Facing the Challenge of Population Ageing in Canada: Could older workers (aged 60 to 64) possibly offset the decline in the labour force growth rate?

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SCOPE OF THE PAPER

Population ageing has become a major concern in Canada today, as seniors are considered to be the fastest growing population group in the Canadian society. The shift in the age structure associated with population ageing rate may have several consequences for the Canadian economy. According to the demographic projections of Statistics Canada, as the baby boom generation (those born between roughly 1946 and 1965) retires, the labour force growth rate will be slower and the overall participation rate will decline sharply over the next few decades[1]. Due to the slower growth rate of the labour force, there will be a decline in the overall labour supply of the country and the production factor returns will also be affected, leading to an increase in the real wages of labour and reduction in the capital stock[2]. This situation represents a major challenge for employers with managing and renewing their labour force. Therefore, today we may well ask the question "Should this decline in labour market growth rate in Canada be a concern to the policy makers?" If so, then, could older workers be potentially interested in staying longer in the workforce if labour market conditions are attractive to them?

In this paper, I investigate the potential source of labour, arising from the older inactive population (specifically the age group 60 to 64), while examining the state of population ageing in Canada and its impact on the labour market. The paper is outlined in two major parts. Part-A, provides an overview of background and statistical information on older population in Canada, detailing the reasons for the population ageing and the labour market effects of population ageing, in order to see how the population ageing transition has evolved in recent years. Then I move on with a complete description of labour force participation rate by older workers, outlining the diverse characteristics of Canada's older population and the factors affecting the participation rate. I intend to show that, the recent improvement in the participation rate of older workers and higher probability of retirees to return to the workforce could have significant positive impact on the labour market and the potential output of the economy.

In Part-B, I set up a model to quantify, to what extent an increase of the labour force participation of older workers (population aged 60 to 64) could compensate the expected negative

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[1] http://www.statcan.gc.ca/daily-quotidien/070615/dq070615b-eng.htm

[2] Mérette, M., Fougère, M. and Zhu, G. 2006. *Population Ageing in Canada and Labour Market Challenges*

demographic effects on potential output. Then I conclude with a few policy implications to improve the labour market incentives for older population in Canada.

Part- A

1. AGEING POPULATION IN CANADA

United Nations defines population ageing as the process by which older individuals become a proportionally larger share of the total population[3]. Over the last few decades, the Canadian population has been ageing slowly but alarmingly. According to Statistics Canada, the total population for the age group 55 to 64 was only 191,600 in 1976, and it reached 375,040 in 2007, which is almost a 95.74% increase. Whereas the total population of the country increased by only 41.62 %, that is from 23,142,000 in 1975 to 32,775,000 in 2007[4]. Again, the United Nations demographic projections shows that the share of the Canadian population aged 65 and over is likely to rise from 13.1% in 2005 to 23.4% in 2030[5]. Thus the demography context in Canada has dramatically shifted over the last several decades and the demographic projection indicates that Canada is going to be hit by the ageing of its population severely as it moves further into the future. Again, **Table-1.1** represents both age wise and gender wise number of older population. One notable feature of the table is that the female population is much larger than the male population for all the age groups.

Besides, in Canada, the number of individual members of the age group 55 to 64 was 375,040 in 2007, whereas the economically active population was only 225,450 in the same year[6]. Here the economically active population represents all persons of either sex who provides the supply of labour for the production of goods and services during a specified time-reference period[7]. On the contrary, the inactivity among older workers mostly refers to the permanent departure from the labour market, which starts after age 55 and accelerates rapidly after 65. Therefore, today as the labour force growth rate is slow and since people aged 55 to 64 will make up a larger share of the population in the decades ahead, the inactive population aged 55 to 64 has become very important for Canadian labour force. According to Marshall and Ferrao (2007), the

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[3] *World Population Ageing 1950-2050,* Population Division, DESA, United Nations
[4] *http://data.un.org/Data.aspx?d=PopDiv&f=variableID%3a12*
[5] *http://data.un.org/Data.aspx?d=PopDiv&f=variableID:34*
[6] ***http://laborsta.ilo.org/applv8/data/c1e.html***
[7] *http://laborsta.ilo.org/applv8/data/c1e.html*

activity rate of the population aged 55 to 64 can affect employment levels, as well as the economic well-being of baby boomers themselves[8]. Specially, I will lay emphasis on the age group 60 to 64, the near retirement age group, as this group could provide an important potential source of labour. Here, I am disregarding the age group 65 years and over, as the majority of the people of this age group has little interest in remaining in the labour force beyond 65.

1.1: What is Causing Population Ageing in Canada

A combination of demographic factors like rising life expectancy, declining fertility rates and in specific regions, emigration of young people and/or immigration of older people etc. are considered to be the main causes of the ageing process in Canada.

Due to the size of the baby boom cohort, it has had major impact on the population ageing process in Canada. As the baby boomers reach the age of 65, the normal retirement age, the ageing of the population in Canada will become acute. According to the Statistics Canada demographic projection, the first baby boomers will reach the age of 65 in 2011[9].

Again, Canada has experienced a change in fertility rates since 1945[10]. According to the United Nations, the fertility rate in Canada was 3.65 children or more per woman, from early 1950s to the mid-1960s. Then the rate started to fall rapidly, it went down to 1.52 children per woman in 2005 and is expected to remain relatively constant at this rate until 2030[11].

The life expectancy on the other hand is increasing due to medical advances. According to Health Canada, life expectancy at birth for Canadians was 77.8 years in 1991 and it reached 80.4 years in 2005, with a life expectancy at birth for men at 78.0 years and 82.7 years for women[12]. The life expectancy is expected to continue to grow, reaching 84.8 years, with 82.6 years for men and 86.9 years for women by 2045[13].

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[8] Marshall, K. and Ferrao, V. 2007. *Participation of Older Workers*
[9] http://www.statcan.gc.ca/daily-quotidien/070615/dq070615b-eng.htm
[10] *Canada's Aging Population,* 2002, A report prepared by Health Canada in collaboration with the Interdepartmental Committee on Aging and Seniors Issues
[11] *http://data.un.org/Data.aspx?d=PopDiv&f=variableID%3a54*
[12] *Canada's Aging Population, 2002, A report prepared by Health Canada in collaboration with the Interdepartmental Committee on Aging and Seniors Issues,*
[13] *http://data.un.org/Browse.aspx?d=PopDiv*

1.2: Labour Market Effects of Population Ageing

One of the major consequences of the workforce ageing is the reduction in the growth rate of the labour force. With the baby boomers reaching their retirement age, the retirement rate will also go up sharply, which will eventually decrease the labour supply and increase the cost of labour. There will also be a shortage of skilled workers in some industries or occupations. The lower growth rate of labour force may also lead to a significant reduction in real per capita output and to a decrease of the overall tax base, eventually affecting the standard of living in the Canadian society negatively[14].

2. LABOUR FORCE PARTICIPATION OF OLDER WORKERS

In order to understand the future interaction between demographic change and the potential labour force, it is important to examine the participation rate of the older workers. Statistics Canada defines participation rate for a particular group (age, sex, marital status, geographic area, etc.) as the total labour force in that group as a percentage of the population 15 years of age and over in the same group. The labour force participation rate measures the extent of an economy's working-age population that is economically active. It also provides an index of the relative size of the supply of labour available for the production activity of the economy and the breakdown of the labour force by sex and age group gives a profile of the distribution of the economically active population within a country[15].

Over the last 30 years, there have been significant changes in the participation rate of the older Canadians. The trends have been different for men and women. In this section, I look at the recent trends in labour force participation of older workers and then I examine what are the factors explaining the trend.

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[14] Mérette, M., Fougère, M. and Zhu, G. 2006. *Population Ageing in Canada and Labour Market Challenges*

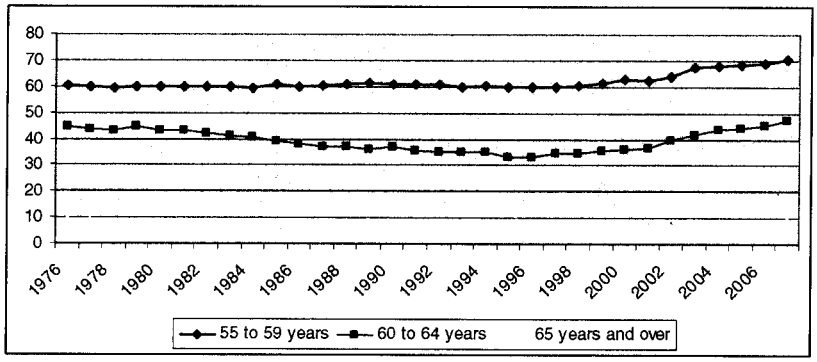
[15] *Labour force projections in Canada, 2007, Statistics Canada*

2.1: Participation Rate by Age Group

A breakdown by age groups shows that the participation rate of people aged 55 to 59 was around 60% from 1976 to 1998. Then it started to increase and peaked in 2007 at 70.6% (**Table-2.1**). On the other hand for people aged 60 to 64; there was a downward trend between 1976 and 1996, from 44.7% to 33.1% (**Table-2.1**). But since 1996 we observe a steady rise for the same age group, which reached 47.1% in 2007, which is a higher participation rate than in 1976. **Figure-2.1**, illustrates the upward trend in the participation rate for both age groups (55 to 59 and 60 to 64), during the recent years.

Not surprisingly, most people do not participate in the labour force after 65 years of age, thus the participation rate is much lower compared to the rate of the other two age groups of the older workers. The participation rate of the 65 years and over, declined by almost three percentage points (9.2% to 6.2%) between 1976 and 1993. Then it fluctuated around 6% for a 10-year period, but started to rise gradually since 2002 and reached the highest level observed at 8.9% in 2007 (**Table-2.1**).

Figure 2.1: Participation rate by age group, both sexes



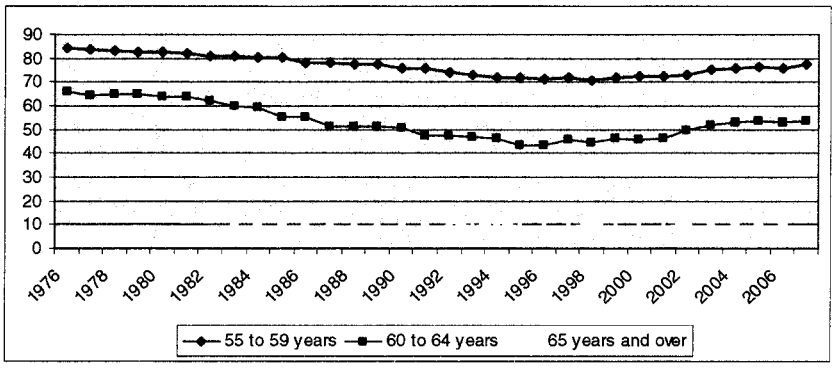
Source: Using data from Statistics Canada (Table-2.1)

2.2: Participation Rate by Sex

There are two different trends for the participation rate of older men and older women, which is evident from **Figure-2.2** and **Figure-2.3**. According to **Table-2.2**, the labour force participation rate fell sharply for older men since 1976, but not for older women. The participation rate of men aged 55 to 59, went from a high of 84.2% in 1976 to a low of 70.6% in

1998, while the participation rate for men aged 60 to 64 years has declined even more, from 66.5% in 1976 to 44.6% in 1998. Since 1998, the participation rate of men of the 55 to 59 age group and the 60 to 64 age group started to rise, reaching 77.6% and 54%, respectively in 2007. But these rates are still lower than what was observed in the 1970s.

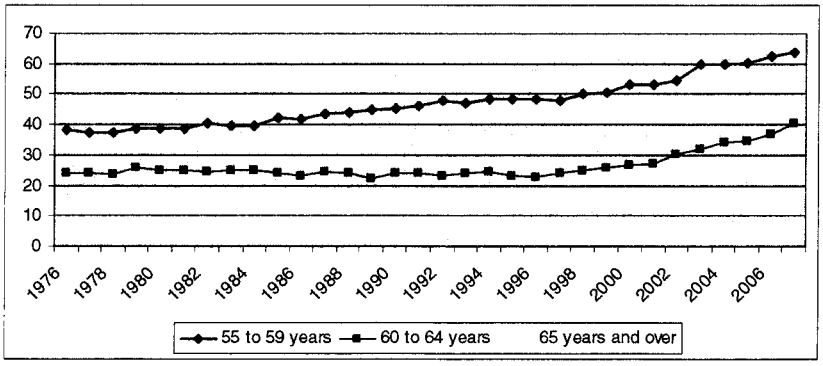
Figure-2.2: Participation rate by age group, Male



Source: Using data from Statistics Canada (Table-2.2)

In contrast, the participation rate of older women, though lower than men, has actually shown an upward trend since 1976 (see **Figure-2.3**). The women participation rate of the 55 to 59 age group has been rising continuously during the past 30 years, from 38.2% in 1976 to 63.9% in 2007 **(Table-2.2)**. The participation rate of women aged 60 to 64, on the other hand, has remained virtually flat between 1976 and 1998, but has increased since 1997. Their participation rate reached a record of 40.3% in 2007 **(Table-2.2).**

Figure 2.3: Participation rate by age group, Female



Source: Using data from Statistics Canada (Table-2.2)

2.3: Factors Affecting the Participation Rate

A variety of reasons could influence the labour force participation of older workers in Canada. In this section, I will try to explore those factors, which might have played a vital role behind the increase and decrease of the older workers' participation rate.

