2014, 13.2% of seniors in the U.S. were foreign born which is projected to increase to 25.8% by 2060.[21] In Canada, the inclusion of immigrants in the population forecasts suggest that 27.2% of the population will be age 65+ by 2056 which, in the absence of immigrants, would have been higher--32.5%.[20]

Discussion:

Contrary to some expectations, there is no indication that there will be a decline in the percentage of the population age 65+ in Canada or the U.S. once the baby-boom generation has largely died off by 2060. This could be due to the mixing of the baby-boom with its echo generation amongst the senior population in later years or perhaps due to increases in life expectancy-- six to seven years by approximately 2060. The critical salient point is that, although each cohort enters the ranks of seniors concurrently at age 65, they do not exit simultaneously. Further, as individuals transverse their senior years, there may be some lengthening of this period, owing to increases in life expectancy over the next 45 years in both countries. It is plausible, that two generations will increasingly co-exist amongst the senior population in future years. Nevertheless, demographic trends may eventually produce a decrease in the percentages of seniors in the population in both countries; however, there is no evidence of this in the available data. Further, there may be important differences across regions in each country regarding demographic trends owing to migration of young people toward urban centres; however, this has slowed recently owing to the recent economic downturn lowering the rate of job growth coupled with skyrocketing real estate prices in urban areas.[22]

The old-age dependency ratios (Exhibit 2) closely emulate the patterns in Exhibit 1, indicating that changes in the percentages of seniors in the three age-groups in Exhibit 1 are driving these ratios upward. With persistently low fertility rates in both countries, the size of the younger cohorts is likely to remain stable or slightly decline in the future. Further, the difference in immigration age-structures between the two countries—with the U.S. welcoming greater percentages of older immigrants than Canada—could help explain the narrowing in the percentage of seniors between the two countries by 2060 (Exhibit 1).

Despite this narrowing, Canada will have a higher percentage of seniors than in the U.S. with the dependency ratios also remaining higher (Exhibit 1 and 2). While the countries may have slightly different forecasting methods, there are some other reasons that might account for the differences observed. Despite similar fertility rates across both countries during the two decades following the end of World War II, Canadian population growth has been supplemented by decades of heavier immigration from the developing world than in the United States. During FY 2014, the U.S. had overall population growth of 0.79% of which 0.32% was attributed to legal immigration.[23,24] In Canada, the most recent statistics from 2012 suggest the overall population is growing at an annual rate of 1.2%, with

nearly two-thirds of this growth (0.74%) due to immigration.[25] These rates have remained relatively constant over the last two decades producing population pyramids that will increase the ranks of seniors in Canada by a greater percentage than in the United States. In particular, there is currently a significantly higher percentage of residents between the ages of 45 to 60 in Canada than in the United States.[26]

There is also some skepticism with the American data that the U.S. Census Bureau may have underestimated increases in future life expectancy at birth by between 3.1 and 7.9 years.[27] As well, the future senior population may be larger than officially projected in the U.S. owing to a large percentage of undocumented immigrants through its border with Mexico. If so, the future percentages of seniors may be closer to those forecast for Canada. Given all of these concerns with the American data and the difference noted earlier in the age-group projections for the denominator of the dependency ratio—18-64 for the U.S. vs. 20-64 for Canada—the difference in dependency ratios may actually be closer than projected.

Given the potential for a sustained large percentage of seniors in the population, general findings regarding the health and health trajectory of seniors should be of concern to decision-makers. According to Statistics Canada's Survey on Disability, approximately 13.7% of the adult population reported

having a disability limiting their daily activities in 2012—a number that is expected to grow to 20% within 20 years.[28,29] One third of Canadians aged 65+ and 43% among those 75+ reported having a disability.[28] Pain, mobility and flexibility limitations were most prevalent, followed by mental or psychological disability. Over one quarter of persons with disabilities were classified as very severe and 81.3% reported using aids and assistive devices.[28]

On average, frail older adults and persons with disabilities utilize more health care services than relatively healthy adults. With an aging population, the level of overall disability may increase albeit slowed somewhat by the generally healthier status of aging baby-boomers compared to earlier generations.[30,31] Assuming that the age-group specific disability rate remains constant in Canada, the number of seniors aged 65+ with a disability is expected to grow from approximately 2 million in 2016 to 4.4 million in 2060 with 1.1 million of these with a severe disability.[28] Although changing demographics are likely to produce increases in the overall rate of disability potentially leading to higher health care costs, it may still be possible to bend the cost curve without compromising quality of care in the future through innovative payment and insurance systems that provide proper incentives and are relatively easy to implement.[32,33]

Further, society needs to adopt innovative forms of community-level social supports to either maintain health or at least reduce the rate of decline. Knickman and Snell (2002) suggest that communities need to "…learn how to tap the human resources that elders represent in the community."[34] An example of this might be to construct nursery schools facilities within old-age homes as both children and seniors mutually benefit from contact with each other. The authors also suggest that examples like this might help to "…alter the cultural view of aging to make sure all ages are integrated into the fabric of community life."[34] If so, the societal impacts of increasing old-age dependency ratios presented may be lessened.

