National Population Projections

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I. Executive Summary

A. Purpose of the Study

This is the first study of the national population projections for Canada published by the Office of the Chief Actuary (OCA). The primary purpose of the study is to provide an estimate of the future size and composition of the population of Canada. Specifically, the projections provide long-term estimates of the number of births, deaths, immigrants, emigrants, and age and sex composition of the Canadian population.

The study also examines the sensitivity of the future evolution of the population to certain key assumptions. In addition, the study provides a comparison of key aging indicators between Canada and the other G8 countries (France, Italy, Germany, Japan, Russia, the United Kingdom, and the United States).

B. Main Findings

This study provides projections of the Canadian population based on the 2001 Census data using the same "best-estimate" assumptions as in the 21st Actuarial Report on the Canada Pension Plan as at 31 December 2003.

Size and Aging of the Population

- The population of Canada is projected to grow from 31.6 million in 2003 to 44.3 million by 2075. In 2003, the numbers of males and females were 15.6 million and 16.0 million, respectively. By 2075, the number of males is projected to reach 21.9 million, and the number of females is projected to reach 22.4 million.

- The average (mean) age of the population in 2003 was 37.6 years, and the median age was 37.9 years. By 2030, the mean and median ages are projected to reach 43.1 and 43.9 years, respectively. By 2075, the mean and median ages will increase slightly more, with the mean reaching 44.8 years and the median reaching 45.4 years.

- The population will continue to increase, but at a declining rate due to projected low levels of fertility. The population will also age over time as a result of low fertility, increasing life expectancies, and the aging of the baby boom generation.

- In 2003, the proportion of the population aged 65 and older was 12.8% (4.1 million people). By 2030, the year by which most of the baby boomers will have retired, this proportion is expected to reach 23.0% (8.9 million). For those aged 80 and older, the proportion will grow from 3.3% (1.0 million) to 5.9% (2.3 million) over the same period.

- As the population ages, greater dependency will be placed on the working-age population (ages 20 to 64). In 2003, the ratio of youths (0 to 19) and retirees (65 and older) to the working-age population was 61 youths and retirees per 100 working-age persons. This total dependency ratio is projected to climb to 78 youths and retirees per 100 working-age persons by 2030.

Fertility

- The total fertility rate has been generally declining since the late 1950s. In 1959, the total fertility rate was 3.9 children per woman. The total fertility rate increased somewhat in the early 1990s to a level of 1.7, but then resumed to decline. In 2001, the total fertility rate was 1.5. It is projected that this rate will increase moderately to an ultimate level of 1.6 by 2016 primarily due to women continuing to have children at later ages.

- The mean age at motherhood has been increasing since the mid-1970s following a period of decline since the mid-1940s. It is projected that this age will continue to increase, reaching 29.4 years by 2016. Prolonged periods of education, increased labour force participation rates for women, and postponement of marriage are all expected to contribute to women having children at later ages.

- The number of births is projected to increase from 333,000 in 2003 to 413,000 in 2075.

- The ratio of male to female newborns is expected to remain at 1.056, consistent with experience over the last 25 years.

Mortality

- Tremendous gains were made in life expectancy during the 20th century. These gains were mostly due to a marked reduction in child and infant mortality resulting from vaccinations, other medical interventions, improved sanitation and improved quality of life.

- Further increases in life expectancy are projected in the future, but at a slower pace than has been observed in the past. Since youths have already experienced much of the increase in life expectancy they will see, further increases in longevity will have to come at the older ages. This will present a challenge, as there is still much to be learned about the diseases that affect the old and the aging process itself.

- In 2003, male and female newborns had expected lifetimes of 83 years and 86 years, respectively. By 2075, expected lifetimes are projected to reach 87 years for male newborns and 90 years for female newborns.

- The gap between female and male life expectancies at birth is expected to continue to decrease following the trend over the last few decades, but at a declining rate. From 2003 to 2075, this gap is expected to narrow from 3.4 to 2.9 years.

- The probability of a newborn reaching retirement age or older is expected to increase. The probability of reaching age 65 is expected to increase from 85% in 2003 to 93% in 2075 for males, and from 91% to 95% for females over the same period.

- The older population is also expected to live longer, with the gender gap decreasing over time. By 2025, 65-year-old males and females could expect to live another

19.6 years and 22.3 years, respectively. At age 65, the probability of reaching age 85 is expected to increase from 40% to 57% for males, and from 56% to 69% for females over the period 2003 to 2075.

- The number of deaths is projected to increase from 225,000 in 2003 to 530,000 in 2075.

Migration

- Immigration and emigration have historically been volatile as they are largely affected by many factors, including political policies, the economy and social attitudes. However, historical levels have been relatively high compared to the general population.

- The net migration level is expected to be 0.50% of the population between 2004 and 2015, and then to gradually increase to 0.54% of the population by 2020. The number of net migrants is correspondingly projected to grow from about 158,000 in 2003 to 196,000 in 2020, and then to 239,000 by 2075.

- Historically, immigrants have been relatively young compared to the general population, and this trend is expected to continue. In 2003, 79% of male and 80% of female immigrants were less than age 40, while male and female immigrants aged 55 and older accounted for only 7% of all immigrants.

- Emigrants have also historically been relatively young, though slightly older than immigrants. In 2003, 69% of net emigrants (emigrants less those who return) were less than 40 years old.

- Net migrants or simply "migrants" (immigrants less net emigrants) are projected to remain relatively young, with the majority less than 40 years old. Of those less than 40, significant proportions are projected to be between ages 20 and 39 and less than age 10 as seen in the past.

- The average ages of the three migration groups have historically been less than that of the general population. In 2003, the average age of immigrants, net emigrants, and net migrants were 28.3 years, 33.0 years, and 26.5 years respectively. These compare to an average age of 37.6 for the general population in 2003.

C. General Conclusions

The population of Canada will continue to increase, but at a slower rate than has been experienced in the past. Moreover, the population is expected to age over time. Low fertility rates will continue to contribute to the slowing growth rate of the population. Along with low fertility rates, increasing life expectancies and the aging of the baby boomers will continue to contribute to the aging of the population.

Fertility rates have fallen with the prevalence of contraception methods, longer periods of formal education, increased levels of female participation in the labour force, and postponement of marriage. It is not likely that the fertility levels of the late 1950s will be experienced in the near or long term.

Significant gains were achieved in life expectancies during the 20th century. Most of these gains were achieved at the younger ages with the introduction of vaccines, improved medical intervention and sanitation, and overall improved quality of life. As such, any material gains in life expectancies will have to come from the older ages where there is still much to be learned about the diseases which affect the old, and the aging process itself. However, the rising incidence of obesity in both children and adults and consequent deterioration in health as well as the emergence of more virulent forms of infectious diseases worldwide could act to reduce future projected gains in life expectancy.

The level of migration affects the aging of the population. As migrants are relatively younger than the general population, increased levels of migration act to impede the extent of this aging. Conversely, low levels of migration lead to accelerated aging of the population. Further, the impact of high or low levels of migration on the aging of the population may be more significant than changes in the levels of fertility or mortality.

The baby boomers are expected to continue to exert a significant impact on the population, with labour shortages anticipated in the next few decades. As this group retires mostly by 2030, the proportions of older individuals in the population will notably increase.

Canada will not be the only country to see these demographic changes in the future. The other G8 countries are also expected to face similar socio-economic challenges as both the growth rates of their populations decline and their populations age.

II. Introduction

A. Purpose

This study presents an overview of the historical and projected population of Canada and provides more detailed results of the projections than those given in the 21st Actuarial Report on the Canada Pension Plan as at 31 December 2003 ("21st CPP Report"). Each component of the evolution of the population, namely fertility, mortality, and migration is discussed in more detail. This study also presents different sensitivity tests regarding mortality and migration than those presented in the 21st CPP Report in order to examine the effects of different possible future scenarios on the population. In addition, a comparison of key aging indicators between the G8 countries (Canada, France, Germany, Italy, Japan, Russia, the United Kingdom, and the United States) is provided as a means to consider the potential impact of aging in these countries.

This study may be useful to demographers and actuaries interested in population projections.

B. Scope

The projections presented in this study are based on the 2001 Census data and the "best-estimate" assumptions used in the 21st CPP Report. The "best-estimate" assumptions reflect our best judgement as to the future size, and age and sex distribution of the Canadian population. The projections in this study cover a 72-year period, from 2004 to 2075 and place more emphasis on historical trends than on short-term trends.

Section III presents the results of the projections of the future size and composition of the population with respect to births, deaths, migration, age and sex. Section IV describes the key best-estimate assumptions on which the projections are based. Section V describes the starting population from which the projections are based. Sections VI, VII, and VIII discuss historical characteristics and projections with respect to fertility, mortality and migration, respectively. Sensitivity tests of the assumptions are next presented in Section IX. Lastly, various appendices in Section X describe the methodology, provide more detailed information on the projections, and list the references used and contributors to this study.

III. Results

A. Size of the Population

The population of Canada is projected to increase from 31.6 million in 2003 to 44.3 million by 2075, with females continuing to outnumber males by a moderate amount (see Table 1 and Chart 1). The baby boomers, those mostly born between 1945 and 1965, will continue to exert a major impact on the demographics of Canada, in particular with respect to the graying of the nation. Chart 2 displays the age and sex distribution of Canada in 1975, 2003, and 2075. The boomers' effect is primarily seen in the changing shape of the distribution over time as the proportion of the population at older ages increases. Expected low levels of fertility and increased life expectancies will also contribute to the distribution shifting upward into the older ages over time.

Projections of the components of population growth, namely births, deaths, and migration and the resulting age structure of the population are discussed in the following subsections.

Table 1 Population of Canada by Sex
(thousands)

Year	Males	Females	Total
1975	11,580	11,563	23,143
1985	12,831	13,011	25,843
1995	14,503	14,799	29,302
2003	15,662	15,968	31,630
2005	15,928	16,233	32,162
2010	16,596	16,886	33,482
2015	17,276	17,544	34,819
2020	17,970	18,232	36,202
2025	18,606	18,889	37,495
2030	19,139	19,469	38,608
2035	19,559	19,945	39,504
2040	19,894	20,324	40,217
2045	20,181	20,636	40,817
2050	20,453	20,913	41,367
2075	21,897	22,377	44,274

Chart 1 Population of Canada
(millions)

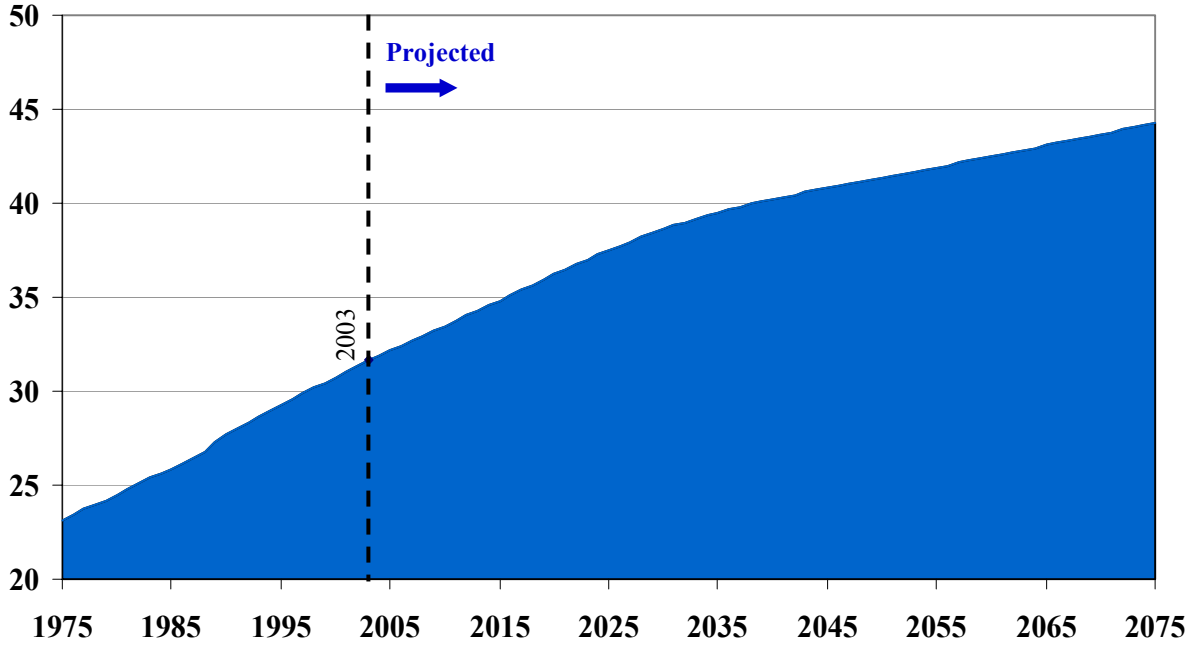
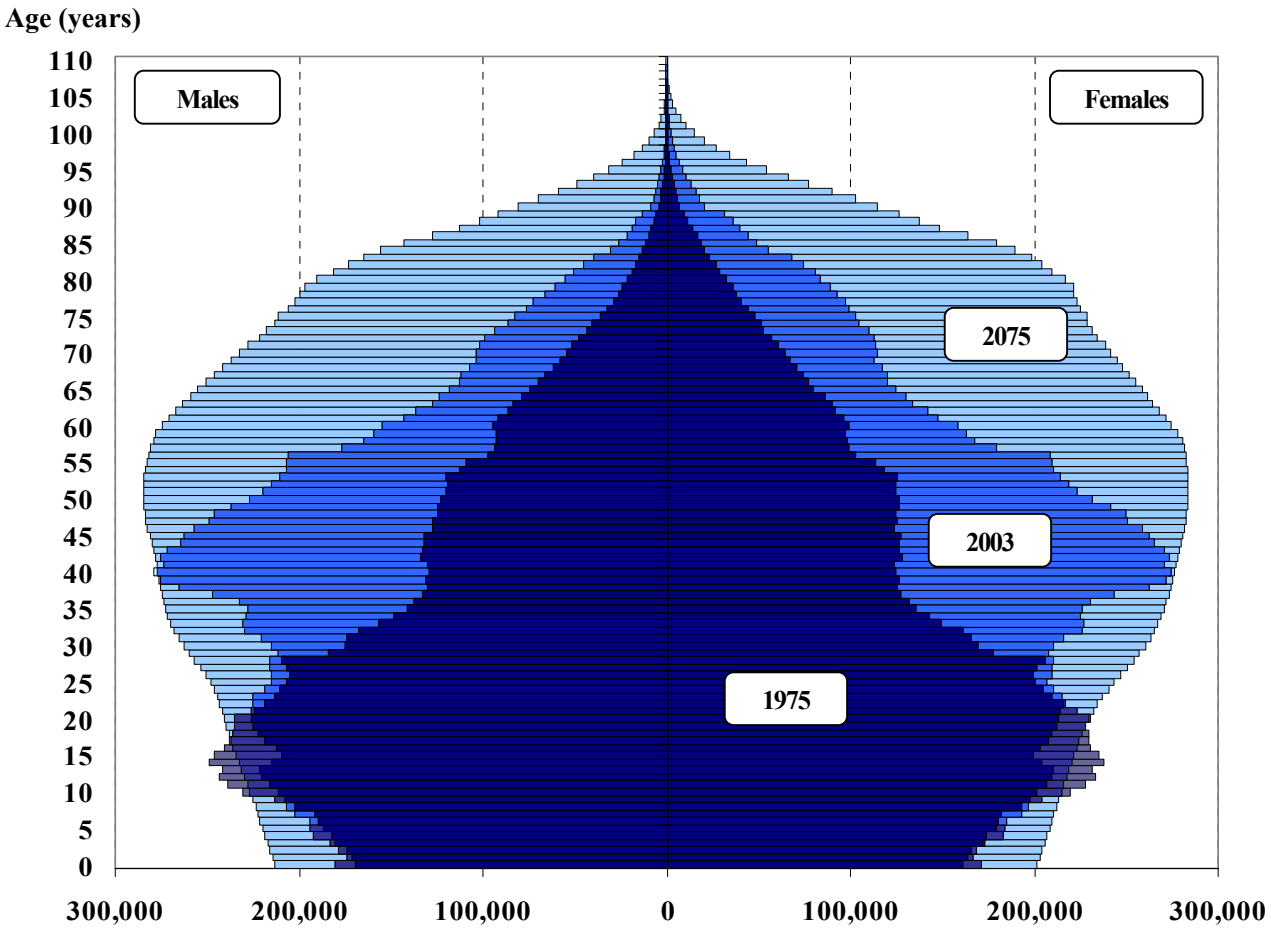


Chart 2 Age Structure of the Canadian Population



B. Fertility, Mortality and Migration

As the population grows, its composition will change not just with respect to age, but also with respect to the three main drivers of population growth: births, deaths and net migrants. Net migration is the excess of immigration over emigration, adjusting for those who emigrate but eventually return to Canada. Net migration is also referred to simply as migration in this study.

Fertility

The total fertility rate per woman per year, that is, the total number of children a woman can expect to have in her lifetime given the age-specific fertility rates for that year, has been declining overall since the late 1950s, while the average (mean) age at motherhood has been rising since the mid-1970s. The total fertility rate was 1.51 in 2001 and is assumed to increase slightly, reaching an ultimate level of 1.60 by 2016. This increase is primarily the result of women assumed to continue having children at later ages. This is reflected in the mean age at motherhood increasing from 28.5 years in 2001 to an ultimate age of 29.4 by 2016. The mean age at motherhood is the average age of all mothers between the ages of 15 and 49. The historical and projected total fertility rate and mean age at motherhood are given in Table 2.

Table 2 Total Fertility Rate per Woman and Mean Age at Motherhood

Year	Total Fertility Rate per Woman	Mean Age at Motherhood
1941	2.83	28.7
1961	3.84	27.3
1981	1.65	26.6
2001	1.51	28.5
2010	1.53	29.1
2016+	1.60	29.4

Mortality

Trends in increasing life expectancies are assumed to continue, however at a much slower rate. It is unlikely that we will see the tremendous gains in life expectancy made over the last century. A male newborn in 2003 could expect a lifetime of 78 years, whereas a female newborn could expect a lifetime of 82 years. These values assume the mortality rates experienced in 2003 will apply each year in the future, that is, with no improvements in mortality. A more realistic measure of life expectancy would include future expected mortality improvements, that is, mortality rates which improve over time. In such case, male and female newborns in 2003 could expect lifetimes of 83 and 86, respectively. As the population is expected to age, the resulting average (mean) age at death will correspondingly increase. Historical and projected life expectancies at birth and mean age at death for males and females are shown in Table 3.

Table 3 Life Expectancy at Birth and Mean Age at Death

Year	Males			Females		
	Life Expectancy at Birth		Mean Age at Death	Life Expectancy at Birth		Mean Age at Death
	without mortality improvements	with mortality improvements		without mortality improvements	with mortality improvements	
1975	70.3	79.9	63.3	77.4	84.0	68.9
2003	77.5	82.9	70.1	82.4	86.2	76.4
2010	79.0	83.3	73.2	83.1	86.6	78.7
2025	80.7	84.2	76.3	84.1	87.4	80.1
2050	82.0	85.5	81.1	85.3	88.6	84.4
2075	83.4	86.8	82.5	86.5	89.7	85.5

Migration

The level of migration has an impact on the aging of the population. Historically, the mean ages of immigrants, net emigrants (emigrants less those who return), and resulting net migrants (immigrants less net emigrants) have been less than the mean age of the population. This trend is expected to continue. In 2003, the mean age of immigrants, net emigrants, and net migrants were 28.3 years, 33.0 years, and 26.5 years respectively. In comparison, the mean age of the general population was 37.6 years in 2003.

For migrants in 2003, 84% of males were less than 40 years old, and for females, the proportion was 83%. This trend is expected to continue, with the majority of migrants being less than age 40. The impact of this is to impede the extent of aging in the population. Historical and projected levels of migration by age and sex, and their relative proportions are provided in Tables 4 and 5.

Table 4 Net Migration by Age and Sex
(thousands)

	Males					Females				
Age Group/Year	**1975**	**2003**	**2010**	**2030**	**2075**	**1975**	**2003**	**2010**	**2030**	**2075**
0 - 9	18.8	13.1	14.4	17.7	20.4	17.6	12.7	14.0	17.3	19.9
10 - 19	12.4	9.5	12.0	15.0	17.2	14.0	9.3	11.6	14.5	16.6
20 - 24	15.8	5.7	6.2	7.6	8.7	15.0	10.3	10.6	13.0	14.9
25 - 29	15.6	11.7	13.6	16.7	19.2	12.6	14.3	15.9	19.6	22.5
30 - 39	14.7	16.4	21.2	26.7	30.6	10.6	17.1	21.4	26.7	30.7
40 - 49	4.8	5.5	7.3	9.5	10.9	4.6	4.8	6.3	8.1	9.3
50 - 59	2.1	2.4	2.0	2.6	3.0	3.1	4.0	3.4	4.3	5.0
60 - 64	1.3	1.6	1.5	1.8	2.1	1.6	2.0	2.0	2.4	2.8
65+	1.6	1.3	1.1	1.5	1.7	2.6	1.9	1.9	2.4	2.8
0 - 19	31.2	22.6	26.4	32.7	37.6	31.6	22.0	25.7	31.8	36.5
0 - 39	77.3	56.3	67.3	83.7	96.1	69.7	63.7	73.5	91.1	104.6
40+	9.9	10.9	11.9	15.4	17.6	11.9	12.6	13.6	17.2	19.8
20 - 64	54.4	43.3	51.7	64.8	74.4	47.5	52.5	59.5	74.1	85.1
Total	87.2	67.2	79.2	99.0	113.7	81.6	76.4	87.1	108.3	124.4
Mean Age Net Migrants (years)	23.5	26.0	25.9	26.1	26.1	24.1	26.9	26.7	26.9	26.9
Mean Age Population (years)	30.4	36.5	38.5	42.3	43.8	31.8	38.6	40.3	44.0	45.7

Table 5 Proportions of Net Migration by Age and Sex

	Males					Females				
Age Group/Year	**1975**	**2003**	**2010**	**2030**	**2075**	**1975**	**2003**	**2010**	**2030**	**2075**
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
0 - 9	22	19	18	18	18	22	17	16	16	16
10 - 19	14	14	15	15	15	17	12	13	13	13
20 - 24	18	8	8	8	8	18	13	12	12	12
25 - 29	18	17	17	17	17	15	19	18	18	18
30 - 39	17	24	27	27	27	13	22	25	25	25
40 - 49	6	8	9	10	10	6	6	7	7	7
50 - 59	2	4	2	3	3	4	5	4	4	4
60 - 64	2	2	2	2	2	2	3	2	2	2
65+	2	2	1	1	1	3	2	2	2	2
0 - 19	36	34	33	33	33	39	29	29	29	29
0 - 39	89	84	85	84	84	85	83	84	84	84
40+	11	16	15	16	16	15	17	16	16	16
20 - 64	62	64	65	65	65	58	69	68	68	68
Total	100	100	100	100	100	100	100	100	100	100

Projected Population

The total projected change in the population, split by births, deaths and migration is presented in Table 6 below. Natural change, or births less deaths, is projected to decrease over the long term, eventually turning negative by 2030 as the number of deaths exceeds births. Net migration is projected to offset this natural decrease, but only to a limited extent. This will lead to a diminished rate of growth of the population in the future.

The total change in the population is composed of the natural change and the change due to migration. The components of change may be viewed both in absolute number and as relative proportions of the total population. These proportions represent the respective components of the total growth rate. For instance, in 2003, the population grew by 266,000 or by 0.84%. The contribution from natural change was 108,000 or 0.34% and the remaining 158,000 or 0.50% was contributed by the change in migration. In the long term, growth in the population is expected to slow down to about 0.30% as the natural change becomes negative.

Table 6 Components of Population Growth
(thousands)

				Natural Change		Net Migrants		Total Change	
Year	Population 1st July	Births	Deaths		% of population		% of population		% of population
2003	31,630	333	225	108	0.34	158	0.50	266	0.84
2004	31,896	334	229	106	0.33	160	0.50	265	0.83
2005	32,162	335	232	103	0.32	161	0.50	264	0.82
2006	32,426	338	236	101	0.31	162	0.50	264	0.81
2007	32,689	341	240	100	0.31	164	0.50	264	0.81
2008	32,954	344	245	99	0.30	165	0.50	264	0.80
2009	33,218	347	249	98	0.30	166	0.50	264	0.80
2010	33,482	351	254	97	0.29	168	0.50	265	0.79
2015	34,819	374	277	97	0.28	181	0.52	278	0.80
2020	36,202	377	303	73	0.20	196	0.54	269	0.74
2025	37,495	373	336	36	0.10	203	0.54	239	0.64
2030	38,608	365	378	(12)	(0.03)	208	0.54	196	0.51
2050	41,367	394	509	(115)	(0.28)	223	0.54	108	0.26
2075	44,274	413	530	(116)	(0.26)	239	0.54	122	0.28

C. Age Structure

The population of Canada is aging as a result of low fertility rates, increased life expectancies, and the baby boomers nearing retirement. The historical and projected population by age group as well as the mean and median ages for males, females, and the total population of Canada are presented in Tables 7 to 9, and the relative proportions of these age groups are presented in Table 10.