2.3.1: Reasons behind the increase in the participation rate:

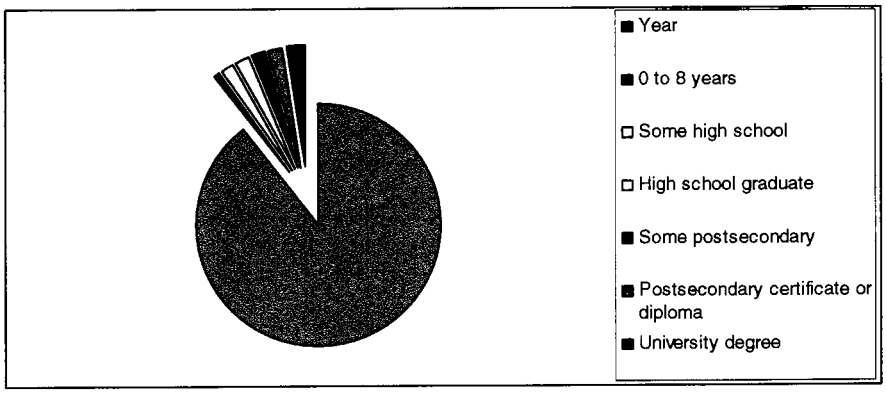
The rising trend in participation rates show that the recent Canadian older workers are staying in the workforce longer, which may eventually help in dampening the threat of a sudden and severe labour shortage after baby boomers retire. Marshall and Ferrao (2007), reports that an estimated 2.1 million individuals aged 55 to 64 were either employed or looking for work in 2006, which is more than twice of the total in 1976. Thus it is worth investigating the driving (or principal) forces behind such an increase in the trend of the older workers' participation.

a) <u>Higher Rate of Women Participation</u>: The main thrust behind the upward trend of the overall older worker participation could be the women's labour force attachment, which has improved in the recent years, specially among the women aged 55 to 64. From **Figure-2.2** and **Figure-2.3, we** have already seen the different trends in the participation rate for older men and older women, where the trend in the older women participation rate is steadily moving upward.

One of the reasons for the continued growth in the participation rate of older women is the increasing level of educational attainment, since the higher level of education fulfills the demand of high quality job opportunities and it also helps to have higher earnings. From **Table-2.3,** it is evident that the participation rate of older women has increased over the years for all educational categories. For example, in 1990, the participation rate of older women with a university degree was only 54.6%, but by 2007 this proportion had increased to 62.3%. Again, **Table-2.3** and **Figure-2.4** demonstrates that the participation rate of older women is positively correlated with the higher levels of education. According to the data, the participation rate with a university degree is much higher compared to the participation rate of other educational attainments for each year. For example, in 2007, the participation rate of women who had a university degree was 62.3%, compared to the participation rate of 56.5% with a post secondary

degree (**Table-2.3**). Even the women with post secondary diploma had a much higher rate of participation than those with a high school degree.

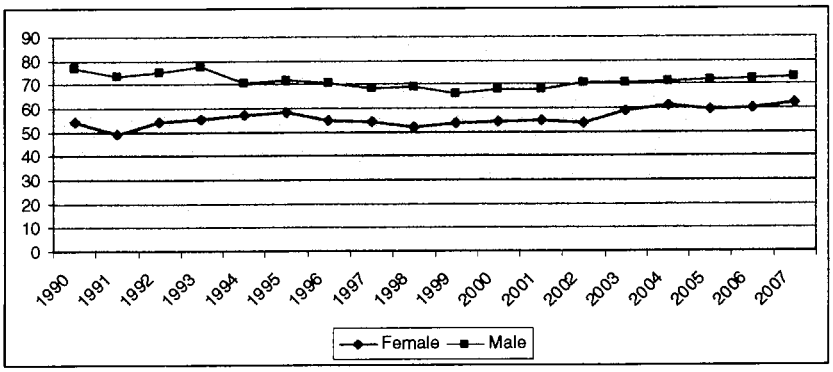
Figure-2.4: Participation rate by educational attainment, female, age group 55-64



Source: Using data from Statistics Canada (Table-2.3)

However, comparing the same situation with the participation rate of men aged 55 to 64, we observe a different scenario. Despite the higher participation rate of older men than older women (see **Figure-2.5),** the participation rate of older men with a university degree did not increase much over the years, it went down instead to 73.1% in 2007 from 76.9% in 1990 **(Table-2.4).** This decreasing trend in the participation rate of older men is almost the same for all other categories of educational attainments, except for those with some post secondary degree and those with post secondary certificate or diploma. The participation rate of men with some post secondary degree rose from 66.3% in 1990 to 70.7% in 2007. Similarly the participation rate with post secondary certificate or diploma reached a highest level of 68% in 2007.

Figure-2.5: Participation rate by university degree achieved, male and female, age group 55- 64

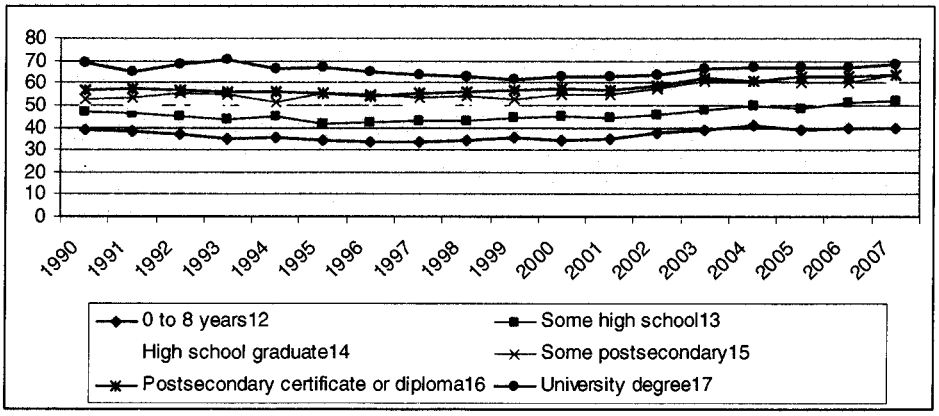


Source: Using data from Statistics Canada (Table-2.3. and Table-2.4)

b) <u>Higher Level of Education</u>: Education is a strong factor in an individual's participation in the labour force at older ages. Individuals with higher levels of education are more likely to continue with their work past age 60, since more schooling often translates into higher-quality job opportunities and higher earnings.

Table-2.5 and **Figure-2.6** demonstrates that older workers with a university degree had much higher participation rates than those without a degree. In 2007 the participation rate of older workers with a university degree was 68.3%, but the participation rate of those with 8 years of schooling was only 39.4%. Consequently, there is a positive correlation between the higher level of education and the rate of participation by older people. Besides, the trend in the level of education of the older workers is progressing over the years. Kesselman (2004) reports that nearly one-half of those aged 55-to-64 will have a college, university, or technical degree by 2010, which was only one-fifth in 1990. Again in 1990, almost two-thirds of the population aged 55-to-64 had less than high school completion, but by 2010 this figure is expected to fall to just one-quarter. Thus the trend in the participation rate of older workers is expected to go up as the well-educated baby boomers enter their senior years (the oldest boomers turned 60 in 2006[16]).

Figure-2.6: Participation rate by educational attainment by people aged 55-64 both sex



Source: Using data from Statistics Canada (Table-2.5)

There are several reasons for the older highly educated workers to stay in the work force longer. One such motive is that, jobs involving high or specialized education tend to be less physically demanding; therefore older people face less physical limitations and may be more ready to retire later. Additionally, most of those specialized jobs generate higher earnings, so the

[16] Marshall, K. and Ferrao, V. 2007. *Participation of Older Workers.*

opportunity cost of retiring early is larger. Also some professions require a longer period of education and training (such as medicine, law) and individuals involved in these jobs starts their careers in their late 20s or early 30s, so they may have to work after reaching 60 years old.

c) Ban of the Mandatory Retirement Policy: Another explanation for the higher participation rate by older workers could be the ban of the Contractual Mandatory Retirement (CMR) in many provinces during the recent years, for example: Ontario and Saskatchewan. CMR provisions are the result of collective agreements and associated pension plans, which force the workers to retire at a pre-determined age, such as 65 and create a constraint to those workers who wish to work longer than the policy suggests. Thus CMR fosters the labour and skill shortages in the country and this CMR could be a reason for the decline in the participation rate of older workers during the 1980s. Kesselman (2004) found that the mandatory retirement policies were the reason for retirement for one out five retirees who left the labour force at 65 years old and over in 2004 and a judicial ban on mandatory retirement, on the other hand, complemented other advances in workplace practices and public policies affecting older workers to bring significant benefits to individuals, businesses, and the economy.

In recent years almost all provinces in Canada has banned the CMR policy. Ontario made it illegal in 2006, Saskatchewan followed suit in 2007, British Columbia banned it in 2008 and Nova Scotia intends to outlaw the practice sometimes this year[17]. Though the experience in jurisdictions where CMR has been banned for many years, has neither witnessed a radical change nor adverse effects. Considering Manitoba and Quebec, where CMR has been banned since 1982 and 1983 respectively, provides quite a wide range of time period to examine the effects of a ban of CMR on the jurisdictions. Surprisingly, even after the ban of CMR in both of these provinces the participation rate of people aged 65 and over did not increase considerably until 2005 (see **Figure-2.7** and **Figure-2.8**). **Table-2.6** demonstrates that in Manitoba the participation rate of the age group of 65 and over was 9.4% in 1982. Then the participation rate started to decline and reached a rate of 9% only after 23 years, that is in 2005 and it has shown an upward trend since then. Conversely, Quebec showed a slight increase in the participation rate for the same age group after banning the CMR, until 1985. But then the rate started to drop again and only

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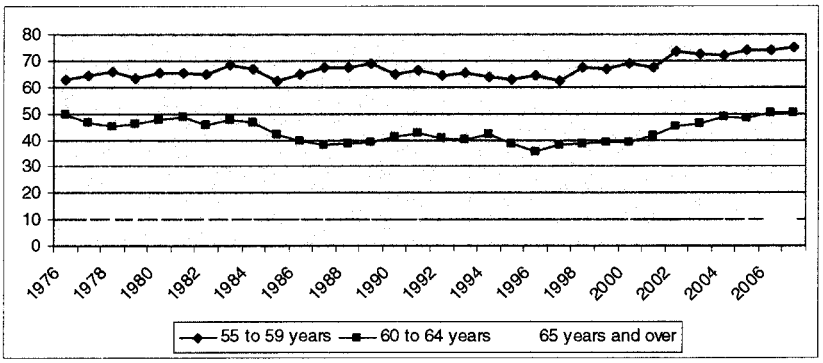
[17] *http://www2.canada.com/edmontonjournal/news/story.html?id=d0a8e28e-cfc1-47f6-a131-6cbb5482a49f*

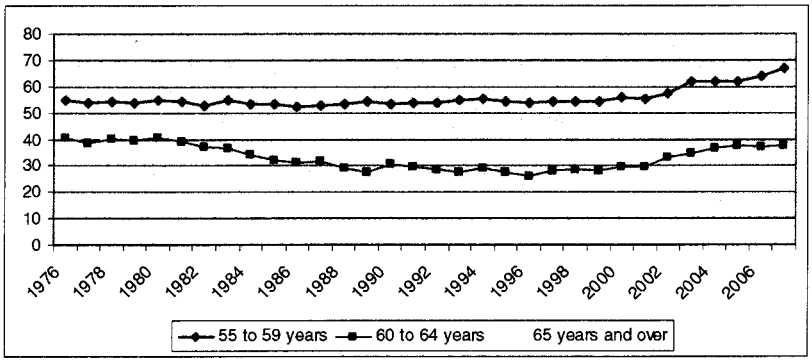
reached a highest of 6.6% in 2007 **(Table-2.7).** Meanwhile, the average retirement age remained at 65, even after more than twenty years of ban on CMR in these two provinces[18]. Which could possibly mean that majority of people has little interest in remaining in the labour force beyond 65, regardless the ban of the CMR. Therefore, the elimination of mandatory retirement in Manitoba and Quebec has little impact on the participation and the retirement decision of older workers, which is also in line with the findings of Reid (1988) and Shannon and Grierson (2003)[19]. Though for the experience of Manitoba and Quebec, we should keep in mind that during 1980s and 1990s, Canada witnessed two major recessions and a ban on CMR was not successful in triggering the participation rate and the average age of retirement of these two provinces.

