Office of the Superintendent of Financial Institutions Canada
Office of the Chief Actuary

Bureau du surintendant des institutions financières Canada
Bureau de l'actuaire en chef

ACTUARIAL REPORT 12th

on the

OLD AGE SECURITY PROGRAM

as at 31 December 2012

Canada

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The Honourable Jason Kenney, P.C., M.P.
Minister of Employment and Social Development Canada
House of Commons
Ottawa, Canada
K1A 0A6

Dear Minister:

In accordance with section 3 of the *Public Pensions Reporting Act*, I am pleased to submit the Actuarial Report prepared as at 31 December 2012, on the pension plan established under the *Old Age Security Act.*

Yours sincerely,

Jean-Claude Ménard

Jean-Claude Ménard, F.S.A., F.C.I.A.
Chief Actuary

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I. Executive Summary

This is the 12th Actuarial Report on the Old Age Security Program since the implementation of the *Old Age Security Act* in 1952. It presents the results of an actuarial examination of the status of the Old Age Security (OAS) Program as at 31 December 2012, and includes projections of future experience through the year 2060. The previous triennial report is the 9th Actuarial Report on the Old Age Security Program as at 31 December 2009, which was tabled in the House of Commons on 20 July 2011. The next triennial report is scheduled as at 31 December 2015.

The *Old Age Security Act* was subject to a series of amendments since the 9th OAS Program Actuarial Report pursuant to the *Supporting Vulnerable Seniors and Strengthening Canada's Economy Act* and the *Jobs, Growth and Long-term Prosperity Act*. The effects of these amendments were covered in the 10th and 11th OAS Program Actuarial Reports, which were tabled in the House of Commons on 4 November 2011 and 22 August 2012, respectively. The effects of the amendments are included in the financial projections of this report.

Amendments to the *Old Age Security Act*, regarding payment of income-tested benefits to sponsored immigrants under Bill C-31 - *Economic Action Plan 2014 Act, No. 1* were tabled in the House of Commons on 28 March 2014. The implementation date of the amendments is yet to be determined. These amendments are not reflected in this report due to the uncertain timing of their implementation and the estimated non-material impact on the Program's financial status. Once the implementation date becomes known, the effects of the amendments will be included in future actuarial reports on the OAS Program.

A. Purpose of Report

This report has been prepared in compliance with the timing and information requirements of the *Public Pensions Reporting Act*, which provides that the Chief Actuary shall prepare a triennial actuarial report on the benefits under the various Parts of the *Old Age Security Act*, being as follows:

- Part I: OAS Basic Pension
- Part II: Guaranteed Income Supplement (GIS)
- Part III: Allowance

Another important purpose of the report is to inform the general public of the current and projected financial status of the OAS Program. The report provides information to evaluate the Program's financial situation over a long period, provided the Program remains unchanged. Such information should facilitate a better understanding of the financial status of the Program and the factors that influence its costs, and thus contribute to an informed public discussion of issues related to it.

B. Scope of Report

Section II presents a general overview of the methodology used in preparing the actuarial estimates included in this report, which are based on the "best-estimate" assumptions described in section III. The results are presented in section IV and include information on key demographic and financial indicators and on the projection of beneficiaries, expenditures, and cost ratios. Section V presents the reconciliation of the results with those presented in the

previous triennial (9th) report. Section VI presents a general conclusion, while section VII provides the actuarial opinion.

The various appendices provide supplemental information on the Program provisions, the description of the data, assumptions and methodology used in this report, detailed reconciliations of the results with the 9th report, the uncertainty of results based on sensitivity analysis of the key best-estimate assumptions using deterministic and stochastic approaches, detailed projections of beneficiaries and expenditures, and lastly acknowledgements.

C. Main Findings

The key observations and findings of this report are:

- Demographic changes, notably the aging of the Canadian population, will have a major impact on the ratio of the number of people aged 20 to 64 to those aged 65 and over. This ratio is expected to fall from about 4.1 in 2013 to 2.2 in 2050.
- The number of beneficiaries of the OAS basic pension is expected to increase by 60% within the next two decades, growing from 5.3 million in 2013 to 8.4 million by 2030, mainly due to the retirement of the baby boom generation over that period.
- OAS basic pension annual expenditures are projected to increase from $33 billion in 2013 to $74 billion in 2030 and $144 billion by 2050.
- The number of GIS and Allowance beneficiaries is expected to increase by 60% within the next two decades, growing from 1.8 million in 2013 to 2.9 million by 2030.
- The GIS recipient rate is projected to slowly increase from its current level of 32% to 34% by 2030 due to the impact of TFSAs. The GIS recipient rate is subsequently projected to reduce to 31% by 2050.
- GIS annual expenditures are projected to increase from $9 billion in 2013 to $20 billion in 2030 and $36 billion by 2050.
- Total annual expenditures are projected to increase from $43 billion in 2013 to $96 billion in 2030 and $181 billion by 2050.
- The ratio of expenditures to the GDP is projected to be 2.3% in 2013, which is similar to what the ratio was in 1980. After 2013, the ratio is projected to reach a high of 2.8% in 2033. This level is somewhat higher than the historical peak of 2.7% reached in the early 1990s.
- After 2033, the ratio of expenditures to GDP is projected to slowly decrease to a level of 2.4% by 2050. This reduction is attributable to expected slower growth in inflation compared to growth in wages and the GDP.

D. Uncertainty of Results

To measure the sensitivity of the long-term projected financial status of the Program to future changes in the demographic and economic environments, individual sensitivity tests were performed. The tests and results are presented in detail in Appendix D of this report.

The tests focus on varying the key best-estimate assumptions individually in order to measure the potential impact on the cost ratio of Program expenditures to GDP. These tests show that

the cost ratio could deviate significantly from its projected best-estimate values if other than best-estimate assumptions were to be realized. For example, if life expectancies at age 65 were to increase by two and half more years than the best estimates of this report, then the ratio in 2050 would increase from 2.37% to 2.56%. As another example, if recipient rates for the GIS and Allowance benefits were to increase by 20%, then the ratio in 2050 would increase from 2.37% to 2.46%.

E. Conclusion

The expected increase in expenditures over the next few decades resulting from the retirement of the baby boomers is somewhat mitigated by the legislated gradual increase in the age of eligibility from 65 to 67 over the period 2023 to 2029.

The combined effect of the increase in the age of eligibility for Program benefits and the aging of the population is expected to result in total annual expenditures growing from 2.3% of GDP in 2013, a level similar to the one in 1980, to a high of about 2.8% in 2033, a level somewhat higher than the historical peak of 2.7% reached in the early 1990s. It is assumed that, for each cohort of individuals who may become eligible for the GIS or Allowance, the initial retirement income will consist mainly of CPP and QPP pensions that reflect increases in line with wage growth prior to retirement. At the same time, it is assumed that the income limits for the GIS and Allowance will have increased in line with inflation prior to retirement. Although together this would lead to reduced eligibility of new retirees for the GIS and Allowance, the fact that individuals are also assumed to invest in TFSAs results in GIS and Allowance recipient rates increasing slightly over time. Ultimately, however, the fact that benefits are indexed to inflation as opposed to wages drive the cost of the OAS Program relative to the GDP down over the long term, with the result that annual expenditures are expected to fall to 2.4% of GDP by 2050.

In comparison with the previous triennial (9^{th}) actuarial report, the assumed continuing increases in longevity, especially at older ages, lead to increases in the cost ratio; however, this effect is countered by assumed increases in net migration, leading to no effect on the projected cost ratios from the demographic assumptions. Although the anticipated effect of TFSAs and changes in economic assumptions act to increase the cost ratios, these effects are more than offset by other factors, including the experience of the last three years and recent legislated amendments to the Program which will gradually increase the age for benefit eligibility. The net result is lower expenditures relative to the GDP over the projection period.

II. Methodology

The actuarial examination of the OAS Program involves projections of its expenditures and cost measurement bases over a long period of time, so that the future impact of historical and projected trends in demographic and economic factors can be properly assessed. The actuarial estimates in this report are based on the provisions of the *Old Age Security Act* as at 31 December 2012, data regarding the starting point for the projections, and "best-estimate" assumptions regarding future demographic and economic experience.

Since the OAS Program is financed from general tax revenues on a pay-as-you-go basis, there is no need to project either contributions or investment earnings. However, projections have been made of combined Canada Pension Plan (CPP) and Québec Pension Plan (QPP) contributory earnings, total employment earnings, and of the GDP, whose bases are then used for measuring the relative costs over the projection period.

The costing begins with a projection of the general population of Canada. This requires assumptions regarding demographic factors such as fertility, migration, and mortality.

Expenditures are made up of the benefits paid out and administrative expenses. Benefits are projected by applying assumptions regarding recipient rates for various types and levels of benefits to the projected population at the relevant ages, along with assumptions regarding increases in the maximum benefit rates. Administrative expenses are projected by considering the historical relationship between expenses and total benefit expenditures.

The combined CPP and QPP contributory earnings and total employment earnings cost measurement bases are derived by applying labour force participation and job creation rates to the projected population and by projecting future employment earnings. This requires assumptions about various factors such as wage increases, an earnings distribution and unemployment rates. The GDP is projected based on the historical relationship between the GDP and total employment earnings.

The assumptions and results presented in the following sections make it possible to measure the financial status of the OAS Program over the projection period. A wide variety of factors influence both the current and projected financial position of the Program. Accordingly, the results shown in this report differ from those shown in previous reports. Likewise, future actuarial examinations will reveal results that differ from the projections included in this report.

III. Best-Estimate Assumptions

A. Introduction

The information required by statute, which is presented in section IV of this report, requires making several assumptions regarding future demographic and economic trends. The projections included in this report cover a long period of time (up to the year 2060) and the assumptions are determined by putting more emphasis on historical long-term trends than on more recent short-term trends. These assumptions reflect the Chief Actuary's best judgment and are referred to in this report as the "best-estimate" assumptions. The assumptions were chosen to be, independently and in aggregate, reasonable and appropriate, taking into account certain interrelationships between them. To the extent applicable, the assumptions are consistent with the best-estimate assumptions used in the 26th Actuarial Report on the Canada Pension Plan as at 31 December 2012 (26th CPP Actuarial Report).

The *Old Age Security Act* was subject to a series of amendments since the 9th OAS Program Actuarial Report. The *Supporting Vulnerable Seniors and Strengthening Canada's Economy Act*, which received Royal Assent on 26 June 2011, amends the *Old Age Security Act* to provide top-up benefits for recipients of the GIS and Allowance benefits, effective 1 July 2011. Most recently, the *Old Age Security Act* was amended by the *Jobs, Growth and Long-term Prosperity Act*, which received Royal Assent on 14 December 2012. Under that Act, the ages of eligibility for OAS Program benefits are scheduled to gradual increase over the period April 2023 to January 2029, and voluntary deferral of the OAS pension is allowed by up to five years in exchange for an actuarially-adjusted higher pension, starting 1 July 2013.

The initial cost estimates of these amendments under the *Supporting Vulnerable Seniors and Strengthening Canada's Economy Act* and the *Jobs, Growth and Long-term Prosperity Act* are provided in the 10th and 11th OAS Program Actuarial Reports, respectively. This 12th OAS Program Actuarial Report includes all the amendments made to the *Old Age Security Act* under the two stated amending Acts.

Amendments to the *Old Age Security Act*, regarding payment of income-tested benefits to sponsored immigrants under Bill C-31 - *Economic Action Plan 2014 Act, No. 1* were tabled in the House of Commons on 28 March 2014. The implementation date of the amendments is yet to be determined. These amendments are not reflected in this report due to the uncertain timing of their implementation and the estimated non-material impact on the Program's financial status. Once the implementation date becomes known, the effects of the amendments will be included in future actuarial reports on the OAS Program.

Table 1 presents a summary of the most important assumptions used in this report compared with those used in the previous triennial report. The assumptions are described in more detail in Appendix B of this report.

Table 1 Best-Estimate Demographic and Economic Assumptions

Canada		12th Report (as at 31 December 2012)			9th Report (as at 31 December 2009)		
Total fertility rate		1.65 (2015+)			1.65 (2015+)		
Mortality		Canadian Human Mortality Database (CHMD 2009) with assumed future improvements			Canadian Human Mortality Database (CHMD 2006) with assumed future improvements		
Canadian life expectancy		Males	Females		Males	Females	
at birth in 2013		86.1 years	89.1 years		85.7 years	88.5 years	
at age 65 in 2013		20.9 years	23.3 years		20.5 years	22.8 years	
Net migration rate		0.60% of population for 2017+			0.58% of population for 2023+		
Participation rate (age group 15-69)		76.8% (2030)			75.2% (2030)		
Employment rate (age group 15-69)		72.1% (2030)			70.6% (2030)		
Unemployment rate (age group 15+)		6.0% (2023+)			6.1% (2022+)		
Rate of increase in prices		2.2% (2021+)			2.3% (2019+)		
Real wage increase		1.2% (2020+)			1.3% (2019+)		
		2013	2030	2050		2013	2030	2050
Recipient rates(1), (2)	OAS:	97.6%	99.6%	100.0%	OAS:	98.3%	99.2%	99.7%
	GIS:	32.2%	33.8%	30.9%	GIS:	35.1%	34.8%	31.6%
	Allowance:	4.0%	2.6%	1.8%	Allowance:	4.1%	2.6%	1.8%

(1) Recipient rates for the OAS basic pension are on a gross basis; that is, before application of the OAS Recovery Tax. All recipient rates include benefits paid outside Canada and for this reason can exceed 100%.

(2) Recipient rates shown in 2013 pertain to ages 65 and older for OAS and GIS beneficiaries, and to ages 60 to 64 for Allowance beneficiaries. Recipient rates shown in 2030 and thereafter pertain to ages 67 and older for OAS and GIS beneficiaries, and to ages 62 to 66 for Allowance beneficiaries, reflecting the scheduled increase in the eligible ages for Program benefits. The OAS recipient rates shown also account for voluntary deferrals, effective 1 July 2013.

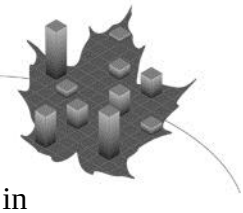
B. Demographic Assumptions

The population projections start with the population of Canada on 1 July 2012, to which are applied fertility, migration, and mortality assumptions. The population projections are essential to determine the future number of OAS Program beneficiaries.

The distribution of the population by age changed considerably with the arrival of the baby boom generation, and the population has been aging since. The causes of this aging are examined in the following subsections.

1. Fertility

The first cause of the aging of the Canadian population is the large drop in the total fertility rate that occurred between the end of the baby boom period (mid-1940s to mid-1960s) and latter half of the 1980s. The total fertility rate in Canada has dropped rapidly from a level of about 4.0 children per woman in the late 1950s to 1.6 by the mid-1980s. The total fertility rate rose slightly in the early 1990s, but then generally declined to a level of 1.5 by the late 1990s. Canada is one of many industrialized countries that have seen an increase in their fertility rates since 2000. By 2008, the total fertility rate for Canada had reached 1.68. However, in some industrialized countries, including Canada, the total fertility rate has



decreased since 2008, which could be attributed to the economic downturn experienced in recent years. As of 2010, the total fertility rate for Canada stood at 1.63.

The overall decrease in the total fertility rate since the 1950s occurred as a result of changes in a variety of social, medical, and economic factors. Although there have been periods of growth in the total fertility rates in recent decades, it is unlikely that the rates will return to historical levels in the absence of significant societal changes. It is assumed that the total fertility rate for Canada will increase slightly from its 2010 level of 1.63 children per woman to an ultimate level of 1.65 in 2015.

2. Mortality

Another element that has contributed to the aging of the population is the significant reduction in age-specific mortality rates. This can be best measured by the increase in life expectancy at age 65, which directly affects how long retirement benefits will be paid to beneficiaries. Male life expectancy (without future mortality improvements) at age 65 increased 37% between 1966 and 2009, rising from 13.6 to 18.6 years. For women, life expectancy at age 65 (without future improvements) increased 28%, from 16.9 to 21.7 years over the same period. Although the overall gains in life expectancy at age 65 since 1966 are similar for males and females (about 5 years), about 60% of the increase occurred after 1991 for males, while for females, about 60% of the increase occurred by 1991.

Mortality improvements are expected to continue in the future, but at a slower pace than most recently observed over the 15-year period ending in 2009. Further, it is assumed that ultimately, mortality improvement rates for males will decrease to the same level as females. The ultimate rates of improvement in the year 2030 correspond to half the value of the average experience for females over the 15 to 20-year periods ending in 2009. Rates of improvement in the year 2010 are assumed to vary by age and sex, and correspond to the average rates experienced over the 15-year period ending in 2009. After 2010, the rates are assumed to gradually reduce to their ultimate levels in 2030 for Canada. As a result, life expectancy at age 65 in 2013 is 20.9 years for males, and 23.3 years for females, assuming future mortality improvements. This represents increases in life expectancies at age 65 in 2013 for males and females of 0.4 and 0.5 of a year, respectively, compared to the 9th OAS Program Actuarial Report.