It is expected that females will continue to slightly outnumber males, and that females will on average be older than males due to females' greater life expectancies. The

mean age of the population is expected to increase from 37.6 years in 2003 to 43.1 years by 2030, and then to increase slightly to 44.8 years by 2075. The median age is expected to show a similar increase over the same period. The median age represents the age at which half the population is older, whereas the mean age is the average age.

In 1975, the total population aged 65 years and older (retirees) was 2.0 million, comprising 8% of the population (see Tables 9 and 10). By 2003, this age group had grown to 4.1 million or 13% of the population. It is projected that in the next 25 years, the population aged 65 and over will more than double in size, reaching 8.9 million or 23% of the population by 2030, and then will continue to grow, surpassing 11.2 million or 25% of the population by 2075.

The population aged 80 and older has also increased significantly, representing one of the fastest growing segments of the population. Between 1975 and 2003, this age group increased from 400,000 to 1.0 million (from 2% to 3% of the population). It is projected this group will also more than double by 2030, reaching 2.3 million (6% of the population) and then will continue to climb, reaching 4.3 million (10% of the population) by 2075. Significant increases in the older segments of the population are anticipated as more people reach older ages.

In contrast, youths (newborns to age 19) are projected to increase by only 154,000 between 2003 and 2030, and then by 755,000 between 2030 and 2075, for a total increase of 909,000 over the period 2003 to 2075. This compares to an increase of 4.6 million for those of working age (20 to 64) and 7.2 million for retirees (65 and older) over the same period. The proportions of youths and working-age persons will fall from their 2003 levels of 25% and 62% to 21% and 56% of the population by 2030, respectively. By 2075, the proportion of youths will fall slightly more to 20%, and the proportion of working-age persons will fall to 55%.

Table 7 Male Population of Canada by Age
(thousands)

Age Group	1975	2003	2010	2020	2030	2050	2075
0 - 19	**4,298**	**4,049**	**3,896**	**3,918**	**4,136**	**4,228**	**4,524**
20 - 24	1,103	1,119	1,110	1,048	1,036	1,130	1,216
25 - 49	3,802	6,062	6,098	6,168	6,242	6,366	6,786
50 - 54	595	1,079	1,293	1,203	1,260	1,298	1,421
55 - 59	485	914	1,117	1,346	1,175	1,351	1,402
60 - 64	435	685	967	1,240	1,162	1,295	1,334
20 - 64	**6,420**	**9,859**	**10,585**	**11,005**	**10,874**	**11,439**	**12,159**
65+	**862**	**1,754**	**2,116**	**3,047**	**4,128**	**4,787**	**5,214**
75+	293	717	893	1,172	1,781	2,450	2,871
80+	**146**	**359**	**484**	**623**	**957**	**1,552**	**1,855**
85+	60	137	204	287	395	838	989
All ages	**11,580**	**15,662**	**16,596**	**17,970**	**19,139**	**20,453**	**21,897**
Mean age	30.4	36.5	38.5	40.6	42.3	43.5	43.8
Median age	26.9	37.0	39.1	41.1	43.1	44.1	44.4

Table 8 Female Population of Canada by Age
(thousands)

Age Group	1975	2003	2010	2020	2030	2050	2075
0 - 19	**4,109**	**3,853**	**3,699**	**3,701**	**3,920**	**4,001**	**4,288**
20 - 24	1,086	1,069	1,075	1,018	996	1,097	1,174
25 - 49	3,677	6,001	6,001	6,082	6,198	6,320	6,744
50 - 54	620	1,098	1,304	1,197	1,239	1,299	1,418
55 - 59	511	929	1,153	1,350	1,172	1,355	1,405
60 - 64	464	712	1,003	1,277	1,179	1,313	1,342
20 - 64	**6,358**	**9,809**	**10,536**	**10,923**	**10,784**	**11,384**	**12,083**
65+	**1,096**	**2,306**	**2,652**	**3,608**	**4,765**	**5,528**	**6,007**
75+	439	1,156	1,320	1,585	2,292	3,113	3,572
80+	**233**	**675**	**822**	**944**	**1,340**	**2,122**	**2,451**
85+	101	313	422	503	633	1,263	1,433
All ages	**11,563**	**15,968**	**16,886**	**18,232**	**19,469**	**20,913**	**22,377**
Mean age	31.8	38.6	40.3	42.3	44.0	45.5	45.7
Median age	27.9	38.8	40.9	42.9	44.8	46.2	46.4

Table 9 Total Population of Canada by Age
(thousands)

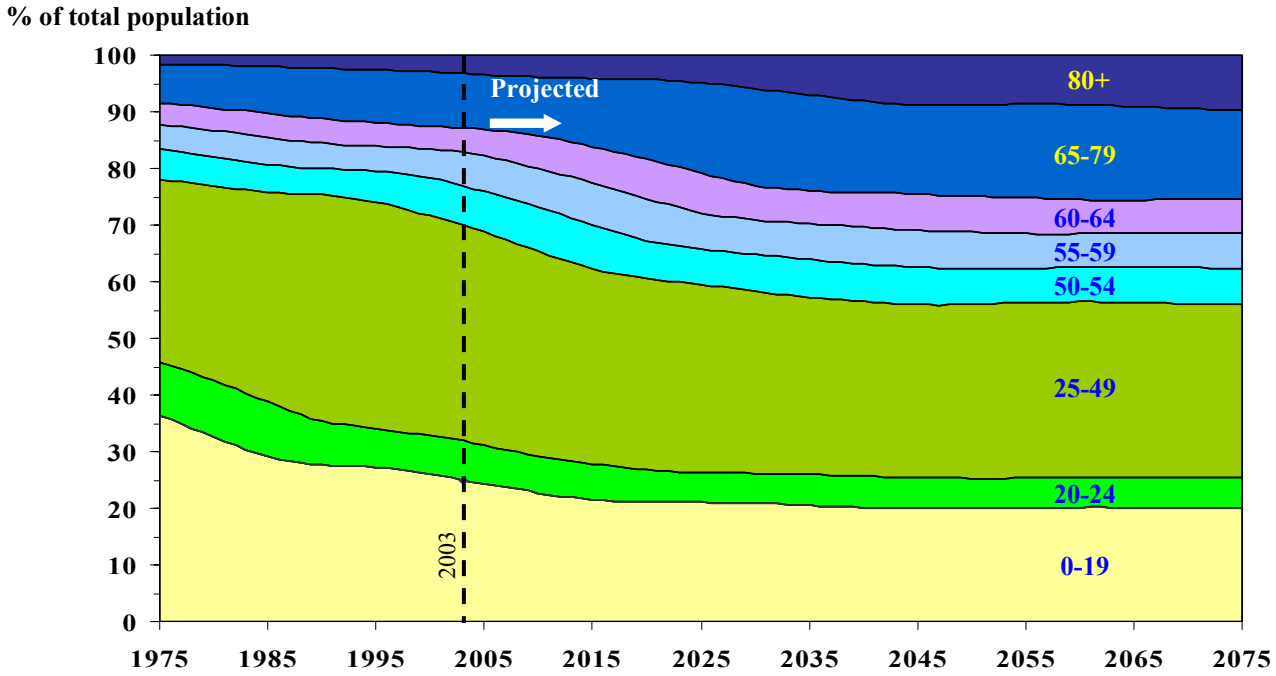
Age Group	1975	2003	2010	2020	2030	2050	2075
0 - 19	**8,407**	**7,902**	**7,595**	**7,619**	**8,056**	**8,229**	**8,811**
20 - 24	2,189	2,189	2,184	2,066	2,031	2,227	2,390
25 - 49	7,479	12,063	12,099	12,250	12,440	12,685	13,530
50 - 54	1,215	2,176	2,597	2,399	2,499	2,597	2,839
55 - 59	996	1,842	2,270	2,696	2,347	2,706	2,807
60 - 64	899	1,397	1,969	2,516	2,341	2,608	2,676
20 - 64	**12,779**	**19,667**	**21,120**	**21,928**	**21,659**	**22,824**	**24,242**
65+	**1,958**	**4,060**	**4,767**	**6,655**	**8,894**	**10,314**	**11,220**
75+	733	1,873	2,212	2,757	4,073	5,563	6,442
80+	**379**	**1,034**	**1,306**	**1,566**	**2,297**	**3,674**	**4,305**
85+	161	450	626	790	1,029	2,101	2,422
All ages	**23,143**	**31,630**	**33,482**	**36,202**	**38,608**	**41,367**	**44,274**
Mean age	31.1	37.6	39.4	41.5	43.1	44.5	44.8
Median age	27.4	37.9	40.0	42.0	43.9	45.1	45.4

Table 10 Proportions of Total Population of Canada by Age

Age Group	1975	2003	2010	2020	2030	2050	2075
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
0 - 19	**36.3**	**25.0**	**22.7**	**21.0**	**20.9**	**19.9**	**19.9**
20 - 24	9.5	6.9	6.5	5.7	5.3	5.4	5.4
25 - 49	32.3	38.1	36.1	33.8	32.2	30.7	30.6
50 - 54	5.2	6.9	7.8	6.6	6.5	6.3	6.4
55 - 59	4.3	5.8	6.8	7.4	6.1	6.5	6.3
60 - 64	3.9	4.4	5.9	7.0	6.1	6.3	6.0
20 - 64	**55.2**	**62.2**	**63.1**	**60.6**	**56.1**	**55.2**	**54.8**
65+	**8.5**	**12.8**	**14.2**	**18.4**	**23.0**	**24.9**	**25.3**
75+	3.2	5.9	6.6	7.6	10.6	13.4	14.6
80+	**1.6**	**3.3**	**3.9**	**4.3**	**5.9**	**8.9**	**9.7**
85+	0.7	1.4	1.9	2.2	2.7	5.1	5.5

The evolution of the age distribution of the population is shown in Chart 3. The substantial increase in the proportions of those aged 65 and older and those aged 80 and older can be seen.

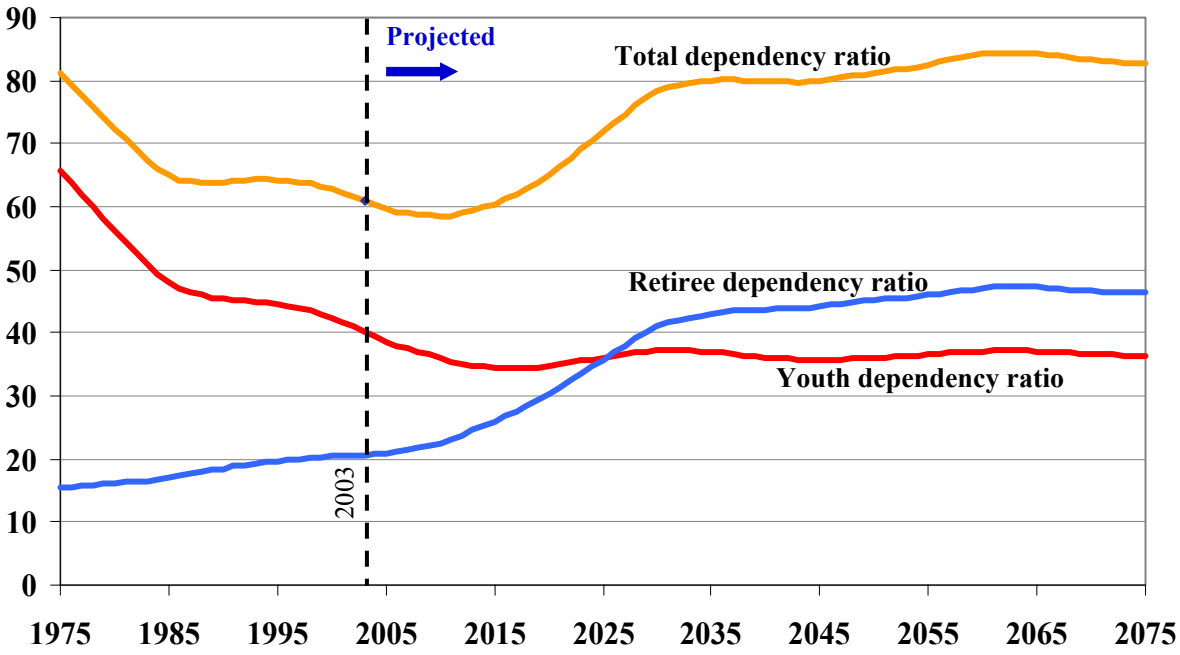
Chart 3 Age Distribution of the Population



As the population evolves, greater dependency will be placed on those of working age as a greater number of youths and retirees will depend on those in the workforce. The youth dependency ratio (youth population to working-age population) fell from 66 to 40 youths per 100 working-age persons between 1975 and 2003 due to falling fertility rates. Over the same period, the retiree dependency ratio (retiree population to working-age population) increased from 15 to 21 retirees per 100 working-age persons.

As fertility rates are assumed to remain low and life expectancies are expected to increase, the ratio of dependent youths is projected to fall to 36 youths per 100 working-age persons, and the ratio of dependent retirees is projected to reach 46 retirees per 100 working-age persons by 2075. By 2030 when most baby boomers will have retired, the retiree dependency ratio will surpass that of youths, and will continue to increase moderately thereafter. This will yield a total dependency ratio (retiree and youth populations to working-age population) of 83 youths and retirees combined per 100 working-age persons by 2075. The evolution of the youth, retiree and total dependency ratios are shown in Chart 4.

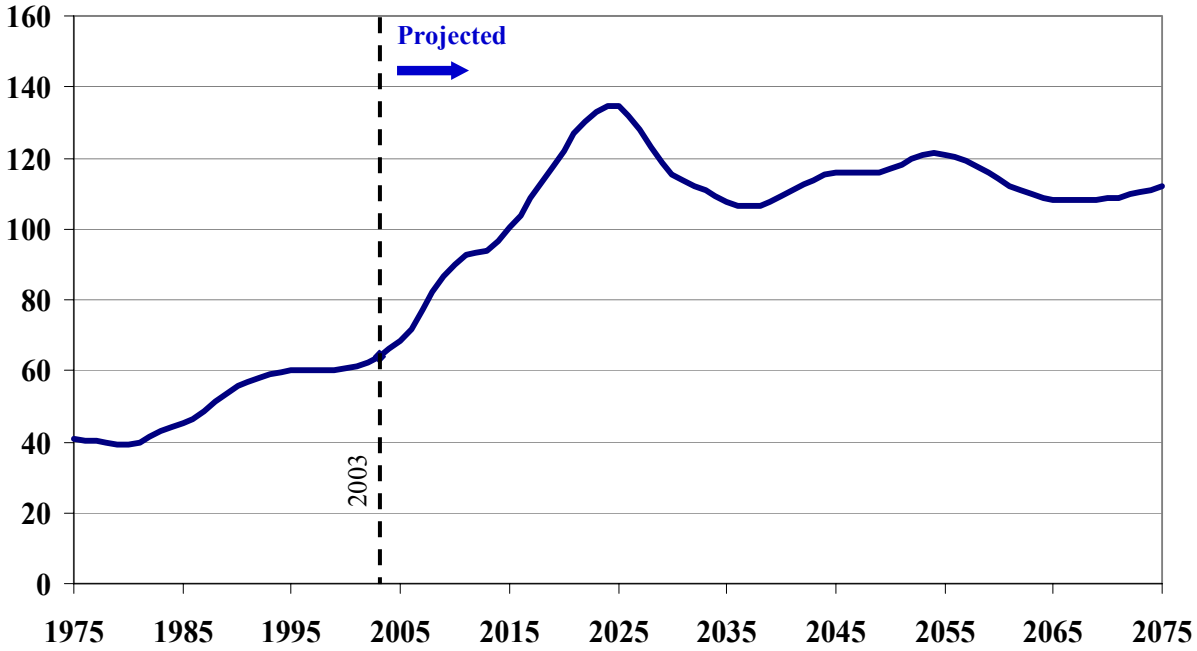
Chart 4 Dependency Ratios
(per 100 people of working age)



An alternative indicator of the aging of the population and more specifically, the anticipated labour shortage as the boomers retire over the coming decades, is the ratio of those leaving the workforce (ages 60 to 64) to those entering it (ages 20 to 24).

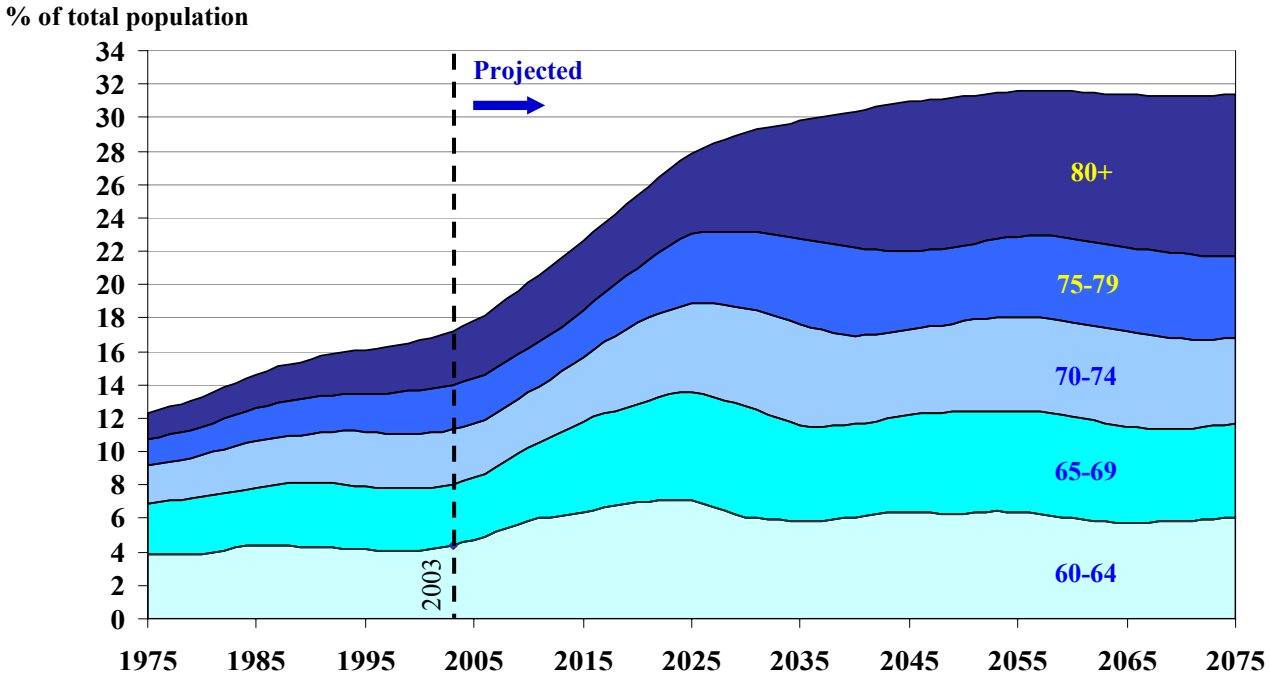
This ratio historically had been well below unity. However, this scenario is projected to reverse in the future as the baby boomers near retirement. In 1975, this ratio had a value of 41 people leaving the workforce for every 100 people entering it. By 2003, the ratio had climbed to 64 per 100. It is anticipated that it will further continue to increase, reaching a peak in 2025 of over 134 per 100. Thereafter, the ratio will show a moderate peak around the mid-2050s as the echo generation (the children of the baby boomers) reach retirement age, but nonetheless will remain above unity. The evolution of this ratio is shown in Chart 5.

Chart 5 People Leaving (60-64) to People Entering (20-24) the Workforce
(per 100 people entering the workforce)



Lastly, as mentioned earlier, the older population is projected to grow significantly in the future. Chart 6 illustrates the evolution of the age distribution for those aged 60 and older. Most notable is the expected increase in the population aged 80 and older, from 3% of the total population in 2003 to 10% by 2075. The mean age for those aged 60 and older is expected to increase from 72 years in 2003 to 74 years by 2075.

Chart 6 Age Distribution of the Population, Ages 60 and Older



IV. Best-Estimate Assumptions

The projections in this study cover a long period of time (72 years) and the assumptions chosen are the same as in the 21st CPP Report. The assumptions are determined by putting more emphasis on historical trends than on short-term trends. These assumptions reflect our best judgement and are referred to in this study as the "best-estimate" assumptions. The assumptions were chosen taking into account certain interrelationships among them.

Table 11 presents a summary of the most important assumptions used in this study.

Table 11 Best-Estimate Demographic Assumptions

Canada			
Total fertility rate	1.60		
Net migration rate	0.50% of population to 2015 0.54% of population for 2020+		
Mortality	1995-97 Life Tables for Canada		
		2005	2025
Canadian life expectancy at birth	Males	78.0 years	80.7 years
	Females	82.6 years	84.1 years

The assumptions together with both past experience and projections for fertility, mortality and migration are discussed in more detail in Sections VI, VII and VIII, respectively. Both the volatility of these factors and the long-term nature of the projections act to ensure that actual experience will not develop exactly in accordance with the assumptions.

V. Starting Population

The starting point for the population projections is the population estimates provided by Statistics Canada as at 1 July 2003, by age and sex. The estimates are based on the 2001 Census and are adjusted for the Census undercount. The population includes all non-permanent residents as reported in the Census. The population estimates as at 1 July 2003 are 15,662,000 males and 15,968,000 females for a total of 31,630,000 people.

VI. Fertility

A. Age-Specific, Total and Cohort Fertility Rates

The fertility rate for a given age and year is the average number of live births per female of that age during that year. The total fertility rate for a year is the average number of children that would be born to a woman in her lifetime if she experienced the age-specific fertility rates observed in, or assumed for, that year. In comparison, the cohort fertility rate is the average number of children born to a woman in her lifetime for women born in a given year. Of the two rates, the cohort rate is considered a better indicator of trends in fertility over time since it tracks fertility over successive generations. In analyzing both rates, available historical data up to and including year 2001 were considered.

Both total and cohort fertility rates have declined significantly over the last 50 years. The total fertility rate fell from a high of 3.94 in 1959 to recent lows of about 1.5 in the late 1990s. The total fertility rate increased somewhat to reach about 1.7 in the early 1990s. Over the last two decades, the total fertility rate averaged about 1.62 and was 1.51 in 2001.

The cohort fertility rate fell from about 3.3 in the early 1960s to 1.7 by the late 1990s. This rate averaged about 1.80 over the last two decades and was 1.71 in 2001. This cohort rate assumes a mean age at motherhood of 29 years. The mean age at motherhood for a given year is the average age of all mothers between the ages of 15 and 49 in that year. A mean age at motherhood of 29 years is close to the current and projected ultimate mean age at motherhood.

Variations in the fertility rate result from changes in many factors, including social attitudes and economic conditions. In this study, it was assumed that the total fertility rate from 2016 onward would be 1.60. This assumed ultimate rate reflects historical trends in fertility by age group over the last 15 years. It is slightly higher than the most recent observed rates. A small increase in the total fertility rate is expected over the medium-term horizon because of continued trends in women having their first child at a later age due to longer stays in the education system, increased labour force participation, and later marriages. Economic conditions are also assumed to improve over the medium term, which could help families plan for additional children. The cohort fertility rate is expected to continue to fall to a level of 1.60 by 2016. Fertility rates are expected to remain below the replacement level of 2.1, which is the rate required to maintain the size of population from births and deaths, excluding the effect of migration.

The historical and assumed total and cohort fertility rates for selected years are shown in Tables 12 and 13 and in Chart 7. Fertility rates by age group are also shown in both tables. Rates have generally declined over the past four decades for women below the age of 30. For those between the ages of 15 and 19, the rate was already quite low in 2001 at 16.3 per 1,000 women, and is assumed to remain at about that level in the future as there have not been many changes in contraception methods and teenagers are generally aware of such methods. For those between the ages of 20 and 24, rates have reduced at a decreasing rate. This is likely due to increased awareness of contraception

methods and longer stays in the education system. A slight decrease to 51.4 was assumed for this group. Similarly, the group aged 25 to 29 has also shown a slowing down in reduced fertility rates. It is expected that female labour force participation will continue to increase but level off by 2011 and that postponement of children will decline as the economy is doing well. As a result, the fertility rate for this group is assumed to continue to fall slightly until 2011.