Figure-2.7: Participation rate by age group, both sexes, Manitoba



Source: Using data from Statistics Canada (Table-2.6)

Figure-2.8: Participation rate by age group, both sexes, Quebec



Source: Using data from Statistics Canada (Table-2.7)

[18] http://www.abilitynotage.ca/index.php?option=com_content&task=view&id=43&Itemid=9

[19] Gunderson, M. 2004. *Banning Mandatory Retirement: Throwing Out the Baby With the Bathwater*

However, it can be said that a ban on CMR alone does not bring about a large change in the labour force participation of older workers or the average retirement ages, but it definitely improves the situation and facilitates the older workers by stimulating business and policy changes and results in higher participation by older workers who prefers to work beyond their retirement age. It specially stimulates the participation of women and recent immigrants - groups that may not have worked sufficiently long in order to accumulate sufficient earnings to provide for their savings after retirement[20]. Moreover, a ban of CMR is necessary as it causes a waste of human resources and violation of human rights and such a ban is a great step to remove the age discrimination, which cannot be justified on any economical or practical grounds. Gillen and Klassen (2000) have observed: "Mandatory retirement is a polite phrase for employment discrimination — for being fired because of age".

d) <u>Higher Labour Market Participation by Immigrants</u>: Attracting more immigrants is often considered a way of countering the effects of ageing and skill shortfall in Canada. The country has one of the highest per capita rates of permanent immigration in the world, which is roughly 0.8 percent in recent years and has welcomed 3.5 million immigrants in the last 15 years[21]. Since most skilled and experienced immigrants arrive at later years of their life, the increasing trend of the participation rate of older workers could also be explained by the contribution of the immigrants in the labour force. Zietsma (2006) found that nearly half of the established immigrants were in the 55 and older age group compared to just over a quarter of Canadian born in 2006. Therefore, the participation of older immigrants could be responsible for the rising trend in the overall older workers participation rate in Canada.

One reason for the increasing participation by the older immigrant is the high level of education of the immigrants, as Canada's immigration has been dominated by the selection of an increased proportion of skilled and experienced immigrants. According to Mérette, Fougère and Zhu (2006), the recent Canadian immigrants tend to be better educated than previous cohorts of immigrants, which helped in a higher participation rate by the immigrants. Besides, some of the specialized professions (Medicine, Engineering etc) require more trained and educated people and immigrants involving those professions start their career at their middle age and they choose

[20] Gomez, R. and Gunderson, M. 2007. *Mandatory Retirement: Myths, Myths and More Damn Myths*
[21] *Annual Report to Parliament on Immigration, 2008,* Citizenship and Immigration Canada

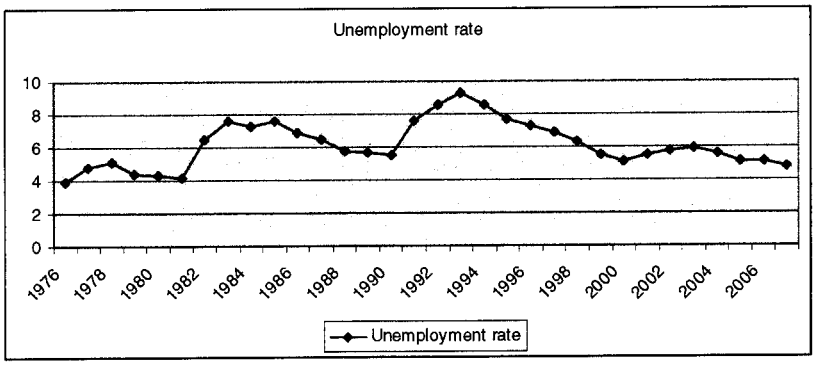
to work far beyond age 65 to accumulate the savings required to maintain their lifestyle after retirement.

2.3.2: Reasons behind the decline in the participation rate:

We have seen earlier that the labour force participation of older workers declined during 1980s and 1990s. Now to grasp the complete picture of the labour market behavior of older workers it is necessary to examine the factors behind such decline of the participation rate.

a) Recession: The decline in the participation rate during the 1980s could partly be explained by the effect of the 1981-1982 recessions. The recession during the third quarter of 1981 lasted till the beginning of 1983. The oil shock of the mid 1970s, anti- inflationary monetary policy, and significant depreciation of the Canadian dollar are held responsible for this recession by the economists[22]. According to **Table- 2.8** and **Figure-2.9,** the rate of unemployment for the age group 55 years and over started to increase sharply during this recession, which rose to 6.5% in 1982 from 3.9% in 1976. Such higher unemployment rate resulted in lower participation by the older workers during the same period which is evident from **Table-2.1.**

Figure-2.9: Unemployment rate for 55 years and over, both sexes



Source: Using data from Statistics Canada (Table-2.8)

Again the recession in 1990-91, resulting from the Gulf War, the rise in oil prices and a contraction of the monetary policy, caused the decline in the participation rate of older workers in 1990s. This recession was much deeper and lengthier than the other and was termed as the "great

[22] Douglas, P. 1991. *Canada, recession and recovery*

Canadian slump" by Fortin (1996)[23]. **Table- 2.8** and **Figure-2.9** demonstrate that the unemployment rate of the older workers jumped to 7.6% in 1991 from 5.5 in 1990, then it reached the highest rate of 9.3% in 1993. Such a high unemployment rate and the early retirement option during the recession provided incentives for older workers to exit the labour market earlier, thus economy witnessed a drop in the participation rate (see **Figure- 2.1**).

b) Early Retirement: Part of the decline in labour market participation by people aged 55 and over during mid-1980s and 1990s could also be explained by the early retirement by those older workers. Different people perceives retirement in different ways, for some, retirement means complete withdrawal from the labour force, while for others it means remaining partly or even fully active in the labour market. However, according to Statistics Canada's standard definition, 'retired' refers to a person who is aged 55 and older, is not in the labour force, and receives 50% or more of his or her total income from retirement-like sources[24].

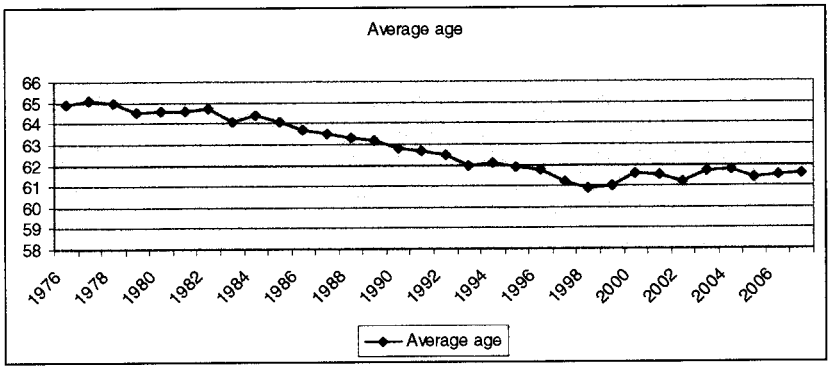
The transition towards retirement can occur in many different ways and at different ages. Some workers may retire voluntarily from their jobs and some may retire involuntarily. A study by health Canada shows that the healthy ageing individuals, who find their work tedious or stressful, prefer to retire long before the "standard" age of retirement, which is considered to be 65 years of age. Again, if working an extra year increases future retirement income, then there is an incentive to work longer. But when the opportunity cost of later retirement is high, people prefer to retire early, specially the voluntary retirees. On the contrary the involuntary retirement could result from illness, mandatory retirement policy, layoffs, plant closures or not finding another job. Involuntarily retirement actually causes less positive outcomes for retirees, such as lower enjoyment of life in retirement.

Again, some people retire early and some retires later. The trend in early retirement has been widespread in Canada and the average age of retirement has declined sharply in the past several decades, as can be seen from **Figure-2.10**. According to **Table- 2.9**, the average age of retirement dropped from 64.9 in 1976, to 60.9 in 1998. Then it remained constant around age 61 from the mid 1999 till 2007. Therefore, we can observe that the decline in the early retirement trend has halted since 1998 and from **Table- 2.1** we have seen that the participation rate actually

[23] Fortin, P. 1996. *The great Canadian Slump*
[24] Bowlby, G. 2007. *Defining Retirement*

started to rise since then. Though, we do not see any improvement in the average retirement age since 1998.

Figure- 2.10: Average age of retirement, both sexes



Source: Using data from Statistics Canada (Table-2.9)

Apart from recession, the decline in the average age of retirement, during the 1980s was likely to be initiated by the introduction of the early retirement provision in the Quebec Pension Plan (QPP) in 1984 and in the Canadian Pension Plan (CPP) in 1987. Here the CPP and the QPP are the earnings-related public pension plans that transfer income from workers to the retired, which are funded through payroll taxes paid by both employers and employees[25]. In addition to a retirement pension, the CPP and QPP provide disability, survivor, orphans and death benefits.

Again, the large scale government cutbacks and corporate downsizing in the 1990s made it difficult for the older workers to continue with their jobs, which resulted in a drop of the average age of retirement. These policy-induced retirement are mostly involuntary. Of course, the public pension system alone is not responsible in influencing individuals' retirement decisions. One of the most common reasons for people to retire earlier is that it is financially possible for them, which is more common among the voluntary retirees than the involuntary retirees. In many cases, the employers, including governments, offer during recessions generous packages to encourage older workers to retire from the labour force, which make retirement suddenly 'financially possible'. According to the Workplace and Employee Survey (GSS Cycle 16) in 2002, the reasons that retirees gave for retirement are as follows[26] :

Financially possible	59.7%
Wanted to stop working	55.5%
Wanted to do other things	39%

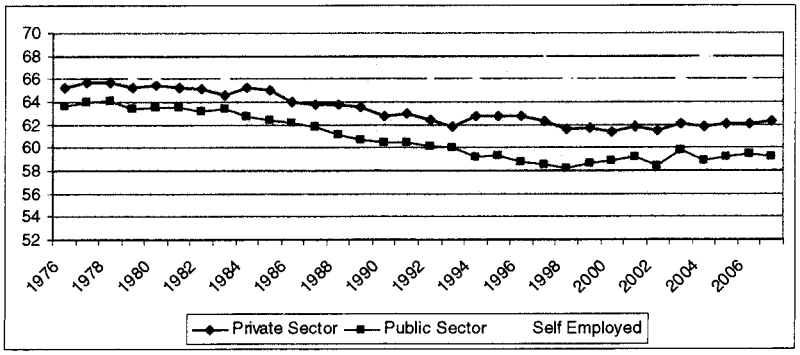
[25] http://www.thecanadianencyclopedia.com/index.cfm?PgNm=TCE&Params=A1ARTA0006599

[26] Gomez, R. and Gunderson, M. 2007. *Mandatory Retirement: Myths, Myths and More Damn Myths*

Qualified for a pension	38.6%
Health	28.4%
Early retirement incentive	13.3%
No longer enjoyed work	12.8%
Job downsized	11.3%
Mandatory retirement	11.1%
Care for a family member	11%
Unemployed	4.8%.