3. Net Migration

Net migration (i.e. the excess of immigration over emigration) is unlikely to materially reduce the continued aging of the population unless (1) the level of immigration rises significantly above what has been observed historically and (2) the average age at immigration falls dramatically.

The net migration rate is assumed to gradually decline from its current (2012) level of 0.77% of the population to an ultimate level of 0.60% of the population for the year 2017 and thereafter. This assumption reflects the fact that the annual net increase in the number of non-permanent residents has recently grown significantly, and that it is expected to remain at a positive but lower level in the future. The ultimate rate of 0.60% corresponds to the average observed experience over the last 30 to 40 years.

4. Population Projections

Table 2 shows the population for three age groups (0-19, 20-64, and 65 and over) throughout the projection period. The ratio of the number of people aged 20-64 to those aged 65 and over is a measure that approximates the ratio of the number of working-age people to retirees. Because of the aging population, this ratio drops from 4.1 in 2013 to less than half its value of 2.0 in 2060. The number of people reaching the eligible age for the OAS basic pension in any given year is representative of the number of new basic pension beneficiaries coming into pay each year. This population is expected to increase significantly within the next twenty years, growing from 394,000 in 2013 to 537,000 by 2030.

Table 2 Population of Canada (thousands)

Year	Total	Age 0-19	Age 20-64	Age 65 and Over	Ratio of 20-64 to 65 and Over	Reaching Eligible Age for OAS Basic Pension[(1)]
2013	35,280	7,838	22,052	5,390	4.1	394
2014	35,676	7,863	22,224	5,590	4.0	395
2015	36,065	7,889	22,382	5,794	3.9	403
2016	36,444	7,926	22,517	6,002	3.8	412
2017	36,814	7,979	22,621	6,213	3.6	419
2018	37,183	8,051	22,695	6,437	3.5	437
2019	37,553	8,134	22,742	6,677	3.4	457
2020	37,920	8,219	22,774	6,928	3.3	474
2025	39,706	8,667	22,821	8,218	2.8	507
2030	41,322	8,911	22,918	9,493	2.4	537
2040	44,005	9,032	24,247	10,726	2.3	454
2050	46,340	9,352	25,358	11,630	2.2	538
2060	48,647	9,961	25,911	12,775	2.0	585

(1) The eligible age for the OAS basic pension is scheduled to increase from the current age of 65 to 67 over the period April 2023 to January 2029.

C. Economic Assumptions

The OAS Program expenditures are presented as cost ratios using three different measurement bases, namely combined CPP/QPP contributory earnings, total employment earnings and the GDP. These cost bases are projected using economic assumptions for indicators such as labour force participation rates, job creation rates, unemployment rates, and real increases in average employment earnings. For benefit projection purposes, assumptions regarding the rate of increase in prices and recipient rates for the various benefits are also required.

One of the key elements underlying the best-estimate economic assumptions relates to the continued trend toward delayed retirement. Older workers are expected to exit the workforce at a later age, which could alleviate the impact of the aging of the population on future labour force growth. However, despite the expected later exit ages, labour force growth is projected to weaken as the working-age population expands at a slower pace and as the baby boomers retire and exit the labour force. As a result, a labour shortage is anticipated. Labour shortages together with projected improvements in productivity growth are assumed to create upward

pressure on real wages. These higher real wages may in turn help keep people in the labour force who might otherwise retire.

1. Labour Force

Employment levels are reflected in the projections through the assumption regarding the proportion of the population, by age and sex, with earnings in a given year. These proportions vary not only with the rate of unemployment, but also reflect trends in increased workforce participation by women, longer periods of formal education among young adults, and changing retirement patterns of older workers.

As the population ages, it becomes more heavily weighted in age groups where labour force participation is lower and, as a result, the labour force participation rate for Canadians aged 15 and over is expected to decline from 66.6% in 2013 to 64.0% by 2030. A more useful measure of the working-age population is the participation rate of those aged 15 to 69, which is expected to increase from 74.6% in 2013 to 76.8% in 2030.

The increase in the participation rate for those aged 15 to 69 is mainly due to an assumed increase in participation rates for those aged 55 and over as a result of an expected continued trend toward delayed retirement. Furthermore, anticipated labour shortages are expected to create attractive employment opportunities that will exert upward pressure on the participation rates for all age groups. It is also expected that future participation rates will increase with the aging of cohorts that have a stronger labour force attachment compared to older cohorts due to higher education attainment. The cohort effect of stronger labour force attachment of women is expected to continue but at a much slower pace than in the past, resulting in a gradual narrowing of the gap between the age-specific participation rates of men and women.

As a result, the participation rates for females are projected to increase slightly more than for males, primarily for those aged 25 to 44. Overall, the male participation rate of those aged 15 to 69 is expected to be 78.5% in 2013 and 80.2% in 2030, while the female participation rate for the same age group is expected to increase from 70.7% in 2013 to 73.4% in 2030. Therefore, the current gap of 7.8% between males and females in this age group is expected to decrease to 6.8%.

The job creation rate (i.e. the change in the number of persons employed) in Canada was on average 1.6% from 1976 to 2012 based on available employment data, and it is assumed that the number of jobs will increase by 1.4% in 2013. The job creation rate assumption is determined on the basis of expected moderate economic growth and an unemployment rate that is expected to gradually decrease from its 2012 level of 7.2% to an ultimate rate of 6.0% by 2023. The job creation rate is on average about 1.0% from 2013 to 2017 and 0.7% from 2018 to 2023, which is slightly higher than the labour force growth rate. For the year 2024 and thereafter, the job creation rate follows the labour force growth rate, which is equal to 0.6% per year on average between 2024 and 2030, and 0.5% per year on average thereafter. The aging of the population is the main reason behind the slower long-term growth in the labour force and job creation rate.

2. Price Increases

Price increases, as measured by changes in the Consumer Price Index (CPI), tend to fluctuate from year to year. In 2011, the Bank of Canada and the Government renewed their commitment to keep inflation between 1% and 3% until the end of 2016. It is expected that this policy will be maintained until the end of 2019. In Canada, inflation was moderate at 1.5% in 2012. To reflect recent experience and the short-term expectation that inflation will remain subdued in coming quarters, the price increase assumption was set at 1.5% in 2013. Thereafter, the price increase assumption is set at 2.0% for years 2014 to 2019, 2.1% in 2020, and 2.2% for 2021 and thereafter.

3. Real Wage Increases

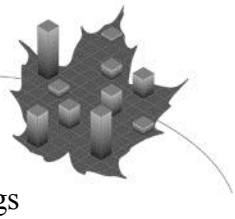
Wage increases affect the financial balance of the OAS Program in two ways. In the short term, an increase in the average wage translates into higher total employment earnings, combined CPP/QPP contributory earnings, and GDP, with little immediate impact on benefits. Therefore, costs in relation to these measurement bases will decrease. Over the longer term, higher average wages in relation to the level of prices could be expected to produce lower payouts for income-tested benefits such as the GIS and Allowance.

Increases in the nominal wage comprise increases in the real wage and increases in the level of prices ("inflation"). Put another way, the difference between nominal wage increases and inflation represents increases in the real wage, which is referred to also in this report as the "real wage increase". The long-term projected costs relative to the various measurement bases are more dependent on real wage increases than on the nominal level of wage increases assumed.

There are five main factors which influence increases in the real wage, namely general productivity, the extent to which changes in productivity are shared between labour and capital, changes in the compensation structure offered to employees, changes in the average number of hours worked, and changes in labour's terms of trade. Labour's terms of trade measure how shifts in the prices of goods produced by workers (measured by the Gross Domestic Product (GDP) deflator) compare to shifts in the prices of goods consumed by workers (CPI).

Based on the average increase in the real average weekly earnings over the last 15 years, the real wage increase is assumed to be 0.5% in 2013. It is then projected to gradually rise to an ultimate value of 1.2% by 2020. The ultimate real wage increase assumption is developed taking into account the relationships described above, historical trends, and an assumed labour shortage. The ultimate real wage increase assumption combined with the ultimate price increase assumption results in an assumed annual increase in average nominal wages of 3.4% in 2021 and thereafter.

The assumptions regarding the increase in average real annual employment earnings and job creation rates result in projected average annual real increases in total Canadian employment earnings of about 1.8% for the period 2013 to 2030. After 2030, this decreases to about 1.7% on average over the remainder of the projection period, reflecting the assumed 1.2% real increase in annual wages and projected average 0.5% annual growth in the working-age population. Given historical trends and the long-term relationship between increases in the



average real annual employment earnings and the Year's Maximum Pensionable Earnings (YMPE), it is assumed, for the purpose of projecting CPP/QPP contributory earnings, that the real wage increase assumption is also applicable to the increases in the YMPE from one year to the next. Table 3 summarizes the main economic assumptions over the projection period.

Table 3 Economic Assumptions

				Labour Force (Canada)			
Year	Real Increase Average Annual Earnings	Real Increase Average Weekly Earnings	Price Increase	Participation Rate (Ages 15+)	Job Creation Rate	Unemployment Rate	Labour Force Annual Increase
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
2013	0.5	0.5	1.5	66.6	1.4	7.1	1.2
2014	0.6	0.6	2.0	66.6	1.1	7.0	1.0
2015	0.7	0.7	2.0	66.5	1.0	6.9	0.9
2016	0.8	0.8	2.0	66.4	0.9	6.8	0.8
2017	0.9	0.9	2.0	66.2	0.8	6.7	0.7
2018	1.0	1.0	2.0	66.1	0.8	6.6	0.6
2019	1.1	1.1	2.0	65.9	0.7	6.5	0.6
2020	1.2	1.2	2.1	65.7	0.7	6.3	0.6
2021	1.2	1.2	2.2	65.5	0.7	6.2	0.6
2025	1.2	1.2	2.2	64.6	0.6	6.0	0.6
2030	1.2	1.2	2.2	64.0	0.7	6.0	0.7
2040	1.2	1.2	2.2	62.7	0.5	6.0	0.5
2050	1.2	1.2	2.2	62.1	0.3	6.0	0.3
2060	1.2	1.2	2.2	61.3	0.4	6.0	0.4

D. Recipient Rates

OAS recipient rates represent the proportion of the Canadian population that has received (historically) or is projected to receive OAS Program benefits. Recipient rates are different than coverage or eligibility rates for benefits, which are higher, since individuals upon becoming eligible for benefits don't necessarily apply for them immediately, but may rather defer application and commencement of their benefits (for reasons such as to receive recently introduced actuarially-adjusted higher benefits for voluntary deferrals or to increase benefits from partial to full amounts by accruing more years of residence).

The recipient rate for a given benefit is derived as the ratio of the number of beneficiaries receiving that benefit to the population. It is worth noting that recipient rates for the OAS basic pension presented in this report exclude the impact of the OAS Recovery Tax. The impact of the OAS Recovery Tax (including pension income splitting and Tax-Free Savings Accounts) on the basic pension recipient rates is discussed in section IV of Appendix B of this report.

As shown in Table 4, the overall basic pension recipient rate for males is projected to increase from 98.1% in 2013 to 100.5% in 2050, while for females it is projected to increase from 97.3% to 99.5% over the same period. The gap between the recipient rates for males and females is thus projected to remain about the same over the projection period. The rates

for both sexes increase over time primarily due to the aging of the population. Moreover, recipient rates for the basic pension include benefits paid outside of Canada and as such, could exceed 100%. It is assumed that such international recipient rates will increase slightly over time, which also leads to an increase in the overall basic pension recipient rates.

The GIS and Allowance recipient rates by age, sex, type and level of benefit for year 2013 were used as the starting point for determining the corresponding best-estimate assumptions. GIS and Allowance recipient rates are projected under the assumption that initial retirement income increases in line with the rate of wage growth, where such retirement income mainly comprises CPP and QPP pensions. At the same time, it is assumed that the income limits for the GIS and Allowance will have increased in line with inflation prior to retirement. Together, this would normally result in a lower proportion of new retirees becoming eligible for these benefits over the projection period. However, the effect of TFSAs on GIS and Allowance benefits (as discussed in section IV of Appendix B of this report) tends to offset in part the expected decline in recipient rates for these benefits.

Furthermore, for the GIS and Allowance, experience adjustment factors are used to adjust the projected recipient rates so that characteristics and trends of historical recipient rates by age, sex, type and level of benefit over the period 2003 to 2012 would be reproduced more closely. These experience adjustment factors are used for the first ten years of the projection period, so that the change in the assumed recipient rates by level of benefit is automatically taken into account.

Table 4 presents a summary of the projected recipient rates by type of benefit.

Table 4 Recipient Rates[(1), (2)]

	Males			Females		
	2013	**2030**	**2050**	**2013**	**2030**	**2050**
OAS	**98.1%**	**100.1%**	**100.5%**	**97.3%**	**99.2%**	**99.5%**
GIS-Single	11.0%	12.2%	11.7%	26.0%	27.5%	27.3%
GIS-Spouse a Pensioner	11.5%	13.1%	11.3%	9.3%	9.4%	7.1%
GIS-Spouse not a Pensioner	2.5%	2.3%	1.8%	0.8%	0.7%	0.6%
GIS-Spouse with Allowance	2.2%	1.6%	1.3%	0.2%	0.2%	0.1%
GIS-All	**27.3%**	**29.2%**	**26.0%**	**36.3%**	**37.8%**	**35.2%**
Allowance-Regular	0.6%	0.5%	0.4%	4.9%	3.6%	2.7%
Allowance-Survivor	0.3%	0.2%	0.1%	2.1%	0.9%	0.4%
Allowance-All	**0.9%**	**0.7%**	**0.5%**	**7.0%**	**4.5%**	**3.1%**

(1) Recipient rates for the OAS basic pension are on a gross basis; that is, before application of the OAS Recovery Tax. All recipient rates include benefits paid outside Canada and for this reason can exceed 100%.

(2) Recipient rates shown in 2013 pertain to ages 65 and older for OAS and GIS beneficiaries, and to ages 60 to 64 for Allowance beneficiaries. Recipient rates shown in 2030 and thereafter pertain to ages 67 and older for OAS and GIS beneficiaries, and to ages 62 to 66 for Allowance beneficiaries, reflecting the scheduled increase in the eligible ages for Program benefits.

IV. Results

A. Overview

The key observations and findings of this report are described below.

- Demographic changes, notably the aging of the Canadian population, will have a major impact on the ratio of the number of people aged 20 to 64 to those aged 65 and over. This ratio is expected to fall from about 4.1 in 2013 to 2.2 in 2050. Chart 1 shows an analysis of the Canadian population by age group.
- The number of beneficiaries of the OAS basic pension is expected to increase by 60% within the next two decades, growing from 5.3 million in 2013 to 8.4 million by 2030, mainly due to the retirement of the baby boom generation over that period.
- OAS basic pension annual expenditures are projected to increase from $33 billion in 2013 to $74 billion in 2030 and $144 billion by 2050.
- The number of GIS and Allowance beneficiaries is expected to increase by 60% within the next two decades, growing from 1.8 million in 2013 to 2.9 million by 2030.
- The GIS recipient rate is projected to slowly increase from its current level of 32% to 34% by 2030 due to the impact of TFSAs. The GIS recipient rate is subsequently projected to reduce to 31% by 2050.
- GIS annual expenditures are projected to increase from $9 billion in 2013 to $20 billion in 2030 and $36 billion by 2050.
- Total annual expenditures are projected to increase from $43 billion in 2013 to $96 billion in 2030 and to $181 billion by 2050.
- The ratio of expenditures to the GDP is projected to be 2.3% in 2013, which is similar to what the ratio was in 1980. After 2013, the ratio is projected to reach a high of 2.8% in 2033. This level is somewhat higher than the historical peak of 2.7% reached in the early 1990s.
- After 2033, the ratio of expenditures to GDP is projected to slowly decrease to a level of 2.4% by 2050. This reduction is attributable to expected slower growth in inflation compared to growth in wages and the GDP.

Over time, price-indexation of benefits that increases more slowly than the rate of growth in average employment earnings means that benefits will replace a decreasing share of an individual's pre-retirement earnings. In the past, this issue has been addressed through occasional ad hoc increases in the benefit rates. One of the sensitivity tests shown in Appendix D of this report provides an indication of the impact on projected results if benefit rates were increased to partially reflect the growth in real wages.