With regard to this connection between well-being/health and the level of social supports, resources currently being redirected or redirected in the near future toward the service of seniors may have a longer life-span serving this population than previously thought. Nevertheless, some resources that are being commissioned shortly, particularly capital resources, may have a lifespan beyond 2060 during which some decline in the percentage of seniors is possible and eventual repurposing of these resources needs to be considered. While the current generations of elderly may be healthier than previous generations, inevitably illness or frailty will occur towards the end of life requiring greater amounts of community-level

social supports to serve a growing population. Meals-on-wheels programs, assisted living and long-term care homes, home care services, and even shifts in health care provider roles could be on the horizon. Rarely would a physician specializing in a certain area be unable to transition within their specialty, as long as their training continues to be initially broadly based and sub-specialization is not the sole post-graduate training. For example, geriatricians typically come from internal medicine and they may practice in both worlds. Endocrinologists who see patients with osteoporosis treat other endocrine disorders. With regard to capital resources, such as long-term care homes, these facilities could have a sufficiently long lifespan that they may need to be repurposed at some point. Ideas for transformation include low-income housing or even immigration absorption centres as the West attempts to avoid a population decline owing to persistently low fertility rates. Thus, even if the demographics eventually shift towards a more predominantly younger population, repurposing human and capital resources may not be a difficult problem.

The larger question is what will become the predominant pattern amongst the baby-boom generation? Will this generation generally experience a longer life-span with even longer years of healthy life than previous generations or will they experience the same pattern of slow decline over a greater

amount of time. If the former, then their dependency in their later years will be less than previous generations lessening the effects of the growth rates in their numbers. However, if not, given the greater numbers of expected seniors, much in the way of planning efforts will need to be underway shortly as the baby-boom generation begins to turn 75 around 2021.

Notes:

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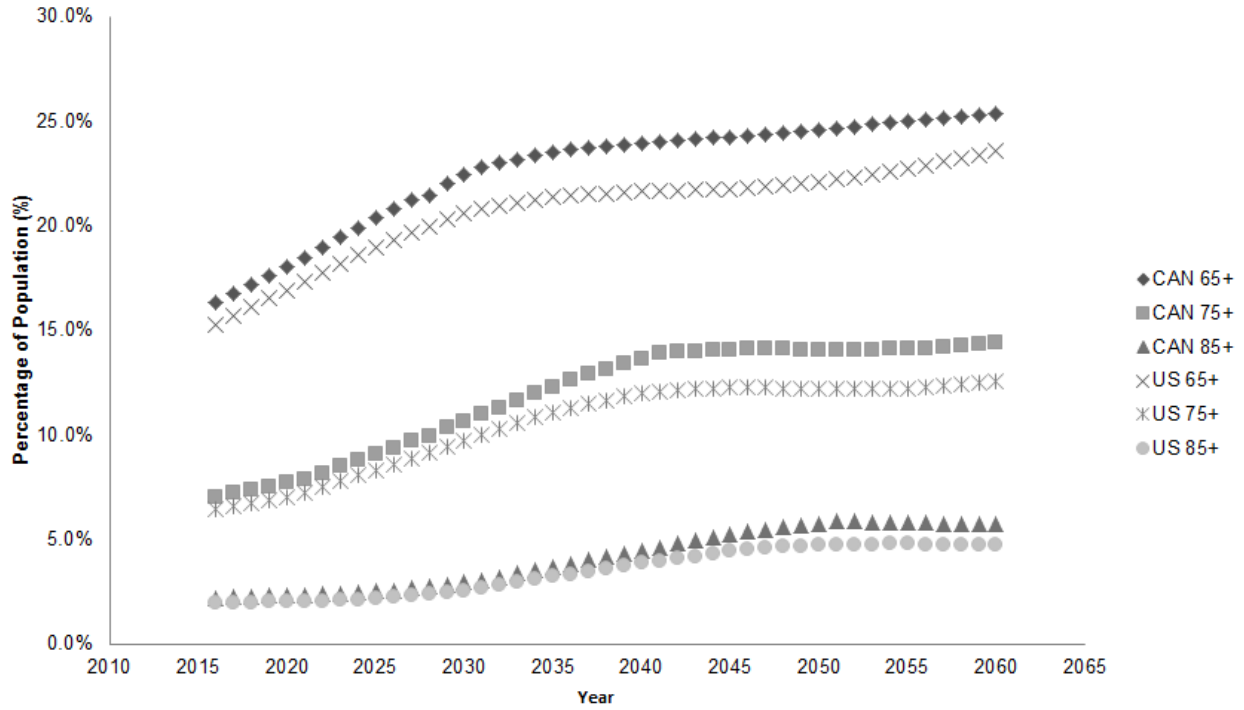
Fig. 1. Percentage of Population According to Different Senior Age-Groupings in Canada and US. Sources: Authors' analysis of data from the following sources: (1) Statistics Canada, 2015a. (2) Statistics Canada 2015b. (3) U.S. Census Bureau, 2015.
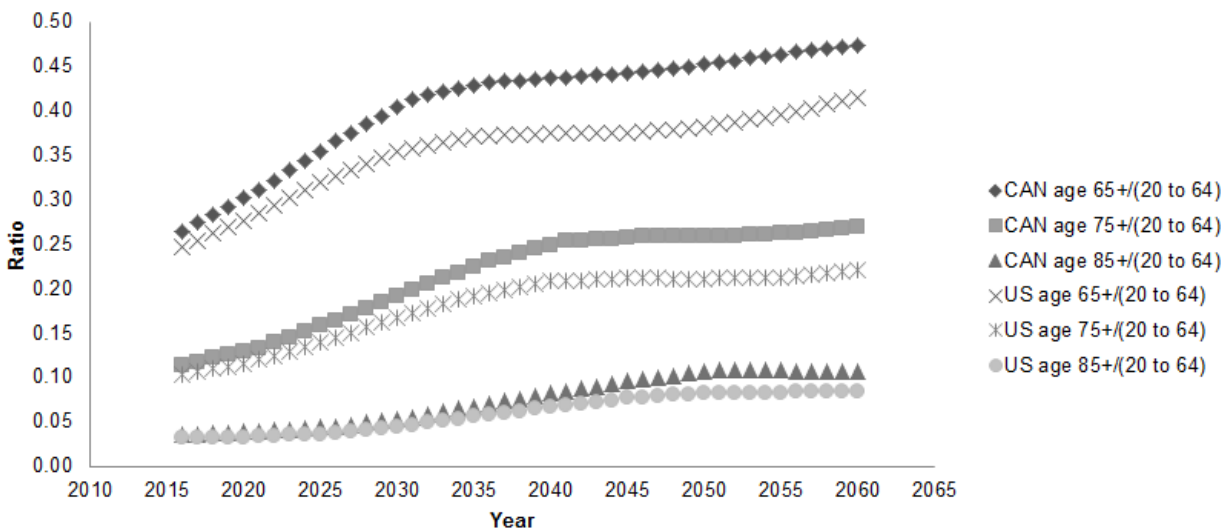
Fig. 2. Ration of seniors (65+, 75+ 85+) to age 20-64 in Canada and US. Sources: Authors' analysis of data from the following Statistics Canada, 2015a; Statistics Canada 2015b; U.S. Census Bureau, 2015. Note: The denominator for this ratio for the U.S. is actually age 18 to 64.
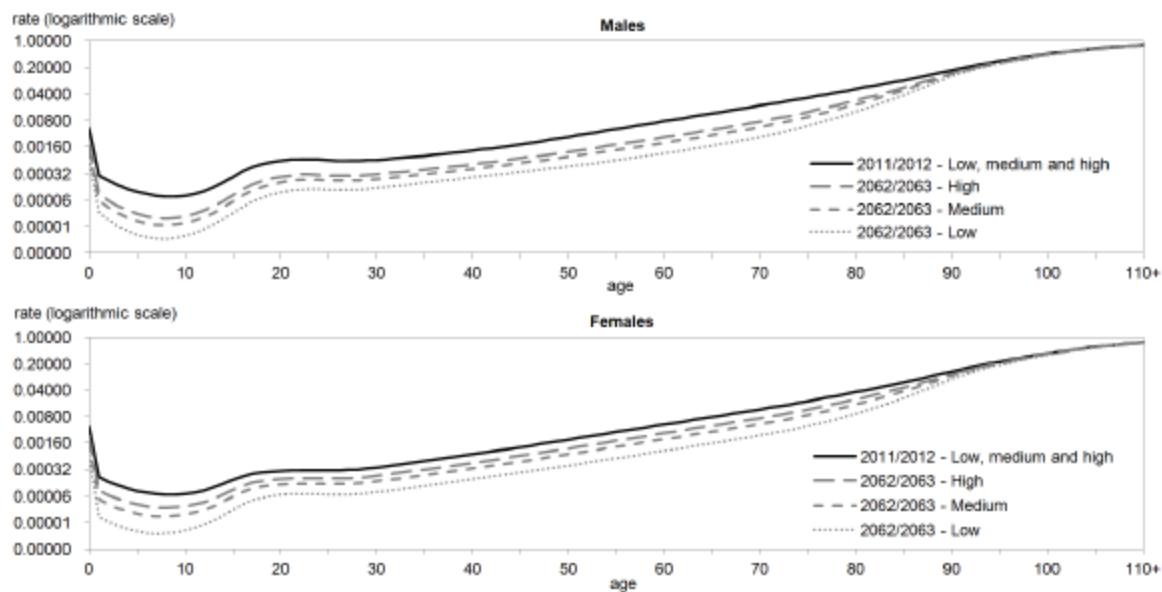
Fig. 3. Projected age-specific death rates at the beginning and end of the period of projection (for low, medium, and high mortality assumptions), Canada. Source: Bohnert et al., 2015. Note: Reproduced and distributed on an "as is" basis with the permission of Statistics Canada.