While considering the sector-wise distribution of average age, we notice that the average age of retirement actually differ in the private, public, and self employed sectors. From **Table-2.10** and **Figure–2.11**, it is evident that the public sector employees have consistently retired at a younger average age than those in the other two sectors since 1976, though over time (1976 to 2007) the average age of retirement declined in the public and private sectors. The average retirement age among public sector employees (for example, education, health care and social assistance, as well as government) declined from 63.7 years in 1976, to 59 years in 2007. In the private sector, on the other hand, the average age of retirement was 65.2 years in 1976 and it dropped to 61.8 years in 1993, however it was back up to 62.3 years by 2007. Comparing the three sectors, self employed people tend to retire at an older age than the paid workers. According to **Table-2.10** and **Figure–2.11, t**he average retirement age of the self-employed, has remained relatively steady since the mid-1970s, fluctuating around 66 years and reached 67.5 years in 2007, which is the highest among all the three sectors. This rising trend in the proportion of the self-employed older workers may also have affected the participation rate positively in the recent years (see **Figure-2.1).**

Figure – 2.11: Average retirement age by class of workers



Source: Using data from Statistics Canada (Table-2.10)

The decision to retire early causes a lower participation rate and an increased inactivity, which have widespread consequences as the population ages. Milligan (2005) reports that, when

an individual retires early, the annual pension income he receives for the rest of his life typically is smaller than if he had retired later. Furthermore because of early retirement the labour market loses a worker and the government loses the worker's tax payments on employment income. On the brighter side, earlier retirement allows the individual to enjoy more leisure and to rest after a life's work. Thus the timing of retirement is the trade off between more income and more leisure.

Again, there are a significant proportion of retirees who re-enters the labour market. Léonardo and Rainville (2006) have found that 18% of retirees returned to the labour market, from 1995 to 2002. The analysis further shows that men are more likely to return (21.7%) than women (13.7%)[27]. The General Social Survey (GSS) of 2002 provides some insight on the behaviour of the retirees, where 45% people reported financial consideration as a reason for re-entering the labour market, the most prominent reason for returning and 54% of them had previously left the labour market involuntarily. Again among the non-financial factors, 22% returned to the labour market because they did not enjoy retirement, while only 6% of them reported their good health condition as a reason for rejoining the work force[28].

With the slower growth rate of the Canadian labour force, today policy makers and employers are searching for new ways to retain older workers on the job. Thus, the population aged 60 to 64 has become an important potential source of labour, even after their retirement. From the above discussion it is also evident that there are still many retirees who are willing to rejoin the labour force and since these retirees are more experienced, they could bring more positive return for the labour market. Therefore, policies should be revised in order to provide more incentives to keep the people aged 60 to 64 in the work force, while encouraging later retirement would definitely increase the participation rate.

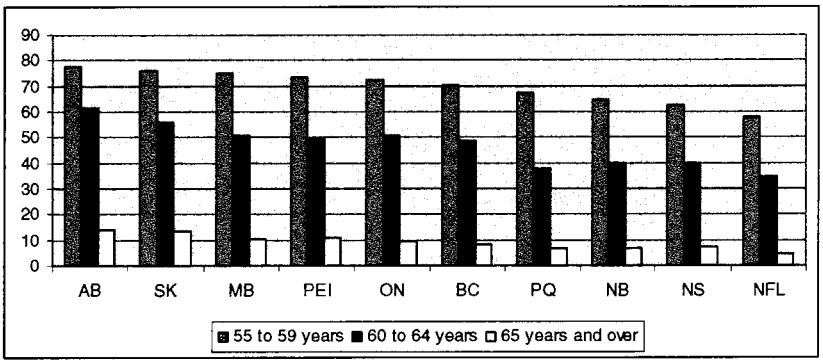
2.4: Participation Rate by Provinces

There are notable variations in the participation rate of older workers across provinces in Canada. According to **Table-2.11** and **Table-2.12, for** all the provinces, the participation rates of the age group 55 to 54 and the age group 60 to 64 is higher in 2007 than in 1976. Alberta had the highest participation rate for all the age groups above 55 in 2007 **(see Figure-2.12),** where the

[27] Mérette, M., Fougère, M. and Zhu, G. 2006. *Population Ageing in Canada and Labour Market Challenges*
[28] Mérette, M., Fougère, M. and Zhu, G. 2006. *Population Ageing in Canada and Labour Market Challenges*

participation rate was 77.8% for the age group 55 to 59 years, 61.4% for the age group 60 to 64 years and 13.8% for the age group of 65 years and over (**Table-2.11**). High labour demand in the province could be one of the vital reasons for such a high participation. The province has been attracting workers of all ages and, in fact, is leading the way in the proportion of older workers with a job, where the vigorous labour demands have been stimulated by the oil boom. The second province to attract more older workers during the recent years is Saskatchewan (see **Figure-2.12**), where the participation rate was 76.2% for the age group of 55-59 years, 55.9% for the age group of 60-64 years and 13.6% for the age group of 65 years and over in 2007 (**Table-2.11**); these rates are much higher than the rate of 1976 **(Table-2.12).**

Figure-2.12: Participation rate by provinces, 2007



Source: Using data from Statistics Canada(Table-2.11)

The other provinces like Manitoba, Prince Edward Island, Ontario and British Columbia also had a higher participation rate of older population in 2007 than in 1976 (**Table-2.11** and **Table-2.12).** One of the reasons for the higher participation rate in the provinces like Ontario and British Columbia is that a high proportion of immigrants who prefer to settle in these provinces. Immigrants usually work longer as they have accumulated savings for retirement during a smaller number of years. Quebec on the other hand, being a faster ageing region, had a lower rate of participation than most provinces, where the participation rate of the province has increased only for the age group 55 to 59 in 2007 than in 1976 (**Table-2.3, Table-2.4).** Among all the provinces, Newfoundland had the lowest participation rate in 2007 for all the age groups of the older workers, which is 57.7% for the age group 55 to 59, 34.7% for the age group 60 to 64 and 4.8% for the age group 65 years and over.

Although most of the provinces have shown an upward trend in the participation rate of older workers in recent years, steps may need to be taken in many regions where the population ageing is evolving more rapidly.

Part B

3. THE MODEL

As ageing of the population in Canada will be severe in the next few decades, the older workers (60 to 64 years of age) could provide an important source of labour supply and could have other significant positive effects on the labour market, as suggested by recent empirical studies. Now I will move onto the projection of the potential output under various scenarios regarding the participation rate of older workers for the future. I will take into consideration the rather certain demographic projections, which will likely reduce potential outputs. My model will determine to what extent an increase of the labour force participation of the age group 60 to 64 will compensate the negative demographic effects on potential output.

3.1: Methodological Issues

The model I am using is simply a production function with its demand for factors. Potential output or GDP (Gross Domestic Product) is determined by the supply side of the model that is, the resources that are available in the economy for production activity. I regroup the working generation and divide them into two important age groups, which are the age group 15 to 59 and the age group 60 to 64 and assume that the age group 15 to 64 is the 100% of the labour force.

The model assumes a perfectly competitive labour market where potential GDP is determined by the availability of resources. The economy is closed, thus the supply of labour comes from the domestic resources only. The model can be separated into several sets of equations relating to supply and demand side of the production activity. The production activity determines a demand for capital and a demand for labour. The stock of physical capital is assumed fixed in the various scenarios elaborated below. Young and older workers are assumed imperfect substitutes from the point of view of the firm. The demand for labour is thus split into a demand for young workers and a demand for older workers. Accordingly, the supply side of

labour is divided into two different age groups: the 15 to 59 years of age and the 60 to 64 years of age. As the participation rates of male and female differs, I assume male and female workers are not perfect substitute from the point of view of the firm, although the elasticity of substitution will be assumed much higher than for the case of young and old workers. The model is complete with the equilibrium conditions for capital and the different types of labour.

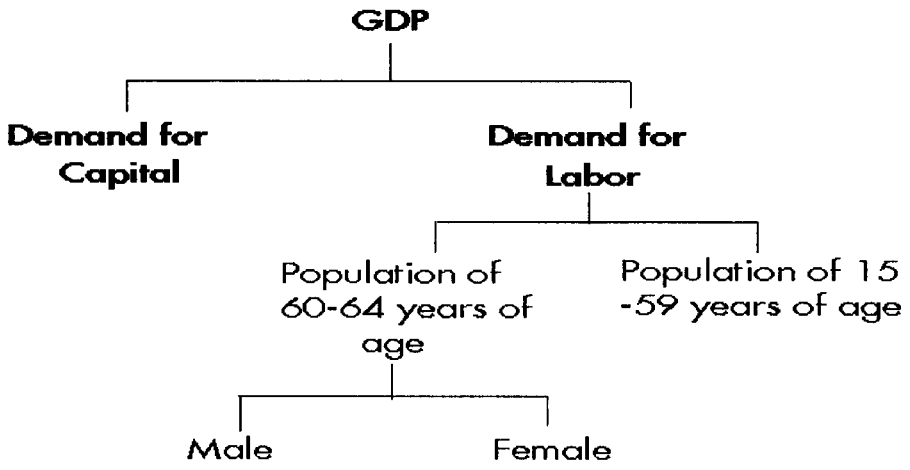
The structure of the model is represented in **Figure 3.1** below. From the production activity (GDP) is derived a demand for capital and a demand for labour. Because of the imperfect substitution assumptions over various types of labour, a specific demand for workers aged 15 to 59 is derived, as well as for the 60 to 64 age group. Again because of imperfect substitution, a specific demand for males and females of the age group 60 to 64 is specified.

Next I proceed with a discussion of the calibration and simulation procedures. The objective of the simulation experiments is to see if changes in the participation rate of the age group 60 to 64 can have an impact on the GDP and compensate the expected negative effects of demographic changes. Both the calibration and the simulation calculation have been done using General Algebraic Modelling System (GAMS), a numerical algorithm widely used in government and international institutions.

3.2: Calibration Process

The model is calibrated on the Canadian economy. GDP in the benchmark scenario is normalized to 100 and the stock of capital is assumed to be a 3 for 1 ratio with respect to GDP as observed in industrialized countries. In the benchmark scenario, prices are normalized to 1, so we can assume that the services of labour to be equal to the share of labour with respect to GDP, which is 62.3. The calibration procedure of the model proceeds in three steps (see **Figure-3.1**).

Figure 3.1: Steps to be followed



Step- 1

In the first step, the GDP of the economy is approximated by a simple Cobb Douglus function:

$$Q = A K^{\alpha} L^{1-\alpha} \qquad (1)$$

Where Q represents GDP, A is the scaling variable, K denoted for the demand for capital, L is the demand for labour and α is the share of capital. Consequently **(1- α)** is the share of labour. The parameter value α is assumed equals to 0.623.

As from the data, the value of Q, K, L and α is known. The value of the scaling variable (A) and the value of the rental rate of capital (Rent) can be calibrated using the following equations:

$$A = Q / K^{\alpha} L^{1-\alpha} \qquad (2)$$

$$\text{Rent} = \alpha Q / K \qquad (3)$$

The values of Q, K, L, α and the calibrated values of A and Rent are represented in **Table-3.1.**

Table-3.1: The main parameters and calibrated values

Parameters and Variables	Value
GDP (Q) is normalized to	100
Stock of capital (K)	300
Demand for labour (L)	62.3
Share of capital (α)	0.623
Share of labour (1- α)	0.377
Scaling variable (A)	*0.578*
Rental rate of capital (Rent)	*0.217*

According to **Table-3.1** the calibrated value of scaling *variable (A)* is 0.578 and the calibrated value of *rental rate of capital (Rent)* is 0.217.

Step-2

The demand side for labour is specific to two different age groups of workers:

1. Population aged 15 to 59
2. Population aged 60 to 64

The labour demand is represented by the CES (Constant Elasticity of Substitution) function:

$$L^d = \left[\eta L_{1559}^{d\ \rho} + (1-\eta) L_{6064}^{d\ \rho}\right]^{1/\rho} \qquad (4)$$

In equation (4), L^d is the overall labour demand in Canada, L^d_{1559} is the labour demand for population aged 15 to 59, L^d_{6064} is the labour demand for population aged 60 to 64, η is the share of population for working generation 15 to 59 years of age and **(1- η)** is the share of population for working generation 60 to 64 years of age. Also from equation (4) the elasticity of substitution for labour demand between younger and older workers can be calculated, which is:

$$\sigma = 1 / 1 - \rho$$

Here, σ is the elasticity of substitution and in this model it is equal to 3, that is the young and older workers are assumed imperfect substitutes from the point of view of the firm.

Using the share of populations from Statistics Canada the calibrated values of the labour demand for the two age groups are reported in **Table-3.2**:

Table-3.2: The main parameters and calibrated values

Parameters	Value
Share of population for working generation 15-59 years of age (η)	0.932
Share of population for working generation 60-64 years of age (1-η)	0.068
Calibrated Values	
Labour demand for working generation of 15-59 years of age (L^d_{1559})	*58.064*
Labour demand for working generation of 60-64 years of age (L^d_{6064})	*4.236*

According to the table the labour demand for the age group 15-59 years is calibrated as 58.064 and the demand for the age group 60-64 years is calibrated as 4.236, the sum being 62.3 which is the value of total labour demand as reported in **Table 3.1**.