The fertility rate for those aged 30 to 34 has been increasing at a relatively slow pace. Recent studies from Statistics Canada show that the percentage of births outside of marriage is increasing at a fast pace. There appears to be increased pressure on this group to have children. It is thus assumed that the rate for this group will continue to increase gradually until 2016.

Increases in fertility rates were also experienced for age groups above age 34. Given the relative stability of marriages for these groups and the improvement in the economy, it is assumed that the rates will continue to increase gradually until 2016.

The cohort fertility rates, which are shown in Table 12, are developed in Table 13. For example, the cohort fertility rate of 1.80 in year 1991 pertains to those women who were born in 1962, that is, assuming a mean age at motherhood of 29 years. The total and cohort fertility rates eventually merge to the ultimate assumption of 1.60 in year 2016 and thereafter, as women born in 1987 or later reach age 29 from 2016 onward.

The year along the bottom of the graph in Chart 7 corresponds to the calendar year for the total fertility rate and to the year in which a woman was or will be 29 years old for the cohort fertility rate.

Table 12 Total and Cohort Fertility Rates by Age and Calendar Year

Calendar Year	Annual Fertility Rates by Age Group (per 1,000 women)							Total Fertility Rate per Woman	Cohort Fertility Rate per Woman(*)
	15-19	20-24	25-29	30-34	35-39	40-44	45-49		
1941	30.7	138.4	159.8	122.3	80.0	31.6	3.7	2.83	2.82
1951	48.1	188.7	198.8	144.5	86.5	30.9	3.1	3.50	3.22
1961	58.2	233.6	219.2	144.9	81.1	28.5	2.4	3.84	3.29
1971	40.1	134.4	142.0	77.3	33.6	9.4	0.6	2.19	2.51
1981	25.9	91.4	123.2	66.7	19.1	3.2	0.2	1.65	1.91
1991	26.0	77.5	120.3	83.6	28.3	3.9	0.2	1.70	1.80
2001	16.3	56.1	97.9	89.9	35.5	6.1	0.3	1.51	1.71
2004	16.2	53.3	93.2	94.4	38.2	6.6	0.3	1.51	1.70
2008	16.2	51.4	87.0	100.3	41.8	7.3	0.3	1.52	1.66
2012	16.2	51.4	82.3	106.3	45.3	7.9	0.4	1.55	1.61
2016+	16.2	51.4	82.3	112.2	48.9	8.6	0.4	1.60	1.60

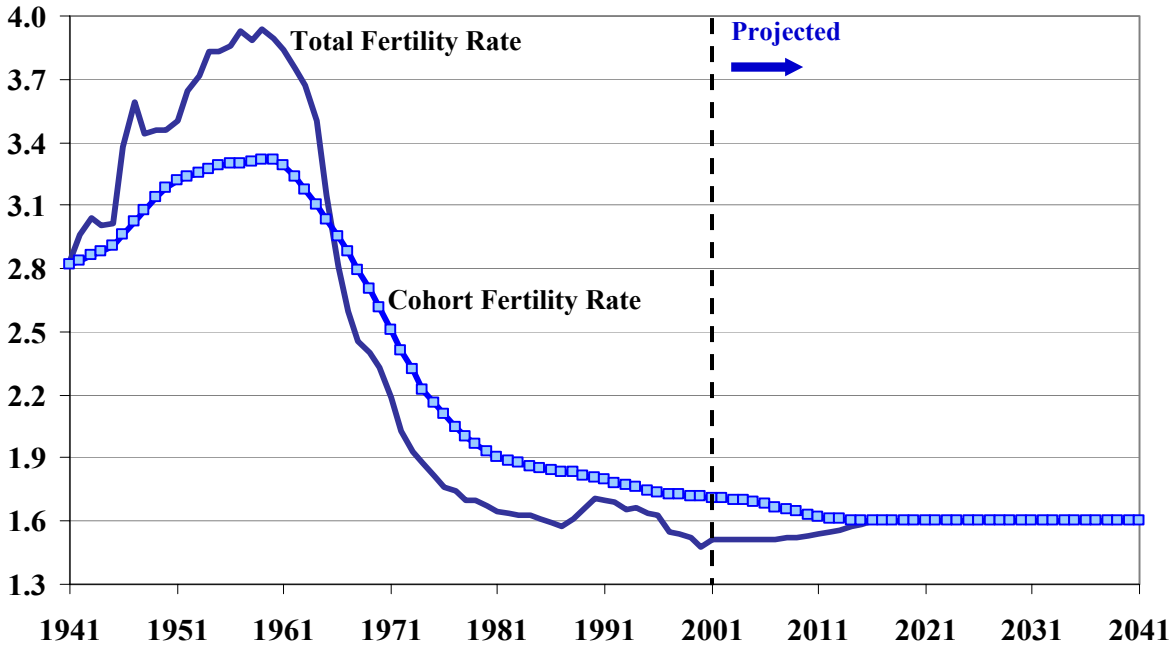
(*) The cohort fertility rate is for a 29 year old female in the given year.

Table 13 Cohort Fertility Rates by Age and Year of Birth of Woman

Year of Birth of Woman	Annual Fertility Rates by Age Group (per 1,000 women)							Cohort Fertility Rate per Woman
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	
1912	29.5	122.1	153.6	134.9	89.1	31.5	2.6	2.82
1922	28.7	149.6	200.9	152.9	86.2	23.9	1.1	3.22
1932	45.0	213.4	223.5	128.2	42.2	5.8	0.2	3.29
1942	59.6	205.6	148.1	66.8	19.2	3.0	0.2	2.51
1952	42.7	112.7	124.3	70.6	26.0	4.6	0.2	1.91
1962	28.2	84.7	119.4	86.0	33.9	6.6	0.4	1.80
1972	24.4	71.9	99.8	94.4	42.6	8.3	0.4	1.71
1975	25.4	65.4	95.6	98.8	45.3	8.6	0.4	1.70
1979	22.4	56.6	90.1	104.8	48.4	8.6	0.4	1.66
1983	17.6	52.5	84.2	110.4	48.9	8.6	0.4	1.61
1987+	16.2	51.4	82.3	112.2	48.9	8.6	0.4	1.60

Note: Fertility rates below the dotted line are partly or wholly projected.

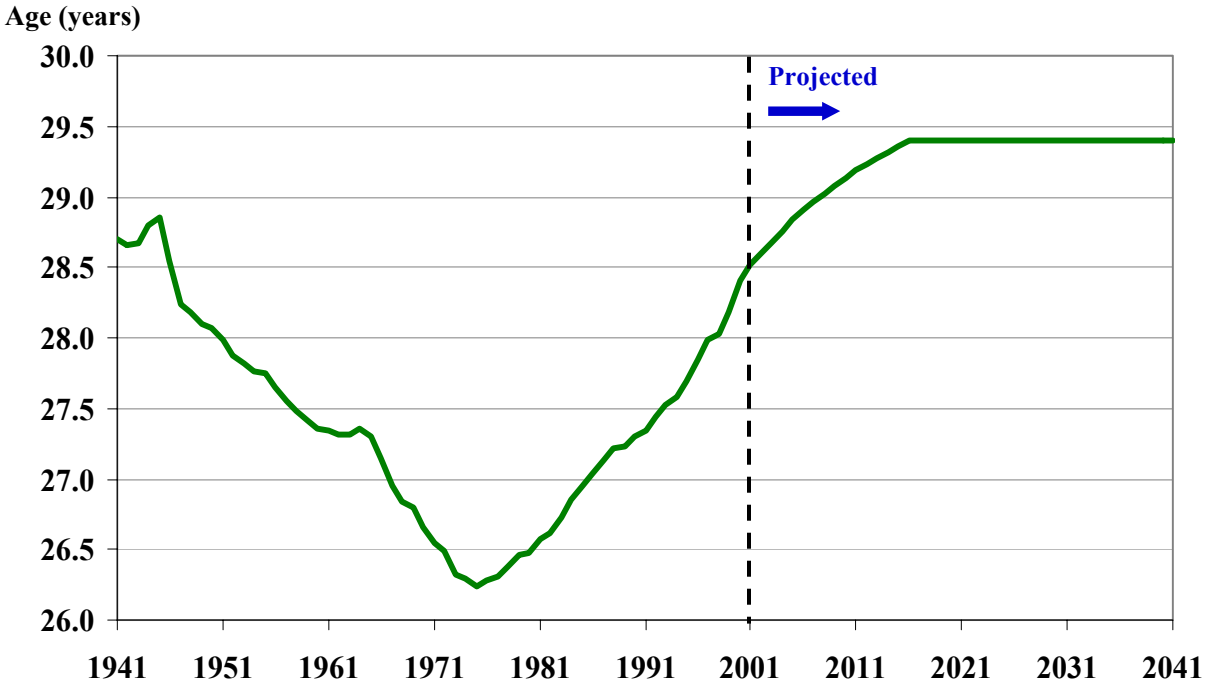
Chart 7 Total and Cohort Fertility Rates



Fertility rates have generally decreased for younger age groups and increased for older age groups. As this shift has become more pronounced since the mid-1970s, the mean age at motherhood has correspondingly increased. In 1945, the mean age at motherhood was 28.8 years. Overall, it then decreased to reach 26.2 by 1975. From 1975, the mean age then increased to reach 28.7 by 2003. Increasing fertility rates at

older ages are expected due to delayed childbearing. As a result, it is expected that the mean age at motherhood will continue to increase, eventually levelling off at 29.4 years by 2016. The evolution of the mean age at motherhood is displayed in Chart 8.

Chart 8 Mean Age at Motherhood



B. Sex at Birth

The ratio of male to female newborns is assumed to remain at 1.056, which is consistent with experience over the last 25 years.

VII. Mortality

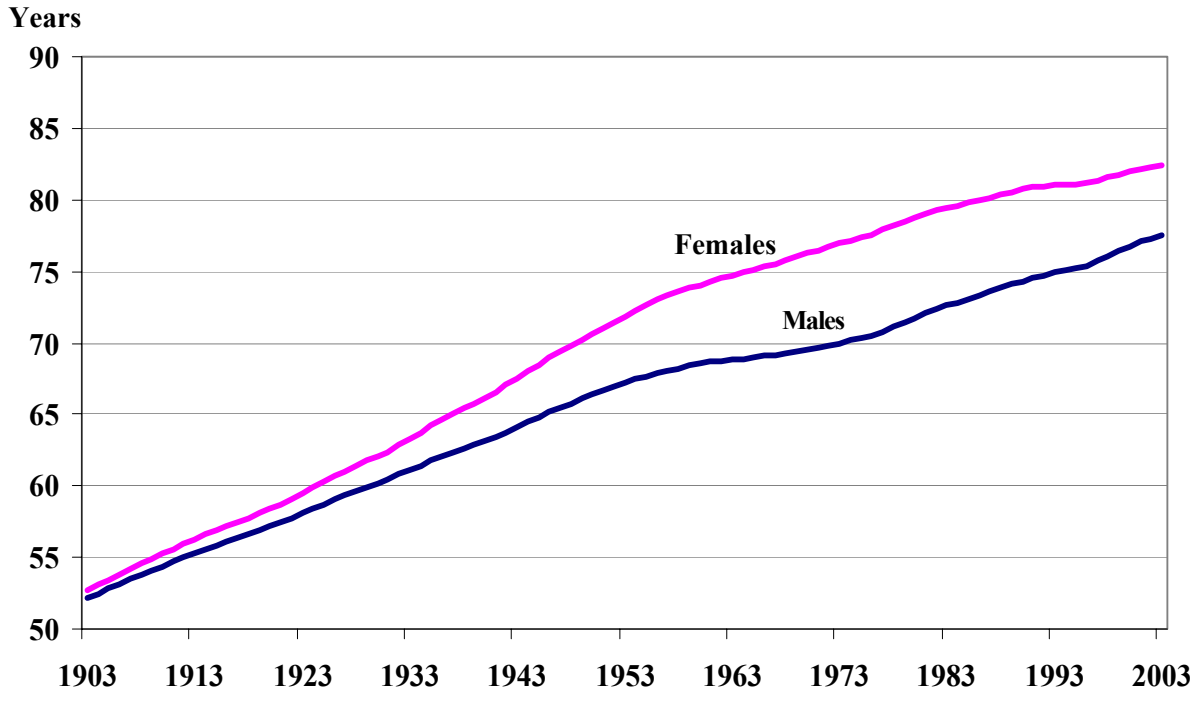
A. Historical Trends in Life Expectancy

Life expectancy increased tremendously during the 20th century around the globe. In 1900 in Canada, about 75% of the population died before reaching age 65. In comparison, in 2003 about 77% of the population died after age 65.

The increase in life expectancy at birth for both males and females that occurred over the last one hundred years is shown below in Chart 9. The rapid increase in life expectancy during the first half of the 20th century was mostly due to a reduction in infant and child mortality. Vaccinations and other medical interventions, together with improved sanitation and overall quality of life all contributed substantially to reducing infant and child mortality. As a result, younger ages have already experienced most of the increase in life expectancy they are likely to see. The implication of this is that future increases will have to happen at the older ages. The life expectancies shown in Chart 9 do not include future mortality improvements; that is, for a given year, the life expectancy is determined by the probabilities of survival from age to age for that year only. Mortality improvements are discussed in the next subsection.

As in the 21st CPP Report, historical mortality rates are based on historical data up to year 2001, with mortality rates estimated for years 2002 and 2003.

Chart 9 Historical Life Expectancies at Birth



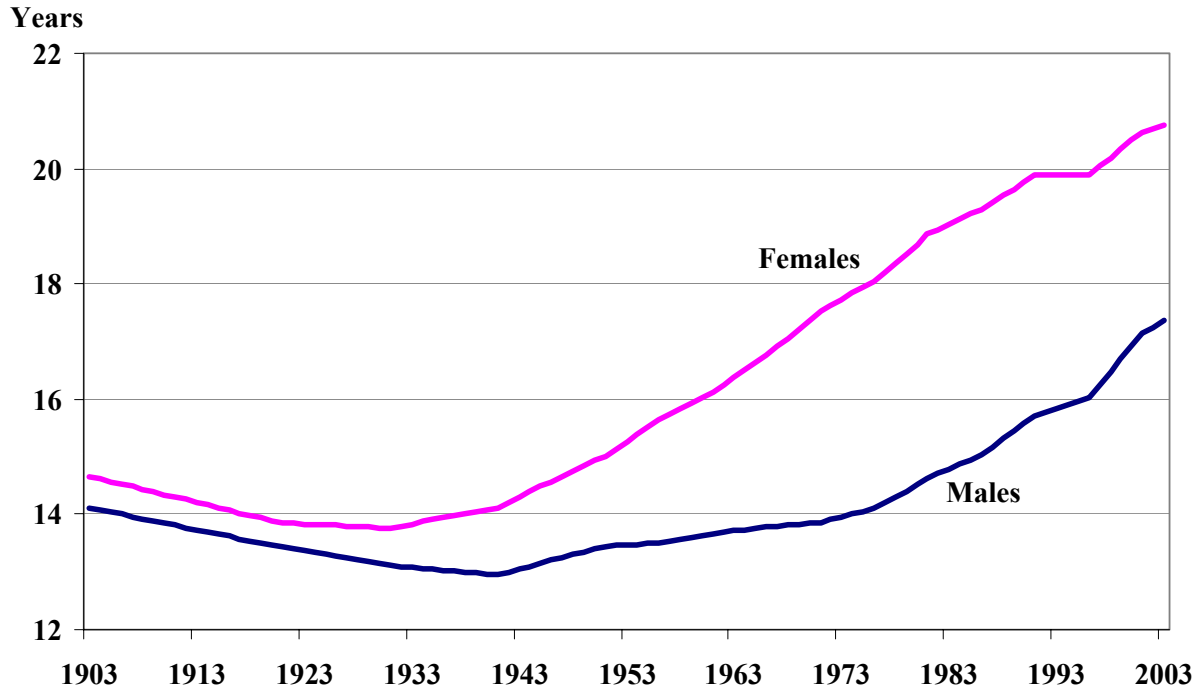
In 1903, male and female newborns could expect to live about 52.1 years and 52.7 years, respectively. By 1953, expected lifetimes had increased to 67.2 and 71.9, and by 2003 expected lifetimes had further increased to 77.5 and 82.4 for male and female newborns, respectively. The gap between female and male life expectancies increased to reach over seven years by the mid-1970s. Since then, the gap has been narrowing as males have made greater gains in life expectancy relative to females.

As the population ages, it is interesting to consider life expectancies at older ages. Life expectancies at age 65 for males and females is shown in Chart 10. Similar to Chart 9, mortality improvements from age 65 are not included.

As at 2003, males and females aged 65 years old could expect to live another 17.4 and 20.7 years, respectively. The gap between female and male life expectancies at age 65 has also narrowed but only more recently.

In addition, in the first few decades of the 20th century, deterioration in mortality, which caused a decrease in life expectancies, was experienced at age 65 for both sexes. One possible explanation is that age 65 was relatively a much older age in the early 20th century compared to today, and so those aged 65 at the time experienced mortality deterioration similar to that experienced for females aged 85 and older in more recent years.

Chart 10 Historical Life Expectancies at Age 65



B. Future Improvements in Age-Specific Mortality Rates

The starting point for mortality rate projections are the mortality rates from the Statistics Canada publication "Life Tables, Canada, provinces and territories, 1995-1997". To reflect anticipated sustained improvements in life expectancy, the 1995 to

1997 mortality rates were projected to 2001 using actual improvements in mortality experienced between 1996 and 2001. Life expectancies at birth and age 65 compared well with those published by Statistics Canada in 2001. The mortality rates obtained for 2001 were then projected to the end of the projection period using the same method as in the 21st CPP Report. Ultimate improvement rates were set for year 2026. The following Table 14 shows the assumed mortality improvement rates, and Table 15 shows the resulting mortality rates for various years over the projection period.

Table 14 Annual Mortality Improvement Rates

	Males		Females	
Age	**2002-2006**	**2026+**	**2002-2006**	**2026+**
	(%)	(%)	(%)	(%)
0	2.25	1.35	2.50	1.25
1 - 14	3.89	0.95	3.36	0.85
15 - 44	3.13	0.80	1.51	0.70
45 - 64	2.50	0.65	1.64	0.55
65 - 84	1.80	0.50	1.06	0.50
85 - 99	0.11	0.40	0.03	0.40

Mortality improvements are projected to decrease with age. This is consistent with historical experience. One reason for declining improvements is that diseases at the younger ages are, by and large, easier to overcome than those at the older ages. To eradicate the major diseases affecting the older population, including heart and respiratory diseases, cancer, stroke, diabetes and dementia, will take more time as there is still much to be learned.

Table 15 Mortality Rates
(annual deaths per 1,000 people)

	Males				Females			
Age	**2003**	**2025**	**2050**	**2075**	**2003**	**2025**	**2050**	**2075**
0	5.09	3.36	2.40	1.71	4.38	2.83	2.07	1.51
10	0.10	0.05	0.04	0.03	0.09	0.05	0.04	0.04
20	0.78	0.51	0.41	0.34	0.29	0.22	0.19	0.16
30	0.89	0.52	0.42	0.35	0.38	0.28	0.24	0.20
40	1.52	1.01	0.83	0.68	0.88	0.73	0.61	0.52
50	3.34	2.35	2.00	1.70	2.18	1.69	1.47	1.28
60	8.97	5.96	5.06	4.30	5.56	4.24	3.69	3.22
65	15.21	10.38	9.02	7.84	8.98	7.12	6.25	5.49
70	24.90	17.98	15.87	14.00	14.42	11.98	10.57	9.32
75	39.96	30.18	26.63	23.49	23.91	19.73	17.40	15.35
80	65.17	52.77	46.55	41.07	41.64	35.24	31.09	27.43
85	105.13	94.10	84.28	75.48	73.74	68.11	61.00	54.63

The projected mortality rates show a continuous decrease over the long term. For example, the mortality rate for a 65 year old male is expected to decline from 15.21 deaths per 1,000 people in 2003 to 7.84 deaths per 1,000 people in 2075. The gap between male and female mortality rates for a given age is also expected to decrease over the long term.

C. Life Expectancies

Life expectancies for Canadians are assumed to continue to grow, but at a slower rate than was experienced in the 20th century. From 2003 to 2075, life expectancy for a male newborn is expected to increase from 77.5 years to 83.4 years. For female newborns, this increase is projected to be from 82.4 years to 86.5 years. These expectations assume no future mortality improvements. If, however, future mortality improvements are included, then the increase is from 82.9 to 86.8 years for males and from 86.2 to 89.7 years for females over the same period. Given the continuing trend toward greater longevity, life expectancies with mortality improvements are considered more realistic than without.

Life expectancies have considerably increased over the last 25 years, and this is reflected in the projected growth in the near term. Thereafter, there is a projected slowdown in the increase in life expectancies consistent with the low rate of improvement in mortality assumed for years 2026 and thereafter. It is also expected that the gap in life expectancies between females and males will continue to narrow over time; however, it is not anticipated that this gap will altogether disappear.

A comparison between life expectances with and without future mortality improvements is presented in Tables 16 and 17. Table 16 shows the projected life expectancies at various ages for selected years, assuming no mortality improvements after each year shown, while Table 17 shows the same life expectancies, but with mortality improvements included. The historical and projected evolution of life expectancies at birth for males and females, with and without future mortality improvements, is displayed in Chart 11, and a similar evolution at age 65 is displayed in Chart 12.

Mortality improvements have more of an impact on increasing expected lifetimes at younger ages than at older ages, since the improvement factors decrease with age and are applied over a longer period of time. For instance, by 2075, mortality improvements lead to more than a 3-year increase in expected lifetimes for both male and female newborns, compared to those without such improvements (that is, 86.8 minus 83.4, or 3.4 for males and 89.7 minus 86.5, or 3.2 for females). At age 30, this increase falls to 2 years for both sexes, and by age 85, it falls to 0.1 years.

Table 16 Life Expectancies, without improvements after the year shown*

	Males				Females			
Age	**2003**	**2025**	**2050**	**2075**	**2003**	**2025**	**2050**	**2075**
0	77.5	80.7	82.0	83.4	82.4	84.1	85.3	86.5
10	68.0	71.0	72.3	73.6	72.9	74.4	75.6	76.7
20	58.3	61.1	62.4	63.7	63.0	64.5	65.6	66.7
30	48.7	51.4	52.7	53.9	53.2	54.7	55.8	56.8
40	39.2	41.7	42.9	44.1	43.4	44.9	45.9	47.0
50	29.9	32.3	33.4	34.5	34.0	35.3	36.3	37.3
60	21.3	23.3	24.3	25.3	25.0	26.1	27.1	28.0
65	17.4	19.1	20.0	20.9	20.7	21.7	22.6	23.5
70	13.8	15.2	16.0	16.8	16.8	17.6	18.4	19.2
75	10.7	11.7	12.4	13.1	13.1	13.8	14.5	15.2
80	8.0	8.6	9.2	9.8	9.8	10.3	10.9	11.5
85	5.8	6.1	6.6	7.1	7.1	7.3	7.8	8.3

* These are calendar year life expectancies based on the mortality rates of the given attained year.

Table 17 Life Expectancies, with improvements after the year shown**

	Males				Females			
Age	**2003**	**2025**	**2050**	**2075**	**2003**	**2025**	**2050**	**2075**
0	82.9	84.2	85.5	86.8	86.2	87.4	88.6	89.7
10	72.8	74.0	75.3	76.5	76.2	77.3	78.4	79.5
20	62.4	63.7	64.9	66.2	65.9	66.9	68.1	69.1
30	52.2	53.4	54.7	55.9	55.6	56.6	57.7	58.8
40	42.1	43.3	44.5	45.6	45.4	46.4	47.5	48.6
50	32.1	33.4	34.5	35.6	35.4	36.4	37.5	38.5
60	22.6	24.0	25.0	26.0	25.8	26.8	27.8	28.8
65	18.3	19.6	20.5	21.4	21.3	22.3	23.2	24.1
70	14.4	15.5	16.4	17.2	17.1	18.0	18.8	19.7
75	11.0	11.9	12.7	13.4	13.3	14.0	14.8	15.5
80	8.1	8.8	9.4	10.0	9.9	10.4	11.1	11.7
85	5.9	6.2	6.7	7.2	7.1	7.4	7.9	8.4

** These are cohort life expectancies that take into account future improvements in mortality and therefore differ from calendar year life expectancies, which are based on the mortality rates of the given attained year.