Chart 1 Analysis of Population of Canada by Age Group

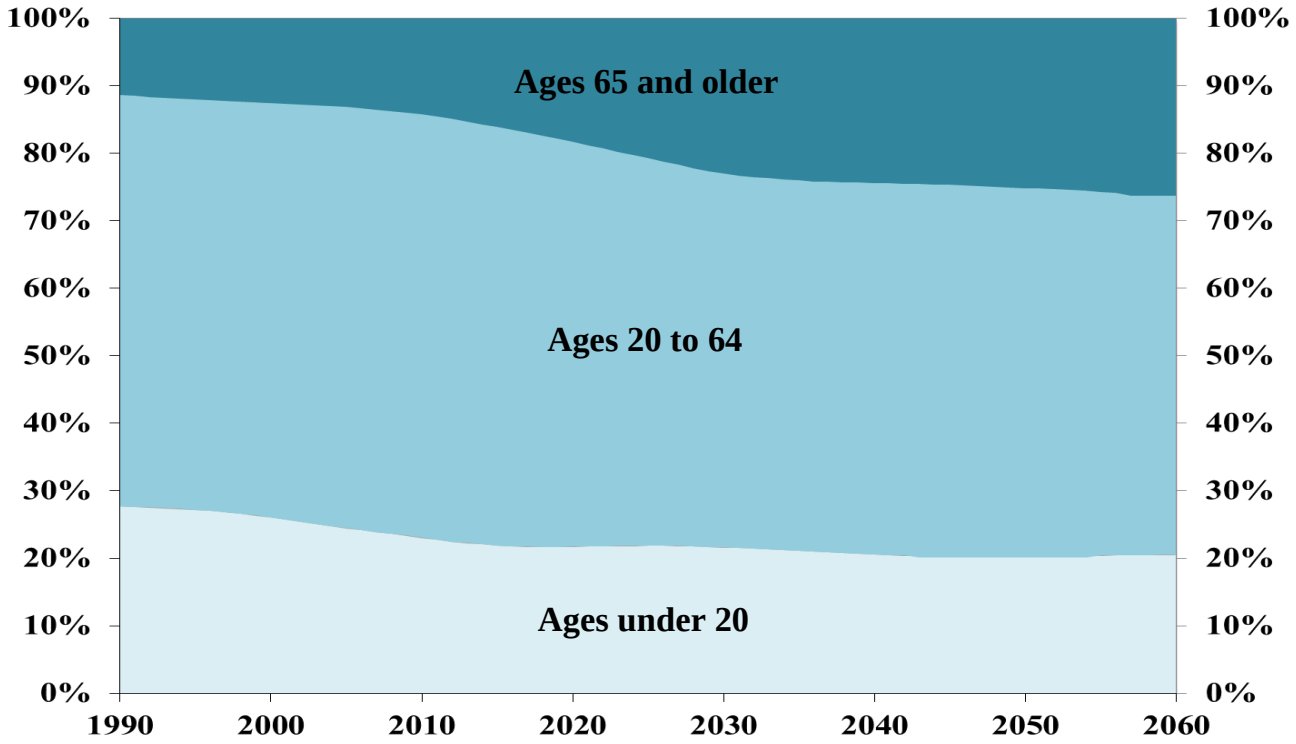
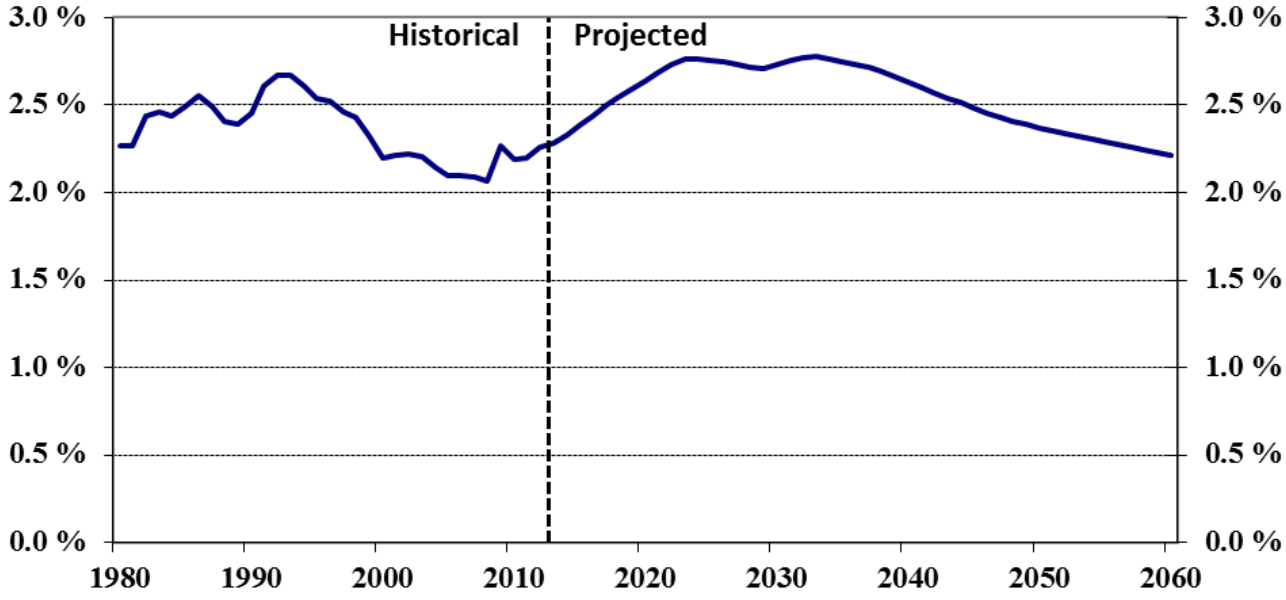
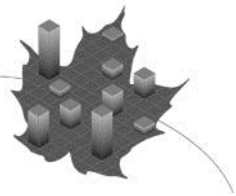


Chart 2 Expenditures as a Proportion of GDP





B. Number of Beneficiaries

Tables 5 and 6 present the historical and projected number of beneficiaries along with the respective overall recipient rates. The number of beneficiaries is the product of the population and the relevant recipient rates, which vary by year, age, sex, and type and level of benefit. Beneficiaries include those who receive benefits outside of Canada. In 2012, about 2.0% of the male population aged 65 and older was receiving a basic pension outside of Canada under international social security agreements, while the corresponding percentage for females was about 1.3%. These percentages are expected to increase over the projection period.

The OAS basic pension recipient rates and number of beneficiaries shown in Tables 5 and 6 are on a gross basis; that is, they have not been adjusted to account for the application of the OAS Recovery Tax, which is a provision of the *Income Tax Act*.

The OAS Recovery Tax, which applies to high-income pensioners, effectively reduces recipient rates, since very high-income pensioners may have their benefit completely reduced. It is estimated that 6.4% (or 337,000) of all OAS pensioners in 2013 were affected by the Recovery Tax. Of this group, 124,000 or 2.4% of all OAS pensioners that year had their pensions completely reduced. In 2050, those affected by the Recovery Tax are projected to represent 6.8% (718,000) of all OAS pensioners, while those fully affected are projected to represent 2.3% (246,000) of pensioners. Section IV of Appendix B presents more detailed information on the projected impact of the OAS Recovery Tax (accounting for TFSAs and pension income splitting) on the number of OAS basic pension beneficiaries and total amounts payable.

As shown in Table 6, the number of beneficiaries for the basic pension is expected to increase by 60% within the next two decades, growing from 5.3 million in 2013 to 8.4 million by the end of 2030. This increase is however mitigated by the legislated increase in the age of eligibility from 65 to 67 over that period. After 2030, due to the relative stability in the growth of the population aged 67 and over and in the basic pension recipient rates, the number of beneficiaries is expected to continue to increase but at a slower pace until the end of the projection period.

The number of GIS beneficiaries is expected to increase by 64% within the next two decades, growing from 1.7 million in 2013 to 2.8 million by 2030. Over that period, the increase in the number of basic pension and GIS beneficiaries is mainly a result of the aging of the population and the retirement of the baby boomers. In addition, the effect of TFSA investments is considered in the projections of both GIS and Allowance benefits. Section IV of Appendix B provides more detailed information on the projected impact of TFSAs on the number of GIS and Allowance beneficiaries and total amounts of benefits payable.

It is assumed that, for each cohort of individuals who may become eligible for the GIS or Allowance, the initial retirement income will consist mainly of CPP and QPP pensions that reflect increases in line with wage growth prior to retirement. At the same time, it is assumed that the income limits for the GIS and Allowance will have increased in line with inflation prior to retirement. Over the projection period, this combined effect would have the overall effect of reducing the number of individuals who might have otherwise been eligible for the GIS or Allowance benefits. However, the impact of TFSAs is expected to offset this decline in eligibility.

The expected decrease in the number of Allowance beneficiaries due to the difference between inflation and wage growth prior to retirement is assumed to outweigh any increase in beneficiaries due to growth in the age group 60 to 64 (transitioning to 62 to 66 by 2030, to which the Allowance applies) and the effect of TFSAs. The number of Allowance beneficiaries is expected to decrease by 21% within the next two decades, going from 84,000 in 2013 to 66,000 by the end of 2030, with the recipient rates decreasing by 35% over the same period. After 2030, the Allowance recipient rates continue to decrease while the growth in the population aged 62 to 66 stabilizes.

The recipient rates shown in Table 6 reflect the increase in the eligible ages for Program benefits scheduled to occur over the period April 2023 to January 2029. The current eligible ages are 65 for the OAS basic pension and GIS, and 60 to 64 for the Allowance benefit, which are reflected in the recipient rates for years prior to 2023. From 2030 onward, the recipient rates reflect the increase in the eligible ages to 67 for the basic pension and GIS and between 62 to 66 for the Allowance. The OAS recipient rates also account for voluntary deferrals, effective 1 July 2013.

Table 5 Beneficiaries (Historical)[1]

Year	Eligible OAS Population	Number of Beneficiaries			Recipient Rates		
		OAS	GIS	Allowance	OAS	GIS	Allowance
	(thousands)	(thousands)	(thousands)	(thousands)	(%)	(%)	(%)
1966	1,222	1,199	-	-	98.1	0.0	0.0
1970	1,716	1,689	816	-	98.4	47.6	0.0
1975	1,957	1,925	1,069	69	98.4	54.6	7.7
1980	2,306	2,259	1,191	75	98.0	51.7	7.8
1981	2,377	2,326	1,232	77	97.9	51.8	7.8
1982	2,441	2,389	1,228	80	97.8	50.3	7.8
1983	2,499	2,448	1,229	86	98.0	49.2	8.0
1984	2,563	2,511	1,246	89	98.0	48.6	8.0
1985	2,648	2,595	1,290	91	98.0	48.7	8.1
1986	2,737	2,683	1,316	139	98.0	48.1	12.2
1987	2,839	2,778	1,336	140	97.9	47.1	12.2
1988	2,929	2,862	1,342	135	97.7	45.8	11.6
1989	3,028	2,948	1,339	128	97.4	44.2	10.9
1990	3,124	3,036	1,325	121	97.2	42.4	10.3
1991	3,212	3,127	1,309	115	97.3	40.8	9.6
1992	3,291	3,210	1,300	110	97.5	39.5	9.2
1993	3,366	3,289	1,313	108	97.7	39.0	8.9
1994	3,434	3,367	1,340	109	98.0	39.0	9.0
1995	3,506	3,447	1,338	108	98.3	38.2	8.9
1996	3,579	3,524	1,341	101	98.5	37.5	8.3
1997	3,655	3,594	1,364	100	98.3	37.3	8.3
1998	3,724	3,656	1,368	97	98.2	36.7	8.0
1999	3,786	3,715	1,372	97	98.1	36.2	7.9
2000	3,852	3,781	1,363	95	98.2	35.4	7.6
2001	3,922	3,852	1,360	93	98.2	34.7	7.2
2002	3,991	3,923	1,404	92	98.3	35.2	6.9
2003	4,064	3,999	1,450	92	98.4	35.7	6.6
2004	4,141	4,078	1,483	93	98.5	35.8	6.3
2005	4,220	4,163	1,515	94	98.6	35.9	6.2
2006	4,325	4,261	1,546	94	98.5	35.7	5.9
2007	4,432	4,362	1,580	94	98.4	35.7	5.5
2008	4,556	4,478	1,584	93	98.3	34.8	5.2
2009	4,691	4,603	1,595	90	98.1	34.0	4.8
2010	4,831	4,732	1,614	92	98.0	33.4	4.7
2011	4,983	4,879	1,662	90	97.9	33.4	4.4
2012	5,187	5,076	1,701	90	97.9	32.8	4.3

(1) The historical OAS basic pension recipient rates and number of beneficiaries are on a gross basis; that is, before application of the OAS Recovery Tax. All recipient rates include benefits paid outside Canada and for this reason can exceed 100%.

Table 6 Beneficiaries (Projected)[1]

Year	Eligible OAS Population	Number of Beneficiaries			Recipient Rates		
		OAS	GIS	Allowance	OAS	GIS	Allowance
	(thousands)	(thousands)	(thousands)	(thousands)	(%)	(%)	(%)
2013	5,390	5,262	1,738	84	97.6	32.2	4.0
2014	5,590	5,477	1,771	81	98.0	31.7	3.7
2015	5,794	5,684	1,824	78	98.1	31.5	3.5
2016	6,002	5,896	1,882	75	98.2	31.4	3.3
2017	6,213	6,110	1,948	74	98.3	31.4	3.1
2018	6,437	6,335	2,020	74	98.4	31.4	3.0
2019	6,677	6,574	2,091	74	98.5	31.3	3.0
2020	6,928	6,824	2,169	74	98.5	31.3	2.9
2021	7,178	7,072	2,250	74	98.5	31.3	2.8
2022	7,435	7,329	2,335	73	98.6	31.4	2.8
2023	7,570	7,480	2,404	74	98.8	31.8	2.8
2024	7,659	7,591	2,461	73	99.1	32.1	2.7
2025	7,742	7,700	2,524	74	99.5	32.6	2.7
2026	7,826	7,788	2,578	73	99.5	32.9	2.7
2027	7,907	7,878	2,642	72	99.6	33.4	2.7
2028	7,982	7,966	2,706	71	99.8	33.9	2.7
2029	8,179	8,155	2,778	69	99.7	34.0	2.7
2030	8,428	8,396	2,847	66	99.6	33.8	2.6
2031	8,664	8,629	2,913	62	99.6	33.6	2.6
2032	8,876	8,844	2,973	59	99.6	33.5	2.5
2033	9,045	9,019	3,022	57	99.7	33.4	2.4
2034	9,181	9,161	3,059	56	99.8	33.3	2.4
2035	9,303	9,288	3,094	55	99.8	33.3	2.3
2036	9,420	9,409	3,126	54	99.9	33.2	2.3
2037	9,533	9,527	3,154	53	99.9	33.1	2.3
2038	9,639	9,636	3,178	52	100.0	33.0	2.2
2039	9,722	9,722	3,193	51	100.0	32.8	2.2
2040	9,794	9,796	3,205	51	100.0	32.7	2.1
2041	9,858	9,862	3,214	51	100.0	32.6	2.1
2042	9,926	9,930	3,221	51	100.0	32.5	2.1
2043	9,991	9,996	3,227	51	100.0	32.3	2.0
2044	10,054	10,058	3,230	51	100.0	32.1	2.0
2045	10,114	10,119	3,231	52	100.0	31.9	2.0
2050	10,514	10,513	3,247	51	100.0	30.9	1.8
2055	11,000	10,996	3,275	50	100.0	29.8	1.7
2060	11,617	11,612	3,329	45	100.0	28.7	1.6

(1) The projected OAS basic pension recipient rates and number of beneficiaries are on a gross basis; that is, before application of the OAS Recovery Tax. All recipient rates include benefits paid outside Canada and for this reason can exceed 100%.

C. Expenditures and Average Annual Benefits

The historical and projected expenditures and average annual benefits by type are presented in Tables 7 and 8. The amounts of OAS basic pension benefits presented in Tables 7 and 8 do not account for the OAS Recovery Tax in the determination of benefits. The OAS Recovery Tax reduces the OAS basic pension benefit by 15 cents for each dollar of income above a minimum threshold. It is estimated that in 2013, approximately 6.4% (or 337,000) of all OAS pensioners were affected by the Recovery Tax, resulting in the repayment of about $1,186 million or 3.6% of the total amount of basic pensions payable. Section IV of Appendix B presents more detailed information on the projected impacts of the OAS Recovery Tax on the basic pensions payable.

Total basic pension expenditures are projected to increase from $33 billion in 2013 to $74 billion by 2030 and $144 billion by 2050. The projected average annual basic pension of $6,251 in 2013 is equal to about 95% of the maximum annual OAS pension for 2013. The average annual benefit is assumed to decrease slightly to about 94% of the maximum or $8,845 by 2030. The existence of partial pensions (introduced in 1977 for those with less than 40 years of residence) is assumed to put downward pressure on the average annual OAS pension.

The projected expenditures and average benefits shown in Table 8 reflect the increase in the eligible ages for Program benefits scheduled to occur over the period April 2023 to January 2029. The OAS basic pension expenditures and average benefits also account for voluntary deferrals, effective 1 July 2013. In addition, the amounts of GIS and Allowance expenditures presented in Tables 7 and 8 account for TFSAs. Section IV of Appendix B presents more detailed information on the projected impact of TFSAs on these benefits.

Total GIS expenditures are projected to increase from $9 billion in 2013 to $20 billion by 2030 and $36 billion by 2050. The projected average annual GIS benefit is $5,371 in 2013, which is about 60% of the maximum annual GIS single rate for 2013. The distribution of the number of GIS beneficiaries by type and level of benefit is assumed to shift to lower benefit categories over the projection period due to the impact of TFSAs. For this reason, the average GIS benefit decreases to about 56% of the maximum GIS single rate and reaches $7,172 by 2030.