Step-3

In this step the focus is on the age group of 60 to 64, as this age group will be a larger share of the Canadian population in the coming years with the baby-boom generation ageing. The calibration now proceeds by dividing the age group 60 to 64 into:

1. Male
2. Female

Here it is important to look at the share of the male workers and female workers separately in order to calculate the overall demand for labour of the age group 60 to 64. The calculation again uses the CES function:

$$L^d_{6064} = \left[\phi {L^d}_{m\_6064}{}^{\rho} + (1-\phi) {L^d}_{f\_6064}{}^{\rho}\right]^{1/\rho} \qquad (5)$$

Where L^d_{6064} is the overall labour demand for the age group 60 to 64, $L^d_{m\_6064}$ is the labour demand in Canada for male working generation of 60 to 64 years of age, $L^d_{f\_6064}$ is the labour demand in Canada for female working generation of 60 to 64 years of age and ϕ is the share of the male population aged 60 to 64, consequently **(1-ϕ)** is the share of the female population aged 60 to 64. Once again the elasticity of substitution (σ) for labour demand between older male workers and older female workers can be calculated using equation (5). Here the male and female workers are not perfect substitute from the point of view of the firm, although the elasticity of substitution is assumed much higher (about 8) than for the case of young and old workers.

The population share of male and female for the age group 60 to 64 is assumed to be equal and that is 0.50. Using this share of populations the value of labour demand for male and female of the age group 60 to 64 is calibrated, which is reported in **Table-3.3**:

Table-3.3: The main parameters and calibrated values

Parameter	Value
Share of male population for working generation 60-64 years (ϕ)	0.500
Share of female population for working generation (60-64) years **(1-ϕ)**	0.500
Calibrated Values	
Labour demand for male workers aged 60-64 ($L^d_{m\_6064}$)	2.118
Labour demand for female workers aged 60-64 ($L^d_{f\_6064}$)	2.118

According to the table the labour demand for male and female workers of the age group 60 to 64 are same and that is 2.118

What is left to be determined is the population units used in the model. In labour market equilibrium, it must be the case that population aged 15 to 59 times labour participation rate for this age group be equal to the labour demand of the age group 15 to 59. As from the data we know the labour participation rate for the benchmark year (2007) and the labour demand from step 2 of calibration, therefore the population units for the 15 to 59 age group can be determined using equation (6):

$$Pop_{1559} = L^d_{1559} / Lpar_{1559} \qquad (6)$$

Where Pop_{1559} is the number of people (population units) in the model of the 15 to 59 age group, L^d_{1559} is labour demand for the 15 to 59 age group and $Lpar_{1559}$ the labour participation rate of the age group 15 to 59.

Similarly we can determine the male and female population in the model by using equations (7) and (8).

$$Pop_{m\_6064} = L^d_{m\_6064} / Lpar_{m\_6064} \qquad (7)$$

$$Pop_{f\_6064} = L^d_{f\_6064} / Lpar_{f\_6064} \qquad (8)$$

In equation (7) Pop_{m_6064} is the number of male population (population units) in the model of the 60 to 64 age group, $L^{d}_{m\_6064}$ is labour demand for male aged 60 to 64 and $Lpar_{m\_6064}$ is the labour participation rate of male aged 60 to 64. Equation (8) follows the same notations except, now it is for female.

Finally the population of the age group 60 to 64 is calculated by the following formula:

$$Pop_{6064} = Pop_{m\_6064} + Pop_{f\_6064} \qquad (9)$$

Table-3.4 reports the population units in the model as determined by equation (7) to (9), which constitutes somewhat the reserve of workers available in the economy. It is in other words, the potential stock of labour or the labour force if all individuals in the economy had participation rate equals to 100%. The participation rates for the different age group are used from the data by Statistics Canada. For comparison purposes, I also report again in this table, the labour demand. As the model is driven by the supply side, an increase in the labour participation rate would increase the labour demand to a level closer to the potential stock of labour.

Table- 3.4: Result of Calibration

	Age group15-59	**Age group 60-64**	**Males, Age group 60-64**	**Females, Age group 60-64**
Labour Demand	58.064	4.236	2.118	2.118
Participation rate of labour	0.711	0.289	0.540	0.400
Potential stock of labour	*81.665*	*9.218*	*3.923*	*5.295*

3.3. Simulation Analysis

One of the policy options to deal with the population ageing challenge in Canada is to provide greater incentives for older workers to work longer. But before considering effective policies to increase the retirement age, it is necessary to look at the marginal effect of an increase of the participation rate on the economy and to evaluate whether or not the potential gains are important. To help address this issue I simulate three scenarios based on various demographic changes and participation rates using the model and simulation program described above. The

model is simulated for the year 2007, but also for 2020 and 2030, so that I will be able to assess the meaning of labour participation rate among older workers in an ageing context.

The objective of the simulation experiments is to assess the role of labour force participation among older workers (males and females) on potential output. The three main scenarios refer to the compositions of the populations that occurred in 2007 and are projected for 2020 and 2030. For those three dates, I then assume pessimistic and optimistic participation rates among older workers. These scenarios include:

Scenario 1: Demography 2007 for population aged 60 to 64

A. Increasing the participation rate of population by 10%

B. Assuming the participation rate of female population is equal to male population.

Scenario 2: Demography 2020 for population aged 60 to 64

A. Change in demography using the same participation rate as in 2007
B. Change in demography using the participation rate as in 1998
C. Change in demography using the participation rate as in 2007 plus increasing the participation rate by 10%
D. Change in demography using the participation rate as in 2007 plus assuming the participation rate of female are equal to male population.

Scenario 3: Repeating Scenario 2 for Demography 2030

Now I will proceed with describing each of these scenarios. For the better understanding of each scenario, all the simulated values and the benchmark values are presented in **Table- 3.5,** where all the percentage change is calculated with respect to the benchmark values of the model.

Table- 3.5: Simulated Results for Canada

(All the percentage changes are calculated with respect to the benchmark values of the model).

	GDP	Rental rate of Capital	Overall labour demand	Age wise labour demand	Gender-wise labour demand	Cost per worker (Wage rate)	Age-wise cost per worker	Gender-wise cost per worker
Benchmark	100.000	0.217	62.300	**15-59-** 58.064	**Male-** 2.118	0.562	**15-59-** 0.562	**Male-** 0.562
				60-64- 4.236	**Female-** 2.118		**60-64-** 0.562	**Female-** 0.562
Scenario 1.A	100.234 *(0.234%)*	0.217	62.717 (0.669%)	**15-59-** 58.064	**Male-** 2.330 (10.00%)	0.559 (0.534%)	**15-59-** 0.561 (0.178%)	**Male-** 0.543 (3.381%)
				60-64- 4.660 (10.00%)	**Female-** 2.330 (10.00%)		**60-64-** 0.543 (3.381%)	**Female-** 0.543 (3.381%)
Scenario 1.B	100.401 (0.401%)	0.218 (0.461%)	63.016 (1.149%)	**15-59-** 58.064	**Male-** 2.118	0.558 (0.712%)	**15-59-** 0.560 (0.356%)	**Male-** 0.541 (3.737%)
				60-64- 4.971 (17.33%)	**Female-** 2.860 (35.033%)		**60-64-** 0.531 (5.516%)	**Female-** 0.521 (7.295%)
Scenario 2.A	99.895 (0.105%)	0.216 (0.461%)	62.113 (0.30%)	**15-59-** 58.064	**Male-** 2.118	0.563 (0.178%)	**15-59-** 0.555 (1.246%)	**Male-** 0.652 (16.014%)
				60-64- 4.236	**Female-** 2.118		**60-64-** 0.652 (16.014%)	**Female-** 0.652 (16.014%)
Scenario 2.B	97.779 (2.221%)	0.212 (2.304%)	58.427 (6.217%)	**15-59-** 58.064	**Male-** 0.945 (55.38%)	0.586 (4.27%)	**15-59-** 0.565 (0.534%)	**Male-** 0.917 (63.167%)
				60-64- 1.471 (65.274%)	**Female-** 0.534 (74.788%)		**60-64-** 0.946 (68.327%)	**Female-** 0.984 (75.089%)
Scenario 2.C	100.167 (0.167%)	**0.217**	***62.597*** (0.477%)	**15-59-** 58.064	**Male-** 2.330 (10.00%)	0.560 (0.356%)	**15-59-** 0.553 (1.601%)	**Male-** 0.630 (12.1%)
				60-64- 4.660 (10.009%)	**Female-** 2.330 (10.00%)		**60-64-** 0.630 (12.1%)	**Female-** 0.630 (12.1%)
Scenario 2.D	100.360 (0.360%)	0.217	62.943 (1.032%)	**15-59-** 58.064	**Male-** 2.118	0.558 (0.712%)	**15-59-** 0.552 (1.779%)	**Male-** 0.628 (11.744%)

				60-64- 4.971 (17.33%)	**Female-** 2.860 (35.033%)		**60-64-** 0.616 (9.609%)	**Female-** 0.605 (7.651%)
Scenario 3.A	99.923 (2.077%)	0.217	62.163 (0.22%)	**15-59-** 58.064	**Male-** 2.118	0.563 (0.178%)	**15-59-** 0.556 (1.068%)	**Male-** 0.639 (13.701%)
				60-64- 4.236	**Female-** 2.118		**60-64-** 0.639 (13.701%)	**Female-** 0.639 (13.701%)
Scenario 3.B	97.786 (2.214%)	0.212 (2.304%)	58.439 (6.197%)	**15-59-** 58.064	**Male-** 0.924 (56.374)	0.586 (4.27%)	**15-59-** 0.567 (0.89%)	**Male-** 0.910 (61.922%)
				60-64- 1.404 (66.84%)	**Female-** 0.489 (76.912)		**60-64-** 0.942 (67.616%)	**Female-** 0.986 (75.445%)
Scenario 3.C	100.189 (0.189%)	0.217	62.638 (0.543%)	**15-59-** 58.064	**Male-** 2.330 (10.00%)	0.560 (0.356%)	**15-59-** 0.554 (1.423%)	**Male-** 0.618 (9.964%)
				60-64- 4.660 (10.009%)	**Female-** 2.330 (10.00%))		**60-64-** 0.618 (9.964%)	**Female-** 0.618 (9.964%)
Scenario 3.D	100.379 (0.379%)	0.217	62.977 (1.087%)	**15-59-** 58.064	**Male-** 2.118	0.558 (0.712%)	**15-59-** 0.553 (1.601%)	**Male-** 0.616 (9.609%)
				60-64- 4.971 (17.33%)	**Female-** 2.860 (35.033%)		**60-64-** 0.604 (7.473%)	**Female-** 0.593 (5.516%)

Table-3.6: Share of population, Canada

Year	Share of population 15-59 with respect to working age population 15-64
2007	0.932
2020	0.894
2030	0.900

Scenario 1.A: This scenario uses the demography (**Table-3.6**) and the participation rate of 2007 (**Table-2.1**) for the age group 60 to 64. Here it is important to look at the effect of the 10% increase of the participation rate of the age group 60 to 64, on the GDP and other important

parameters of the model. This scenario is considered to be an optimistic one as the participation rate of the year 2007 is the highest in the last few decades. However, a 10% increase in the participation rate among the 60 to 64 age group would still be under the average participation rate of the age group 15 to 59. The simulated result shows that it increases the GDP by 0.234% for the year 2007. It also increases the overall labour demand of the country from 62.300 to 62.717, which is almost a 0.669% increase. Now if we look at the age wise labour demand then we can see that the labour demand for the age group 60 to 64 went up by 10.00%, but the labour demand for age group 15 to 59 is same as the benchmark case of 58.064. We can observe a similar rise when we look at the gender-wise labour demand, where for both old male and old female workers the demand increased by 10%. At the same time the cost per worker or the wage rate decreases for both age wise and gender-wise labour structure. From **Table-3.5** we can see that the overall cost per worker declined by 0.534%. Again the increase of the participation rate of the age group 60 to 64 decreases the cost per worker of that particular age group by 3.381%. Also if we look at the gender-wise cost per worker, we notice a similar decrease.

This scenario actually shows that how an increase in the participation rate of older workers by a certain percentage (here 10%) can help to increase the output of the economy and compensate for the negative effects such as increase in the labour cost, caused by the population ageing.