Chart 11 Life Expectancies at Birth

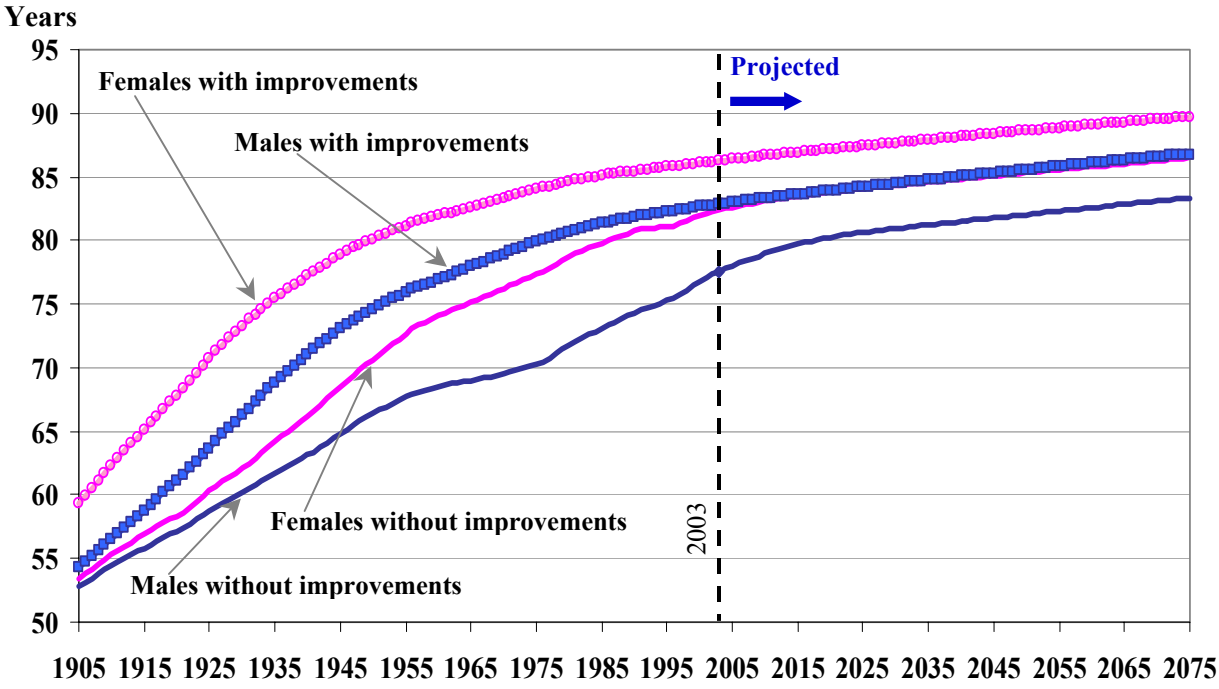
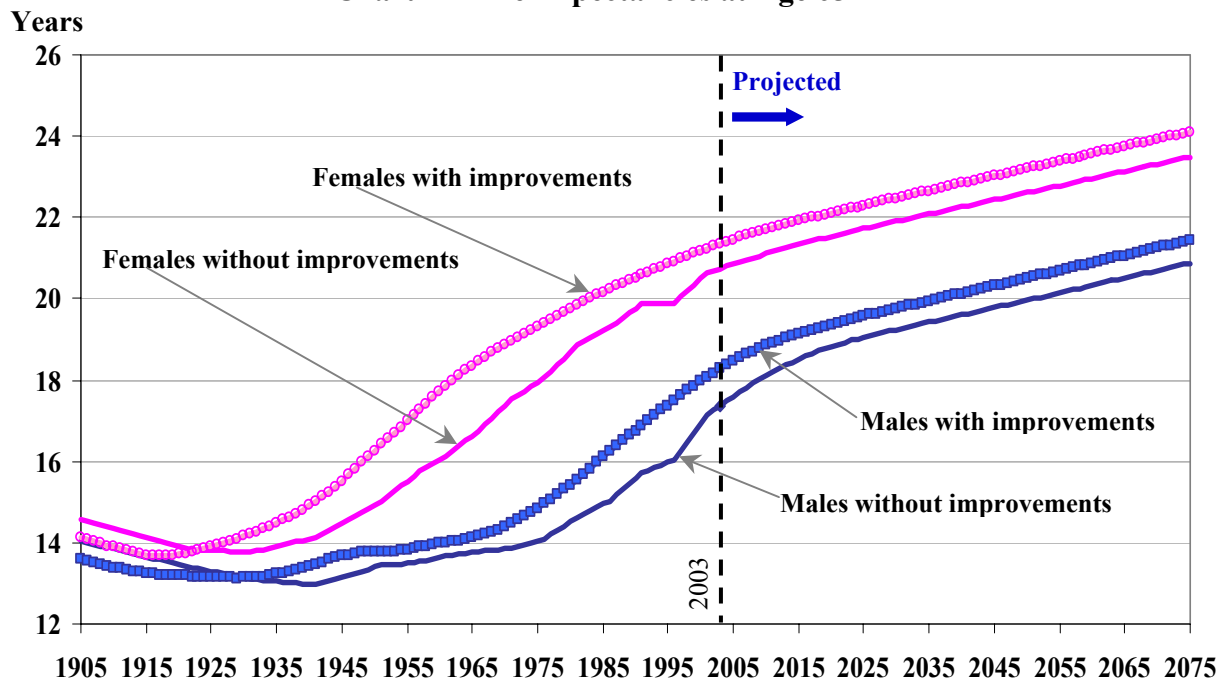
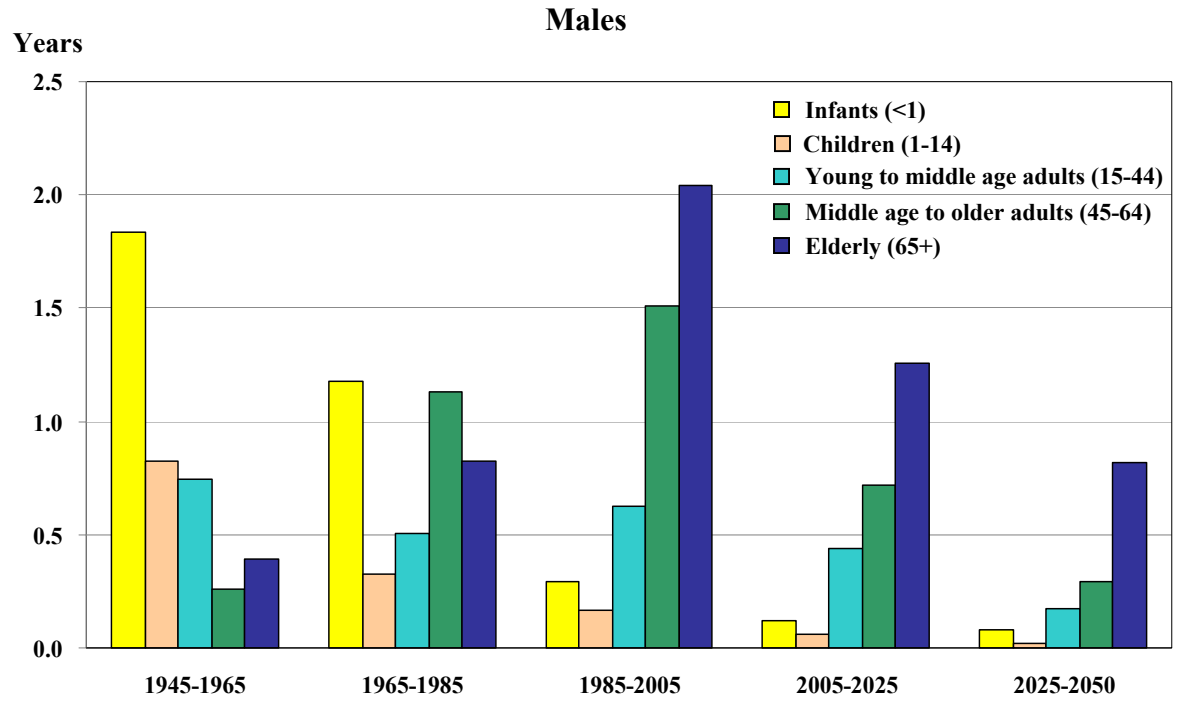


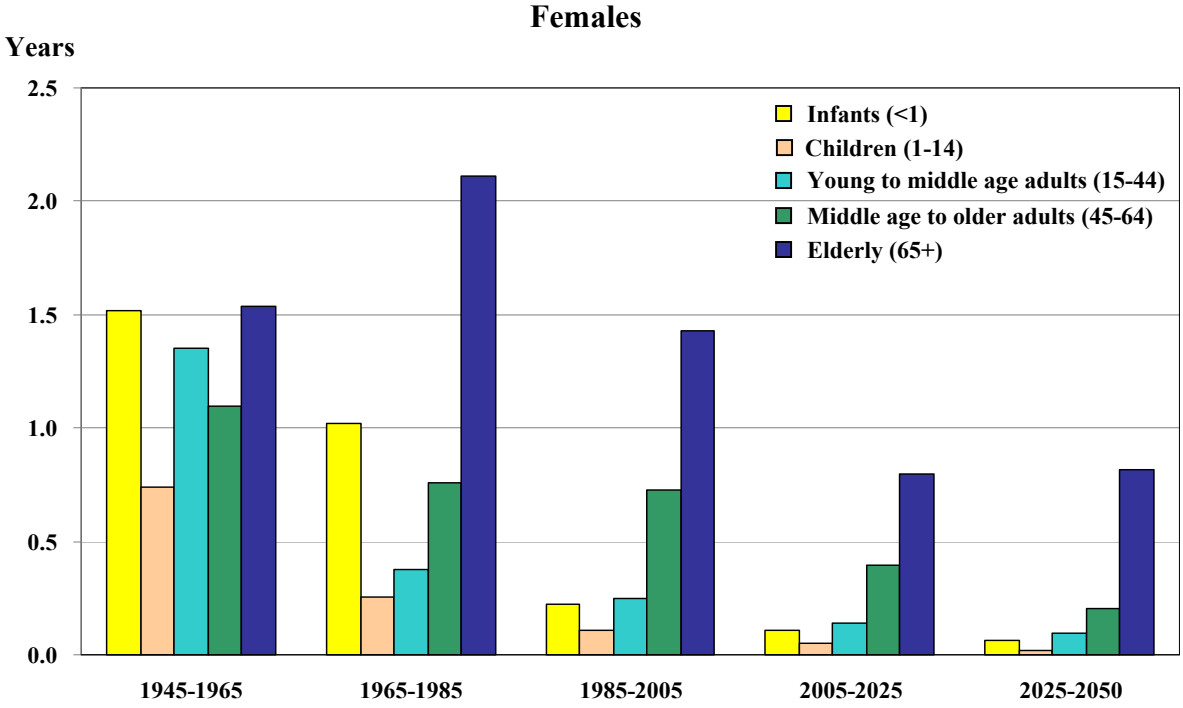
Chart 12 Life Expectancies at Age 65



As major gains in life expectancy have already been achieved at the younger ages, it is anticipated that the older ages will experience greater relative gains in life expectancy in the future. Chart 13 depicts the relative historical and projected contributions to the increase in life expectancy by sex and age group. The large gains contributed by infants and children early in the 20th century are seen to quickly diminish, while contributions from the older age groups become prominent as time progresses.

Chart 13 Contribution to Increase in Life Expectancy at Birth

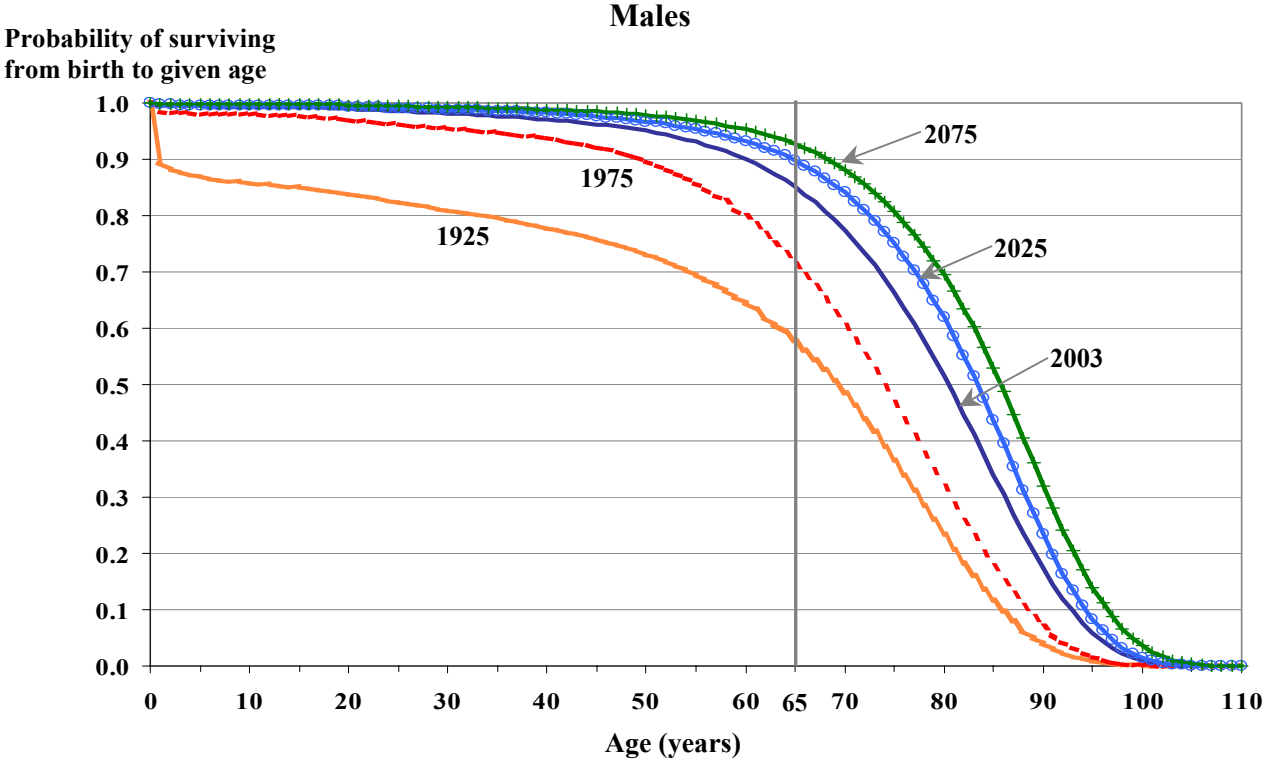




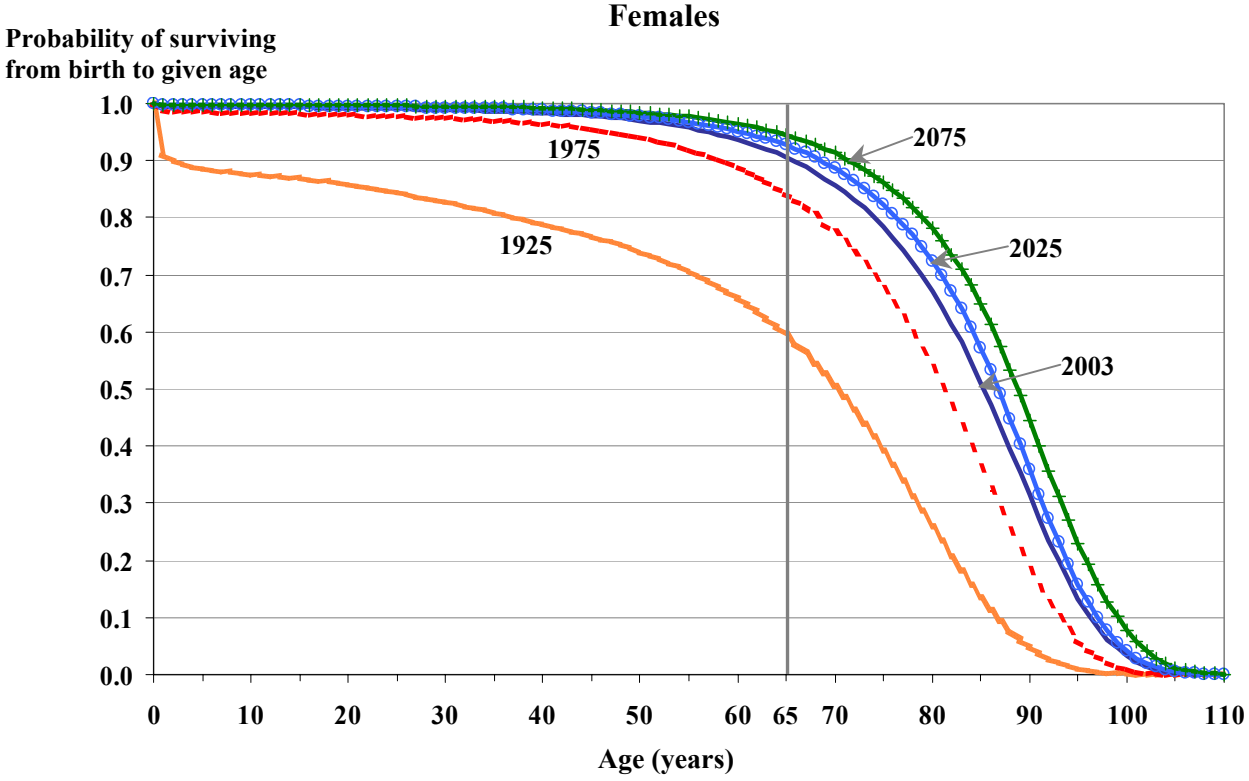
The low probabilities of a newborn reaching a very advanced age can be seen by the survival curves at birth as illustrated in Chart 14. A survival curve at birth represents the probability of a newborn reaching a given age. The "squaring" of the survival curves over time from 1925 to 2075 is the result of expected lifetimes increasing and the maximum age we can attain being set at 110 years. The probability of surviving beyond age 110 is practically nil. As indicated in the graphs by the intersection of the vertical line at age 65 with the survival curves, the probability of reaching age 65 increased substantially in the past. In 1925, a male newborn had a probability of 58% of reaching age 65. By 2003, this figure had increased to 85%, and by 2075 it is projected to reach 93%. For a female born in 1925, her probability of reaching age 65 was 60%, increased to 91% by 2003, and is projected to reach 95% by 2075. It is expected that survival probabilities will continue to increase, but at a slower rate than has been observed historically.

Chart 14 Survival Curves at Birth

Males

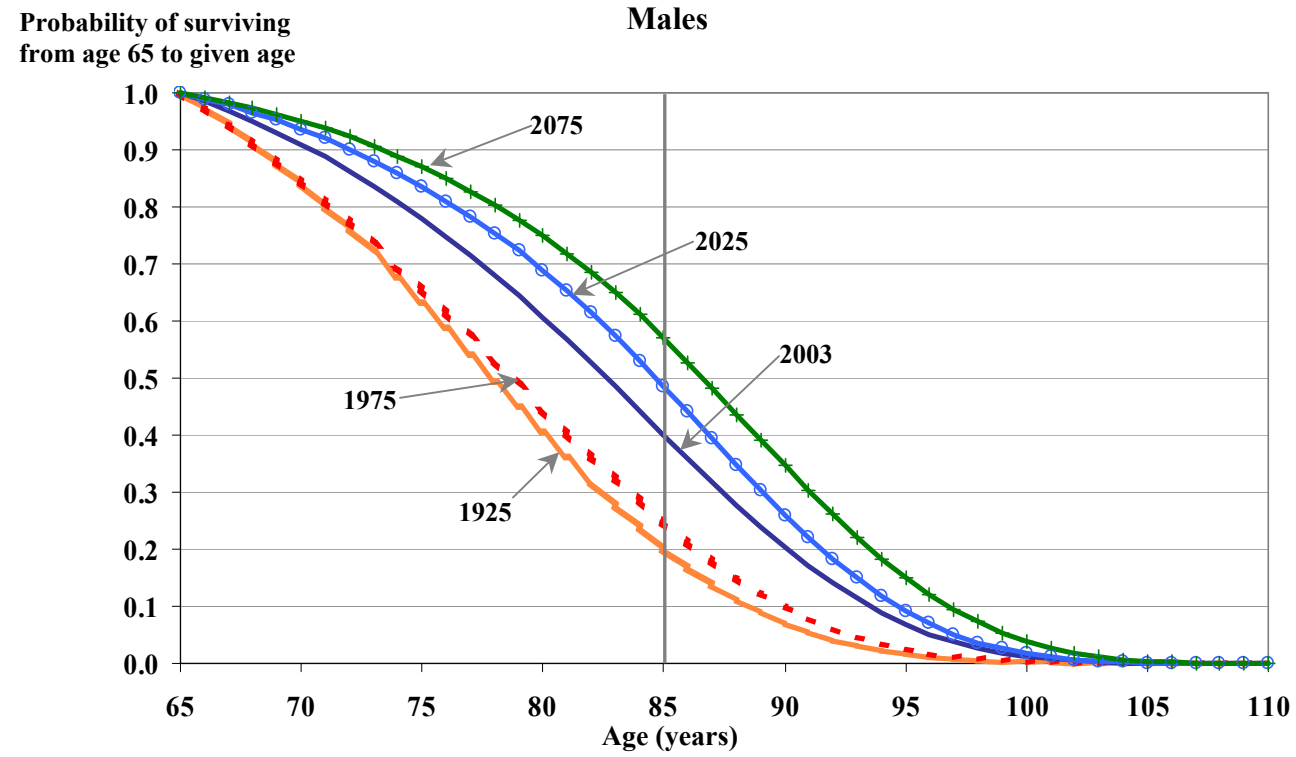


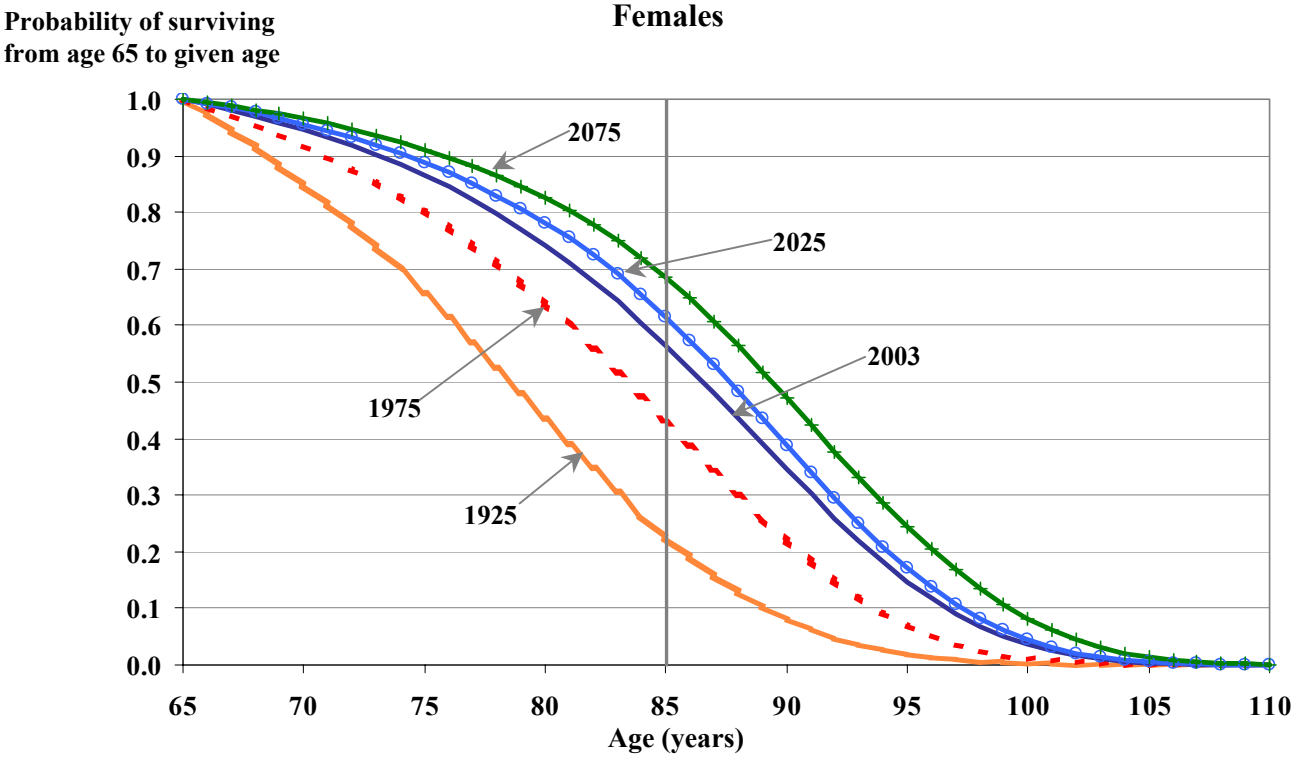
Females



Survival curves may also be viewed at other ages. As more and more people reach the normal retirement age of 65, it is interesting to consider the survival probabilities from this age. Chart 15 below provides similar graphs as in Chart 14, but with survival probabilities measured from age 65.