Total Allowance expenditures are projected to increase from $531 million in 2013 to $582 million by 2030 and $671 million by 2050. The projected overall average annual Allowance benefit is $6,311 in 2013, which is about 50% of the maximum regular annual benefit for 2013. The distribution of the number of Allowance beneficiaries by type and level of benefit is assumed to stay relatively stable over the projection period due to the impact of TFSAs. For this reason, the average benefit stays at about 50% of the maximum Allowance regular rate and reaches $8,836 by 2030.

For each benefit, total expenditures are the product of the number of beneficiaries and respective average benefit by age, sex, and type and level of benefit. Projected total annual Program expenditures for all benefits and administrative expenses are $43 billion in 2013, rising to $96 billion in 2030 and $181 billion by 2050. OAS basic pension benefits represent 77% of total expenditures in 2013, and this proportion is expected to increase to 80% by 2050.

Table 7 Expenditures and Average Annual Benefits (Historical) (1)

	Expenditures ($ million)					Average Annual Benefit ($)		
Year	OAS	GIS	Allowance	Administrative Expenses	Total	OAS	GIS	Allowance
1966	1,007	-	-	5	1,012	840	-	-
1970	1,611	274	-	9	1,894	954	336	-
1975	2,883	896	13	10	3,802	1,498	838	192
1980	5,147	1,772	169	34	7,122	2,279	1,488	2,272
1981	5,918	2,180	197	42	8,337	2,544	1,770	2,561
1982	6,804	2,376	217	45	9,442	2,848	1,935	2,707
1983	7,504	2,508	232	54	10,298	3,065	2,040	2,692
1984	8,077	2,792	245	56	11,170	3,217	2,241	2,751
1985	8,696	3,278	295	60	12,329	3,351	2,542	3,244
1986	9,346	3,419	468	59	13,292	3,484	2,598	3,356
1987	10,070	3,577	482	59	14,188	3,625	2,677	3,446
1988	10,774	3,725	476	56	15,031	3,764	2,776	3,521
1989	11,579	3,851	464	62	15,956	3,927	2,877	3,621
1990	12,484	3,954	452	67	16,957	4,112	2,985	3,732
1991	13,545	4,102	447	63	18,157	4,331	3,133	3,892
1992	14,292	4,227	438	77	19,034	4,452	3,252	3,964
1993	14,872	4,393	430	90	19,785	4,522	3,346	3,974
1994	15,403	4,587	431	91	20,512	4,574	3,423	3,967
1995	15,832	4,601	411	106	20,950	4,593	3,439	3,802
1996	16,433	4,636	398	104	21,571	4,663	3,458	3,956
1997	16,944	4,710	393	106	22,153	4,715	3,453	3,935
1998	17,470	4,810	386	109	22,775	4,779	3,517	3,964
1999	17,903	4,894	388	99	23,284	4,819	3,567	3,990
2000	18,669	5,019	389	89	24,166	4,937	3,682	4,087
2001	19,508	5,160	390	95	25,153	5,065	3,795	4,205
2002	20,318	5,417	397	99	26,231	5,179	3,858	4,326
2003	21,217	5,710	411	97	27,435	5,306	3,937	4,473
2004	21,923	5,954	453	104	28,434	5,376	4,015	4,885
2005	22,701	6,334	469	104	29,608	5,453	4,182	4,978
2006	23,737	6,800	497	97	31,131	5,570	4,399	5,287
2007	24,711	7,346	513	112	32,682	5,665	4,649	5,457
2008	25,926	7,425	531	120	34,001	5,789	4,687	5,692
2009	27,149	7,708	523	121	35,501	5,898	4,831	5,814
2010	27,984	7,807	550	126	36,467	5,913	4,837	5,999
2011	29,528	8,434	539	134	38,635	6,053	5,074	5,964
2012	31,423	9,029	570	143	41,165	6,190	5,309	6,365

(1) The historical OAS basic pension expenditures and average benefits are on a gross basis; that is, before application of the OAS Recovery Tax. All expenditures include benefits paid outside of Canada.

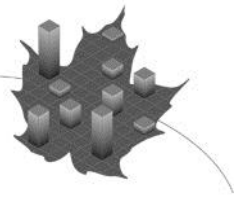


Table 8 Expenditures and Average Annual Benefits (Projected)[(1)]

	Expenditures ($ million)					Average Annual Benefit ($)		
Year	OAS	GIS	Allowance	Administrative Expenses	Total	OAS	GIS	Allowance
2013	32,892	9,335	531	147	42,905	6,251	5,371	6,311
2014	34,796	9,536	522	155	45,009	6,353	5,385	6,422
2015	36,785	10,001	509	163	47,458	6,472	5,483	6,560
2016	38,892	10,507	503	172	50,074	6,597	5,582	6,697
2017	41,109	11,081	505	182	52,877	6,728	5,687	6,828
2018	43,477	11,698	513	192	55,880	6,863	5,791	6,962
2019	46,021	12,300	524	203	59,048	7,000	5,883	7,094
2020	48,757	12,990	533	215	62,495	7,145	5,988	7,236
2021	51,628	13,722	544	227	66,121	7,300	6,100	7,377
2022	54,679	14,518	553	241	69,991	7,461	6,216	7,532
2023	57,511	15,287	547	253	73,598	7,688	6,360	7,412
2024	59,633	15,913	565	263	76,374	7,856	6,467	7,685
2025	61,814	16,610	566	273	79,263	8,028	6,580	7,687
2026	63,830	17,300	585	282	81,997	8,196	6,710	8,011
2027	65,942	18,018	600	292	84,852	8,371	6,821	8,306
2028	68,138	18,752	601	302	87,793	8,553	6,931	8,483
2029	70,609	19,511	598	313	91,031	8,659	7,023	8,653
2030	74,263	20,418	582	329	95,592	8,845	7,172	8,836
2031	78,011	21,342	563	345	100,261	9,040	7,326	9,020
2032	81,725	22,245	544	361	104,875	9,241	7,483	9,207
2033	85,185	23,096	536	375	109,192	9,445	7,643	9,377
2034	88,432	23,870	536	389	113,227	9,653	7,802	9,549
2035	91,642	24,653	538	403	117,236	9,866	7,968	9,733
2036	94,888	25,434	539	417	121,278	10,084	8,138	9,928
2037	98,199	26,211	538	431	125,379	10,308	8,311	10,130
2038	101,521	26,976	537	445	129,479	10,535	8,490	10,342
2039	104,690	27,688	542	459	133,379	10,768	8,670	10,537
2040	107,816	28,387	550	472	137,225	11,006	8,856	10,742
2041	110,936	29,072	561	485	141,054	11,249	9,046	10,951
2042	114,185	29,767	571	499	145,022	11,498	9,240	11,178
2043	117,484	30,458	583	513	149,038	11,753	9,439	11,404
2044	120,844	31,145	597	527	153,113	12,014	9,643	11,633
2045	124,272	31,834	613	541	157,260	12,281	9,852	11,864
2050	144,189	35,622	671	623	181,105	13,715	10,972	13,132
2055	168,597	40,003	730	723	210,053	15,332	12,214	14,534
2060	198,711	45,162	718	845	245,436	17,112	13,567	16,129

(1) The projected OAS basic pension expenditures and average benefits are on a gross basis; that is, before application of the OAS Recovery Tax. All expenditures include benefits paid outside of Canada.

D. Cost Ratios

Since the Program is financed from general revenues on a pay-as-you-go basis, it is useful to express its annual expenditures in relative terms rather than in absolute dollar terms. For this reason, the expenditures are presented as cost ratios using three different measurement bases. The three bases used are the GDP, combined CPP/QPP contributory earnings, and total employment earnings. The details regarding how these measurement bases are projected are provided in Appendix B of this report.

The GDP basis is derived from projected total employment earnings using the historical relationship between the two. Tables 9 and 10 present the historical and projected annual expenditures as a percentage of GDP.

The combined CPP/QPP contributory earnings basis is derived from CPP contributory earnings as projected under the 26th CPP Actuarial Report as at 31 December 2012, adjusted to take into account QPP contributory earnings by using the historical relationship between the two. This measurement basis facilitates a direct comparison of the cost of the Program with the costs of the CPP and QPP by using the same contributory basis. Tables 11 and 12 present the historical and projected annual expenditures as a percentage of combined CPP/QPP contributory earnings.

The total employment earnings basis is derived from the CPP total employment earnings as projected under the 26th CPP Actuarial Report as at 31 December 2012, adjusted to account for Québec's total employment earnings. The adjustment is determined by using the historical relationship between total employment earnings as published by Statistics Canada and total employment earnings applicable to Canada less Québec for the purpose of the CPP. Tables 13 and 14 present the historical and projected annual expenditures as a percentage of total employment earnings.

The projected expenditures shown in Tables 10, 12, and 14 reflect the increase in the eligible ages for Program benefits scheduled to occur over the period April 2023 to January 2029. The OAS basic pension expenditures also account for voluntary deferrals, effective 1 July 2013.

Table 9 Expenditures as Percentage of GDP (Historical)

Year	Gross Domestic Product	Expenditures as % of Gross Domestic Product[1]				
		OAS	GIS	Allowance	Administrative Expenses	Total
	($ billion)	(%)	(%)	(%)	(%)	(%)
1966	65	1.55	-	-	0.01	1.56
1970	90	1.79	0.30	-	0.01	2.10
1975	174	1.66	0.52	0.01	0.01	2.19
1980	314	1.64	0.56	0.05	0.01	2.27
1981	367	1.61	0.59	0.05	0.01	2.27
1982	387	1.76	0.61	0.06	0.01	2.44
1983	419	1.79	0.60	0.06	0.01	2.46
1984	458	1.76	0.61	0.05	0.01	2.44
1985	496	1.75	0.66	0.06	0.01	2.49
1986	522	1.79	0.66	0.09	0.01	2.55
1987	569	1.77	0.63	0.08	0.01	2.49
1988	623	1.73	0.60	0.08	0.01	2.41
1989	667	1.74	0.58	0.07	0.01	2.39
1990	691	1.81	0.57	0.07	0.01	2.45
1991	697	1.94	0.59	0.06	0.01	2.61
1992	713	2.00	0.59	0.06	0.01	2.67
1993	742	2.01	0.59	0.06	0.01	2.67
1994	787	1.96	0.58	0.05	0.01	2.61
1995	826	1.92	0.56	0.05	0.01	2.54
1996	855	1.92	0.54	0.05	0.01	2.52
1997	901	1.88	0.52	0.04	0.01	2.46
1998	937	1.87	0.51	0.04	0.01	2.43
1999	1,002	1.79	0.49	0.04	0.01	2.32
2000	1,098	1.70	0.46	0.04	0.01	2.20
2001	1,135	1.72	0.45	0.03	0.01	2.22
2002	1,181	1.72	0.46	0.03	0.01	2.22
2003	1,244	1.71	0.46	0.03	0.01	2.21
2004	1,325	1.65	0.45	0.03	0.01	2.15
2005	1,411	1.61	0.45	0.03	0.01	2.10
2006	1,487	1.60	0.46	0.03	0.01	2.09
2007	1,566	1.58	0.47	0.03	0.01	2.09
2008	1,646	1.58	0.45	0.03	0.01	2.07
2009	1,567	1.73	0.49	0.03	0.01	2.27
2010	1,663	1.68	0.47	0.03	0.01	2.19
2011	1,760	1.68	0.48	0.03	0.01	2.20
2012	1,820	1.73	0.50	0.03	0.01	2.26

(1) The historical OAS basic pension expenditures are on a gross basis; that is, before application of the OAS Recovery Tax. All expenditures include benefits paid outside of Canada.

Table 10 Expenditures as Percentage of GDP (Projected)

Year	Gross Domestic Product	Expenditures as % of Gross Domestic Product[1]				
		OAS	GIS	Allowance	Administrative Expenses	Total
	($ billion)	(%)	(%)	(%)	(%)	(%)
2013	1,879	1.75	0.50	0.03	0.01	2.28
2014	1,930	1.80	0.49	0.03	0.01	2.33
2015	1,992	1.85	0.50	0.03	0.01	2.38
2016	2,056	1.89	0.51	0.02	0.01	2.44
2017	2,118	1.94	0.52	0.02	0.01	2.50
2018	2,197	1.98	0.53	0.02	0.01	2.54
2019	2,280	2.02	0.54	0.02	0.01	2.59
2020	2,369	2.06	0.55	0.02	0.01	2.64
2021	2,464	2.10	0.56	0.02	0.01	2.68
2022	2,562	2.13	0.57	0.02	0.01	2.73
2023	2,664	2.16	0.57	0.02	0.01	2.76
2024	2,767	2.16	0.58	0.02	0.01	2.76
2025	2,874	2.15	0.58	0.02	0.01	2.76
2026	2,987	2.14	0.58	0.02	0.01	2.75
2027	3,107	2.12	0.58	0.02	0.01	2.73
2028	3,232	2.11	0.58	0.02	0.01	2.72
2029	3,364	2.10	0.58	0.02	0.01	2.71
2030	3,503	2.12	0.58	0.02	0.01	2.73
2031	3,639	2.14	0.59	0.02	0.01	2.76
2032	3,784	2.16	0.59	0.01	0.01	2.77
2033	3,936	2.16	0.59	0.01	0.01	2.77
2034	4,096	2.16	0.58	0.01	0.01	2.76
2035	4,262	2.15	0.58	0.01	0.01	2.75
2036	4,436	2.14	0.57	0.01	0.01	2.73
2037	4,619	2.13	0.57	0.01	0.01	2.71
2038	4,810	2.11	0.56	0.01	0.01	2.69
2039	5,007	2.09	0.55	0.01	0.01	2.66
2040	5,211	2.07	0.54	0.01	0.01	2.63
2041	5,421	2.05	0.54	0.01	0.01	2.60
2042	5,639	2.03	0.53	0.01	0.01	2.57
2043	5,864	2.00	0.52	0.01	0.01	2.54
2044	6,096	1.98	0.51	0.01	0.01	2.51
2045	6,334	1.96	0.50	0.01	0.01	2.48
2050	7,638	1.89	0.47	0.01	0.01	2.37
2055	9,181	1.84	0.44	0.01	0.01	2.29
2060	11,092	1.79	0.41	0.01	0.01	2.21

(1) The projected OAS basic pension expenditures are on a gross basis; that is, before application of the OAS Recovery Tax. All expenditures include benefits paid outside of Canada.

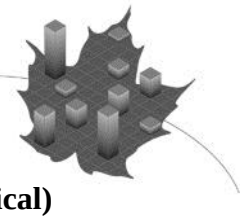


Table 11 Expenditures as Percentage of CPP/QPP Contributory Earnings (Historical)

Year	CPP/QPP Contributory Earnings	Expenditures as % of CPP/QPP Contributory Earnings[1]				
		OAS	GIS	Administrative Allowance	Administrative Expenses	Total
	($ billion)	(%)	(%)	(%)	(%)	(%)
1966	20	4.92	-	-	0.03	4.95
1970	27	5.94	1.01	-	0.03	6.99
1975	51	5.71	1.77	0.03	0.02	7.53
1980	94	5.47	1.88	0.18	0.04	7.56
1981	109	5.44	2.00	0.18	0.04	7.66
1982	117	5.83	2.03	0.19	0.04	8.08
1983	126	5.95	1.99	0.18	0.04	8.16
1984	141	5.74	1.98	0.17	0.04	7.94
1985	156	5.58	2.10	0.19	0.04	7.90
1986	171	5.45	2.00	0.27	0.03	7.76
1987	183	5.51	1.96	0.26	0.03	7.76
1988	196	5.50	1.90	0.24	0.03	7.67
1989	211	5.48	1.82	0.22	0.03	7.55
1990	222	5.63	1.78	0.20	0.03	7.64
1991	225	6.01	1.82	0.20	0.03	8.05
1992	231	6.20	1.83	0.19	0.03	8.25
1993	236	6.31	1.86	0.18	0.04	8.39
1994	244	6.31	1.88	0.18	0.04	8.40
1995	252	6.28	1.83	0.16	0.04	8.32
1996	257	6.40	1.80	0.15	0.04	8.40
1997	269	6.31	1.75	0.15	0.04	8.25
1998	286	6.10	1.68	0.13	0.04	7.95
1999	301	5.94	1.62	0.13	0.03	7.73
2000	319	5.85	1.57	0.12	0.03	7.58
2001	332	5.87	1.55	0.12	0.03	7.57
2002	344	5.91	1.58	0.12	0.03	7.63
2003	357	5.94	1.60	0.12	0.03	7.69
2004	372	5.90	1.60	0.12	0.03	7.65
2005	388	5.85	1.63	0.12	0.03	7.62
2006	409	5.80	1.66	0.12	0.02	7.61
2007	435	5.68	1.69	0.12	0.03	7.52
2008	455	5.70	1.63	0.12	0.03	7.47
2009	457	5.94	1.69	0.11	0.03	7.76
2010	479	5.84	1.63	0.11	0.03	7.62
2011	496	5.96	1.70	0.11	0.03	7.79
2012	530	5.93	1.70	0.11	0.03	7.77

(1) The historical OAS basic pension expenditures are on a gross basis; that is, before consideration application of the OAS Recovery Tax. All expenditures include benefits paid outside of Canada.