Scenario 1.B: Using the demography (**Table-3.6**) and participation rate (**Table-2.1**) of 2007, this scenario assumes that the participation rate of female population is equal to the male population. This optimistic scenario is more likely than it looks like at first sight as the female participation rate is on upward trend for many years (see **Figue-2.3** of previous section). New and future cohorts of female workers are more educated, so they will likely participate more in the labour market. The simulated values show that it increases the GDP by 0.401% and the overall labour demand of the country by 1.149%, these are much higher increase than the increase in scenario 1.A. For the age wise labour demand, the demand for the age group 60 to 64 went up to 4.971, which is almost a 17.33% increase. Now in this scenario when we look at the gender-wise labour demand we can notice that the demand for old female worker is much higher now, that is a 35.033% increase, compared to the 10% increase in scenario 1.A. On the other hand the demand for old male worker did not change with respect to the benchmark value of 2.118. The overall cost per worker decreases by 0.712% and for the age group 60 to 64 the cost

per worker decreases by 5.516%. Again for the age group 15 to 59, the cost per worker goes down by 0.356%. Another remarkable feature of this scenario is that the cost of old female labour decreases more than the cost of the old male labour, which is a 7.295% decrease compared to 3.737% and this decrease is even more than the scenario 1.A.

Therefore if the female population aged 60 to 64, participates equally to the male population of the same age group, then the economy witnesses more positive outcomes than increasing the participation rate of the 60 to 64 age group by 10%.

Scenario 2.A: This scenario uses the demography projection of 2020 **(Table-3.6)** for the age group 60 to 64 and the participation rate of scenario 1.A and 1.B. Thus the scenario shows that the GDP actually decreases in 2020 at 99.895, which is almost 0.105% less than the GDP of the benchmark scenario. The overall labour demand will go down by 0.30% and we see any change neither in age wise nor in gender-wise category of the labour demand. However, as the labour force becomes thinner with the demographic change, the overall cost per worker increases, that is by 0.178%. One noticeable feature of this scenario is that the cost per worker for the age group 15 to 59 will go down by 1.246%, but the cost per worker for the age group 60 to 64 will go up by 16.014%.

Therefore we can see that if the population grows at the present rate and if the participation rate of the older workers does not increase then the economy will likely be affected adversely. With this scenario not only the GDP of the economy will decrease but also the cost per worker of the target age group (60-64) will increase quite a bit.

Scenario 2.B: Now I will consider a pessimistic participation rate by using the participation rate of 1998 **(Table-2.1),** when the participation rate of the age group 60 to 64 was very low. Actually in 1990 Canada was hit by a severe recession and the labour participation decreased a lot following that period. Therefore the recession and the downward trend in the average retirement age during 1990s were considered to be responsible for such lower participation rate in 1998. Here I assume again the same demography of 2020.

Therefore this scenario shows that for such low participation rate, the GDP decreases a lot in 2020 and reaches 97.779, which is lower than in all the scenarios above and more than 2.221% lower than the benchmark value. Again the overall demand for labour will go down by

more than 6% and the rent of capital will also go down by 2.304%. According to my simulation, the demand for labour for the age group 60 to 64 drops significantly, by almost 65.274%, though the labour demand for the age group 15 to 59 remains the same as in the benchmark scenario. Again when we look at the gender-wise labour demand we notice that with the participation rate of 1998, the labour demand for both old male and old female workers will decrease by a large amount, that is almost by 55.38% and 74.788% respectively in 2020, specially the demand for old female workers is hurt more than the old male worker. The overall cost per worker will go up by 4.27%. While for the age wise cost per worker we can see that the cost per worker for the age group 60 to 64 will go up by 68.327%. On the other hand the gender-wise labour cost will also face a greater increase, that is the cost per worker for male aged 60 to 64 will go up by 63.167% and the cost per worker for female aged 60 to 64 will go up by 75.089%.

Thus it can be said, that in the future if the participation rate of older people decline after the current recession, as had occurred after the 1991 recession, then the negative effects will be strengthened by age composition of population changes prospects and the overall economy will be severely affected. Therefore to outweigh the negative effects of such situation it is important to increase the participation rate of the older workers in order to combat the challenge of population ageing in Canada.

Scenario 2.C: This scenario is same as scenario 2.A, except now I am adding an assumption of a 10% increase in the labour force participation of the age group 60 to 64 in 2020. In scenario 2.A we have seen that with the demographic projection for 2020 and with a participation rate of 2007, the GDP decreased to 99.895 and with participation rate of 1998 (scenario 2.B) the GDP decreased even further, that is to 97.779. Now after increasing the participation of older workers by 10% with respect of a participation rate of 2007, GDP increases to 100.167, which is not only greater than the scenario 2.A and scenario 2.B, but also 0.167% greater than the benchmark value. Again the overall labour demand also decreased in scenario 2.A and scenario 2.B, but now we notice an increase in the labour demand and comparing these values to the benchmark scenario gives an increase in the overall labour demand by 0.477%. For the age wise labor demand we have noticed that the demand for the older labour (60-64 years) went down significantly in scenario 2.B, but now we notice a 10.00% increase in the demand for labour for the age group 60 to 64. Similarly the demand for both old male and old female labour goes up by

10.00%. The overall cost per worker actually declines by 0.356% and for the age wise cost per worker, the cost of younger workers (15-54 years) decreases by 1.601%, this is even lower than the decrease in scenario 2.A and scenario 2.B. Again the cost per worker for the age group 60 to 64 and the gender-wise cost per worker decrease than both scenario 2.A and scenario 2.B, though it is still little higher compared to the benchmark value.

For a given projection of the future population, this scenario therefore provides a much clear picture of what we can expect if we increase the participation of the potential source of the labour that is, the age group 60 to 64 and we see that it has positive impact on GDP and the labor market.

Scenario 2.D: Here I am again using all the information of scenario 2.A, but now I assume that the participation rate of female population is equal to the male population. Previously in scenario 1.B we have seen that equalizing the participation rate of older male worker and older female worker has a much better impact on the economy than increasing the participation rate of the older workers by 10%. Now I will see if the situation will be the same for the year 2020 with a demographic projection given for that year.

Thus we do see a higher GDP value than the scenario 2A, 2.B and 2.C and comparing with the benchmark value we get a 0.360% increase. The overall labour demand also goes up by 1.032% and if we take into consideration the age wise categories for labor demand we notice a much higher demand for the older workers (60-64 years), just as in scenario 1.B. Also the demand for older female workers will increase by the same percentage as was in scenario 1.B, that is by 35.033%. The overall cost per worker decreases more than the scenario 2.A and scenario 2.B, which is 0.712% lower than the benchmark value. We also observe a decline in the cost for the younger labour. Now for the older workers, the cost didn't decrease much compared to the benchmark case, but if we compare the value with that of the scenario 2.B, where the cost per worker for the age group 60 to 64 increased sharply for a pessimistic participation rate, then we observe a 34.884 % decrease. Likewise if we compare the cost per worker for older male and older female with that of the scenario 2.B, we again notice a significant decline in the cost, which is by 31.516 % for male and a 38.516 % for female. Though all these gender-wise cost per worker are still little higher than the benchmark case.

Therefore this scenario provides almost a similar picture of scenario 1.B, where increasing the women participation of the older workers has a much higher impact on the economy, which not only increases the GDP, but also increases the demand for older worker, especially for female workers by a significant amount.

Scenario 3.A: In this scenario, we use the demographic projection of 2030 **(Table-3.6)** for the age group 60 to 64 and the participation rate for 2007 (**Table-2.1**). The objective to analyze this scenario is to look what will be the impact on potential output in 2030 if we take into consideration the projected age composition of the population and assuming that labour participation rate remains constant with respect to the observed numbers in 2007.

From **Table-3.5** we can see that the GDP actually decreases more than the decrease in scenario 2.A. Here the simulated value of GDP is 99.923, which is 0.077% less than the GDP of the benchmark scenario. The overall labour demand decreases by 0.22%. Again we neither see any change in age wise nor in gender-wise category of the labour demand. However, the overall cost per worker will increase up to 0.563, which is almost a 0.17% increase than the benchmark value. Like scenario 2.A, here we again see that the cost per worker for the age group 15 to 59 declines and the cost per worker for the age group 60 to 64 go up significantly. This scenario certainly shows that if the participation rate does not increase, then for the given demographic projection of 2030, the economy is about to face a decline in its potential output.

Scenario 3.B: Now I assume the participation rate of 1996 (**Table-2.1**) with the demographic projection of 2030 **(Table-3.6).** In this scenario too both the GDP and the overall labour demand will go down, where the GDP decreases by 2.214% and the overall labour demand goes down by 6.197%. Also the overall cost per worker increases more than scenario 3.A, that is by 4.27%. For a low participation rate, this scenario thus gives us an idea about what will be the situation in the labour market and the overall economy. Unless necessary steps are taken it won't be easy to outweigh the negative consequences of population ageing in the year 2030.

Scenario 3.C: Using the same demographic projection, I again assume a 10% increase in the participation of older workers in 2030 with respect to the observed rates in 2007. As we have seen earlier in scenario 1.A and scenario 2.C, such an increase in the older worker participation increases the GDP and the demand for older worker. Here the GDP goes up by 0.189% and the

overall labour demand goes up by 0.543%. Also the overall cost per worker declines by 0.356%. Therefore this scenario gives the same positive outcome as in scenario 1.B and scenario 2.C.

Scenario 3.D : Using all the information as in scenario 3.A and assuming that the participation rate of male and female population are equal, this scenario too shows the same positive effect on the economy as scenario 1.B and scenario 2.D. Here the GDP increases by 0.379%, a much higher percentage than scenario 3.C. Therefore this scenario also proves that increasing the older women participation and equalizing to that of men could possibly play an important role in combating the challenge of population ageing in the coming years.

1.3 Simulation Result for Provinces

Now setting up the model for each province and looking at the change for each scenario mentioned above will reveal pretty much similar change as in the case of Canada overall. Therefore, to determine the effect of increasing the participation rate of older workers on the potential output, I will just consider the change in GDP (potential output) for each scenario. Here again, the benchmark value of GDP is assumed to be 100 for each province, and all the percentage change is again calculated with respect to the benchmark value of the model. All the values and percentage changes are presented in **Table- 3.7.**

Before comparing different scenarios for the provinces it is worth mentioning that the regions can be separated in three categories according to the regional economic impact of population ageing: the regions that will be severely affected by population ageing (Atlantic and Quebec), the regions that will be moderately affected (Manitoba, Saskatchewan and British Columbia) and the regions that may not be affected as much (Ontario and Alberta)[29]. Also from **Figure-2.12**, it is evident that the Atlantic region and Quebec had a lower participation rate than the other provinces. Ontario and British Columbia, on the other hand, having the advantage of a high proportion of immigrants, had a much higher participation rate of older workers. Again provinces like Alberta, and Saskatchewan had the highest rate of participation, which attracted workers during the recent years. Now I will see for each scenario what the changes are in the potential output in these provinces.

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[29] Mérette, M., Fougère, M. and Zhu, G. 2006. *Population Ageing in Canada and Labour Market Challenges*

Table- 3.7: Simulated GDP values for Provinces

(All the percentage changes are calculated with respect to the benchmark values of the model).