Chart 15 Survival Curves at Age 65





Large gains in the probability of survival from age 65 were attained historically. Between 1925 and 2003, the probability of a male 65 year old reaching 85 doubled from 20% to 40%, and is projected to increase to 57% by 2075. The probability for a female 65 year old reaching 85 more than doubled from 23% to 56% between 1925 and 2003, and is projected to increase to 69% by 2075. These probabilities are shown in the graphs by the intersection of the vertical line at age 85 with the survival curves. The survival probabilities at age 65 are expected to increase, but more slowly than has been observed historically.

In general, probabilities of surviving to older ages have increased over the last century and this trend is expected to continue at a slower pace. The number and proportion of the population expected to reach older ages is shown in Table 18. In particular, it can be seen that the population aged 65 and older is anticipated to more than double, from 4.1 million or 13% of the population in 2003 to 8.9 million or 23% of the population in 2030. By 2075, this group will reach 11.2 million or 25% of the population. The population aged 80 and older is also expected to more than double, from 1.0 million or 3% of the population in 2003 to 2.3 million or 6% of the population in 2030. By 2075, this group will reach 4.3 million or 10% of the population.

Another perspective on viewing the aging of the population is to consider the proportion of deaths and mean age at death over time (see Tables 19 and 20). It is projected that deaths resulting from those aged 85 and older will eventually comprise the largest proportion of deaths compared to the younger age groups shown as the proportions of younger age groups decline. By 2075, over 57% of all deaths will result from those aged 85 and older. Correspondingly, the mean age at death for both sexes is projected to increase well above age 80 by 2075.

Table 18 Population Reaching Older Ages, Numbers and Proportions

	Population (thousands)						Proportion of Population (%)					
Age	**2003**	**2010**	**2020**	**2030**	**2050**	**2075**	**2003**	**2010**	**2020**	**2030**	**2050**	**2075**
65	243	318	468	509	515	514	0.8	1.0	1.3	1.3	1.2	1.2
70	218	241	380	487	479	474	0.7	0.7	1.0	1.3	1.2	1.1
75	185	194	271	403	404	441	0.6	0.6	0.7	1.0	1.0	1.0
80	139	159	182	293	348	407	0.4	0.5	0.5	0.8	0.8	0.9
85	75	104	118	170	289	322	0.2	0.3	0.3	0.4	0.7	0.7
90	29	51	65	77	173	195	0.1	0.2	0.2	0.2	0.4	0.4
65+	4,060	4,767	6,655	8,894	10,314	11,220	12.8	14.2	18.4	23.0	24.9	25.3
80+	1,034	1,306	1,566	2,297	3,674	4,305	3.3	3.9	4.3	5.9	8.9	9.7

Table 19 Deaths by Age Group, Numbers and Proportions

Calendar Year/ Age Group	Deaths					Proportion of Deaths (%)				
	0-64	65-74	75-84	85+	Total	0-64	65-74	75-84	85+	Total
1950	58,400	27,900	26,000	11,400	123,700	47.2	22.6	21.0	9.2	100.0
1975	61,200	37,500	41,000	27,200	167,000	36.7	22.4	24.6	16.3	100.0
2003	51,900	46,000	70,000	59,700	227,600	22.8	20.2	30.8	26.2	100.0
2025	45,300	63,500	102,100	122,300	333,200	13.6	19.1	30.7	36.7	100.0
2050	40,000	61,100	131,600	276,600	509,400	7.9	12.0	25.8	54.3	100.0
2075	35,800	54,500	136,200	303,500	530,100	6.8	10.3	25.7	57.3	100.0

Table 20 Mean Age at Death

Year	Males	Females
2003	70.1	76.4
2025	76.3	80.1
2050	81.1	84.4
2075	82.5	85.5

It is also interesting to consider over time the range of ages in which a given percentage of deaths are expected to occur. For instance, we may consider a percentage of seventy and view the progression over time of the age range in which 70% of deaths are expected to occur, as shown in Table 21. The historical large gains in life expectancy can be seen from this table. In 1925, about 70% of male newborns could expect to die between ages 16 and 83; that is, 15% of male newborns died prematurely before age 16 while 15% who were the strongest died after age 83. By 2003, this range had both moved forward and narrowed to an age range of 66 to 90. A similar shift and narrowing in range can be seen for females. Again, this trend is expected to continue in the future, but at a slower pace compared to the past.

Table 21 Evolution of Age Range in Which Given Percentage of Deaths are Expected to Occur

	Male Range			Female Range		
Year	15%	70%	15%	15%	70%	15%
1925	(0-15)	(16-83)	(84+)	(0-23)	(24-84)	(85+)
1950	(0-50)	(51-84)	(85+)	(0-55)	(56-86)	(87+)
1975	(0-55)	(56-86)	(87+)	(0-64)	(65-91)	(92+)
2003	(0-65)	(66-90)	(91+)	(0-70)	(71-94)	(95+)
2025	(0-69)	(70-92)	(93+)	(0-73)	(74-95)	(96+)
2050	(0-70)	(71-93)	(94+)	(0-74)	(75-96)	(97+)
2075	(0-72)	(73-94)	(95+)	(0-75)	(76-97)	(98+)

With respect to cause, nearly 75% of deaths at the older ages were due to circulatory system diseases, respiratory system diseases, and tumours in 2002. Major medical advances to combat these causes would be needed to extend lifetimes materially at the older ages.

Though life expectancy increased significantly during the 20th century, the maximum age to which we can live has not improved much for centuries. Advances in the field of medicine and improvements in living standards have increased our expected lifetimes, but the maximum age humans can possibly attain has not materially increased. This is largely due to there remaining much to be learned about the aging process itself. Until the mysteries of this process are understood, it will be difficult to attain a lifespan of more than 120 years or so.

Although life expectancies are projected to increase in the future, it is plausible that health and environmental factors may counteract the degree of this increase. The rising incidence of obesity in both children and adults and the ensuing risk of related complications later on in life, such as diabetes and heart disease, could act to reduce future projected gains in life expectancy. The threat of worldwide pandemics resulting from more virulent forms of infectious diseases is also a reality, which could impact longevity.

D. Comparison of Aging Indicators Between the G8 Countries

Canada as well as the other G8 countries (France, Germany, Italy, Japan, Russia, United Kingdom, and the United States) are all expected to face increasingly older populations as time progresses. This progression may be viewed by considering different indicators of aging. Table 22 provides a comparison between the G8 countries for various aging indicators. The values for Canada are derived from data used in the 21st CPP Report, while the values for the other G8 countries are from world population projections by the United Nations.

As shown, only Italy and Japan are projected to exceed Canada with respect to life expectancy, while life expectancy for Russia is projected to remain much lower than the other countries. The median age in all G8 countries is projected to increase with Canada's median age projected to be greater than that of the United States, but still well below Germany, Italy and Japan.

The aging of the countries is further emphasized by the projected proportions of the populations for the age groups 0 to 19, 20 to 64, and 65 and older, with the population less than 65 generally projected to fall while the population 65 and older projected to rise. In addition, the population aged 80 and older will climb significantly for some countries by 2025, most notably for Germany, Italy and Japan.

The total dependency ratio of those below 20 and above 64 to those aged 20 to 64 will also increase for most countries. For Canada, this ratio is expected to increase from 0.59 (sum of 24.2 and 13.1 divided by 62.7) in 2005 to 0.72 (sum of 21.0 and 20.8 divided by 58.2) by 2025 for an absolute increase of 0.13. In comparison for the US, this ratio is expected to increase from 0.68 to 0.75 for an absolute increase of 0.07 over the same period. Japan by far will see the greatest increase in its total dependency

ratio, from 0.64 to 0.86 (absolute increase of 0.22) over this period. All G8 countries are expected to have total dependency ratios greater than 0.70 by 2025, except for Russia which will have a ratio of 0.65 by 2025.

The population growth rates for most of the countries are declining, and will even turn negative for Germany, Italy, Japan, and Russia. Increasing life expectancies and generally declining population growth rates will lead to aging populations. As a consequence, it is anticipated that the G8 countries will become increasingly competitive in attracting and retaining qualified workers from immigration. Further, as their populations age, socio-economic challenges will likely become more prominent for the G8 countries.

Table 22 Comparison of Aging Indicators Between the G8 Countries

	Canada(*)	France	Germany	Italy	Japan	Russia	UK	USA
Life expectancy at birth								
2005-2010	80.7	80.0	79.3	80.6	82.8	65.0	79.0	77.9
2010-2015	81.3	80.7	80.0	81.2	83.7	65.6	79.6	78.5
2015-2020	81.8	81.3	80.6	81.8	84.5	66.9	80.2	79.1
2020-2025	82.2	81.9	81.2	82.4	85.3	68.2	80.8	79.6
Median age								
2005	38.6	39.3	42.1	42.3	42.9	37.3	39.0	36.1
2010	40.0	40.5	44.1	44.3	44.4	37.9	40.3	36.6
2015	41.1	41.6	45.9	46.5	46.1	38.8	40.9	37.0
2020	42.0	42.5	46.9	48.6	48.0	40.0	41.2	37.6
2025	43.0	43.3	47.1	50.5	50.0	41.7	41.4	38.3
Percentage aged 0-19								
2005	24.2	24.5	20.2	18.9	19.1	23.7	24.7	28.0
2010	22.7	23.9	18.8	18.6	18.4	21.1	23.4	27.2
2015	21.5	23.5	18.0	17.9	18.1	21.2	22.4	26.3
2020	21.0	23.0	17.8	17.3	17.5	22.0	22.1	25.8
2025	21.0	22.3	18.1	16.6	17.1	21.8	22.4	25.2
Percentage aged 20-64								
2005	62.7	58.9	61.0	61.1	61.1	62.6	59.4	59.7
2010	63.1	59.2	60.8	60.3	59.1	66.3	60.1	60.0
2015	62.3	57.5	61.2	59.1	55.9	65.5	59.5	59.6
2020	60.6	56.2	60.2	58.2	54.4	62.9	59.1	58.4
2025	58.2	55.1	58.0	57.0	53.8	60.6	57.8	57.1
Percentage aged 65 and older								
2005	13.1	16.6	18.8	20.0	19.7	13.8	16.0	12.3
2010	14.2	16.9	20.4	21.1	22.5	12.6	16.5	12.8
2015	16.2	19.0	20.7	23.0	26.0	13.3	18.1	14.1
2020	18.4	20.8	22.1	24.5	28.1	15.2	18.8	15.8
2025	20.8	22.6	23.9	26.4	29.1	17.6	19.8	17.7
Percentage aged 80 and older								
2005	3.5	4.7	4.4	5.1	4.8	2.2	4.4	3.6
2010	3.9	5.4	5.1	6.1	6.3	2.9	4.6	3.7
2015	4.1	5.8	5.6	7.0	7.8	3.0	4.7	3.6
2020	4.3	5.9	6.9	7.8	9.1	3.5	4.9	3.7
2025	4.9	6.0	7.5	8.4	10.6	3.0	5.3	4.1
Annual Growth Rate of Population (%)								
2005-2010	0.81	0.34	0.00	0.03	0.06	-0.45	0.28	0.92
2010-2015	0.79	0.26	-0.05	-0.12	-0.07	-0.48	0.30	0.85
2015-2020	0.78	0.20	-0.06	-0.24	-0.20	-0.53	0.35	0.77
2020-2025	0.70	0.14	-0.08	-0.29	-0.30	-0.59	0.37	0.68

(*) Projections for Canada are based on the 21st CPP Report. Projections for the other G8 countries are based on United Nations population projections, 2004 revision.

VIII. Migration

A. Immigration and Emigration

Migration may be separated into its component parts: immigration, emigration, and a third part for those who emigrate but eventually return to Canada. As such, net emigration is defined as emigration less those who leave but eventually return. Net migration may then be defined as immigration less net emigration, that is, the net number of people who immigrate to Canada.

Immigration and emigration have been volatile historically and are thus seen as being volatile parameters of future population growth. Volatility results from many factors including political policies, the economy and social attitudes. Between 1975 and 2003, annual immigration to Canada varied between 84,000 and 267,000, annual emigration varied between 40,000 and 78,000, and the annual numbers of returning emigrants varied between 14,000 and 38,000.

In 2003, over 199,000 people immigrated to Canada, while more than 73,000 emigrated and of those, about 18,000 returned. This resulted in 144,000 net migrants in 2003, representing 0.45% of the population. The historical and projected evolution of migration, in absolute number and as a percentage of the population is shown in Charts 16 and 17, and the evolution of migration split by its components is provided in Table 23.

B. Short and Long-Term Migration Assumptions

In the short term, from 2004 to 2015, the net migration rate is assumed at a level of 0.50% of the population, which should be sustainable over this period given an expected improvement in the economy. Under better economic conditions emigration would likely decrease. A level of 0.50% also corresponds to the average over the last 30 years. From 2015 to 2020, this proportion is gradually increased from 0.50% to 0.54% to account for the expected labour shortage. Long term, from 2020 onward, this proportion is assumed to remain constant at 0.54%. The ultimate level of 0.54% corresponds to the average over the last 15 to 20 years. As the population grows, this will result in a steadily increasing migrant population. It is expected that the number of net migrants to Canada will steadily grow from about 144,000 in 2003 to 201,000 by 2025 and to 238,000 by 2075.

The distributions of immigrants, emigrants and returning emigrants by age and sex used for the population projections were derived from Statistics Canada data averaged over the period 1999 to 2003.

Chart 16 Evolution of Migration
(thousands)

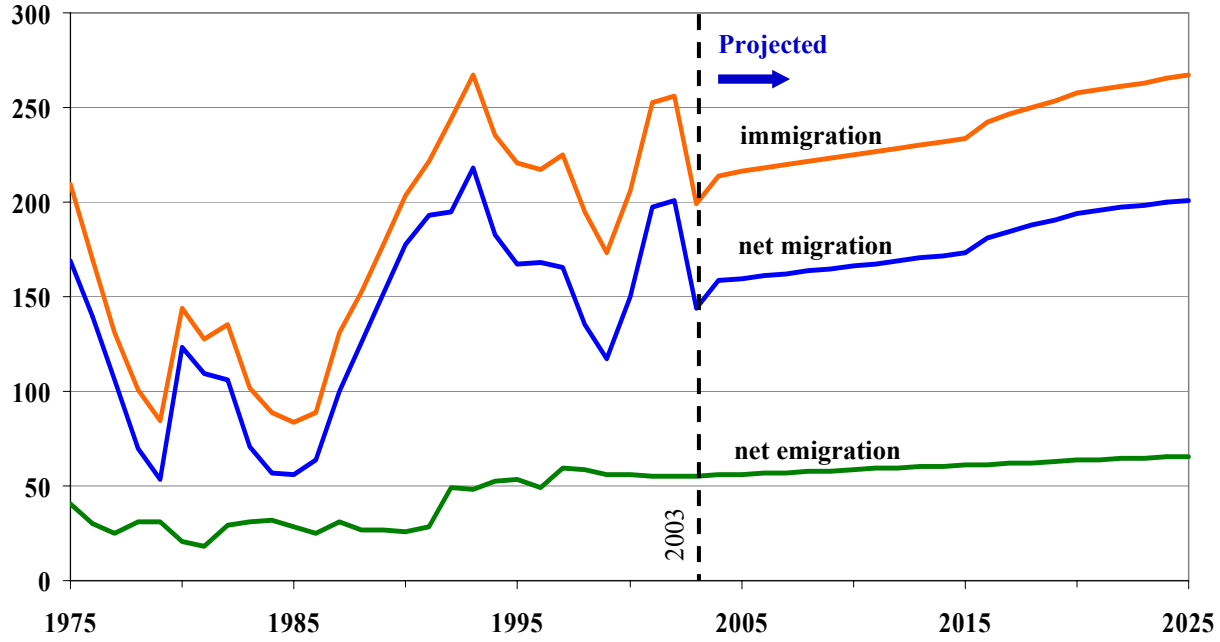


Chart 17 Evolution of Migration as % of Population

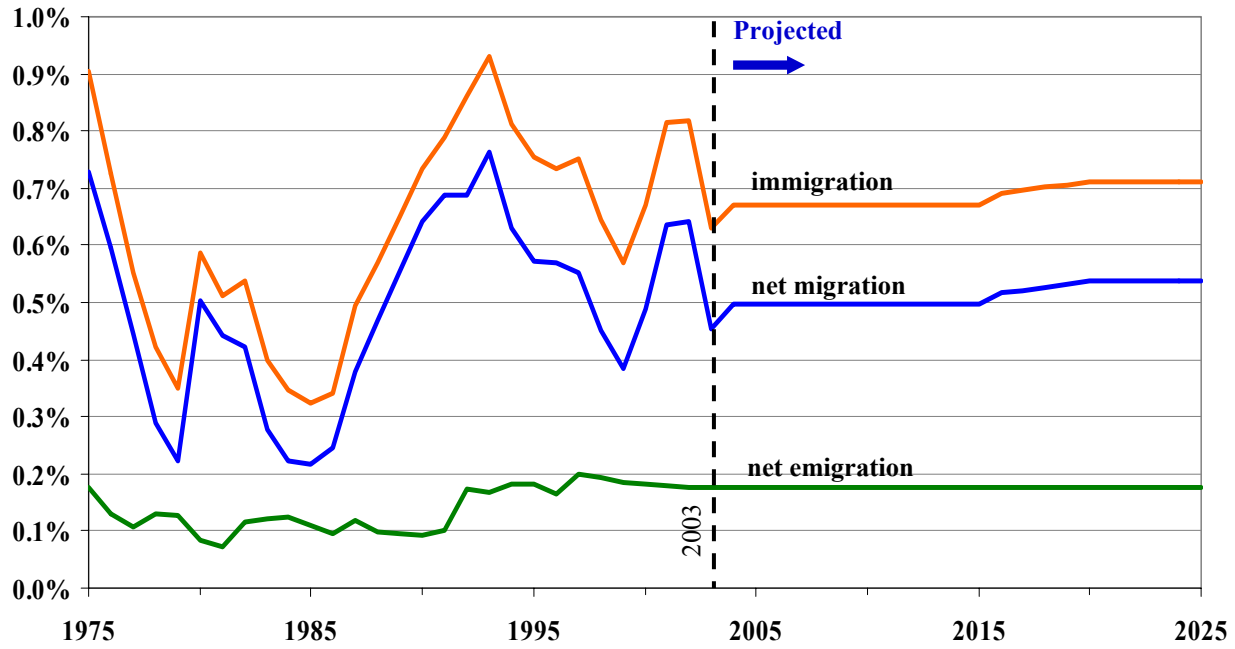


Table 23 Evolution of Migration by Component

Year (Ending 30th June)	Immigration	Emigration	Returning	Net Emigration	Net Migration
1975	209,300	78,000	37,500	40,500	168,800
1985	83,900	55,200	27,100	28,100	55,800
1995	220,700	71,800	18,400	53,400	167,300
2003	199,200	73,500	17,900	55,600	143,600
2004	214,200	73,700	17,900	55,800	158,400
2005	216,000	74,400	18,100	56,300	159,700
2006	217,800	75,000	18,300	56,700	161,000
2007	219,600	75,600	18,400	57,200	162,400
2008	221,300	76,200	18,600	57,700	163,700
2009	223,100	76,800	18,700	58,100	165,000
2010	224,900	77,400	18,800	58,600	166,300
2015	233,900	80,500	19,600	60,900	173,000
2020	257,600	83,700	20,400	63,400	194,200
2025	266,900	86,800	21,100	65,700	201,300
2030	275,000	89,400	21,800	67,700	207,400
2050	295,000	95,900	23,400	72,600	222,500
2075	315,800	102,700	25,000	77,700	238,100

C. Age and Sex Distribution

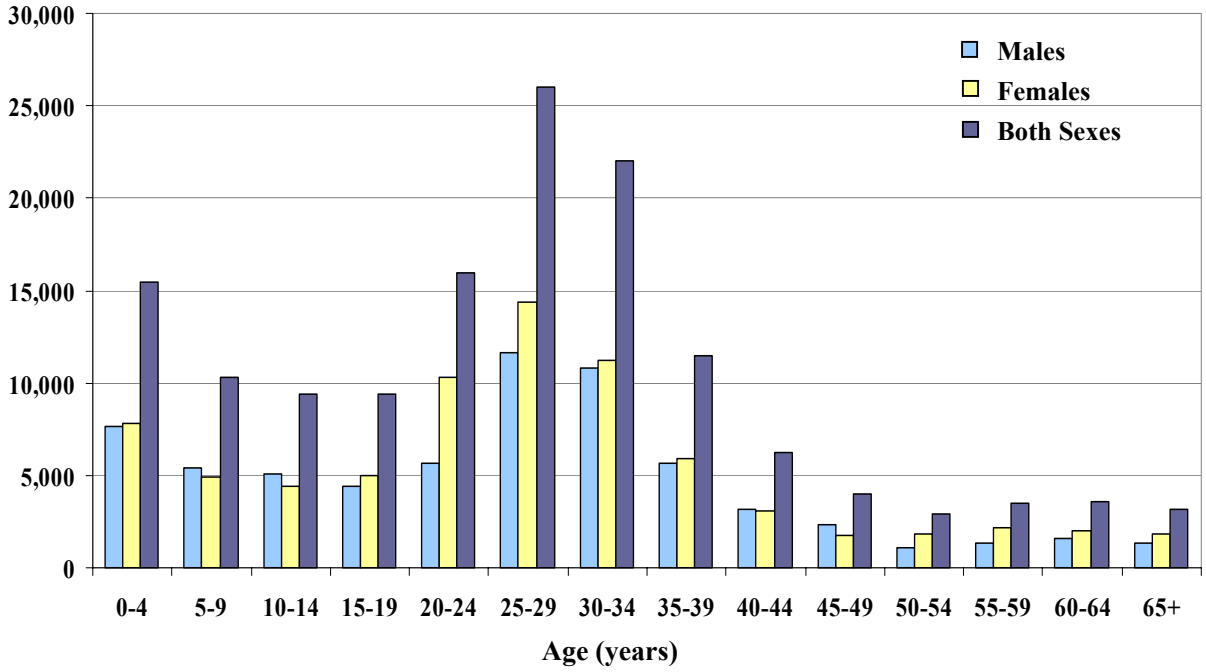
Historically, immigrants to Canada have been relatively young. In 1975, about 88% of males and 85% of females who immigrated to Canada were less than 40 years old. Of those, 59% of males and 57% of females respectively were between ages 20 and 39. This pattern of relatively young immigrants continued between 1975 and 2003. In 2003, 79% of male and 80% of female immigrants were less than 40 years old, and of these, 62% and 66% respectively were between the ages 20 and 39. Further, children less than 10 years old accounted for a considerable proportion of those aged less than 40 (20% in 2003). Immigrants aged 55 and older accounted for only 6% of all immigrants in 1975, generally increased through the mid-1980s to reach 16% and then generally declined thereafter to a level of 7% in 2003.

Net emigrants have also been relatively young historically. However, a greater proportion of this population has tended to be aged 40 and older compared to immigrants. In 2003, the proportion of net emigrants aged 40 and older was 31% for both males and females, compared to 21% and 20% respectively for immigrants. Another notable difference historically is that the number of net emigrants aged less than 5 and aged 20 to 24 has been far less than their immigrant counterparts. For net emigrants, these age groups have represented relative low points in the distribution while for immigrants this pattern has not been seen.

The resulting distribution of net migrants (immigrants less net emigrants) is relatively younger than the distribution of immigrants, with 84% of net migrants less than 40 years old in 2003 and the concentration around ages below 10 and between 20 and 39

still evident. In 2003, 31% of all net migrants were less than 20 years old, 67% were between the ages of 20 and 64, and only 2% were aged 65 and older. The number of net migrants by age group for 2003 is illustrated in Chart 18.