Table 12 Expenditures as Percentage of CPP/QPP Contributory Earnings (Projected)

Year	CPP/QPP Contributory Earnings	Expenditures as % of CPP/QPP Contributory Earnings[1]				
		OAS	GIS	Administrative Allowance	Administrative Expenses	Total
	($ billion)	(%)	(%)	(%)	(%)	(%)
2013	548	6.00	1.70	0.10	0.03	7.83
2014	568	6.13	1.68	0.09	0.03	7.93
2015	589	6.24	1.70	0.09	0.03	8.05
2016	613	6.34	1.71	0.08	0.03	8.17
2017	637	6.46	1.74	0.08	0.03	8.31
2018	662	6.57	1.77	0.08	0.03	8.44
2019	688	6.69	1.79	0.08	0.03	8.58
2020	716	6.81	1.81	0.07	0.03	8.73
2021	746	6.92	1.84	0.07	0.03	8.87
2022	776	7.04	1.87	0.07	0.03	9.01
2023	808	7.11	1.89	0.07	0.03	9.10
2024	841	7.09	1.89	0.07	0.03	9.08
2025	875	7.07	1.90	0.06	0.03	9.06
2026	911	7.01	1.90	0.06	0.03	9.00
2027	948	6.96	1.90	0.06	0.03	8.95
2028	988	6.90	1.90	0.06	0.03	8.89
2029	1,028	6.87	1.90	0.06	0.03	8.86
2030	1,070	6.94	1.91	0.05	0.03	8.93
2031	1,113	7.01	1.92	0.05	0.03	9.01
2032	1,158	7.06	1.92	0.05	0.03	9.06
2033	1,205	7.07	1.92	0.04	0.03	9.06
2034	1,255	7.05	1.90	0.04	0.03	9.02
2035	1,306	7.01	1.89	0.04	0.03	8.97
2036	1,361	6.97	1.87	0.04	0.03	8.91
2037	1,418	6.92	1.85	0.04	0.03	8.84
2038	1,477	6.87	1.83	0.04	0.03	8.77
2039	1,539	6.80	1.80	0.04	0.03	8.67
2040	1,602	6.73	1.77	0.03	0.03	8.56
2041	1,668	6.65	1.74	0.03	0.03	8.46
2042	1,736	6.58	1.71	0.03	0.03	8.35
2043	1,806	6.51	1.69	0.03	0.03	8.25
2044	1,878	6.43	1.66	0.03	0.03	8.15
2045	1,953	6.36	1.63	0.03	0.03	8.05
2050	2,361	6.11	1.51	0.03	0.03	7.67
2055	2,839	5.94	1.41	0.03	0.03	7.40
2060	3,425	5.80	1.32	0.02	0.02	7.17

(1) The projected OAS basic pension expenditures are on a gross basis; that is, before application of the OAS Recovery Tax. All expenditures include benefits paid outside of Canada.

Table 13 Expenditures as Percentage of Total Employment Earnings (Historical)

Year	Total Employment Earnings	Expenditures as % of Total Employment Earnings[1]				
		OAS	GIS	Allowance	Administrative Expenses	Total
	($ billion)	(%)	(%)	(%)	(%)	(%)
1966	31	3.21	-	-	0.02	3.22
1970	46	3.53	0.60	-	0.02	4.15
1975	89	3.24	1.01	0.01	0.01	4.27
1980	156	3.29	1.13	0.11	0.02	4.55
1981	180	3.29	1.21	0.11	0.02	4.64
1982	192	3.55	1.24	0.11	0.02	4.93
1983	200	3.75	1.25	0.12	0.03	5.15
1984	215	3.75	1.30	0.11	0.03	5.19
1985	232	3.75	1.41	0.13	0.03	5.32
1986	247	3.78	1.38	0.19	0.02	5.37
1987	269	3.75	1.33	0.18	0.02	5.28
1988	295	3.65	1.26	0.16	0.02	5.10
1989	319	3.63	1.21	0.15	0.02	5.01
1990	333	3.74	1.19	0.14	0.02	5.09
1991	339	4.00	1.21	0.13	0.02	5.36
1992	343	4.17	1.23	0.13	0.02	5.55
1993	347	4.28	1.27	0.12	0.03	5.70
1994	356	4.33	1.29	0.12	0.03	5.76
1995	366	4.32	1.26	0.11	0.03	5.72
1996	376	4.37	1.23	0.11	0.03	5.74
1997	398	4.26	1.18	0.10	0.03	5.57
1998	421	4.15	1.14	0.09	0.03	5.41
1999	445	4.02	1.10	0.09	0.02	5.23
2000	486	3.84	1.03	0.08	0.02	4.98
2001	504	3.87	1.02	0.08	0.02	4.99
2002	521	3.90	1.04	0.08	0.02	5.04
2003	541	3.92	1.06	0.08	0.02	5.07
2004	571	3.84	1.04	0.08	0.02	4.98
2005	605	3.75	1.05	0.08	0.02	4.90
2006	645	3.68	1.05	0.08	0.02	4.83
2007	685	3.61	1.07	0.07	0.02	4.77
2008	716	3.62	1.04	0.07	0.02	4.75
2009	705	3.85	1.09	0.07	0.02	5.03
2010	728	3.85	1.07	0.08	0.02	5.01
2011	767	3.85	1.10	0.07	0.02	5.04
2012	801	3.92	1.13	0.07	0.02	5.14

(1) The historical OAS basic pension expenditures are on a gross basis; that is, before application of the OAS Recovery Tax. All expenditures include benefits paid outside of Canada.

Table 14 Expenditures as Percentage of Total Employment Earnings (Projected)

Year	Total Employment Earnings	Expenditures as % of Total Employment Earnings[1]				
		OAS	GIS	Allowance	Administrative Expenses	Total
	($ billion)	(%)	(%)	(%)	(%)	(%)
2013	823	3.99	1.13	0.06	0.02	5.21
2014	848	4.10	1.12	0.06	0.02	5.30
2015	875	4.21	1.14	0.06	0.02	5.43
2016	902	4.31	1.17	0.06	0.02	5.55
2017	928	4.43	1.19	0.05	0.02	5.70
2018	961	4.52	1.22	0.05	0.02	5.81
2019	996	4.62	1.23	0.05	0.02	5.93
2020	1,034	4.71	1.26	0.05	0.02	6.04
2021	1,075	4.80	1.28	0.05	0.02	6.15
2022	1,116	4.90	1.30	0.05	0.02	6.27
2023	1,159	4.96	1.32	0.05	0.02	6.35
2024	1,203	4.96	1.32	0.05	0.02	6.35
2025	1,248	4.95	1.33	0.05	0.02	6.35
2026	1,296	4.92	1.33	0.05	0.02	6.33
2027	1,347	4.90	1.34	0.04	0.02	6.30
2028	1,400	4.87	1.34	0.04	0.02	6.27
2029	1,456	4.85	1.34	0.04	0.02	6.25
2030	1,514	4.90	1.35	0.04	0.02	6.31
2031	1,571	4.96	1.36	0.04	0.02	6.38
2032	1,632	5.01	1.36	0.03	0.02	6.43
2033	1,696	5.02	1.36	0.03	0.02	6.44
2034	1,763	5.02	1.35	0.03	0.02	6.42
2035	1,833	5.00	1.34	0.03	0.02	6.40
2036	1,906	4.98	1.33	0.03	0.02	6.36
2037	1,983	4.95	1.32	0.03	0.02	6.32
2038	2,063	4.92	1.31	0.03	0.02	6.28
2039	2,145	4.88	1.29	0.03	0.02	6.22
2040	2,230	4.84	1.27	0.02	0.02	6.15
2041	2,317	4.79	1.25	0.02	0.02	6.09
2042	2,408	4.74	1.24	0.02	0.02	6.02
2043	2,502	4.70	1.22	0.02	0.02	5.96
2044	2,598	4.65	1.20	0.02	0.02	5.89
2045	2,697	4.61	1.18	0.02	0.02	5.83
2050	3,236	4.46	1.10	0.02	0.02	5.60
2055	3,870	4.36	1.03	0.02	0.02	5.43
2060	4,653	4.27	0.97	0.02	0.02	5.28

(1) The projected OAS basic pension expenditures are on a gross basis; that is, before application of the OAS Recovery Tax. All expenditures include benefits paid outside of Canada.

V. Reconciliation with Previous Triennial Report

A. Introduction

The results presented in this report differ from those presented in the previous triennial 9th OAS Program Actuarial Report for a variety of reasons. Differences between the actual experience from 2010 through 2012 and that projected in the 9th OAS Program Actuarial Report are addressed in subsection B below. Since historical results provide the starting point for the projections shown in this report, these historical differences between actual and projected experience have an effect on the projections. Detailed reconciliations of the projected expenditures are presented in Appendix C.

B. Experience Update – 2010 to 2012

The components of change in the Program expenditures from 31 December 2009 to 31 December 2012 are summarized in Table 15.

Table 15 Financial Results - 2010 to 2012(1)
($ million)

	Actual	Expected(2)	Difference Actual less Expected	% Change Difference/ Expected
Expenditures:				
OAS	88,936	88,742	194	0.2%
GIS	25,270	25,489	(219)	(0.9%)
Allowance	1,659	1,697	(38)	(2.2%)
Administrative Expenses	403	405	(2)	(0.5%)
Total Expenditures	**116,268**	**116,333**	**(65)**	**(0.1%)**
Gross Domestic Product	**5,243,000**	**4,968,000**	**275,000**	**5.5%**
Expenditures as % of GDP	**2.22%**	**2.34%**	**(0.12%)**	**(5.3%)**

(1) Components may not sum to totals due to rounding.
(2) Expected expenditures and GDP shown are as per the 9th OAS Program Actuarial Report as at 31 December 2009.

OAS expenditures during the period were $194 million higher than projected. For the most part, this is because a slightly lower number of OAS beneficiaries was more than offset by a higher average benefit than projected. GIS and Allowance expenditures were $257 million (or 0.9%) lower than anticipated mainly due to lower than expected number of beneficiaries, which was partly offset by higher average benefits than projected. Administrative expenses were $2 million or 0.5% lower than expected over the period.

Total GDP over the period was 5.5% higher than projected. As a result, overall expenditures relative to the GDP were about 5.3% lower than projected, being 2.22% of GDP instead of 2.34%.

C. Changes in Expenditures as a percentage of the GDP

Table 16 presents the main elements of changes in the expenditures expressed as a percentage of the Gross Domestic Product since the 9th OAS Program Actuarial Report, including the changes that have arisen over the period 2010 to 2012 from amendments to the Program, as reflected in the 10th and 11th Actuarial Reports. Although assumed continuing increases in longevity lead to increases in the cost ratio, this effect is countered by assumed increases in net migration, leading to no effect on the projected cost ratios from the demographic assumptions. Although the anticipated effect of TFSAs and changes in economic assumptions act to increase the cost ratios, these effects are more than offset by other factors, including the experience of the last three years and recent legislated amendments to the Program. The net result is lower expenditures relative to the GDP over the projection period.

Table 16 Reconciliation of Expenditures as a Percentage of GDP

	2013	2030	2050
		% of GDP	
9th OAS Program Actuarial Report	**2.45**	**3.14**	**2.60**
Legislated amendments:			
10th OAS Program Actuarial Report	0.02	0.02	0.01
• top-up of GIS and Allowance benefits			
11th OAS Program Actuarial Report			
• increase in benefit eligibility ages	0.00	(0.32)	(0.21)
• voluntary deferral of basic pension	0.00	0.00	0.01
Total amendments	**0.02**	**(0.30)**	**(0.19)**
Improvements in methodology	0.00	0.00	0.00
Experience update (2010 to 2012)	(0.08)	(0.09)	(0.08)
Changes in demographic assumptions	0.00	0.01	0.00
Changes in economic assumptions	(0.12)	0.00	0.06
Changes in benefit assumptions	0.01	(0.03)	(0.02)
12th OAS Program Actuarial Report	**2.28**	**2.73**	**2.37**

VI. Conclusion

The expected increase in expenditures over the next few decades resulting from the retirement of the baby boomers is somewhat mitigated by the legislated gradual increase in the age of eligibility from 65 to 67 over the period 2023 to 2029.

The combined effect of the increase in the age of eligibility for Program benefits and the aging of the population is expected to result in total annual expenditures growing from 2.3% of GDP in 2013, a level similar to the one in 1980, to a high of about 2.8% in 2033, a level somewhat higher than the historical peak of 2.7% reached in the early 1990s. It is assumed that, for each cohort of individuals who may become eligible for the GIS or Allowance, the initial retirement income will consist mainly of CPP and QPP pensions that reflect increases in line with wage growth prior to retirement. At the same time, it is assumed that the income limits for the GIS and Allowance will have increased in line with inflation prior to retirement. Although together this would lead to reduced eligibility of new retirees for the GIS and Allowance, the fact that individuals are also assumed to invest in TFSAs results in GIS and Allowance recipient rates increasing slightly over time. Ultimately, however, the fact that benefits are indexed to inflation as opposed to wages drive the cost of the OAS Program relative to the GDP down over the long term, with the result that annual expenditures are expected to fall to 2.4% of GDP by 2050.

In comparison with the previous triennial (9^{th}) actuarial report, the assumed continuing increases in longevity, especially at older ages, lead to increases in the cost ratio; however, this effect is countered by assumed increases in net migration, leading to no effect on the projected cost ratios from the demographic assumptions. Although the anticipated effect of TFSAs and changes in economic assumptions act to increase the cost ratios, these effects are more than offset by other factors, including the experience of the last three years and recent legislated amendments to the Program which will gradually increase the age for benefit eligibility. The net result is lower expenditures relative to the GDP over the projection period.

To measure the sensitivity of the long-term projected financial status of the Program to changes in the future demographic and economic outlook, a number of sensitivity tests were performed. These tests focussed on varying the key best-estimate assumptions individually in order to measure the potential impact on the cost ratio of Program expenditures to GDP. These tests show that the cost ratio could deviate significantly from its projected best-estimate values if other than best-estimate assumptions were to be realized. For example, if life expectancies at age 65 were to increase by two and half more years than the best estimates of this report, then the ratio in 2050 would increase from 2.37% to 2.56%. As another example, if recipient rates for the GIS and Allowance benefits were to increase by 20%, then the ratio in 2050 would increase from 2.37% to 2.46%.

The projected financial status of the OAS Program presented in this report is based on the assumed demographic and economic outlook over the long term. Therefore, it remains important to review the Program's long-term financial status on a regular basis by producing periodic actuarial reports. For this purpose, as required by the *Public Pensions Reporting Act*, the next such review will be as at 31 December 2015.

VII. Actuarial Opinion

In our opinion, considering that this 12th Actuarial Report was prepared pursuant to the *Public Pensions Reporting Act*:

- the data on which this report is based are sufficient and reliable;
- the assumptions used are, individually and in aggregate, reasonable and appropriate; and,
- the methodology employed is appropriate for the purposes of this report.

This report has been prepared, and our opinions given, in accordance with both accepted actuarial practice in Canada, in particular, the General Standards of Practice of the Canadian Institute of Actuaries, and internationally accepted actuarial practice as provided by the International Standards of Actuarial Practice for General Actuarial Practice (ISAP 1) and Financial Analysis of Social Security Programs (ISAP 2) of the International Actuarial Association.

Michel Montambeault, F.S.A., F.C.I.A.
Senior Actuary

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Chief Actuary

Ottawa, Canada
23 May 2014

Appendix A – Summary of Program Provisions

I. Introduction

The *Old Age Security Act* came into force in January 1952. Benefits provided under the *Old Age Security Act* include the basic pension, the Guaranteed Income Supplement, and the Allowance, which started being paid in 1952, 1967, and 1975, respectively. The Allowance for the survivor benefit started in 1985.

Recently, the *Old Age Security Act* was amended by the *Supporting Vulnerable Seniors and Strengthening Canada's Economy Act* to provide top-up benefits for recipients of the GIS and Allowance benefits, effective 1 July 2011. The 10th Actuarial Report Supplementing the Actuarial Report on the Old Age Security Program as at 31 December 2009 was prepared in accordance with the *Public Pensions Reporting Act* (PPRA) to show the effect of the top-up benefits on the long-term financial status of the OAS Program. The 10th Actuarial Report was tabled in the House of Commons on 4 November 2011.

The *Old Age Security Act* was most recently amended by the *Jobs, Growth and Long-term Prosperity Act*, which received Royal Assent on 29 June 2012. Under that Act, there is a scheduled increase in the age of eligibility for OAS Program benefits commencing in April 2023 and voluntary deferral of the OAS pension by up to five years with actuarial adjustment, starting 1 July 2013. The 11th Actuarial Report Supplementing the Actuarial Report on the Old Age Security Program as at 31 December 2009 was prepared in accordance with the PPRA to show the effect of these amendments on the long-term financial status of the OAS Program. The 11th Actuarial Report was tabled in the House of Commons on 22 August 2012.