	NFL	NS	NB	PEI	PQ
Benchmark	100	100	100	100	100
Scenario 1.A	100.303 (0.303%)	100.241 (0.241%)	100.289 (0.289%)	100.289 (0.289%)	100.285 (0.285%)
Scenario 1.B	100.927 (0.927%)	100.406 (0.406%)	100.588 (0.588%)	100.468 (0.468%)	101.750 (1.750%)
Scenario 2.A	99.917 (0.083%)	99.832 (0.168%)	99.918 (0.082 %)	99.945 (0.055 %)	99.937 (0.063 %)
Scenario 2.B	96.395 (3.605 %)	97.258 (2.742 %)	97.006 (2.994 %)	97.734 (2.266 %)	95.691 (4.309 %)
Scenario 2.C	100.257 (0.257%)	100.121 (0.121%)	100.244 (0.244%)	100.264 (0.264%)	100.255 (0.255%)
Scenario 2.D	100.959 (0.959%)	100.318 (0.318%)	100.581 (0.581%)	100.462 (0.462%)	101.882 (1.882%)
Scenario 3.A	99.908 (0.092 %)	99.861 (0.139 %)	98.732 (1.268 %)	99.970 (0.03 %)0	99.967 (0.033 %)
Scenario 3.B	96.227 (3.773 %)	97.323 (2.677 %)	96.937 (3.063 %)	97.615 (2.385 %)	95.786 (4.214 %)
Scenario 3.C	100.251 (0.251%)	100.145 (0.145%)	100.259 (0.259%)	100.281 (0.281%)	100.276 (0.276%)
Scenario 3.D	100.956 (0.956%)	100.340 (0.340%)	100.591 (0.591%)	100.474 (0.474%)	101.859 (1.859%)

	ON	MB	SK	AB	BC
Benchmark	100	100	100	100	100
Scenario 1.A	100.244 (0.244%)	100.255 (0.255%)	100.316 (0.316%)	100.241 (0.241%)	100.265 (0.265%)
Scenario 1.B	100.354 (0.354%)	100.623 (0.623%)	100.661 (0.661%)	101.389 (1.389%)	100.488 (0.488%)
Scenario 2.A	99.946 (0.054 %)	99.896 (0.104 %)	99.972 (0.028 %)	99.937 (0.063 %)	99.934 (0.066 %)
Scenario 2.B	97.850 (2.15 %)	97.779 (2.221 %)	98.054 (1.946 %)	96.654 (3.346 %)	97.741 (2.259 %)
Scenario 2.C	100.218 (0.218%)	100.190 (0.190%)	100.311 (0.311%)	100.208 (0.208%)	100.231 (0.231%)
Scenario 2.D	100.340 (0.340%)	100.614 (0.614%)	100.681 (0.681%)	101.496 (1.496%)	100.480 (0.480%)
Scenario 3.A	99.934 (0.066 %)	99.624 (0.376 %)	99.997 (0.003 %)	99.959 (0.041 %)	99.945 (0.055 %)
Scenario 3.B	97.787 (2.213 %)	97.744 (2.256 %)	97.977 (2.023 %)	96.820 (3.18 %)	97.787 (2.213 %)
Scenario 3.C	100.209 (0.209%)	100.218 (0,218%)	100.321 (0.321%)	100.224 (0.224%)	100.239 (0.239%)
Scenario 3.D	100.333 (0.333%)	100.632 (0.632%)	100.675 (0.675%)	101.486 (1.486%)	100.486 (1.486%)

Table-3.8: Share of population by province

Provinces	Year	Share of population 15-59 with respect to working age population 15-64
Newfoundland (NFL)	2007	0.912
	2020	0.875
	2030	0.873
Nova Scotia (NS)	2007	0.930
	2020	0.880
	2030	0.885
New Brunswick (NB)	2007	0.916
	2020	0.880
	2030	0.885
Prince Edward Island (PEI)	2007	0.916
	2020	0.887
	2030	0.895
Quebec (PQ)	2007	0.917
	2020	0.886
	2030	0.895
Ontario (ON)	2007	0.929
	2020	0.902
	2030	0.899
Manitoba (MB)	2007	0.926
	2020	0.887
	2030	0.895
Saskatchewan (SK)	2007	0.908
	2020	0.887
	2030	0.901
Alberta (AB)	2007	0.93
	2020	0.901
	2030	0.907
British Columbia (BC)	2007	0.923
	2020	0.892
	2030	0.895

Scenario 1.A: Here for a 10% increase of the participation rate of the age group 60 to 64, the simulated result shows that it increases the GDP for all the provinces. Comparing the increase in the GDP among the provinces, we notice that the GDP increases more in Saskatchewan and Newfoundland, that is by 0.316% and 0.303% respectively, for the year 2007.

Scenario 1.B: Equalizing the female participation rate of the age group 60 to 64 to that of male, also increases the GDP for all the provinces and it increases even more than scenario 1.A. Here

the GDP increases in Quebec by 1.750%, in Alberta by 1.389% and in Newfoundland by 0.927%. These are the provinces, where GDP increase more than the other provinces.

***Scenario 2.A*:** Now using the demography projection of 2020 **(Table-3.8)** for the age group 60 to 64 and the participation rate of 2007, we notice a decrease in the GDP for all the provinces. The provinces that will more severely be affected are Nova Scotia and Manitoba, where the GDP declines by 0.168% and by 0.104 %, respectively. Also in the two other Atlantic provinces, Newfoundland and New Brunswick, the GDP declines by a greater percentage than the other regions, that is by 0.083% and 0.082 %, respectively.

***Scenario 2.B*:** Using the pessimistic participation rate that is the participation rate of 1998 and the demography of 2020 for the provinces **(Table-3.8),** we can see that the GDP has declined more than scenario 2.A in all the provinces. In this Scenario, the provinces that are more severely affected are Quebec, Newfoundland and Alberta. In Quebec, GDP declines by 4.309 %. In Newfoundland and Alberta, GDP declines by 3.605 % and 3.346%, respectively.

***Scenario 2.C*:** Now for the participation rate of 1998 and the demography of 2020, a 10% increase in the labour force participation of the age group 60 to 64 results in rise in the GDP in all the jurisdictions. Specially, in Saskatchewan GDP increases by 0.311%, which is the highest among all the provinces. Also two of the Atlantic Provinces (Newfoundland and New Brunswick) and Quebec shows quite a high increase in the GDP than the other regions.

***Scenario 2.D*:** In the case of Canada we have seen that equalizing the participation rate of older male and older female has a better impact on the economy than increasing the participation rate of the older workers by 10%. The situation is same for the provinces as well. Like scenario 1.B, in this scenario too Quebec and Alberta has the highest increase in the GDP. The GDP in Quebec increases by 1.882% and in Alberta the GDP increases by 1.496%.

***Scenario 3.A*:** For the demographic projection of 2030 **(Table-3.8)** and the participation rate of 2007, this scenario again shows a decline in the GDP for all the provinces. From **Table-3.7**, we can see that the GDP actually decreases more than the decrease in scenario 2.A. For this scenario the GDP declines more in New Brunswick and Manitoba than the other regions, where it declines by 1.268 % and 0.376 % respectively.

***Scenario 3.B*:** Now using the participation rate of 1996, with the demographic projection of 2030 **(Table-3.8),** in this scenario we can see that the GDP declines more than scenario 2.B for all the provinces. Again Quebec has the lowest GDP for such pessimistic participation rate, which is 4.214 % lower than the benchmark case. Also the Atlantic Provinces and Alberta had a high percentage of decrease in the GDP.

***Scenario 3.C*:** Assuming a 10% increase in the participation of older workers in 2030 with respect to the observed rates in 2007, we again notice a rise in the GDP for all the jurisdictions. Provinces like Saskatchewan, Prince Edward Island, Quebec, New Brunswick and Newfoundland are benefitted more from this scenario (see **Table-3.7**).

***Scenario 3.D*:** Now equalizing the participation rate of female to that of male, this scenario again shows the same positive effect on the economy for 2030 as in the case of Canada. Here though the GDP increases in all the provinces, it increases more in Quebec (by 1.859%), Alberta (by 1.486%) and British Columbia (by 1.486%).

Comparing all the scenarios for the provinces, we can notice that the regions (Atlantic and Quebec) which are predicted to be affected severely by the population ageing are benefitted more from an increase in the participation of older workers.

LAST WORDS

It is a well known fact that population ageing is one of the major concerns in Canada today. The rising proportion of older workers has significant consequences on the labour market as indicated earlier. The retirement of the larger share of baby-boomers generates upward pressures on the labour market and fosters labour shortages in Canada. Besides, relative labour shortage leads to a higher wages and a reduction in the capital stock.

However, the consequences on productive capacity could be offset to a certain extent by a rise in labour productivity through some policy measures. Mérette, Fougère, Mercenier and Harvey (2005) reports that despite all the negative impact of population ageing, the situation can be improved by three possible ways:

1. selecting more skilled immigrants,
2. promoting later retirement
3. encouraging younger cohorts to invest more in human capital could mitigate the impact of ageing.

In this paper, I have concentrated on the second option that is to promote late retirement and encourage the experienced older workers (specially the age group 60 to 64) to work longer, as it is possible that the future labour market conditions and potential changes in terms of work incentives for older workers will significantly affect the labour force participation of older workers. These incentives can be provided in many forms, such as: by encouraging late retirement of older workers, reforming the Canadian public pension system by eliminating early retirement incentives, eliminating mandatory retirement in the provinces that still haven't banned it, implementing income tax reforms etc[30].

However, there are indications that older workers could serve as a potential labour source in Canada. *First*, we have noticed from the analysis of the first part of the paper, that there is still a large number of economically inactive population among the age group 60 to 64, as inactivity rises continuously in later years (55 and over). Therefore, today with the slow labour force growth rate, the inactive population aged 60 to 64 has become very attractive for the Canadian labour force.

Second, we have seen an improvement in the participation rate of the older workers in the recent years (**Table-2.1**). Thus it can be said that today's older Canadian prefers to stay in the labour force as long as the jobs remain available to them.

Third, from **Table-2.9**, we have noticed that the early retirement trends have halted since 1998, as people choose to work longer to accumulate savings required to maintain their lifestyle in retirement. Also there is evidence of older workers returning to the labour force after their retirement, which is another positive sign for the Canadian labour market. Therefore, if more seniors of both sexes prolong their careers past current retirement ages and since people aged 55

[30] Mérette, M., Fougère, M. and Zhu, G. 2006. *Population Ageing in Canada and Labour Market Challenges*

and over will make up a larger share of the population in the decades ahead, we can assume that there will be a rise in the participation rates of older workers in the future.

Fourth, **Table-1.1** demonstrates that the number of older women greatly outnumbered older men and from **Table-2.2** it is also evident that the trend in the participation rate of older women is moving upward. This rising labour market attachment by older women, which has pushed up the overall participation rate of older workers, is an indication that the older women could serve as an important potential source of labour.

These recent trends in the behaviour of older workers have significant positive effects on the labour market and the potential output of the economy. The simulation results from the model show that when the participation rate of older workers is increased by a certain percentage, it compensates the negative demographic effects of ageing on the productive capacity of the economy, that is by increasing the GDP and the demand for older workers and by decreasing the cost per worker (wage rate) particularly for the older workers. Even provincial comparisons shows that the regions where population ageing is more severe, such as some Atlantic provinces and Quebec, policy instruments like increasing the older workers participation by 10% or by equalizing the older women participation to that of men, increases the GDP in those jurisdictions more than the others.

Therefore, policies should be revised in order to reduce incentives to retire before or at the age 60 and open up opportunities for workers to allow a greater share of older individuals in the Canadian labour force. Furthermore incentives should be provided to employers to retain and attract older workers and to invest in accommodating older workers in workplace. Here, the federal government needs to play a very important role in addressing the challenges of the ageing population in a comprehensive, collaborative and inclusive manner.

TABLES

Part-A

1. AGEING POPULATION IN CANADA

Table-1.1: Population by age group and sex

Sex	Age group	2007
Both sexes	50 to 54 years	2,450,300
	55 to 59 years	2,078,800
	60 to 64 years	1,671,600
Males	50 to 54 years	1,219,800
	55 to 59 years	1,024,400
	60 to 64 years	820,30
Females	50 to 54 years	1,230,500
	55 to 59 years	1,054,500
	60 to 64 years	851,30

Source: Statistics Canada

2. Labour Force Participation of Older Workers

Table-2.1: Participation rate by age group, both sexes

Date	55 to 59 years	60 to 64 years	65 years and over
1976	60.4	44.7	9.2
1977	59.7	43.6	8.5
1978	59.4	43.4	8.3
1979	59.7	44.6	8.3
1980	60	43.4	8
1981	59.7	43.2	7.8
1982	59.9	42.1	7.8
1983	59.7	41.5	7.3
1984	59.3	41	7.3
1985	61	39	7.4
1986	59.7	38.4	6.7
1987	60.6	37.2	6.7
1988	60.9	37.2	6.6
1989	61.2	36.3	6.7
1990	60.7	37.1	6.7
1991	61	35.5	6.7
1992	60.8	35.3	6.5
1993	60	35.3	6.2
1994	60.2	35.4	6.6
1995	60.1	33.2	6.2
1996	59.8	33.1	6.1
1997	59.7	34.8	6.3
1998	60.3	34.7	6.5
1999	61.2	35.8	6.2
2000	62.8	36.2	6
2001	62.6	36.7	6.1
2002	63.7	39.9	6.7
2003	67.6	41.9	7.5
2004	67.7	43.6	7.7
2005	68.2	44.3	8.1
2006	69.1	45.1	8.3
2007	70.6	47.1	8.9