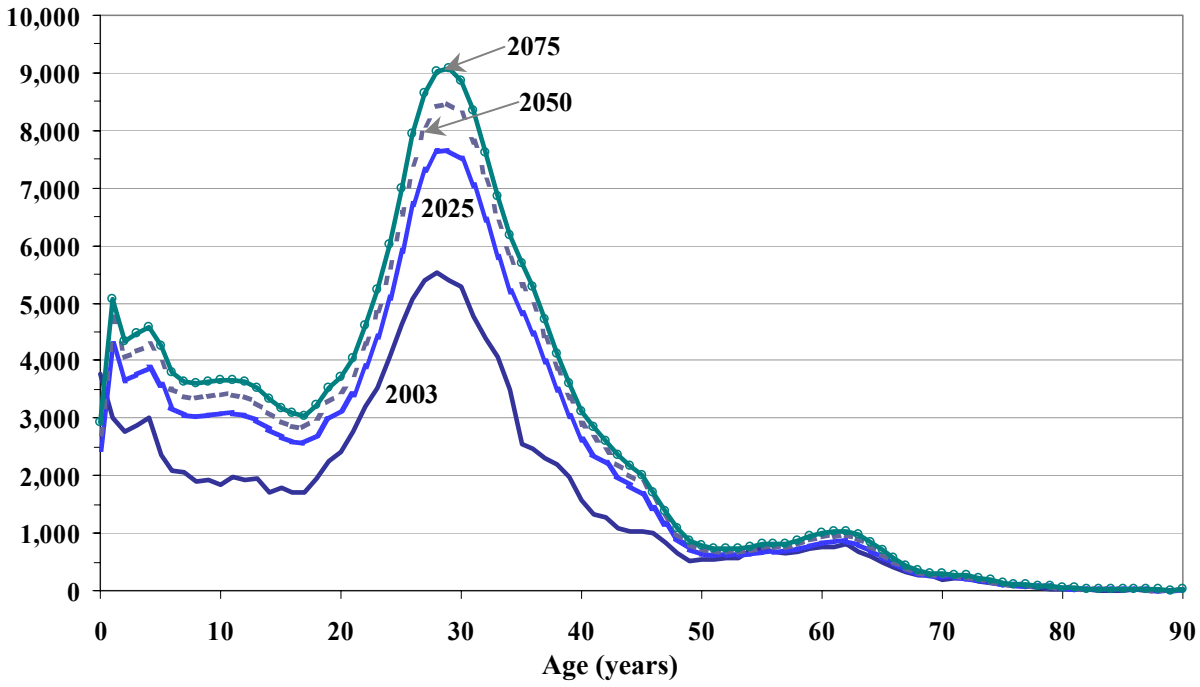
Chart 18 Net Migration by Age and Sex in 2003



It is expected that the age structure of net migrants will continue similarly to its historical trend, and that this evolution will be similar for males and females. The age structure of net migrants for selected years is presented in Chart 19. The number of net migrants is expected to continue to show peaks at younger ages, that is, around the late 20s, and also, to a lesser extent, for young children. The number of near-retirement, retirement, and post-retirement age migrants is expected to continue to remain relatively low. This is important since it is anticipated that as the population ages migration will become increasingly relied upon to provide Canada with a supply of qualified workers to replace those who have retired or left the workforce for other reasons.

Historically, the mean ages of immigrants and net emigrants have been less than that of the general population. This resulted in the mean age of net migrants also being less than that of the general population, as shown in Table 4 of Section III. In 2003, the mean ages of male and female migrants were 26.0 and 26.9 years, respectively. This compares with mean ages of males and females in the general population of 36.5 and 38.6 years, respectively. In 2003, the mean ages of immigrants, net emigrants, and net migrants were 28.3, 33.0, and 26.5 years, respectively. In comparison, the mean age of the general population was 37.6 years in 2003.

Chart 19 Net Migration by Age



In the past, the number of female migrants was generally higher than the number of male migrants (see Table 24). In the future, it is expected female migrants will outnumber male migrants, and that this gap will gradually increase. The number of female migrants is expected to increase gradually from about 76,000 in 2003 to 124,000 by 2075. For males, this growth will also be gradual, from about 67,000 to 114,000 over the same period.

Table 24 Net Migration by Sex

Year (Ending 30th June)	Males	Females	Total
1975	87,200	81,600	168,800
1985	25,100	30,600	55,800
1995	78,300	89,000	167,300
2003	67,200	76,400	143,600
2004	75,500	82,900	158,400
2005	76,100	83,600	159,700
2006	76,700	84,300	161,000
2007	77,400	85,000	162,400
2008	78,000	85,700	163,700
2009	78,600	86,400	165,000
2010	79,200	87,100	166,300
2015	82,400	90,600	173,000
2020	92,700	101,500	194,200
2025	96,100	105,100	201,300
2030	99,000	108,300	207,400
2050	106,200	116,200	222,500
2075	113,700	124,400	238,100

IX. Sensitivity Tests

The projections in this study were derived using the same demographic best-estimate assumptions as in the 21st CPP Report. Given the variability in the key determinants of the size of the population (fertility, mortality and migration) and the length of the projection period, it is ensured that actual experience will not develop exactly in accordance with the best-estimate assumptions. As such, sensitivity tests were performed, consisting of projections of the population using alternative assumptions.

The sensitivity tests were performed by varying each of the three main assumptions individually, holding the other two assumptions at their best-estimate levels. Two tests were performed with respect to each of the assumptions. The alternative assumptions selected are intended to represent a wide range of potential long-term experience. However, the results cannot simply be combined, because a change in any particular assumption may have an impact on another to various degrees. Each of these sensitivity tests was categorized as being either "low" or "high" in relation to its best-estimate assumption.

The sensitivity tests presented in this section are based on a deterministic approach (that is, developed assuming a specific range of values for each assumption) and provide only for a wide range of possible outcomes for each assumption.

Both sensitivity tests performed for the fertility rate and the "high" test performed for mortality are the same as those performed in the 21st CPP Report. The "low" test for mortality, and both tests for migration differ from those in the 21st CPP Report in that they present more extreme scenarios than those presented in that Report.

A. Fertility

The best-estimate assumption for the total fertility rate is that it will increase slightly from its 2001 level of 1.51 to an ultimate level of 1.60 in 2016. Generational effects result from this assumption in the long term, as one generation of newborns yields a generation of mothers in the future, who are themselves subject to the same assumption. The magnitude of this compounding effect rests on the level of fertility assumed.

The low fertility assumption has the fertility rate decreasing to an ultimate level of 1.30 in 2016. This represents a continuation of the historical trend of decreases. In comparison, the high fertility assumption has the fertility rate increasing to an ultimate level of 1.90 in 2016. This represents a return to the levels typical of the early 1970s.

Table 25 compares the difference in age group and total fertility rates and mean age at motherhood between the low fertility, best-estimate and high fertility assumptions for selected years. The effect on age group fertility rates for the low and high fertility assumptions is expected to be most pronounced for women aged 30 to 34, while the mean age at motherhood is projected to level off at 29.4 years for all three assumptions as the trend toward delayed childbearing is maintained.

Table 25 Total Fertility Rates and Mean Ages at Motherhood Under Varying Fertility Assumptions

Year	Annual Fertility Rates by Age Group (per 1,000 women)							Total Fertility Rate per Woman	Mean Age at Motherhood
	15-19	20-24	25-29	30-34	35-39	40-44	45-49		
Low Fertility									
2004	13.2	47.5	88.6	90.2	36.3	6.3	0.3	1.41	28.9
2008	13.2	41.8	76.2	90.5	37.5	6.5	0.3	1.33	29.2
2012	13.2	41.8	66.9	90.8	38.6	6.8	0.3	1.29	29.4
2016+	13.2	41.8	66.9	91.2	39.7	7.0	0.3	1.30	29.4
Best-Estimate									
2004	16.2	53.3	93.2	94.4	38.2	6.6	0.3	1.51	28.8
2008	16.2	51.4	87.0	100.3	41.8	7.3	0.3	1.52	29.0
2012	16.2	51.4	82.3	106.3	45.3	7.9	0.4	1.55	29.2
2016+	16.2	51.4	82.3	112.2	48.9	8.6	0.4	1.60	29.4
High Fertility									
2004	19.2	59.1	97.8	98.6	40.0	6.9	0.3	1.61	28.6
2008	19.2	61.0	97.8	110.1	46.0	8.0	0.4	1.71	28.9
2012	19.2	61.0	97.7	121.7	52.1	9.1	0.4	1.81	29.1
2016+	19.2	61.0	97.7	133.2	58.1	10.2	0.5	1.90	29.4

Under the low fertility assumption, the population grows much more slowly, to levels that are 4% lower and 18% lower in 2030 and 2075 respectively than under the best-estimate assumption. In addition, the proportion of the population at younger ages declines as lower fertility causes the population to age more rapidly. By 2075, the proportion of the population aged 65 and older grows to 30%, and the proportion aged 80 and older grows to 12% (see Table 26). In comparison, these proportions correspond to 25% and 10% respectively under the best-estimate assumption.

Table 26 Population by Age (thousands) and Relative Proportions Under Varying Fertility Assumptions

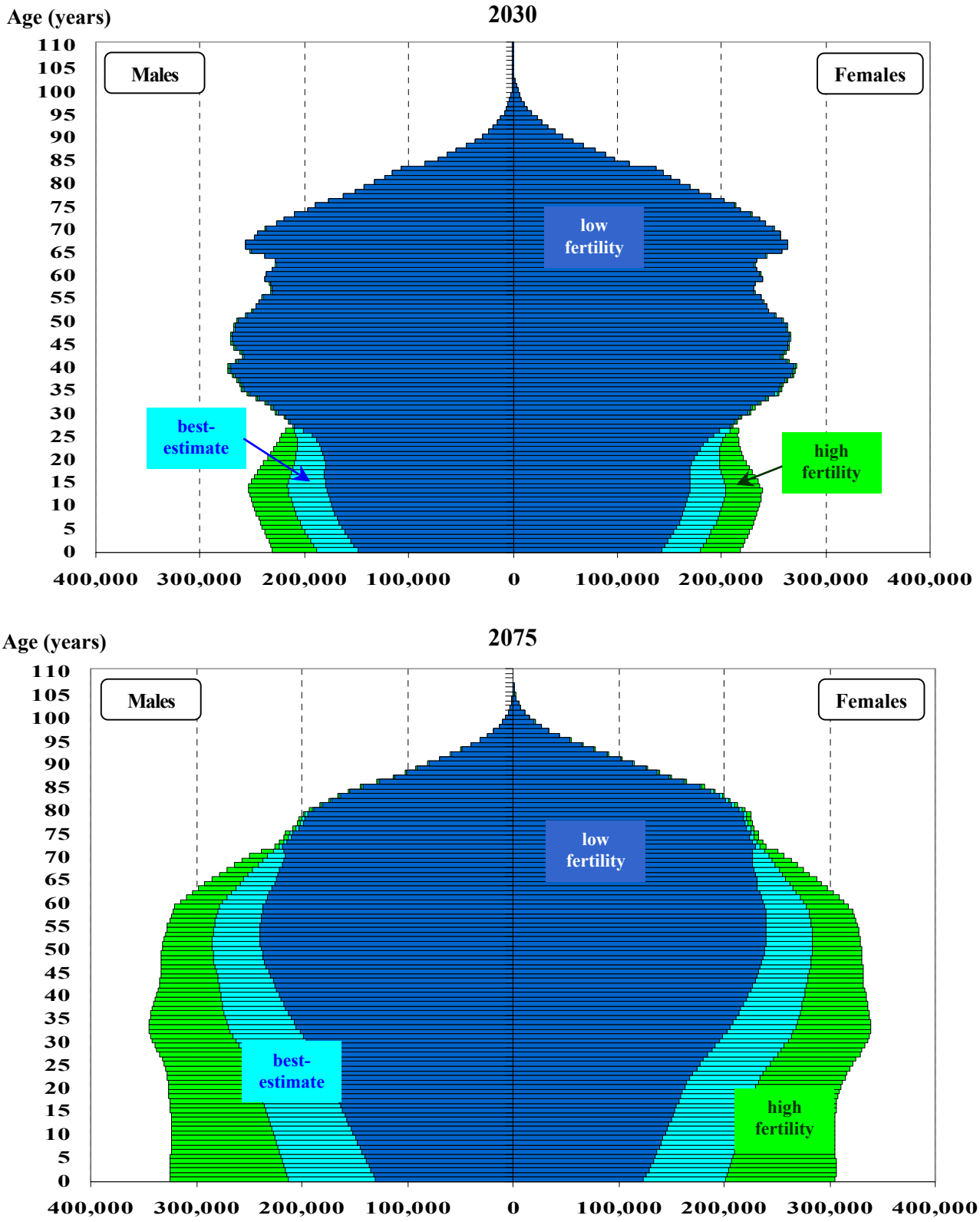
Year	All Ages	0-19		20-64		65 and over		80 and over	
2003	31,630	7,902	25.0%	19,667	62.2%	4,060	12.8%	1,034	3.3%
Low Fertility									
2005	32,121	7,751	24.1%	20,152	62.7%	4,219	13.1%	1,119	3.5%
2010	33,236	7,351	22.1%	21,118	63.5%	4,767	14.3%	1,306	3.9%
2015	34,262	6,927	20.2%	21,689	63.3%	5,646	16.5%	1,444	4.2%
2020	35,272	6,714	19.0%	21,905	62.1%	6,654	18.9%	1,566	4.4%
2025	36,176	6,646	18.4%	21,727	60.1%	7,803	21.6%	1,824	5.0%
2030	36,876	6,647	18.0%	21,340	57.9%	8,889	24.1%	2,297	6.2%
2050	37,349	6,164	16.5%	20,901	56.0%	10,284	27.5%	3,669	9.8%
2075	36,140	5,858	16.2%	19,449	53.8%	10,832	30.0%	4,268	11.8%
Best-Estimate									
2005	32,162	7,791	24.2%	20,152	62.7%	4,219	13.1%	1,119	3.5%
2010	33,482	7,595	22.7%	21,120	63.1%	4,767	14.2%	1,306	3.9%
2015	34,819	7,475	21.5%	21,698	62.3%	5,647	16.2%	1,444	4.1%
2020	36,202	7,619	21.0%	21,928	60.6%	6,655	18.4%	1,566	4.3%
2025	37,495	7,878	21.0%	21,813	58.2%	7,805	20.8%	1,825	4.9%
2030	38,608	8,056	20.9%	21,659	56.1%	8,894	23.0%	2,297	5.9%
2050	41,367	8,229	19.9%	22,824	55.2%	10,314	24.9%	3,674	8.9%
2075	44,274	8,811	19.9%	24,242	54.8%	11,220	25.3%	4,305	9.7%
High Fertility									
2005	32,202	7,831	24.3%	20,152	62.6%	4,219	13.1%	1,119	3.5%
2010	33,729	7,839	23.2%	21,123	62.6%	4,767	14.1%	1,306	3.9%
2015	35,378	8,024	22.7%	21,707	61.4%	5,647	16.0%	1,444	4.1%
2020	37,134	8,526	23.0%	21,951	59.1%	6,656	17.9%	1,567	4.2%
2025	38,820	9,114	23.5%	21,899	56.4%	7,807	20.1%	1,825	4.7%
2030	40,359	9,483	23.5%	21,978	54.5%	8,898	22.0%	2,298	5.7%
2050	45,702	10,582	23.2%	24,776	54.2%	10,344	22.6%	3,678	8.0%
2075	53,766	12,598	23.4%	29,551	55.0%	11,617	21.6%	4,344	8.1%

Under the high fertility assumption, the population grows much more quickly to levels that are 5% higher and 21% higher in 2030 and 2075 respectively than under the best-estimate assumption. In addition, the proportion of the population at younger ages grows as higher fertility causes the population to age less rapidly. By 2075, the proportion of the population aged 65 and older grows to 22%, and the proportion aged 80 and older grows to 8%.

The resulting effect on the projected age structure of the population in years 2030 and 2075 for the best-estimate, low fertility and high fertility assumptions is illustrated in Chart 20. Differences in the size of the population and tendency toward younger or older ages can be seen between the assumptions. By 2030, the effects of the different fertility assumptions can be seen up to about age 27, after which the populations merge

as the effect of fertility dissipates. By 2075, the effects of the different assumptions are much more pronounced with the populations only merging at about age 80.

Chart 20 Age Structure of the Population Under Varying Fertility Assumptions



Under the low fertility assumption, the population is older as the population ages more rapidly than under the best-estimate assumption, and this effect becomes more pronounced over time. This effect can be observed by considering the dependency ratios of youths and retirees to the working-age population (see Table 27 below). By 2075, the youth dependency ratio declines to 30 youths per 100 working-age persons, which is much less than the corresponding ratio of 36 youths per 100 working-age persons under the best-estimate assumption. The retiree dependency ratio increases significantly to 56 retirees per 100 working-age persons, which is much greater than the best-estimate ratio of 46 retirees per 100 working-age persons. The combined effect of the youth and retiree ratios leads to a total dependency ratio of 86 youths and retirees per 100 working-age persons by 2075, which is greater than the best-estimate total dependency ratio of 83 per 100.

Under the high fertility assumption, the population is younger as the population ages less rapidly than under the best-estimate assumption, and this effect becomes more pronounced over time. By 2075, the youth dependency ratio increases to 43 youths per 100 working-age persons, which is much greater than the corresponding best-estimate ratio. The retiree dependency ratio increases to 39 retirees per 100 working-age persons, which is much less than the best-estimate retiree ratio. Significant increases are still seen in the older age groups as the population continues to age, outweighing the effect of increased fertility; however these increases are to a much lesser extent than under the low fertility assumption. The combined effect of the youth and retiree ratios yields a total dependency ratio of 82 youths and retirees per 100 working-age persons by 2075, which is slightly less than the best-estimate total dependency ratio.

Table 27 Dependency Ratios Under Varying Fertility Assumptions
(per 100 people of working age)

	Low Fertility			Best-Estimate			High Fertility		
Year	0-19 to 20-64	65+ to 20-64	0-19 and 65+ to 20-64	0-19 to 20-64	65+ to 20-64	0-19 and 65+ to 20-64	0-19 to 20-64	65+ to 20-64	0-19 and 65+ to 20-64
2003	40	21	61	40	21	61	40	21	61
2005	38	21	59	39	21	60	39	21	60
2010	35	23	57	36	23	59	37	23	60
2020	31	30	61	35	30	65	39	30	69
2030	31	42	73	37	41	78	43	40	84
2050	29	49	79	36	45	81	43	42	84
2075	30	56	86	36	46	83	43	39	82

B. Mortality

Mortality improvements are expected to continue in the future. The ultimate rates of improvement were established by adjusting the results of a detailed study prepared by the Office of the Chief Actuary of the United States Social Security Administration regarding trends in mortality by age, sex and cause of death to reflect, in part, historical differences in mortality improvements between Canada and the United States. Rates of

improvement are kept at their current levels for the first five years of projections and are then graded down to reach ultimate values by 2026.

Under the low mortality assumption, mortality is assumed to improve more rapidly. Improvement rates are assumed to gradually reach 350% of the best-estimate ultimate levels by 2026. Alternatively under the high mortality assumption, mortality is assumed to improve less rapidly, with improvements rates assumed to grade down to zero by 2026. Best-estimate mortality improvements rates are provided in Table 14 of Section VII.

As mortality varies, so does life expectancy. Life expectancies at birth, age 65 and age 80 under the three assumptions and for selected years are provided in Tables 28 and 29. A comparison of historical and projected life expectancies at birth between the assumptions and between the sexes is shown in Chart 21. For both Table 28 and Chart 21, no improvements in mortality are assumed after each year shown, while Table 29 includes mortality improvements.

Table 28 Life Expectancies Under Varying Mortality Assumptions, without mortality improvements after each year shown

		Males			Females		
		High Mortality	Best-Estimate	Low Mortality	High Mortality	Best-Estimate	Low Mortality
2010	**At Birth**	78.9	79.0	79.0	83.1	83.1	83.2
	At Age 65	18.1	18.1	18.2	21.1	21.1	21.2
	At Age 80	8.2	8.2	8.3	9.9	9.9	10.0
2030	**At Birth**	80.1	80.9	82.9	83.6	84.4	86.1
	At Age 65	18.7	19.2	20.6	21.4	21.9	23.2
	At Age 80	8.4	8.7	9.6	10.0	10.4	11.3
2075	**At Birth**	80.1	83.4	90.3	83.6	86.5	92.7
	At Age 65	18.7	20.9	26.3	21.4	23.5	28.6
	At Age 80	8.4	9.8	13.7	10.0	11.5	15.5

Over time the effect of the mortality assumption becomes more pronounced. In 2010, a newborn would not see a noticeable difference in his or her life expectancy under the low or high mortality assumptions compared to the best-estimate assumption (see Table 28). However, by 2075, a newborn could expect a lifetime of about 3 years less under the high mortality assumption and over 6 years more under the low mortality assumption compared to the best estimate. The marked increase in effect over time also appears at the older ages. For instance, an 80 year old female in 2010 could expect to live another 10 years under the low mortality assumption, just 0.1 year more than under the best-estimate assumption. By 2075, such female would see another 15.5 years, or four more years than under the best-estimate assumption.

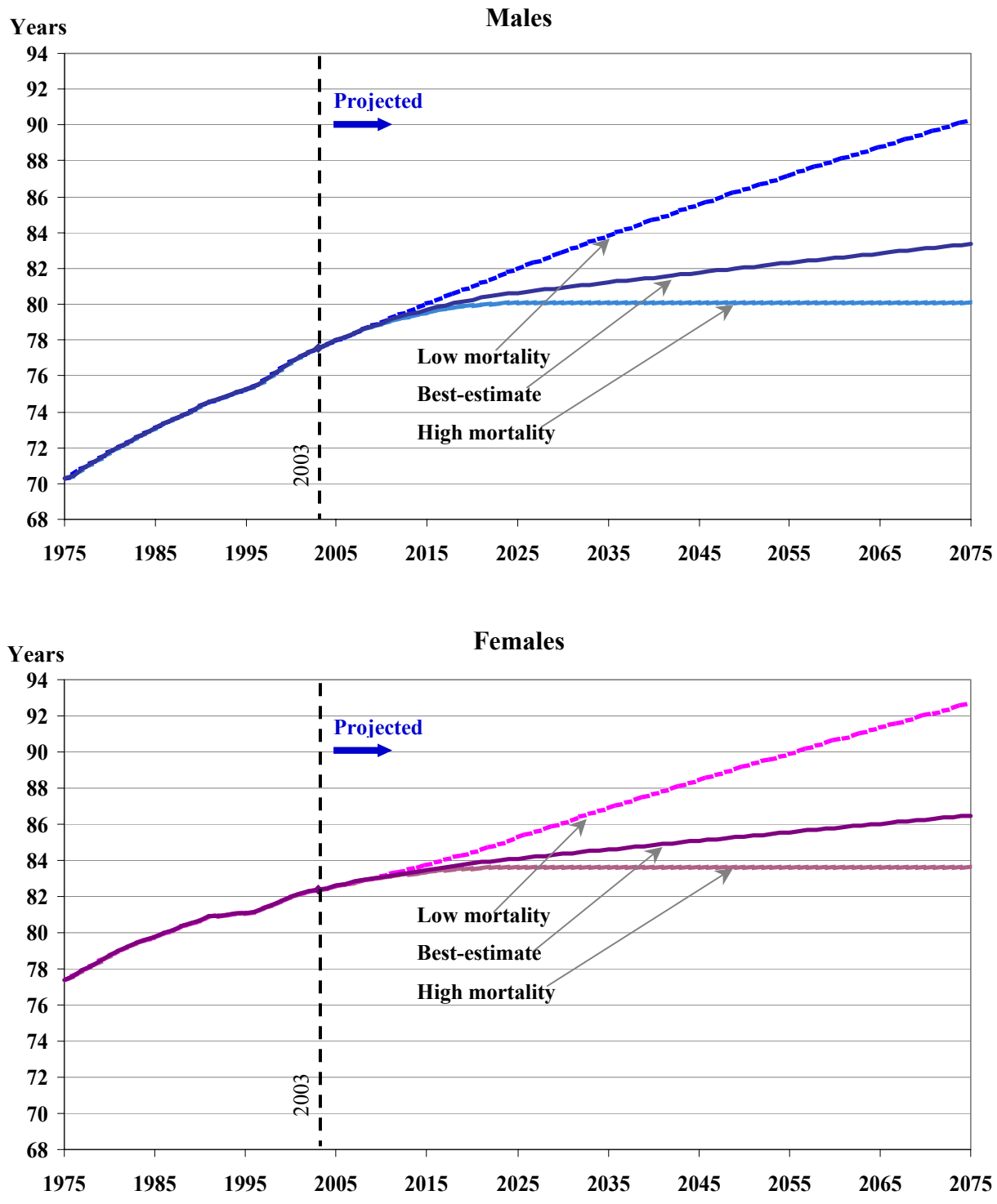
Table 29 Life Expectancies Under Varying Mortality Assumptions, with mortality improvements after each year shown

		Males			Females		
		High Mortality	Best-Estimate	Low Mortality	High Mortality	Best-Estimate	Low Mortality
2010	**At Birth**	80.0	83.3	91.7	83.6	86.6	94.5
	At Age 65	18.5	18.8	19.8	21.3	21.7	22.8
	At Age 80	8.3	8.3	8.5	9.9	10.0	10.3
2030	**At Birth**	80.1	84.5	95.1	83.6	87.7	97.5
	At Age 65	18.7	19.8	22.6	21.4	22.5	25.4
	At Age 80	8.4	8.9	10.2	10.0	10.6	12.0
2075	**At Birth**	80.1	86.8	100.5	83.6	89.7	102.4
	At Age 65	18.7	21.4	28.8	21.4	24.1	31.3
	At Age 80	8.4	10.0	14.7	10.0	11.7	16.5

In both Tables 28 and 29, life expectancies in years 2030 and 2075 are the same under the high mortality assumption. The reason for this is that under this assumption no improvements in mortality are assumed after the year 2025.