This Appendix A is meant only to provide a summary of the provisions of the OAS Program. The legislation shall prevail if there is a discrepancy between it and this summary.

II. Financing

All benefits provided under the Old Age Security Act are currently financed from federal general tax revenues.

III. Basic Pension

The OAS basic pension is a monthly benefit available, on application, to anyone age 65 or over who meets the residence and legal status requirements specified in the *Old Age Security Act*.

A. Eligibility Conditions

To qualify for a OAS basic pension, a person must be 65 years of age or over, and

- must be a Canadian citizen or a legal resident of Canada on the day preceding the approval of his or her application; or
- if the person no longer lives in Canada, must have been a Canadian citizen or a legal resident of Canada on the day preceding the day he or she stopped living in Canada.

A minimum of 10 years of residence in Canada after reaching age 18 is required to receive an OAS basic pension in Canada. To receive the OAS pension outside the country, a person must have lived in Canada for a minimum of 20 years after reaching age 18. An international social security agreement may assist a person to meet the 10- and 20-year requirements. As of 1 January 2011, the OAS basic pension is not payable to any individual incarcerated in an institution in accordance with the provisions of the *Eliminating Entitlements for Prisoners Act*. Commencing 1 April 2023, the ages of eligibility for the OAS basic pension and GIS benefit will both gradually increase from 65 to 67, with full implementation by January 2029. The following table presents the scheduled increase in the age of eligibility for the basic pension and GIS.

Table 17 Increase in OAS Basic Pension and GIS Ages of Eligibility

	OAS Basic Pension and GIS Ages of Eligibility				
	Year of Birth				
Month of Birth	1958	1959	1960	1961	1962
January	65	65 + 5 mo	65 + 11 mo	66 + 5 mo	66 + 11 mo
February –March	65	65 + 6 mo	66	66 + 6 mo	67
April – May	65 + 1 mo	65 + 7 mo	66 + 1 mo	66 + 7 mo	67
June – July	65 + 2 mo	65 + 8 mo	66 + 2 mo	66 + 8 mo	67
August – September	65 + 3 mo	65 + 9 mo	66 + 3 mo	66 + 9 mo	67
October – November	65 + 4 mo	65 + 10 mo	66 + 4 mo	66 + 10 mo	67
December	65 + 5 mo	65 + 11 mo	66 + 5 mo	66 + 11 mo	67

B. Amount of Benefits

The amount of a person's pension is determined by how long he or she has lived in Canada, according to the following rules:

- A person who has lived in Canada, after reaching age 18, for periods that total at least 40 years may qualify for a full OAS pension.
- A person who has not lived in Canada for 40 years after reaching age 18 may still qualify for a full pension if, on 1 July 1977, he or she was 25 years of age or over, and
  - lived in Canada on that date, or
  - had lived in Canada before that date and after reaching age 18, or
  - possessed a valid immigration visa on that date.

In such cases, the individual must have lived in Canada for the 10 years immediately prior to the approval of the application for the pension. Absences during this 10-year period may be offset if,

after reaching age 18, the applicant was present in Canada before those 10 years for a total period that was at least three times the length of absence. In this instance, however, the applicant must also have lived in Canada for at least one year immediately prior to the date of the approval of the application. For example, an absence of two years between the ages of 60 and 62 could be offset by six years of presence in Canada after age 18 and before reaching age 55.

- A person who cannot meet the requirements for the full OAS pension may qualify for a partial pension. A partial pension is earned at the rate of $1/40^{th}$ of the full monthly pension for each complete year of residence in Canada after reaching age 18. Once a partial pension has been approved, it may not be increased as a result of additional years of residence in Canada. As an example, an individual with 20 complete years of residence in Canada at the time of application for the OAS pension would be entitled to 50% (or 20/40) of the maximum monthly OAS pension for the remainder of his/her lifetime.

Effective 1 July 2013, individuals may opt to defer receiving the OAS basic pension by up to five years after the eligible age in exchange for a higher pension. The deferred pensions are actuarially adjusted upward by 0.6% per month for each month after the eligible age, up to a maximum of 36% after five years of deferral, as shown in Table 18. The upward adjustment to the pension is permanent.

Table 18 Increases to the OAS Basic Pension for Voluntary Pension Deferrals

Take-up Age	Age of Eligibility is 65	Age of Eligibility is 66	Age of Eligibility is 67
65	0.0%	n/a	n/a
66	7.2%	0.0%	n/a
67	14.4%	7.2%	0.0%
68	21.6%	14.4%	7.2%
69	28.8%	21.6%	14.4%
70	36.0%	28.8%	21.6%
71	36.0%	36.0%	28.8%
72+	36.0%	36.0%	36.0%

The OAS basic pension is subject to income tax. The maximum monthly pension payable at age 65 was $551.54 during the first quarter of 2014. The OAS basic pension is adjusted quarterly in line with changes in the CPI, as described in section VI.

The amount of pension paid to persons with high incomes is reduced through a provision of the *Income Tax Act* often referred to as the "OAS Recovery Tax". For benefits payable in 2014, the reduction applies to individuals whose total net annual income exceeds $71,592 in that calendar year. For this purpose, an individual's total net annual income is after pension income splitting, if that option is elected by OAS beneficiaries who are married or common-law partners.

OAS Recovery Tax deductions are withheld at source. The deductions are estimates of the tax owed and are recalculated in July of each year based on the OAS recipient's previous year's net income (after pension income splitting). The Recovery Tax actually owed for a given year is determined the following year and compared to the deductions made, with the given year's tax liability adjusted accordingly.

The income threshold for the Recovery Tax is indexed upward in accordance with increases in the CPI. For every dollar of income above this limit, the amount of basic pension is reduced by 15 cents. Income earned within a TFSA or withdrawals made from a TFSA are excluded from total net annual income for the purpose of determining the amount of the OAS Recovery Tax, which could result in a higher basic pension payable.

As an example, an OAS recipient with a net annual income (after pension income splitting) of $73,592 in 2014 would incur an annual reduction (repayment) of $300. The full 2014 annual OAS basic pension is thus eliminated when a pensioner's net annual income (after pension income splitting) is $115,716 or above in 2014 (estimated as of the first quarter of 2014 based on annualized OAS benefits of $6,618.48).

IV. Guaranteed Income Supplement

The GIS is a monthly benefit paid to residents of Canada who receive an OAS basic pension (either the full amount or a partial amount) and who have little or no other income.

Payment of the GIS may begin in the same month as payment of the basic pension. The amount of the benefit varies according to income (see below). Since 1999, most of those receiving the GIS can continue to do so by filing their income tax returns, rather than making a new application each year. The amount of monthly payments may increase or decrease according to reported changes in a person's yearly income. Any income earned within a TFSA or withdrawals made from a TFSA are not considered as income for the purpose of determining the level of GIS benefit entitlement.

Unlike the OAS basic pension, the GIS is not subject to income tax. The GIS is not payable outside Canada beyond a period of six months following the month of departure from Canada, regardless of how long the person previously lived in Canada.

A. Eligibility Conditions

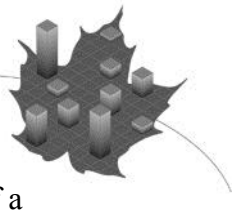
To receive the GIS, a person must be receiving an OAS pension. Eligibility for the GIS is redetermined every year based on the previous year's income. Starting 1 July 1999, income (as defined for purposes of the GIS and Allowance benefits under the Old Age Security Act) received in the previous year is used to calculate the amount of benefits paid during the period starting on 1 July of a calendar year and ending on 30 June of the following calendar year. However, if an individual or an individual's spouse or common-law partner has retired or has suffered a loss of pension income, an estimate of income may be substituted for the income of the preceding year.

Commencing 1 April 2023, the age of eligibility for the GIS will gradually increase from 65 to 67, with full implementation by January 2029. The scheduled increase in the eligible age is the same as that for the OAS basic pension, as shown in Table 17.

In general, income as defined under the Income Tax Act is included subject to certain deductions. Deductions from income include any payments received under the OAS Program (basic pension, GIS, and Allowance benefits) and employment income up to $3,500.

The resulting estimated income of an individual (or, the combined income of the individual and his or her spouse or common-law partner) cannot exceed certain limits as will be described later.

Persons admitted to Canada as sponsored immigrants after 6 March 1996 and persons qualifying for benefits from 2001 onward are not eligible, generally speaking, to receive the GIS for the duration of a sponsorship, up to a maximum of ten years. Exceptions are made, however, if an



immigrant's sponsor dies, is incarcerated for a period of more than six months, is convicted of a criminal offence relating to the sponsored individual, or undergoes personal bankruptcy.

A spouse or common-law partner who becomes involuntarily separated due to, for example, incarceration or institutionalization of his or her spouse or partner, is considered to be single in regard to applying for the GIS benefit.

B. Amount of Benefits

The amount of the GIS to which a person is entitled depends on his or her length of residence in Canada, marital status, and income. If the person is married or living in a common-law relationship, the combined income of the person and his or her spouse or common-law partner is taken into consideration when the amount of GIS benefit is calculated.

To be entitled to a full benefit, persons admitted to Canada after 6 March 1996 and persons qualifying for benefits from 2001 onward must have resided in Canada for at least 10 years after reaching age 18. If a person to whom either of these conditions applies has less than 10 years of residence, a partial benefit is payable provided, as noted in the previous section, that the person is not a sponsored immigrant who is still in the period of sponsorship. The partial benefit is calculated at the rate of $1/10^{th}$ of the amount of the full benefit for each complete year of residence in Canada after age 18. The proportion payable is recalculated each year, taking into account additional residence in Canada during the previous year, building gradually to a full benefit after 10 years. The 10-year requirement for entitlement to a full benefit does not apply to persons who qualify for benefits before the year 2001 and who were permanent residents of Canada on or before 6 March 1996.

There are two rates of payment for a GIS benefit. The single rate applies to single individuals – including widowed, divorced or separated persons as well as individuals who have never married and to persons for whom their spouses or common-law partners do not receive either the OAS pension or the Allowance. The single rate also applies to spouses or common-law partners who become involuntarily separated from their spouses or partners as mentioned above. During the first quarter of 2014 the maximum monthly GIS single benefit (including the top-up, discussed below) is $747.86.

The married rate applies both to legally married couples and to couples living in common-law relationships, where either both spouses are OAS pensioners or where one spouse is eligible for the Allowance benefit. During the first quarter of 2014, the maximum monthly GIS married benefit (including the top-up, discussed below) is $495.89.

The single rate is higher than the married rate, reflecting the higher cost of living alone. However, each member of a married or common-law couple is entitled to his or her own benefit, so the combined benefits for a couple are higher than those for a single person.

Effective 1 July 2011, top-up benefits are payable to GIS recipients who receive benefits at the single rate, as described above, and to couples that include a GIS recipient and either an OAS pensioner or Allowance recipient. For the first quarter of 2014, the top-up benefits are $51.67 and $72.34 for single-rate recipients and couples, respectively, and are adjusted quarterly in line with changes in the CPI, as described in section VI. The top-ups are reduced by 25 cents for every dollar of income in excess of $2,000 for GIS single recipients and $4,000 of combined income for couples. In the first quarter of 2014, the income limits for the top-ups are $4,496 for GIS single recipients, $8,992 for couples where the GIS recipient's spouse or common law partner does not

receive a basic pension or Allowance, and $7,552 for couples where the GIS recipient's spouse or common law partner is either an OAS pensioner or Allowance recipient.

A special provision applies to persons who receive a partial OAS pension. In this case, the supplement is increased by the difference between the maximum OAS pension and the partial OAS pension in order to provide the same combined monthly pension and supplement to beneficiaries with the same level of income. The additional amount may result in the supplement exceeding the maximum GIS payable.

As an example, during the first quarter of 2014, a single person with no income who is entitled to a partial pension of $137.89 (25% of the maximum monthly OAS pension of $551.54) would be entitled to an additional supplement of $413.65 for a total supplement of $1,161.51 (i.e. $747.86 plus $413.65, including the top-up).

For a single, widowed, divorced or separated person, the maximum monthly GIS benefit is reduced by 50 cents for every dollar of monthly income (i.e. annual income divided by 12). This reduction is in addition to any reduction to the top-up. For example, a monthly income of $800 would reduce the maximum monthly GIS payable by $451.67 to $296.19 in the first quarter of 2014. In this case, the maximum allowable annual income before GIS stops being paid is $16,728 in the first quarter of 2014.

If both spouses or common-law partners are receiving the basic OAS pension, the maximum monthly GIS of each person is reduced by 25 cents for every dollar of other combined monthly income (i.e. annual income divided by 12), which is in addition to any reduction applied to the top-up. For example, a combined monthly income of $1,400 for a couple would reduce the maximum monthly GIS benefit payable to each spouse by $386.17 to $109.72 in the first quarter of 2014. In this case, the maximum allowable annual income before the GIS stops being paid is $22,080 in the first quarter of 2014.

A special provision applies in the case of a couple in which only one spouse or common-law partner is a pensioner and the other is not eligible for either the OAS pension or the Allowance. In this instance, the pensioner can receive the GIS at the higher rate paid to those who are single. Moreover, the maximum monthly GIS is reduced by 25 cents for every dollar of the couple's combined monthly income (i.e. annual income divided by 12), and the reduction of 25 cents is applied only when the combined monthly income of the couple exceeds the maximum monthly OAS pension, where that pension, if not a multiple of $4, is rounded to the next higher multiple of $4 (i.e. $552 in the first quarter of 2014). This reduction is in addition to any reduction applied to the top-up benefit. As an example, a couple with a combined monthly income of $2,000 would see their maximum monthly GIS benefit reduced by $413.67 to $334.19 in the first quarter of 2014. In this case, the maximum allowable annual income before GIS stops being paid is $40,080 in the first quarter of 2014.

In the case of a couple in which only one spouse receives the GIS and the other is eligible for the Allowance, the GIS is paid at the rate paid to those who are married, and the maximum monthly GIS is reduced by 25 cents for every dollar of the couple's combined monthly income (i.e. annual income divided by 12). The first reduction of 25 cents is made only when the combined monthly income of the couple exceeds four-thirds times the maximum monthly OAS pension, where that pension, if not a multiple of $3, is rounded to the next higher multiple of $3, and four-thirds time that amount, if not a multiple of $4, is rounded to the next higher multiple of $4 (i.e. income above four-thirds of $552, or $736, in the first quarter of 2014). This reduction is in addition to

any reduction applied to the top-up. As an example, a couple with a combined monthly income of $1,400 would see the pensioner's maximum monthly GIS benefit at the married rate reduced by $202.17 to $293.72 in the first quarter of 2014. In this case, for the first quarter of 2014, the maximum allowable annual income before the GIS stops being paid is $40,080.

All GIS benefits including top-ups are adjusted quarterly in line with changes in the CPI, as described in section VI. No actuarial adjustment is applied to GIS benefits payable to OAS pensioners who defer receiving their basic pensions in exchange for actuarially-adjusted higher pensions.

V. Allowance

The Allowance monthly benefit is designed to recognize the difficult circumstances faced by couples living on the pension of only one spouse as well as by many widowed persons. Since 1999, most of those receiving the Allowance can continue to do so by filing their income tax returns, rather than making a new application each year. Starting 1 July 1999, income (as defined for purposes of the GIS and the Allowance benefits under the *Old Age Security Act*) received in the previous calendar year is used to calculate the amount of benefits paid during the period starting on 1 July of a calendar year and ending on 30 June of the following calendar year. Like the GIS, Allowance benefits are not subject to income tax. In addition, also like the GIS benefit, Allowance benefits are not payable outside Canada beyond a period of six months following the month of departure from Canada, regardless of how long the person previously lived in Canada.

A. Eligibility Conditions

The Allowance may be paid to the spouse or common-law partner of a senior receiving OAS and GIS benefits, or to a survivor, who, in each case, is between the ages of 60 and 64 and who has lived in Canada for at least 10 years after reaching age 18. An applicant must also be a Canadian citizen or a legal resident of Canada on the day preceding the approval of the application. The same income exclusions and deductions that apply to the GIS also apply to the Allowance benefit.

The Allowance stops being paid when the person becomes eligible for a basic pension at age 65, leaves Canada for more than six months, or dies. For a couple, the Allowance stops being paid if the older spouse or common-law partner ceases to be eligible for the GIS, or if the spouses separate, divorce, or dissolve their common-law partnership. In addition, in the case of survivors, the Allowance ceases if the person remarries. Sponsored immigrants are subject to the same conditions regarding eligibility as are described in the preceding section concerning the GIS. Allowance benefits to spouses or common-law partners of incarcerated individuals remain payable.

Commencing 1 April 2023, the age of eligibility for the Allowance benefit (regular and survivor) will gradually increase from 60 to 62, with full implementation by January 2029. The scheduled increase in the eligible age for the Allowance benefit will occur in line with the eligible age increases for the OAS basic pension and GIS. Table 19 presents the scheduled increase in the age of eligibility for the Allowance benefit.