Source: Statistics Canada

Table-2.2: Participation rate by age group, male and female

	Male				Female		
Date	55 to 59 years	60 to 64 years	65 years and over		55 to 59 years	60 to 64 years	65 years and over
1976	84.2	66.5	15.4		38.2	24.4	10
1977	83.5	64.7	14.2		37.5	24.2	9.6
1978	83	65.1	13.7		37.4	23.6	9.4
1979	82.4	65.3	13.8		38.7	25.9	9.5
1980	82.9	63.9	13.2		38.8	25	9.3
1981	82.1	63.7	12.7		38.9	25	9.4
1982	80.9	62	12.7		40.3	24.5	9.6
1983	81.1	59.9	12.1		39.5	25.3	8.7
1984	80.1	59.2	11.8		39.5	25	9.3
1985	80.4	55.7	11.8		42.3	24.1	9.9
1986	78.2	55.2	11.1		41.7	23.5	8.3
1987	78.1	51.4	11.2		43.4	24.5	8.1
1988	77.7	51.4	10.7		44.2	24.3	8.6
1989	77.6	51.4	10.5		45	22.5	9.3
1990	76.1	50.9	10.8		45.4	24.2	8.7
1991	75.9	47.6	11.1		46.2	24.1	8.5
1992	73.9	47.8	10.6		47.8	23.3	8.9
1993	72.9	46.7	9.7		47.1	24.3	9.1
1994	71.9	46.3	10.7		48.6	24.8	8.9
1995	72.1	43.4	9.9		48.3	23.4	8.9
1996	71.6	**43.6**	9.8		48.3	**23.1**	8.8
1997	71.7	45.7	9.8		48.1	24.2	9.6
1998	70.6	**44.6**	10.2		50.2	**25.2**	9.3
1999	71.9	46.2	9.8		50.6	25.8	8.9
2000	72.5	45.8	9.5		53.1	27	8.9
2001	72.2	46.5	9.4		53.3	27.4	9.5
2002	73.1	49.9	10.3		54.5	30.3	10.6
2003	75.4	51.9	11.5		60	32.2	12.2
2004	75.6	53.2	11.8		59.9	34.3	12.9
2005	76.2	53.9	12.1		60.4	35	14.3
2006	76.1	53.3	12.1		62.3	37.1	14.9
2007	77.6	**54**	13		63.9	**40.3**	15.9

Source: Statistics Canada

Table-2.3: Participation rate by educational attainment, female, age group 55-64

Year	0 to 8 years	Some high school	High school graduate	Some post - secondary	Post - secondary certificate or diploma	University degree
1990	22.2	34	40.7	39.5	44.7	54.6
1991	22.5	33.9	39.4	42.9	46.8	49.1
1992	21.4	32.6	41.6	43.9	48	54.3
1993	20.9	32.9	40.1	45	46.9	55.6
1994	21.7	34.6	41.7	40.3	47.4	56.9
1995	21.8	31.5	39	49	46	58.2
1996	21.3	30.7	39.4	46	46.5	55.1
1997	20.4	32.6	39.8	47.6	46.2	54.6
1998	20.7	33.4	42.1	49.4	48.5	52.2
1999	21.9	33	42.8	45.4	48.3	53.7
2000	21.9	35	45.4	49	50	54.3
2001	22.5	33.5	44.6	48.2	49.5	54.9
2002	24.8	35.8	47.7	50.3	50.9	53.9
2003	26.1	38.3	51.2	53.7	55.4	58.8
2004	28.7	38.8	51.7	56.6	53.3	61.1
2005	26.2	37.7	51.4	56.1	56.5	59.7
2006	28.4	43.8	51.8	52.2	58.1	59.8
2007	28.4	43.1	54.1	56.5	59.2	62.3

Source: Statistics Canada

Table-2.4: Participation rate by educational attainment, male, age group 55-64

Year	0 to 8 years	Some high school	High school graduate	Some postsecondary	Postsecondary certificate or diploma	University degree
1990	56.7	62	68.3	66.3	67.4	76.9
1991	53.9	61.9	63.6	64.2	67.4	73.8
1992	51.9	59.5	64.3	67	64.3	75.3
1993	49.6	56.5	61.3	63.5	65.1	77.8
1994	49.8	57.8	61	62.7	64.1	70.6
1995	47.4	54.6	59.5	62.2	63.9	71.9
1996	46.5	55.7	61.5	64.4	61.6	70.6
1997	48.1	56.7	63.8	59.1	63.8	68.6
1998	48.9	54.3	59.4	58.8	63	68.8
1999	50.2	57.5	61.7	61.3	64.5	66.3
2000	47.6	57.2	62.4	60.6	65.7	68.2
2001	47.8	57	64	61.8	64.2	67.8
2002	51.1	57.7	64.2	64.6	66	70.5
2003	54.1	58.8	65.5	68.6	68.5	71
2004	55	61.6	67.3	65.2	68.4	71.2
2005	54.2	60.6	67.3	64.7	69.9	72.1
2006	52.7	60.4	66.8	67.7	68.3	72.3
2007	51.7	61.5	68.3	70.7	68	73.1

Source: Statistics Canada

Table-2.5: Participation rate by educational attainment by people aged 55-64, both sex

Year	0 to 8 years	Some high school	High school graduate	Some postsecondary	Postsecondary certificate or diploma	University degree
1990	39.2	47	52.3	52.7	56.6	69
1991	38.2	46.8	49.8	53	57.4	65.1
1992	36.6	44.8	50.9	55.6	56.5	68.5
1993	34.9	43.9	49.2	54.6	56.2	70.1
1994	35.6	45.1	49.7	51	55.9	66.2
1995	34.3	42	47.8	55.3	55.2	67.1
1996	33.5	42.2	48.8	55	54.1	65.1
1997	33.7	43.3	49.9	53.2	55.3	63.6
1998	34.2	43.1	49.4	53.8	55.8	62.8
1999	35.4	44.2	50.8	52.9	56.5	61.6
2000	34.3	45.2	52.9	54.6	57.7	62.9
2001	34.9	44.2	53.1	54.6	56.7	62.9
2002	37.3	45.9	54.9	57.3	58.5	63.8
2003	39.2	47.8	57.2	60.9	62	66.1
2004	40.9	49.7	58.3	61	61	66.9
2005	39	48.6	58.2	60.5	63.1	66.9
2006	39.6	51.6	58.3	60.2	63.2	66.9
2007	39.4	51.9	60.2	63.5	63.6	68.3

Source: Statistics Canada

Table- 2.6: Participation rate by age group, both sexes, Manitoba

Date	55 to 59 years	60 to 64 years	65 years and over
1976	63	49.9	8.2
1977	64.4	46.8	9
1978	66.1	45.4	9.6
1979	63.4	46.4	9.5
1980	65.2	47.6	9.3
1981	65.2	48.9	8.7
1982	**64.8**	**45.6**	**9.4**
1983	68.5	47.6	9.1
1984	67	46.7	8.5
1985	62.6	42.4	8.3
1986	64.9	40	8.4
1987	67.6	38.3	8.4
1988	67.6	38.5	7.6
1989	69	39	**8.6**
1990	65	41.2	7.9
1991	66.2	42.6	8.6
1992	64.3	40.8	7.5
1993	65.4	40.1	8
1994	64.1	42.5	8.1
1995	62.9	38.9	7.2
1996	64.3	35.9	6.7
1997	62.2	38.1	7.2
1998	67.6	38.8	7.6
1999	66.9	39.3	7.7
2000	69	39.4	8.4
2001	67.3	41.7	7.5
2002	73.4	45.4	7.2
2003	72.7	46.1	8.1
2004	72.1	48.9	8.4
2005	**74**	**48.1**	**9**
2006	73.9	50.3	10
2007	75.1	50.5	10.1

Source: Statistics Canada

Table- 2.7: Participation rate by age group, both sexes, Quebec

Date	55 to 59 years	60 to 64 years	65 years and over
1976	54.9	40.8	8.1
1977	53.6	38.8	8.1
1978	54.4	40.3	7.8
1979	53.7	39.8	7.1
1980	54.6	40.7	6.9
1981	54.3	39.3	6.4
1982	52.6	37	6.6
1983	**54.6**	**36.9**	**5.8**
1984	53.2	34.1	6.7
1985	53.2	32.3	6.4
1986	52.3	31	5.1
1987	52.6	31.6	5
1988	53.1	29.2	5.4
1989	**54.4**	**27.6**	**5.8**
1990	53.5	30.6	4.7
1991	53.9	29.5	4.2
1992	53.9	28.6	5
1993	55	27.7	4.4
1994	55.1	29.4	4.1
1995	54.1	27.5	3.8
1996	54	26	4.4
1997	54.1	28.4	4.9
1998	54.1	28.9	4.9
1999	54.2	28.1	3.9
2000	55.7	29.8	3.3
2001	55.1	29.6	4
2002	57.2	33.2	4.4
2003	61.7	34.5	5.2
2004	62.1	36.8	5.5
2005	**62.1**	**37.5**	**5.9**
2006	64.1	37.1	6.4
2007	67	37.6	6.6

Source: Statistics Canada

Table-2.8: Unemployment rate for 55 years and over, both sex

Date	Unemployment rate
1976	3.9
1977	4.8
1978	5.1
1979	4.4
1980	4.3
1981	4.2
1982	6.5
1983	7.6
1984	7.3
1985	7.6
1986	6.9
1987	6.5
1988	5.8
1989	5.7
1990	5.5
1991	7.6
1992	8.6
1993	9.3
1994	8.6
1995	7.7
1996	7.3
1997	6.9
1998	6.3
1999	5.5
2000	5.1
2001	5.5
2002	5.8
2003	5.9
2004	5.6
2005	5.1
2006	5.1
2007	4.8

Source: Statistics Canada

Table- 2.9: Average age of retirement, both sexes

Date	Average age
1976	64.9
1977	65.1
1978	65
1979	64.5
1980	64.6
1981	64.6
1982	64.7
1983	64.1
1984	64.4
1985	64.1
1986	63.7
1987	63.5
1988	63.3
1989	63.2
1990	62.8
1991	62.7
1992	62.5
1993	62
1994	62.1
1995	61.9
1996	61.8
1997	61.2
1998	**60.9**
1999	61
2000	61.6
2001	61.5
2002	61.2
2003	61.7
2004	61.8
2005	61.4
2006	61.5
2007	61.6

Source: Statistics Canada

Table-2.10: Average retirement age by sectors (by class of workers), both sex

	Private Sector	Public Sector	Self Employed
1976	65.2	63.7	67.5
1977	65.7	64	66.9
1978	65.7	64.1	67
1979	65.3	63.4	66.4
1980	65.5	63.5	66.3
1981	65.2	63.5	67
1982	65.1	63.2	67.5
1983	64.6	63.4	66.4
1984	65.2	62.8	67.2
1985	65	62.4	67.5
1986	64	62.2	66.8
1987	63.8	61.8	67
1988	63.8	61.2	66.5
1989	63.6	60.7	66.6
1990	62.8	60.5	67.3
1991	63	60.5	66.5
1992	62.4	60.1	66.1
1993	61.8	60	67.5
1994	62.8	59.3	66.2
1995	62.7	59.4	66.5
1996	62.8	58.8	67.2
1997	62.3	58.6	67.7
1998	61.6	58.2	66.4
1999	61.7	58.7	65.4
2000	61.4	58.9	67.4
2001	61.8	59.2	66.7
2002	61.5	58.4	66.8
2003	62.1	59.8	66.4
2004	61.9	58.9	68.3
2005	62.1	59.2	67.2
2006	62.1	59.5	66
2007	62.3	59.2	66.7

Source: Statistics Canada

Table-2.11: Participation rate by provinces, both sexes, 2007

Province	55 to 59 years	60 to 64 years	65 years and over
Alberta (AB)	77.8	61.4	13.8
Saskatchewan (SK)	76.2	55.9	13.6
Manitoba (MB)	75.1	50.5	10.1
Prince Edward Island (PEI)	73.3	49.4	10.7
Ontario (ON)	72.3	50.5	9.5
British Columbia (BC)	70.1	48.8	8.5
Quebec (PQ)	67	37.6	6.6
New Brunswick (NB)	64.9	39.8	6.5
Nova Scotia (NS)	62.5	39.9	7
Newfoundland (NFL)	57.7	34.7	4.8

Source: Statistics Canada

Table-2.12: Participation rate by provinces, both sexes, 1976

Province	55 to 59 years	60 to 64 years	65 years and over
Alberta (AB)	66.6	52.1	13.4
Saskatchewan (SK)	62.1	48.9	13.3
Manitoba (MB)	63	49.9	8.2
Prince Edward Island (PEI)	57.7	48	10.6
Ontario (ON)	65.2	48.6	10.1
British Columbia (BC)	59.8	38.2	7
Quebec (PQ)	54.9	40.8	8.1
New Brunswick (NB)	51.9	39.9	5.5
Nova Scotia (NS)	55.6	40.6	7.9
Newfoundland (NFL)	42.3	32	4

Source: Statistics Canada

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