If future mortality improvements are not included, then life expectancies at birth are projected to exceed 90 years by 2075 for both males and females under the low mortality assumption. If mortality improvements are included, then life expectancies at birth are projected to exceed 95 years by 2030, and by 2075 are projected to exceed 100 years for both males and females under the low mortality assumption.

Chart 21 Life Expectancies at Birth Under Varying Mortality Assumptions, without mortality improvements after each year shown



Under the low mortality assumption, the population grows to a level in 2075 that is 8% higher than under the best-estimate assumption. In addition, the effect is more pronounced at older ages in the long term where effective lower mortality increases the older population to a greater extent than the younger population. By 2075, the

proportion of the population aged 65 and older is 29%, and the proportion aged 80 and older is 14% (see Table 30 below).

Table 30 Population by Age (thousands) and Relative Proportions Under Varying Mortality Assumptions

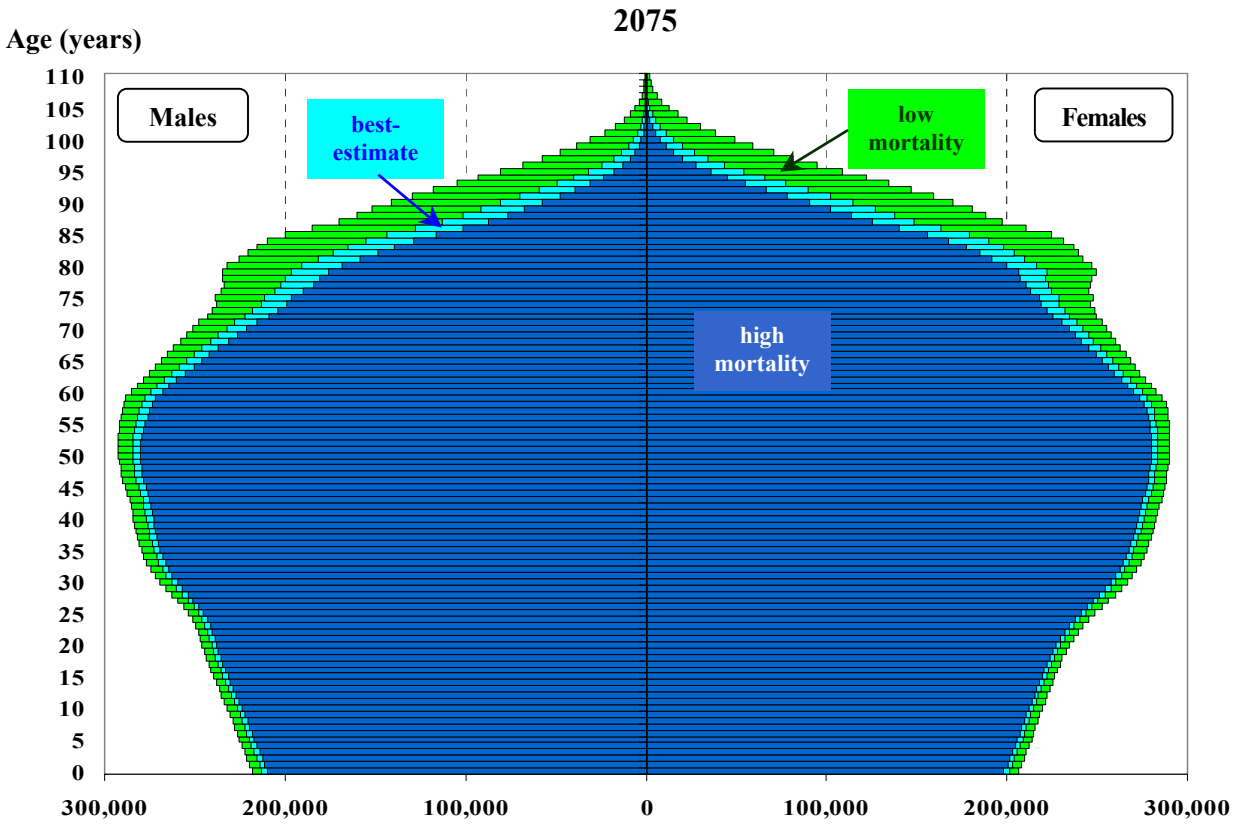
Year	All Ages	0-19		20-64		65 and over		80 and over	
2003	31,630	7,902	25.0%	19,667	62.2%	4,060	12.8%	1,034	3.3%
Low Mortality									
2005	32,162	7,791	24.2%	20,152	62.7%	4,219	13.1%	1,119	3.5%
2010	33,485	7,595	22.7%	21,121	63.1%	4,769	14.2%	1,308	3.9%
2015	34,843	7,476	21.5%	21,703	62.3%	5,664	16.3%	1,454	4.2%
2020	36,282	7,622	21.0%	21,944	60.5%	6,716	18.5%	1,602	4.4%
2025	37,683	7,883	20.9%	21,847	58.0%	7,953	21.1%	1,910	5.1%
2030	38,975	8,068	20.7%	21,718	55.7%	9,190	23.6%	2,476	6.4%
2050	43,027	8,294	19.3%	23,067	53.6%	11,665	27.1%	4,686	10.9%
2075	47,918	9,019	18.8%	24,886	51.9%	14,012	29.2%	6,504	13.6%
Best-Estimate									
2005	32,162	7,791	24.2%	20,152	62.7%	4,219	13.1%	1,119	3.5%
2010	33,482	7,595	22.7%	21,120	63.1%	4,767	14.2%	1,306	3.9%
2015	34,819	7,475	21.5%	21,698	62.3%	5,647	16.2%	1,444	4.1%
2020	36,202	7,619	21.0%	21,928	60.6%	6,655	18.4%	1,566	4.3%
2025	37,495	7,878	21.0%	21,813	58.2%	7,805	20.8%	1,825	4.9%
2030	38,608	8,056	20.9%	21,659	56.1%	8,894	23.0%	2,297	5.9%
2050	41,367	8,229	19.9%	22,824	55.2%	10,314	24.9%	3,674	8.9%
2075	44,274	8,811	19.9%	24,242	54.8%	11,220	25.3%	4,305	9.7%
High Mortality									
2005	32,162	7,791	24.2%	20,152	62.7%	4,219	13.1%	1,119	3.5%
2010	33,481	7,595	22.7%	21,120	63.1%	4,766	14.2%	1,306	3.9%
2015	34,810	7,475	21.5%	21,696	62.3%	5,639	16.2%	1,439	4.1%
2020	36,170	7,618	21.1%	21,921	60.6%	6,630	18.3%	1,552	4.3%
2025	37,417	7,875	21.0%	21,798	58.3%	7,745	20.7%	1,790	4.8%
2030	38,454	8,051	20.9%	21,632	56.3%	8,771	22.8%	2,225	5.8%
2050	40,653	8,197	20.2%	22,703	55.8%	9,753	24.0%	3,279	8.1%
2075	42,652	8,707	20.4%	23,899	56.0%	10,046	23.6%	3,473	8.1%

Under the high mortality assumption, the population grows to a level in 2075 that is 4% lower than under the best-estimate assumption. Also, the effect is more pronounced at older ages in the long term where effective higher mortality decreases the older population to a greater extent than the younger population. By 2075, the proportion of the population aged 65 and older grows to 24%, and the proportion aged 80 and older grows to 8%.

The projected age structures of the population under the best-estimate, low mortality and high mortality assumptions for year 2075 are shown in Chart 22. The populations

for 2075 are shown and not for a more recent year, since the effect of changing mortality improvement only becomes more evident over the long term. Differences in the size of the population between the assumptions and the effect at older ages can be seen.

Chart 22 Age Structure of the Population Under Varying Mortality Assumptions



Under the low mortality assumption, when compared to the best-estimate assumption, life expectancies increase leading to an older population. This aging becomes more pronounced over time as the effect of mortality primarily occurs at the older ages. As such, the youth dependency ratio is not noticeably affected over time compared to the best-estimate assumption (see Table 31). However, the retiree dependency ratio increases to 56 retirees per 100 working-age persons by 2075, which is significantly greater than the best-estimate retiree ratio. The combined effect of the youth and retiree ratios leads to a total dependency ratio of 93 youths and retirees per 100 working-age persons by 2075, which is significantly greater than the best-estimate total dependency ratio.

Under the high mortality assumption, when compared to the best-estimate assumption, life expectancies decrease leading to a younger population which becomes more pronounced over time. As before, the youth dependency ratio does not noticeably change over time. The retiree dependency ratio, however, increases to 42 retirees per 100 working-age persons, which is less than under the best-estimate assumption. Significant increases are still seen in the older age groups as the aging of the population predominates over higher mortality; however, these increases are to a much lesser

extent than under the low mortality assumption. The combined effect of the youth and retiree ratios yields a total dependency ratio of 78 youths and retirees per 100 working-age persons by 2075, which is much less than the best-estimate total dependency ratio.

Table 31 Dependency Ratios Under Varying Mortality Assumptions
(per 100 people of working age)

	Low Mortality			Best-Estimate			High Mortality		
Year	0-19 to 20-64	65+ to 20-64	0-19 and 65+ to 20-64	0-19 to 20-64	65+ to 20-64	0-19 and 65+ to 20-64	0-19 to 20-64	65+ to 20-64	0-19 and 65+ to 20-64
2003	40	21	61	40	21	61	40	21	61
2005	39	21	60	39	21	60	39	21	60
2010	36	23	59	36	23	59	36	23	59
2020	35	31	65	35	30	65	35	30	65
2030	37	42	79	37	41	78	37	41	78
2050	36	51	87	36	45	81	36	43	79
2075	36	56	93	36	46	83	36	42	78

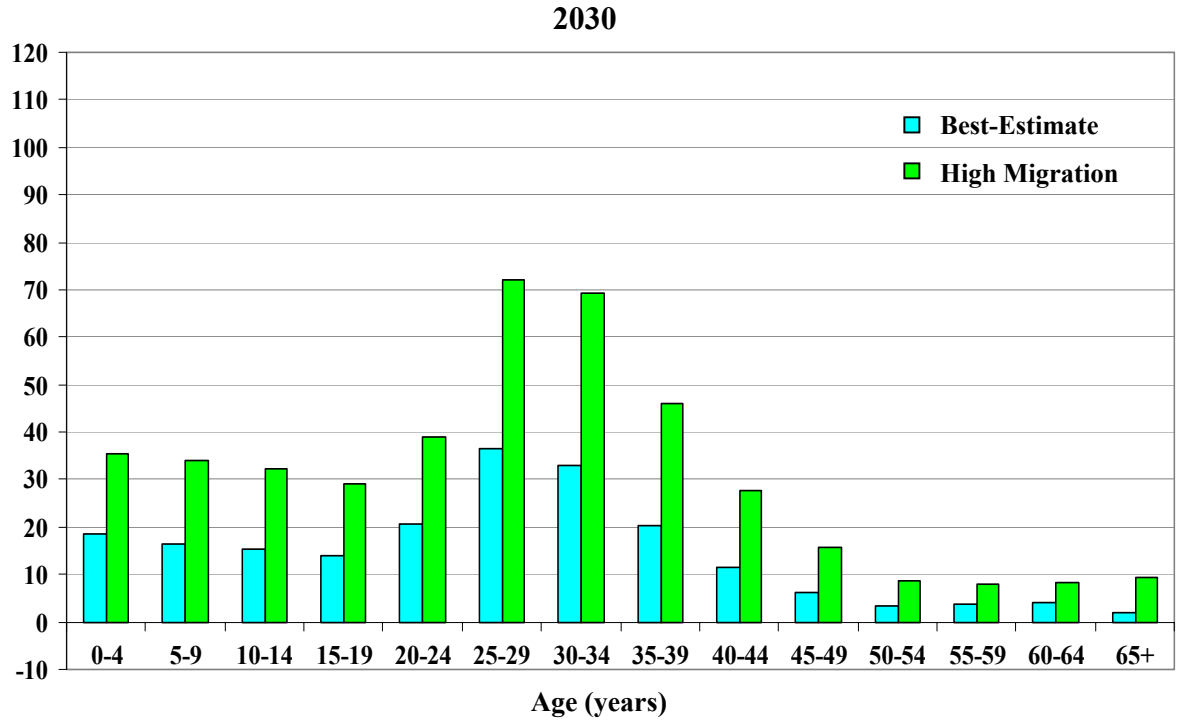
C. Migration

An ultimate best-estimate assumption for migration of 0.54% of the population is set for 2020 and thereafter. This level is reached in two steps; first, a level of 0.50% is kept constant from 2004 until 2015, then the ultimate level of 0.54% is gradually reached in 2020. The ultimate migration level is consistent with experience over the last 15 to 25 years. Note that migration refers to net migration.

The low (zero) migration assumption has migration decreasing to an ultimate level of 0% of the population by 2010 and being maintained at that level thereafter. This represents the extreme case of no migration from 2010 onward, so that growth in the population would come solely from natural increase, that is, the number of births less deaths. In comparison, the high migration assumption has net migration increasing to an ultimate level of 1% of the population by 2010 and being maintained at that level thereafter. This assumption is higher than the immigration target of approximately 1% as a long-term objective put forth by Citizenship and Immigration Canada (CIC) in its Immigration Plan for 2002: "Pursuing Canada's Commitment to Immigration". The assumption is higher than CIC's target since the assumption applies to the level of net migration and not just to immigration.

A comparison of the projected number of net migrants by age group under the best-estimate and high migration assumptions in 2030 and 2075 is shown in Chart 23. By 2010, net migration under the low assumption is assumed to be nil, and so is not shown in this chart. The pattern of relative peaks at ages less than 5 and between ages 25 and 29 in the best-estimate case is also present for the high migration assumption, but to a greater degree. Total migrant projections for selected years are provided in Table 32.

Chart 23 Net Migration by Age Under Varying Migration Assumptions
(thousands)



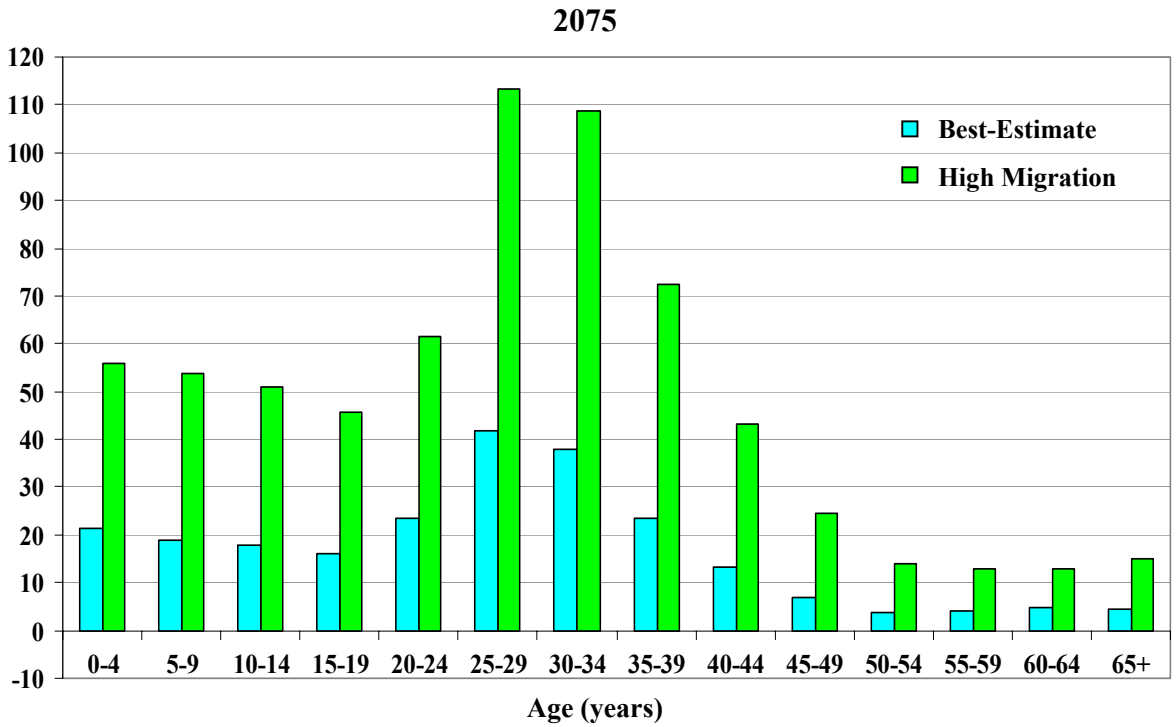


Table 32 Net Migration Under Varying Migration Assumptions

Assumption	Net Migrants
Low Migration	
2004	123,300
2010	0
2030	0
2075	0
Best-Estimate	
2004	158,400
2010	166,300
2030	207,400
2075	238,100
High Migration	
2004	168,500
2010	337,200
2030	435,700
2075	684,900

As migrants are generally young (84% of migrants were younger than 40 years old in 2003), the level of migration can have a significant impact on both the size and age composition of the population. In the case of zero migration, the population would grow much more slowly, to levels that are 14% lower in 2030 and 43% lower in 2075 than under the best-estimate assumption (see Table 33). This represents by far the largest decline in the population compared to the assumptions of low fertility and high mortality. In addition, the population ages more quickly compared to the other two assumptions. This accelerated aging occurs because net migrants are relatively younger than the general population and thus impede the aging of the population. In their absence, this impeding effect is removed. By 2075, the proportion of the population aged 65 and older grows to 30%, and the proportion aged 80 and older grows to 13%.

Table 33 Population by Age (thousands) and Relative Proportions Under Varying Migration Assumptions

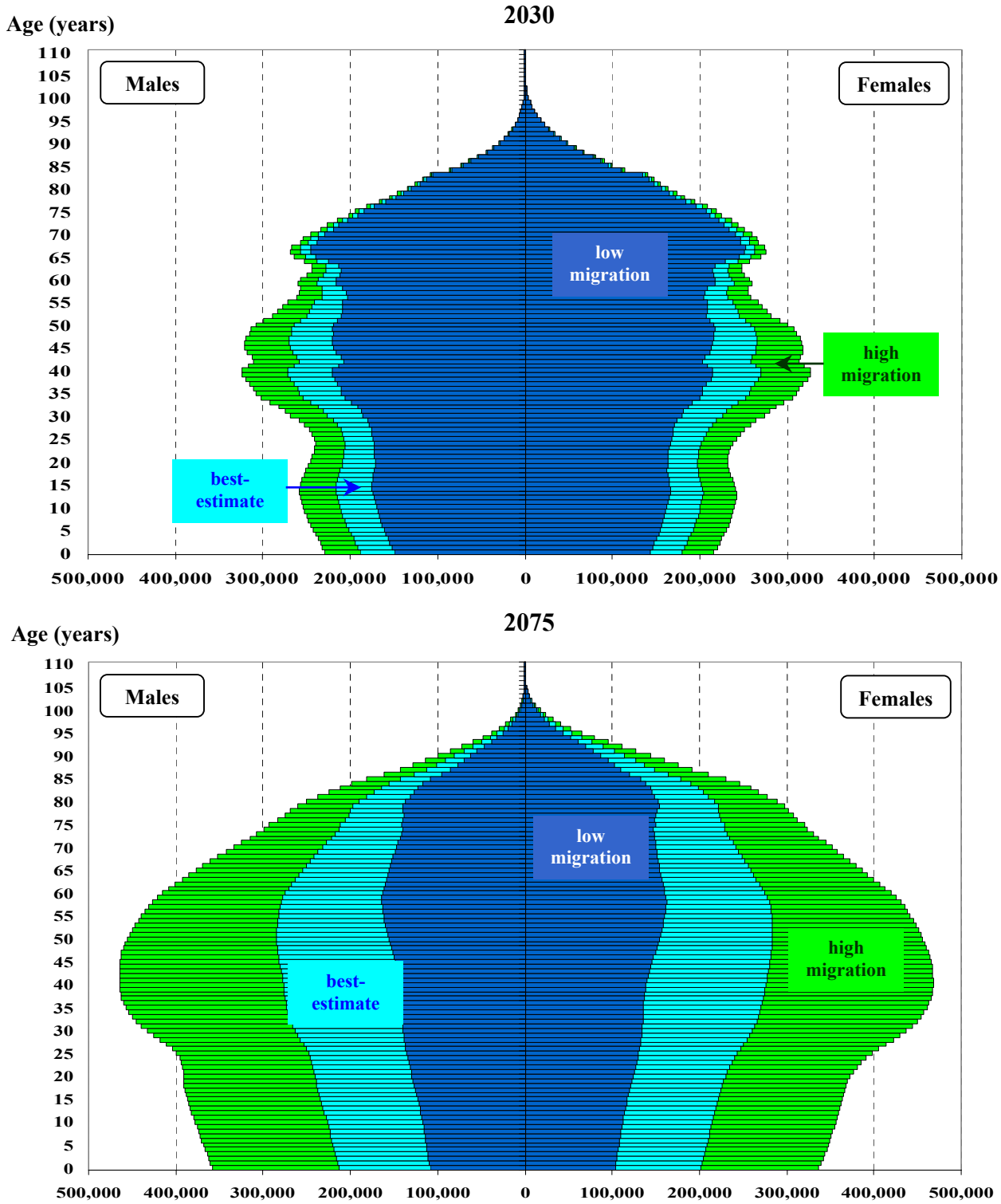
Year	All Ages	0-19		20-64		65 and over		80 and over	
2003	31,630	7,902	25.0%	19,667	62.2%	4,060	12.8%	1,034	3.3%
Low Migration									
2005	32,068	7,763	24.2%	20,089	62.6%	4,216	13.1%	1,119	3.5%
2010	32,742	7,368	22.5%	20,628	63.0%	4,746	14.5%	1,304	4.0%
2015	33,116	6,951	21.0%	20,575	62.1%	5,590	16.9%	1,437	4.3%
2020	33,379	6,758	20.2%	20,072	60.1%	6,549	19.6%	1,552	4.7%
2025	33,442	6,667	19.9%	19,143	57.2%	7,632	22.8%	1,798	5.4%
2030	33,243	6,511	19.6%	18,112	54.5%	8,620	25.9%	2,252	6.8%
2050	30,136	5,461	18.1%	15,763	52.3%	8,912	29.6%	3,444	11.4%
2075	25,382	4,593	18.1%	13,121	51.7%	7,668	30.2%	3,226	12.7%
Best-Estimate									
2005	32,162	7,791	24.2%	20,152	62.7%	4,219	13.1%	1,119	3.5%
2010	33,482	7,595	22.7%	21,120	63.1%	4,767	14.2%	1,306	3.9%
2015	34,819	7,475	21.5%	21,698	62.3%	5,647	16.2%	1,444	4.1%
2020	36,202	7,619	21.0%	21,928	60.6%	6,655	18.4%	1,566	4.3%
2025	37,495	7,878	21.0%	21,813	58.2%	7,805	20.8%	1,825	4.9%
2030	38,608	8,056	20.9%	21,659	56.1%	8,894	23.0%	2,297	5.9%
2050	41,367	8,229	19.9%	22,824	55.2%	10,314	24.9%	3,674	8.9%
2075	44,274	8,811	19.9%	24,242	54.8%	11,220	25.3%	4,305	9.7%
High Migration									
2005	32,208	7,805	24.2%	20,183	62.7%	4,220	13.1%	1,119	3.5%
2010	34,135	7,795	22.8%	21,555	63.1%	4,786	14.0%	1,308	3.8%
2015	36,484	7,987	21.9%	22,796	62.5%	5,700	15.6%	1,450	4.0%
2020	38,987	8,472	21.7%	23,758	60.9%	6,757	17.3%	1,580	4.1%
2025	41,529	9,087	21.9%	24,467	58.9%	7,974	19.2%	1,851	4.5%
2030	44,038	9,629	21.9%	25,246	57.3%	9,162	20.8%	2,342	5.3%
2050	53,940	11,398	21.1%	30,778	57.1%	11,764	21.8%	3,907	7.2%
2075	69,187	14,621	21.1%	39,225	56.7%	15,341	22.2%	5,488	7.9%

A net migration assumption of 1% of the population may be considered high, especially given the anticipated competition Canada will face for qualified immigrant workers with other developed first world countries. Under this assumption, the population grows much more quickly, to levels that are 14% higher in 2030 and 56% higher in 2075 than under the best-estimate assumption. This represents the largest increase in the population compared to the assumptions of high fertility and low mortality. As well, the population ages more slowly in comparison to the other two assumptions. This occurs for the same reason attributable to net migrants mentioned above, namely their impeding effect on the aging of the population. By 2075, the proportions of the population aged 65 and older and 80 and older are 22% and 8%, respectively.