Table 19 Increase in Allowance Benefit Age of Eligibility

	Allowance (Regular and Survivor) Age of Eligibility				
	Year of Birth				
Month of Birth	1963	1964	1965	1966	1967
January	60	60 + 5 mo	60 + 11 mo	61 + 5 mo	61 + 11 mo
February – March	60	60 + 6 mo	61	61 + 6 mo	62
April – May	60 + 1 mo	60 + 7 mo	61 + 1 mo	61+ 7 mo	62
June – July	60 + 2 mo	60 + 8 mo	61 + 2 mo	61 + 8 mo	62
August – September	60 + 3 mo	60 + 9 mo	61 + 3 mo	61 + 9 mo	62
October – November	60 + 4 mo	60 + 10 mo	61 + 4 mo	61 + 10 mo	62
December	60 + 5 mo	60 + 11 mo	61 + 5 mo	61 + 11 mo	62

B. Amount of Benefits

The Allowance is an income-tested benefit. Like the GIS, if the recipient is married or living in a common-law relationship, the combined income of the recipient and his or her spouse or common-law partner is taken into account in determining the amount of the Allowance. In addition, to be entitled to the full Allowance, persons admitted to Canada after 6 March 1996 and persons qualifying for benefits from 2001 onward must have resided in Canada for at least 10 years after reaching age 18. If a person to whom either of these conditions applies has less than 10 years of residence, a partial Allowance is payable, calculated at the rate of $1/10^{th}$ of the amount of the full Allowance for each complete year of residence in Canada after age 18. The proportion payable is recalculated each year, taking into account additional residence in Canada during the previous year, building gradually to a full Allowance after 10 years. The 10-year requirement for entitlement to a full Allowance does not apply to persons who qualify for benefits before the year 2001 and who were permanent residents of Canada on or before 6 March 1996.

Effective 1 July 2011, top-up benefits are payable to Allowance recipients for both the regular benefit (i.e. Allowance spouses and common-law partners of GIS recipients) and the survivor benefit. In the first quarter of 2014, the top-up benefits are $51.67 and $72.34 for the survivor and regular Allowance benefits, respectively, and are adjusted quarterly in line with changes in the CPI, as described in section VI. The top-ups are reduced by 25 cents for every dollar of income in excess of $2,000 for Allowance (survivor) recipients and $4,000 of combined income for couples. In the first quarter of 2014, the income limits for the top-ups are $4,496 for the survivor Allowance benefit and $7,552 for the regular Allowance benefit.

The maximum amount payable to the spouse of a pensioner under the regular Allowance benefit is equal to the combination of a full OAS pension and the maximum GIS at the married rate. This amount was $1,047.43 (including the top-up) during the first quarter of 2014. Since July 1984, the maximum amount payable under the survivor Allowance benefit is higher than under the regular Allowance benefit, recognizing the higher cost of living alone. The maximum monthly survivor Allowance amount was $1,172.65 during the first quarter of 2014.

The OAS-equivalent portion of the maximum monthly Allowance benefit (regular and survivor) is reduced at a rate of 75 cents for every dollar of the person's or couple's monthly income (i.e.

annual income divided by 12) until this portion is reduced to zero, which in the first quarter of 2014 corresponds to monthly income reaching $736. Up to this level of income the GIS portion remains payable at the maximum. For the regular Allowance benefit, both the GIS-equivalent portion of the Allowance and the pensioner's GIS are then reduced by 25 cents for every additional dollar of the couple's combined monthly income, i.e., in this case no Allowance benefit becomes payable if the annual income exceeds $30,912 in the first quarter of 2014. For the survivor Allowance benefit, the GIS-equivalent portion is reduced by 50 cents for every additional dollar of monthly income, i.e., in this case, for the first quarter of 2014, no survivor Allowance benefit becomes payable if annual income exceeds $22,512. The reductions to the Allowance benefits are in addition to any applied to the top-ups.

As examples, for a couple including a GIS recipient and Allowance recipient, with a combined monthly income of $1,400, the maximum monthly Allowance benefit would be reduced by $753.71 to $293.72 in the first quarter of 2014. For a survivor Allowance recipient with a monthly income of $800, the maximum benefit would be reduced by $635.21 to $537.44 in the first quarter of 2014.

In the case where a pensioner of a spouse of common-law partner is incarcerated, the couple's monthly income for the purpose of determining the spousal Allowance benefit is the monthly income of the spouse or common-law partner only.

All Allowance benefits including top-ups are adjusted quarterly in line with changes in the CPI, as described in section VI. No actuarial adjustment is applied to Allowance benefits payable to spouses or common-law partners of OAS pensioners who defer receiving their basic pensions in exchange for actuarially-adjusted higher pensions.

VI. Inflation Adjustments

All benefit amounts under the *Old Age Security Act* are adjusted at the beginning of each calendar quarter in line with changes in the CPI. However, if the CPI decreases, benefit amounts do not decrease, but are held constant until the CPI exceeds its previous peak.

Appendix B – Assumptions and Methodology

I. Introduction

This section describes the assumptions and methods that underlie the financial projections in the Results section of this report.

Future expenditures and cost ratios are projected over a long period of time, i.e. up to the year 2060, and depend on assumptions such as those regarding fertility, mortality, migration, labour force participation, job creation, unemployment, inflation, and employment earnings. These assumptions form the basis for the projections of future expenditures of the Program and cost measurement bases.

Although the demographic and economic assumptions have been developed using the available information, the resulting estimates should be interpreted with caution. These estimates are not intended to be predictions, but rather projections of the future financial status of the Program. To the extent applicable, these assumptions are consistent with the best-estimate assumptions used in the 26th Actuarial Report on the Canada Pension Plan as at 31 December 2012.

II. Demographic Projections

Both the historical and projected populations of Canada are required for the calculation of future benefits. The population of Canada as at 1 July 2012 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. Applying the fertility, migration, and mortality assumptions to the starting population develops the annual numbers of births, net migrants, and deaths.

A. Initial Population as at 1 July 2012

The starting point for the demographic projections is based on the most recent Statistics Canada population estimates as at 1 July 2012 for Canada, by age and sex. The estimates are based on the 2006 Census. The estimates are adjusted by ungrouping ages 100 and older into individual ages using the observed distribution of OAS Program beneficiaries by age for ages 100 and older.

B. 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.

The total fertility rate in Canada has declined significantly since the baby boom period, when the rate peaked at nearly 4.0 per woman in the late 1950s. The baby bust period that followed in the mid-1960s pulled down the total fertility rate by the mid-1980s to a low of 1.6 children per woman. The total fertility rate rose slightly in the early 1990s, but then generally declined to a level of 1.5 by the late 1990s. Canada is one of many industrialized countries that have seen an increase in their total fertility rates since 2000. By 2008, the total fertility rate for Canada reached 1.68. However, in some industrialized countries, including Canada, the total fertility rate has decreased since 2008, which could be attributed to the economic downturn experienced in recent years. In 2010, the total fertility rate for Canada was 1.63.

Fertility rates are affected by many factors, including social attitudes, reproductive technologies, and economic conditions. It is assumed for this report that the recent economic downturn has

caused a temporary downward effect on total fertility rates, with couples choosing to postpone having any or more children until economic conditions improve. This effect was taken into consideration along with historical trends in fertility rates by age group over the last 20 years. The short periods of growth in the fertility rates that have occurred in recent decades are assumed to be temporary in nature, rather than having any long-term effects. In this report, it is thus assumed that the total fertility rate from 2015 onward for Canada will be 1.65 children per woman. This ultimate rate is the same as was assumed for the 9th OAS Program Actuarial Report.

Finally, in accordance with the average experience over the last 10, 20, and 30 years, the assumed ratio of male to female newborns is 1.054, which is the same as for the 9th OAS Program Actuarial Report. Table 20 shows the projected age-specific and total fertility rates by calendar year for Canada. In comparison, total cohort fertility rates per woman together with each cohort's age-specific rates, all based on the year of birth of a woman, are shown in Table 21. Cohort fertility rates provide a more reliable measure of the level of fertility, since they reflect the experience of real cohorts of women as opposed to the experience of synthetic cohorts, which is based on calendar years and used to derive the total fertility rates. Chart 3 shows the historical and projected total and cohort fertility rates for Canada.

Table 20 Total Fertility Rates for Canada

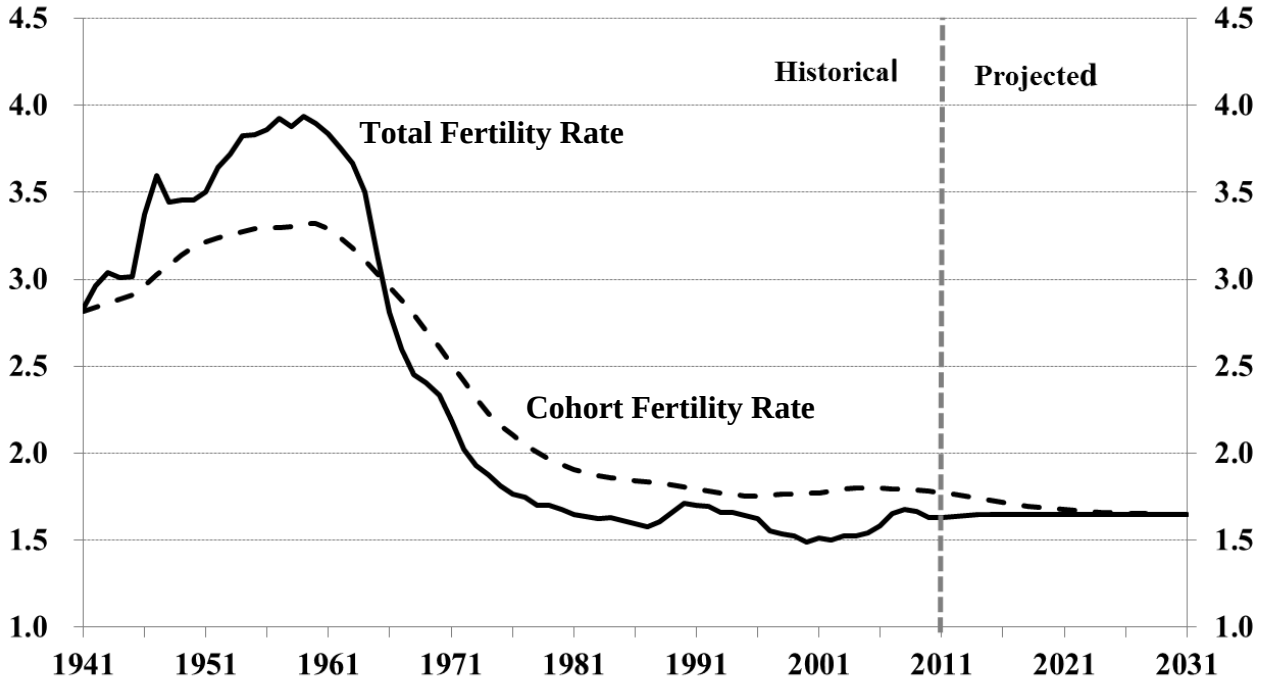
	Annual Fertility Rates by Age Group (per 1,000 women)							Total Fertility Rate
Year	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40-44**	**45-49**	**per Woman**
2013	11.4	44.3	93.2	111.1	56.9	10.9	0.5	1.64
2014	10.7	43.0	92.1	112.9	58.6	11.3	0.5	1.65
2015+	10.0	41.8	91.0	114.7	60.4	11.6	0.6	1.65

Table 21 Cohort Fertility Rates by Age and Year of Birth
(Canada)

Year of Birth of Woman[1]	Annual Fertility Rates by Age Group (per 1,000 women)[2]							Cohort Fertility Rate per Woman[2]
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	
1956 – 1960	34.8	95.2	120.7	83.5	31.3	5.9	0.3	1.86
1961 – 1965	27.0	81.5	122.6	86.8	33.9	7.1	0.4	1.80
1966 – 1970	23.3	79.2	109.7	85.1	42.1	9.9	0.6	1.75
1971 – 1975	25.5	70.6	96.8	97.4	51.6	11.6	0.6	1.77
1976 – 1980	24.5	58.3	97.3	105.7	60.4	11.6	0.6	1.79
1981 – 1985	17.3	50.4	96.4	114.7	60.4	11.6	0.6	1.76
1986 – 1990	13.4	48.0	91.0	114.7	60.4	11.6	0.6	1.70
1991 – 1995	13.5	41.8	91.0	114.7	60.4	11.6	0.6	1.67
1994 – 1998	11.4	41.8	91.0	114.7	60.4	11.6	0.6	1.66
1996 – 2000+	10.0	41.8	91.0	114.7	60.4	11.6	0.6	1.65

(1) Ranges for years of birth correspond to the oldest to youngest ages for an age group. For example, in the first row of the table, 1956 is the year of birth for those aged 19, 24, 29, etc., 1957 is the year of birth for those aged 18, 23, 28, etc., and so forth.
(2) Fertility rates below and to the right of the dotted line are projected.

Chart 3 Historical and Assumed Total and Cohort Fertility Rates for Canada[1]



(1) Cohort fertility rates are based on the age of a woman being 29 in a given calendar year.

C. Mortality

For this report, the mortality rate projections start from the 2009 mortality rates of the Canadian Human Mortality Database (CHMD). According to the CHMD, life expectancies at birth in 2009 for males and females in Canada were 79.0 and 83.4 years, respectively, without any assumed future improvements in mortality.

For 2010, the annual rates of mortality improvement, varying by age and sex, were set equal to the average annual improvement rates experienced in Canada over the 15-year period 1994 to 2009.

The analysis of trends in Canadian mortality over the period 1921 to 2009 shows that Canadian males born between the mid-1930s and the late 1940s experienced historically higher improvement rates at most ages compared to males born at earlier or later periods. This observed phenomenon of people born in a certain period experiencing more rapid improvements in mortality than generations born outside of this period is referred to as a 'cohort effect'.

Mortality improvement rates for any given age, sex, and year may be regarded as a combination of age, year and cohort components or effects. Improvement rates for years 2011 to 2029 were determined by cubical interpolation between:

- the improvement rates of year 2010 after removing the cohort component value, where applicable, and
- the ultimate improvement rates described below in respect of the period 2030 and thereafter for Canada.

It was then assumed that the cohort effect will impact improvement rates for males aged 60 to 74 in 2010. This effect is assumed to gradually disappear by 2020.

For the year 2030 and thereafter for Canada, the ultimate annual rates of mortality improvement vary by age only and not by sex or calendar year. The ultimate mortality improvement rates are derived by analyzing Canadian experience over the period 1921 to 2009. Male improvement rates at most ages are currently higher than female improvement rates but are assumed to decrease to the same level as female rates from 2030 onward.

The historical downward trend in mortality improvement rates is clear for both sexes in the age group 0-59. For age groups 60 and older, recent experience has shown a stabilization of improvement rates for both sexes. The ultimate rate for both sexes for ages 0 to 84 is set at 0.8% per year from 2030 onward for Canada, where 0.8% represents about one-half of the average rates observed for females over the 15 and 20-year periods ending in 2009. The ultimate improvement rate is then set to reduce from 0.6% for the age group 85-89 to 0.2% for those aged 95 and older, consistent with observed experience that shows decreasing improvement rates with age. Table 22 shows the initial (2010), intermediate (2011-2029) and ultimate (2030+) assumed annual mortality improvement rates for Canada.