A comparison between the projected age structures of the general population under the best-estimate, low migration and high migration assumptions for years 2030 and 2075

is shown in Chart 24. Differences in the size of the population and tendency toward younger or older ages can be seen between the assumptions.

Chart 24 Age Structure of the Population Under Varying Migration Assumptions



Under the low (zero) migration assumption, the population decreases and ages more rapidly than under the best-estimate assumption. This occurs since migrants are relatively younger than the general population, and so their absence significantly causes the population both to decrease and age. The effect is seen largely to affect the working-age population, as the bulge in the population under the best-estimate assumption mostly disappears by 2075 if zero migration is assumed instead. The effect can also be seen by the dependency ratios over time (see Table 34 below). The youth dependency ratio falls to 35 youths per 100 working-age persons by 2075, which is slightly less than under the best-estimate assumption. In comparison, the retiree dependency ratio increases more to 58 retirees per 100 working-age persons, which is significantly greater than the best-estimate retiree ratio. The combined effect of the youth and retiree ratios yields a total dependency ratio of 93 youths and retirees per 100 working-age persons by 2075, significantly higher compared to the best-estimate total dependency ratio.

Under the high migration assumption, the population increases significantly and ages less rapidly than under the best-estimate assumption. The bulge in the population around the working ages becomes much more evident by 2075. The youth dependency ratio increases to 37 youths per 100 working-age persons by 2075, which is slightly higher than the best-estimate youth ratio. The retiree dependency ratio increases to only 39 retirees per 100 working-age persons, which is much less than the best-estimate retiree ratio. Significant increases are still seen in the older age groups as the population continues to age, outweighing the effect of increased net migration. The combined effect of youths and retirees yields a total dependency ratio of 76 youths and retirees per 100 working-age persons by 2075, significantly lower compared to the best-estimate total dependency ratio.

Table 34 Dependency Ratios Under Varying Migration Assumptions
(per 100 people of working age)

	Low Migration			Best-Estimate			High Migration		
Year	0-19 to 20-64	65+ to 20-64	0-19 and 65+ to 20-64	0-19 to 20-64	65+ to 20-64	0-19 and 65+ to 20-64	0-19 to 20-64	65+ to 20-64	0-19 and 65+ to 20-64
2003	40	21	61	40	21	61	40	21	61
2005	39	21	60	39	21	60	39	21	60
2010	36	23	59	36	23	59	36	22	58
2020	34	33	66	35	30	65	36	28	64
2030	36	48	84	37	41	78	38	36	74
2050	35	57	91	36	45	81	37	38	75
2075	35	58	93	36	46	83	37	39	76

X. Appendices

A. Methodology

The methodology used in this study is the same as was used in the 21st CPP Report. As in the 21st CPP Report, the projections in this study are over a long period of time, so that the future impact of historical and projected trends in demographic factors can be properly assessed. The actuarial estimates in this study are based on initial data representing the starting point for the projections, "best-estimate" assumptions regarding future demographic experience, and a methodology for translating this information into estimates of the future size and composition of the population.

The population of Canada as at 1 July 2003 is used as a starting point. The population is then projected by age and sex from one year to the next by adding births and net migrants and subtracting deaths. Net migrants are immigrants less emigrants, adjusted to include those who emigrate but eventually return to Canada. Applying the fertility, mortality and migration best-estimate assumptions to the starting population develops the annual numbers of births, deaths and net migrants.

B. Projected Population of Canada by Age and Sex, 2003-2075* (thousands)

		Year as at 1st July							
Age Group	**Sex**	**2003**	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**
0-4	**Males**	877.3	868.5	895.6	948.0	987.1	985.3	969.6	958.2
	Females	837.0	826.9	844.8	890.3	936.2	938.9	925.8	912.4
	Both Sexes	1,714.3	1,695.3	1,740.4	1,838.3	1,923.3	1,924.1	1,895.4	1,870.6
5-9	**Males**	998.6	959.3	904.8	933.5	989.6	1,031.1	1,030.7	1,016.3
	Females	951.1	915.8	861.0	880.4	929.4	977.5	981.6	969.7
	Both Sexes	1,949.7	1,875.1	1,765.8	1,813.9	1,919.0	2,008.6	2,012.3	1,986.0
10-14	**Males**	1,084.8	1,076.1	991.8	938.7	970.9	1,029.1	1,071.9	1,072.7
	Females	1,032.9	1,022.6	944.7	891.2	913.7	964.7	1,014.0	1,019.0
	Both Sexes	2,117.6	2,098.7	1,936.5	1,829.9	1,884.6	1,993.8	2,085.9	2,091.7
15-19	**Males**	1,088.8	1,086.6	1,103.3	1,020.5	970.7	1,004.9	1,064.3	1,108.0
	Females	1,031.8	1,035.1	1,048.9	972.2	921.7	946.1	998.1	1,048.3
	Both Sexes	2,120.5	2,121.7	2,152.2	1,992.8	1,892.4	1,951.0	2,062.4	2,156.3
20-24	**Males**	1,119.0	1,132.3	1,109.7	1,127.9	1,048.2	1,000.4	1,035.6	1,095.8
	Females	1,069.5	1,084.3	1,074.6	1,090.2	1,017.6	969.6	995.6	1,048.9
	Both Sexes	2,188.5	2,216.6	2,184.4	2,218.0	2,065.8	1,970.0	2,031.2	2,144.7
25-29	**Males**	1,074.0	1,113.0	1,179.5	1,159.5	1,182.9	1,106.6	1,061.0	1,097.9
	Females	1,044.2	1,080.3	1,152.2	1,145.4	1,167.8	1,099.5	1,054.3	1,082.6
	Both Sexes	2,118.1	2,193.3	2,331.6	2,304.9	2,350.7	2,206.1	2,115.3	2,180.5
30-34	**Males**	1,124.8	1,117.0	1,179.8	1,249.5	1,237.3	1,265.4	1,192.3	1,149.2
	Females	1,103.9	1,095.9	1,152.1	1,227.0	1,227.9	1,255.0	1,189.8	1,147.2
	Both Sexes	2,228.7	2,212.9	2,331.9	2,476.5	2,465.1	2,520.5	2,382.1	2,296.5
35-39	**Males**	1,247.4	1,180.7	1,160.9	1,226.0	1,301.6	1,293.3	1,323.5	1,252.5
	Females	1,233.8	1,167.6	1,142.4	1,200.7	1,280.8	1,285.2	1,314.4	1,251.1
	Both Sexes	2,481.2	2,348.2	2,303.3	2,426.7	2,582.4	2,578.5	2,637.9	2,503.5
40-44	**Males**	1,364.3	1,372.5	1,200.4	1,182.7	1,251.6	1,329.3	1,322.5	1,353.8
	Females	1,355.0	1,358.3	1,191.1	1,167.4	1,229.0	1,311.1	1,316.8	1,347.0
	Both Sexes	2,719.3	2,730.8	2,391.5	2,350.1	2,480.6	2,640.5	2,639.3	2,700.8
45-49	**Males**	1,251.6	1,304.7	1,377.6	1,208.8	1,194.3	1,264.6	1,342.9	1,337.0
	Females	1,264.2	1,309.0	1,363.5	1,198.4	1,177.0	1,239.6	1,322.1	1,328.5
	Both Sexes	2,515.7	2,613.8	2,741.2	2,407.2	2,371.3	2,504.3	2,665.0	2,665.5
50-54	**Males**	1,078.8	1,138.7	1,293.3	1,367.1	1,202.7	1,189.7	1,260.1	1,338.2
	Females	1,097.7	1,162.8	1,303.7	1,358.8	1,196.8	1,176.6	1,239.4	1,321.7
	Both Sexes	2,176.5	2,301.5	2,597.0	2,725.9	2,399.5	2,366.3	2,499.5	2,659.9
55-59	**Males**	913.9	997.0	1,117.1	1,271.3	1,346.3	1,186.7	1,174.9	1,245.0
	Females	928.5	1,017.8	1,153.4	1,293.7	1,349.9	1,191.4	1,172.3	1,235.1
	Both Sexes	1,842.5	2,014.8	2,270.5	2,564.9	2,696.2	2,378.1	2,347.3	2,480.1
60-64	**Males**	684.8	746.8	966.5	1,086.8	1,239.8	1,315.1	1,161.5	1,151.4
	Females	712.0	773.1	1,002.5	1,137.1	1,276.7	1,333.4	1,179.3	1,161.6
	Both Sexes	1,396.8	1,520.0	1,969.1	2,223.9	2,516.4	2,648.4	2,340.8	2,313.0
65-69	**Males**	552.2	575.0	705.4	917.4	1,035.9	1,184.4	1,257.8	1,113.4
	Females	595.7	619.4	749.3	972.2	1,104.5	1,241.1	1,297.1	1,149.4
	Both Sexes	1,147.9	1,194.4	1,454.7	1,889.6	2,140.4	2,425.5	2,555.0	2,262.8
70-74	**Males**	484.2	487.7	517.7	641.0	838.6	950.9	1,089.4	1,158.8
	Females	554.9	554.1	582.6	706.6	918.5	1,045.3	1,175.8	1,230.2
	Both Sexes	1,039.1	1,041.7	1,100.3	1,347.6	1,757.1	1,996.1	2,265.2	2,389.0
75-79	**Males**	358.8	377.6	408.3	439.6	549.9	723.5	823.6	946.6
	Females	480.7	485.9	497.5	526.2	640.9	835.3	952.7	1,073.7
	Both Sexes	839.4	863.5	905.8	965.8	1,190.8	1,558.7	1,776.3	2,020.3
80-84	**Males**	221.6	241.2	280.0	307.4	335.9	424.6	562.0	643.9
	Females	362.0	383.5	400.5	413.1	440.5	539.8	706.2	808.8
	Both Sexes	583.7	624.7	680.5	720.5	776.4	964.4	1,268.2	1,452.7
85-89	**Males**	97.2	108.2	145.4	171.4	190.1	210.9	269.9	360.4
	Females	199.7	215.8	268.5	282.2	292.9	315.5	390.0	513.5
	Both Sexes	297.0	324.0	413.9	453.6	483.0	526.4	659.9	873.9
90+	**Males**	39.8	45.3	58.8	79.0	96.6	110.4	125.6	160.0
	Females	113.3	125.2	153.2	190.5	210.5	223.5	243.4	295.7
	Both Sexes	153.1	170.5	212.0	269.5	307.0	333.9	368.9	455.8
0-19	**Males**	4,049.4	3,990.5	3,895.5	3,840.7	3,918.3	4,050.4	4,136.5	4,155.2
	Females	3,852.8	3,800.3	3,699.4	3,634.1	3,701.1	3,827.2	3,919.5	3,949.4
	Both Sexes	7,902.2	7,790.9	7,594.9	7,474.8	7,619.3	7,877.5	8,056.0	8,104.7
20-39	**Males**	4,565.2	4,543.0	4,629.8	4,762.9	4,770.0	4,665.7	4,612.5	4,595.5
	Females	4,451.3	4,428.0	4,521.3	4,663.2	4,694.0	4,609.4	4,554.2	4,529.8
	Both Sexes	9,016.5	8,971.0	9,151.1	9,426.1	9,464.0	9,275.1	9,166.6	9,125.2
40-59	**Males**	4,608.6	4,812.9	4,988.4	5,029.8	4,994.9	4,970.4	5,100.4	5,274.1
	Females	4,645.4	4,848.0	5,011.7	5,018.3	4,952.7	4,918.8	5,050.7	5,232.3
	Both Sexes	9,254.0	9,660.9	10,000.1	10,048.1	9,947.5	9,889.2	10,151.1	10,506.3
60-79	**Males**	2,079.9	2,187.1	2,597.9	3,084.8	3,664.1	4,173.9	4,332.4	4,370.1
	Females	2,343.3	2,432.5	2,831.9	3,342.1	3,940.6	4,455.0	4,604.9	4,614.9
	Both Sexes	4,423.2	4,619.6	5,429.8	6,426.8	7,604.7	8,628.8	8,937.3	8,985.1
80+	**Males**	358.6	394.7	484.3	557.8	622.6	745.9	957.5	1,164.3
	Females	675.1	724.5	822.2	885.8	943.9	1,078.8	1,339.6	1,618.1
	Both Sexes	1,033.7	1,119.2	1,306.5	1,443.6	1,566.4	1,824.6	2,297.1	2,782.4
All Ages	**Males**	**15,661.7**	**15,928.2**	**16,595.9**	**17,276.0**	**17,969.8**	**18,606.2**	**19,139.3**	**19,559.2**
	Females	**15,967.9**	**16,233.4**	**16,886.5**	**17,543.5**	**18,232.2**	**18,889.1**	**19,468.8**	**19,944.5**
	Both Sexes	**31,629.7**	**32,161.6**	**33,482.4**	**34,819.5**	**36,202.1**	**37,495.2**	**38,608.1**	**39,503.7**

* Projections are based on population estimates as at 1 July 2003.

B. Projected Population of Canada by Age and Sex, 2003-2075* (thousands)

		Year as at 1st July							
Age Group	**Sex**	**2040**	**2045**	**2050**	**2055**	**2060**	**2065**	**2070**	**2075**
0-4	**Males**	970.6	999.7	1,027.8	1,042.3	1,046.0	1,049.1	1,059.6	1,078.1
	Females	919.4	945.1	973.2	989.8	994.6	996.9	1,005.2	1,021.6
	Both Sexes	1,890.1	1,944.8	2,001.0	2,032.1	2,040.6	2,046.0	2,064.8	2,099.7
5-9	**Males**	1,005.9	1,019.1	1,048.8	1,077.7	1,092.8	1,097.2	1,101.0	1,112.3
	Females	957.3	965.0	991.3	1,020.1	1,037.3	1,042.8	1,045.8	1,054.8
	Both Sexes	1,963.2	1,984.1	2,040.2	2,097.7	2,130.2	2,140.0	2,146.8	2,167.1
10-14	**Males**	1,059.1	1,049.5	1,063.3	1,093.6	1,123.1	1,138.9	1,143.9	1,148.4
	Females	1,007.9	996.1	1,004.4	1,031.3	1,060.5	1,078.4	1,084.4	1,088.0
	Both Sexes	2,067.0	2,045.6	2,067.7	2,124.9	2,183.6	2,217.3	2,228.3	2,236.4
15-19	**Males**	1,109.6	1,096.7	1,087.7	1,102.1	1,132.9	1,162.9	1,179.3	1,185.0
	Females	1,054.1	1,043.6	1,032.3	1,041.2	1,068.5	1,098.3	1,116.7	1,123.3
	Both Sexes	2,163.7	2,140.3	2,120.0	2,143.2	2,201.5	2,261.2	2,296.0	2,308.3
20-24	**Males**	1,140.3	1,142.5	1,130.2	1,121.8	1,136.7	1,168.1	1,198.7	1,215.6
	Females	1,100.1	1,106.8	1,097.1	1,086.6	1,096.2	1,124.3	1,154.9	1,174.1
	Both Sexes	2,240.4	2,249.3	2,227.4	2,208.4	2,232.9	2,292.5	2,353.6	2,389.8
25-29	**Males**	1,159.4	1,204.9	1,208.2	1,196.9	1,189.5	1,205.4	1,237.9	1,269.4
	Females	1,137.7	1,190.3	1,198.3	1,189.9	1,180.7	1,191.6	1,221.1	1,253.1
	Both Sexes	2,297.1	2,395.2	2,406.5	2,386.8	2,370.2	2,397.1	2,459.0	2,522.5
30-34	**Males**	1,188.1	1,251.0	1,297.9	1,302.5	1,292.6	1,286.7	1,304.1	1,337.9
	Females	1,177.4	1,234.1	1,288.1	1,297.4	1,290.4	1,282.7	1,295.1	1,326.0
	Both Sexes	2,365.5	2,485.1	2,585.9	2,599.9	2,583.1	2,569.4	2,599.2	2,664.0
35-39	**Males**	1,211.0	1,250.9	1,314.8	1,362.5	1,368.2	1,359.5	1,354.6	1,373.1
	Females	1,210.0	1,241.2	1,298.8	1,353.7	1,364.0	1,358.1	1,351.4	1,364.8
	Both Sexes	2,421.0	2,492.2	2,613.6	2,716.2	2,732.2	2,717.5	2,706.0	2,737.9
40-44	**Males**	1,284.0	1,243.6	1,284.1	1,348.4	1,396.7	1,403.1	1,395.1	1,391.0
	Females	1,284.8	1,244.6	1,276.5	1,334.5	1,389.9	1,400.9	1,395.6	1,389.7
	Both Sexes	2,568.8	2,488.2	2,560.5	2,682.9	2,786.6	2,803.9	2,790.8	2,780.7
45-49	**Males**	1,368.9	1,300.3	1,260.8	1,301.7	1,366.2	1,414.9	1,421.9	1,414.6
	Females	1,359.1	1,297.7	1,258.2	1,290.3	1,348.6	1,404.2	1,415.5	1,410.8
	Both Sexes	2,728.0	2,598.0	2,518.9	2,592.0	2,714.8	2,819.0	2,837.4	2,825.4
50-54	**Males**	1,333.1	1,365.2	1,297.9	1,259.3	1,300.4	1,364.9	1,413.6	1,421.1
	Females	1,328.5	1,359.3	1,298.8	1,259.9	1,292.3	1,350.5	1,406.2	1,417.8
	Both Sexes	2,661.6	2,724.6	2,596.7	2,519.3	2,592.6	2,715.4	2,819.8	2,838.9
55-59	**Males**	1,322.6	1,318.4	1,350.7	1,285.1	1,247.9	1,289.0	1,353.3	1,402.1
	Females	1,317.0	1,324.4	1,355.4	1,296.1	1,258.3	1,290.8	1,349.0	1,404.6
	Both Sexes	2,639.6	2,642.8	2,706.1	2,581.2	2,506.2	2,579.9	2,702.4	2,806.8
60-64	**Males**	1,221.0	1,297.7	1,294.8	1,327.4	1,264.4	1,229.2	1,270.5	1,334.5
	Females	1,224.1	1,305.3	1,313.4	1,344.6	1,287.1	1,250.8	1,283.6	1,341.6
	Both Sexes	2,445.0	2,602.9	2,608.1	2,672.0	2,551.5	2,480.0	2,554.0	2,676.1
65-69	**Males**	1,105.4	1,173.7	1,248.5	1,247.4	1,280.1	1,221.0	1,188.9	1,230.1
	Females	1,133.5	1,195.3	1,275.0	1,284.1	1,315.4	1,260.6	1,226.4	1,259.3
	Both Sexes	2,238.8	2,369.0	2,523.5	2,531.4	2,595.4	2,481.6	2,415.3	2,489.4
70-74	**Males**	1,028.1	1,022.9	1,088.6	1,159.8	1,161.1	1,193.4	1,140.5	1,112.8
	Females	1,092.2	1,078.7	1,139.1	1,216.2	1,226.5	1,257.7	1,206.9	1,176.0
	Both Sexes	2,120.3	2,101.6	2,227.7	2,376.0	2,387.6	2,451.2	2,347.4	2,288.7
75-79	**Males**	1,009.6	899.0	897.6	958.8	1,024.3	1,028.8	1,060.3	1,016.2
	Females	1,125.5	1,001.6	991.6	1,049.7	1,122.7	1,134.6	1,165.5	1,120.6
	Both Sexes	2,135.1	1,900.6	1,889.2	2,008.5	2,147.0	2,163.4	2,225.8	2,136.8
80-84	**Males**	744.0	797.2	713.9	717.1	771.1	827.7	835.9	865.4
	Females	914.6	961.6	859.1	854.0	908.0	974.1	988.2	1,018.1
	Both Sexes	1,658.6	1,758.8	1,573.0	1,571.1	1,679.1	1,801.8	1,824.1	1,883.5
85-89	**Males**	417.2	486.3	524.7	474.2	481.0	522.8	565.3	576.2
	Females	592.3	673.6	711.8	640.0	640.7	686.6	740.3	756.0
	Both Sexes	1,009.6	1,159.9	1,236.4	1,114.3	1,121.6	1,209.4	1,305.7	1,332.1
90+	**Males**	215.8	262.8	313.4	351.0	340.8	344.6	374.6	413.0
	Females	388.3	471.4	551.0	605.8	587.9	584.7	620.8	676.9
	Both Sexes	604.1	734.2	864.4	956.7	928.7	929.4	995.4	1,089.9
0-19	**Males**	4,145.3	4,165.0	4,227.7	4,315.7	4,394.8	4,448.1	4,483.8	4,523.8
	Females	3,938.7	3,949.8	4,001.3	4,082.3	4,161.0	4,216.4	4,252.1	4,287.7
	Both Sexes	8,083.9	8,114.8	8,228.9	8,398.0	8,555.8	8,664.5	8,736.0	8,811.5
20-39	**Males**	4,698.7	4,849.4	4,951.0	4,983.7	4,987.0	5,019.7	5,095.2	5,196.1
	Females	4,625.2	4,772.4	4,882.3	4,927.6	4,931.3	4,956.7	5,022.5	5,118.0
	Both Sexes	9,323.9	9,621.7	9,833.3	9,911.3	9,918.4	9,976.4	10,117.7	10,314.1
40-59	**Males**	5,308.6	5,227.5	5,193.5	5,194.5	5,311.1	5,471.8	5,584.0	5,628.9
	Females	5,289.5	5,226.1	5,188.8	5,180.9	5,289.0	5,446.4	5,566.4	5,622.9
	Both Sexes	10,598.1	10,453.5	10,382.3	10,375.3	10,600.2	10,918.2	11,150.3	11,251.8
60-79	**Males**	4,364.1	4,393.2	4,529.4	4,693.3	4,729.9	4,672.5	4,660.2	4,693.5
	Females	4,575.2	4,580.8	4,719.1	4,894.5	4,951.7	4,903.7	4,882.4	4,897.6
	Both Sexes	8,939.3	8,974.1	9,248.5	9,587.9	9,681.6	9,576.2	9,542.6	9,591.1
80+	**Males**	1,377.0	1,546.2	1,551.9	1,542.3	1,592.9	1,695.1	1,775.8	1,854.5
	Females	1,895.3	2,106.6	2,121.9	2,099.8	2,136.6	2,245.5	2,349.3	2,451.0
	Both Sexes	3,272.2	3,652.8	3,673.8	3,642.1	3,729.5	3,940.6	4,125.2	4,305.5
All Ages	**Males**	**19,893.7**	**20,181.3**	**20,453.5**	**20,729.5**	**21,015.7**	**21,307.2**	**21,599.0**	**21,896.7**
	Females	**20,323.7**	**20,635.7**	**20,913.3**	**21,185.1**	**21,469.7**	**21,768.7**	**22,072.8**	**22,377.2**
	Both Sexes	**40,217.4**	**40,817.0**	**41,366.8**	**41,914.7**	**42,485.4**	**43,075.9**	**43,671.8**	**44,273.9**

* Projections are based on population estimates as at 1 July 2003.

C. Data Availability

Detailed projections of the Canadian population by age and sex for years 2003 to 2075 are available in Microsoft Excel 2000 format. The Excel file is available in English and French versions at the following Internet addresses:

http://www.osfi-bsif.gc.ca/app/DocRepository/1/eng/oca/studies/popcdn_e.xls

http://www.osfi-bsif.gc.ca/app/DocRepository/1/fra/bac/etudes/popcdn_f.xls

For its records, the OCA would appreciate being informed of any use of this file for the purpose of further studies.

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