Table 22 Annual Mortality Improvement Rates for Canada

	Males			Females		
Age	**2010**	**2011-2029**	**2030+**	**2010**	**2011-2029**	**2030+**
	(%)	(%)	(%)	(%)	(%)	(%)
0	1.3	1.0	0.8	0.8	0.8	0.8
1-14	3.1	1.9	0.8	3.5	2.2	0.8
15-44	2.6	1.6	0.8	1.3	1.1	0.8
45-64	2.0	1.4	0.8	1.5	1.1	0.8
65-74	3.0	1.8	0.8	1.8	1.3	0.8
75-84	2.6	1.7	0.8	1.7	1.3	0.8
85-89	2.0	1.3	0.6	1.5	1.1	0.6
90-94	1.3	0.8	0.4	1.2	0.8	0.4
95+	0.4	0.3	0.2	0.4	0.3	0.2

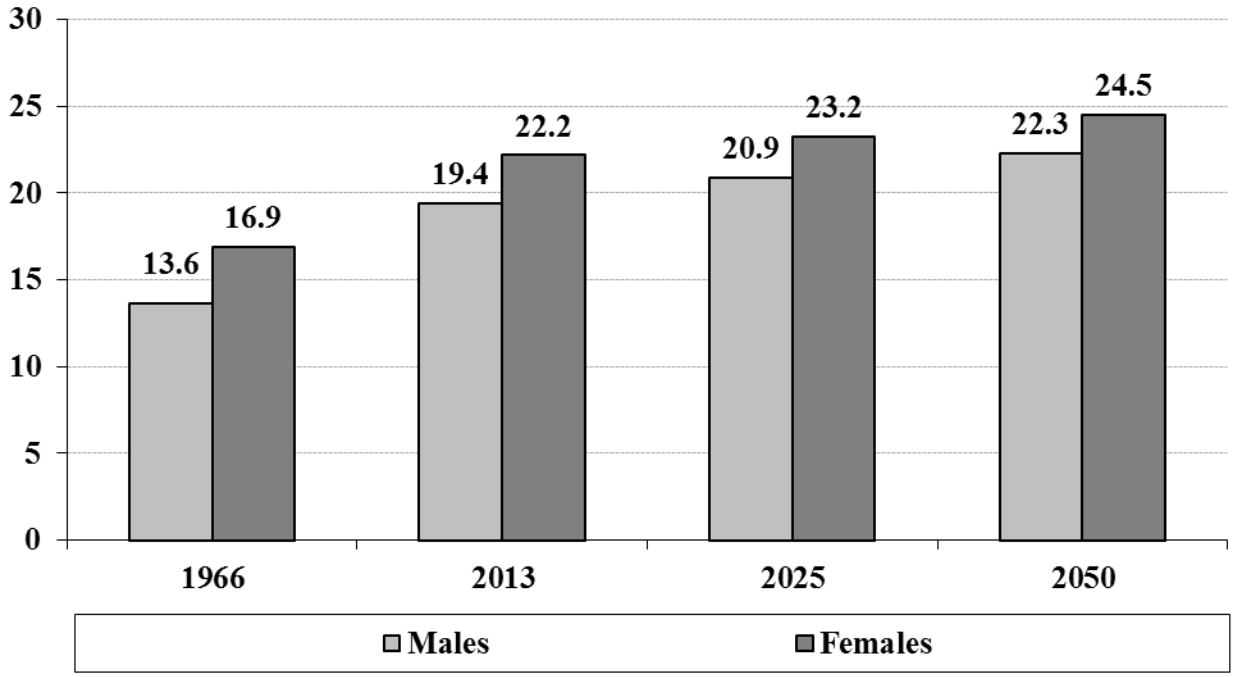
The projected mortality rates in Table 23 indicate a continuous decrease in mortality rates over the long term. For example, the mortality rate at age 65 for males is expected to decrease from about 12 deaths per thousand people in 2013 to 8 deaths per thousand people by 2050. The gap in mortality rates between males and females at each age is also expected to decrease over the projection period.

Chart 4 shows the historical and projected life expectancies at age 65 since 1966, which are based on each given year's mortality rates (i.e. without future mortality improvements).

Table 23 Mortality Rates for Canada
(annual deaths per 1,000 people)

	Males			Females		
Age	**2013**	**2025**	**2050**	**2013**	**2025**	**2050**
0	4.85	4.28	3.50	4.58	4.17	3.41
10	0.11	0.09	0.07	0.10	0.07	0.06
20	0.62	0.51	0.42	0.27	0.24	0.19
30	0.73	0.59	0.48	0.38	0.34	0.28
40	1.17	0.99	0.81	0.79	0.69	0.56
50	3.20	2.78	2.27	2.08	1.85	1.51
60	7.32	6.03	4.92	4.78	4.08	3.33
65	11.56	9.52	7.76	7.42	6.34	5.18
70	17.91	14.45	11.78	11.79	10.07	8.22
75	29.20	22.99	18.73	19.43	16.59	13.55
80	50.08	40.37	32.91	33.95	28.99	23.67
85	85.15	71.11	59.77	61.47	53.37	44.92
90	142.28	125.35	110.90	110.05	98.21	86.93
100	319.64	302.44	280.38	287.41	271.95	252.12

Chart 4 Life Expectancies at Age 65 for Canada(1)



(1) These are calendar year life expectancies based on the mortality rates of the given year.

Table 24 shows projected Canadian life expectancies at various ages for the specified calendar years, also based on each given year's mortality rates (without future improvements). Table 25 is similar to Table 24, the only difference being that it takes into account the assumed mortality improvements after the specified calendar years (with future improvements). Given the continuing trend in increased longevity, Table 25 is considered to be more realistic than, especially for the older ages. At the same time, the extended length of the projection period increases the uncertainty of the results presented in Table 25 for younger ages.

From 2013 to 2050, Canadian life expectancy at age 65 (with assumed future mortality improvements) is projected to grow from 20.9 to 23 years for males and from 23.3 to 25.3 years for females, as shown in Table 25. The yearly increase in life expectancies at age 65 in the early years of the projection reflects the significant increase observed over the last decades. Thereafter, there is a projected slowdown in the increase in life expectancies consistent with the lower rate of improvement in mortality assumed for 2030 and thereafter.

Table 24 Life Expectancies for Canada, without improvements after the year shown[1]

	Males			Females		
Age	**2013**	**2025**	**2050**	**2013**	**2025**	**2050**
0	80.0	82.0	83.9	84.0	85.4	87.1
10	70.5	72.4	74.3	74.5	75.8	77.4
20	60.7	62.6	64.4	64.6	65.9	67.5
30	51.1	52.9	54.7	54.8	56.1	57.6
40	41.5	43.3	45.0	45.0	46.3	47.8
50	32.2	33.9	35.5	35.5	36.8	38.2
60	23.5	25.1	26.5	26.5	27.6	29.0
65	19.4	20.9	22.3	22.2	23.2	24.5
70	15.6	17.0	18.2	18.1	19.0	20.2
75	12.1	13.3	14.3	14.2	15.1	16.1
80	9.1	10.0	10.8	10.7	11.5	12.3
85	6.6	7.2	7.8	7.8	8.3	8.9
90	4.6	5.0	5.4	5.4	5.8	6.2
100	2.3	2.5	2.7	2.6	2.7	2.9

(1) These are calendar year life expectancies based on the mortality rates of the given attained year.

Table 25 Life Expectancies for Canada, with improvements after the year shown[1]

	Males			Females		
Age	**2013**	**2025**	**2050**	**2013**	**2025**	**2050**
0	86.1	86.9	88.6	89.1	89.9	91.3
10	75.9	76.7	78.4	79.0	79.7	81.1
20	65.3	66.2	67.9	68.5	69.2	70.7
30	55.0	55.8	57.5	58.1	58.8	60.3
40	44.7	45.5	47.2	47.7	48.4	49.9
50	34.7	35.5	37.1	37.6	38.3	39.8
60	25.3	26.1	27.5	27.9	28.6	30.0
65	20.9	21.7	23.0	23.3	24.0	25.3
70	16.7	17.5	18.7	19.0	19.6	20.8
75	12.9	13.6	14.7	14.9	15.5	16.5
80	9.5	10.2	11.0	11.2	11.7	12.5
85	6.8	7.3	7.9	8.0	8.4	9.1
90	4.7	5.0	5.4	5.5	5.8	6.3
100	2.4	2.5	2.7	2.6	2.7	2.9

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

D. Net Migration

Immigration and emigration are generally recognized as being volatile parameters of future population growth since they are subject to a variety of demographic, economic, social and political factors. During the period from 1972 to 2012, annual immigration to Canada varied from 84,000 to 271,000, annual emigration from Canada fluctuated between 40,000 and 84,000 and the

annual numbers of returning Canadians fluctuated between 14,000 and 41,000. During the period from 1972 to 2012, the annual net increase in the number of non-permanent residents fluctuated between -71,000 and 141,000.

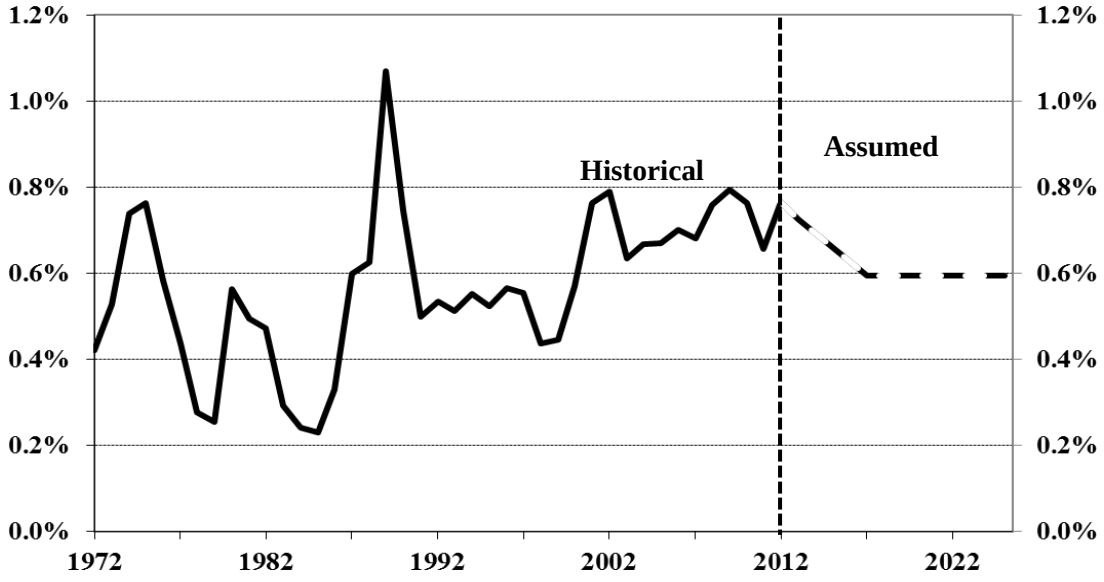
In previous OAS Program actuarial reports, the average annual net increase of non-permanent residents was assumed to be zero, because of the large historical variations (both positive and negative) in this migration component. However, over the last 15 years, the number of non-permanent residents has constantly increased in Canada, and it is believed that non-permanent residents will continue filling the need for jobs in fields where it is difficult to recruit Canadian workers. It is expected that the annual net increase of non-permanent residents will remain at a positive but lower level in the future. It is projected that the annual net increase of non-permanent residents will reduce from its current level of 55,000 to an ultimate level of about 3,500 per year by 2017.

It is assumed that the net migration rate will reduce from its 2012 level of 0.77% of the population to 0.60% in 2017 and will remain stable at that level for the remainder of the projection period. The ultimate level of 0.60% generally corresponds to the average experience over the last 30 to 40 years. Chart 5 shows the net migration (immigration less emigration, plus the number of returning Canadians, plus the net increase of non-permanent residents) experience since 1972 and the assumed rate for the future.

The distributions of immigrants, emigrants, returning Canadians, and non-permanent residents by age and sex used for the demographic projections were derived from Statistics Canada data averaged over the period 2008 to 2012.

Chart 5 Net Migration Rate

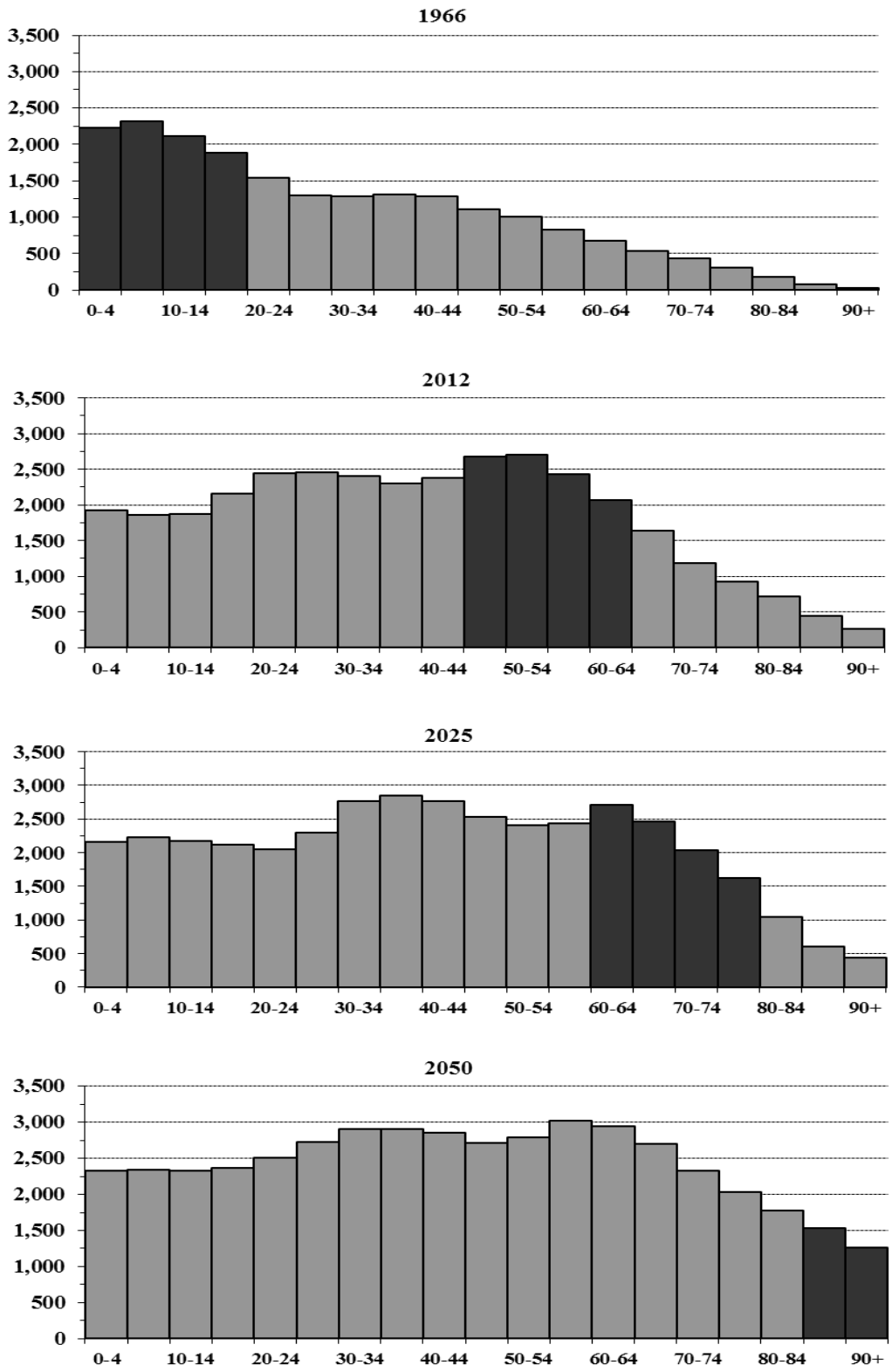
% of population



E. Projected Population and its Characteristics

The evolution of the Canadian population age distribution since 1966 is shown in Chart 6. One can easily observe that the triangular shape of the 1960s has become more rectangular over time. This is projected to continue and indicates an aging population. The effects of the baby boom, baby bust, and echo generations can be seen. The chart also reveals that the number of people aged 85 and over is expected to increase dramatically over the next 40 years.

Chart 6 Age Distribution of the Canadian Population
(thousands)



The population of Canada as at 1 July 2012 is 34.9 million. Table 26 presents the projected population of Canada as at 1 July for selected age groups and years. The number of people reaching the eligible age for the OAS basic pension in any given year is representative of the number of new basic pension beneficiaries coming into pay each year. This population is expected to increase significantly within the next twenty years, growing from 394,000 in 2013 to 537,000 by 2030. Chart 7 shows the evolution of the total population of Canada and of those aged 20 to 64 from 1970 to 2060.

Table 27 shows the variations in the relative proportions of various age groups for Canada throughout the projection period. The proportion of people aged 67 and over is expected to increase significantly from 13.0% of the total population in 2013 to 23.9% by 2060. The number of people aged 67 and older as a proportion of the number of people aged 20 to 66 more than doubles over the same period, from 20.2% in 2013 to 42.9% by 2060. This proportion significantly affects the ratio of OAS Program benefits to GDP.

Table 26 Population of Canada by Age
(thousands)

Year	0-19	20-64	65+	0-19	20-66	67+	Total	Reaching Eligible Age for OAS Basic Pension[(1)]
2013	7,838	22,052	5,390	7,838	22,838	4,603	35,280	394
2014	7,863	22,224	5,590	7,863	23,010	4,803	35,676	395
2015	7,889	22,382	5,794	7,889	23,177	4,999	36,065	403
2016	7,926	22,517	6,002	7,926	23,328	5,190	36,444	412
2017	7,979	22,621	6,213	7,979	23,449	5,386	36,814	419
2018	8,051	22,695	6,437	8,051	23,547	5,585	37,183	437
2019	8,134	22,742	6,677	8,134	23,632	5,787	37,553	457
2020	8,219	22,774	6,928	8,219	23,702	6,000	37,920	474
2025	8,667	22,821	8,218	8,667	23,843	7,196	39,706	507
2030	8,911	22,918	9,493	8,911	23,983	8,428	41,322	537
2040	9,032	24,247	10,726	9,032	25,179	9,794	44,005	454
2050	9,352	25,358	11,630	9,352	26,474	10,514	46,340	538
2060	9,961	25,911	12,775	9,961	27,070	11,617	48,647	585

(1) The eligible age for the OAS basic pension is scheduled to increase from the current age of 65 to 67 over the period April 2023 to January 2029.

Chart 7 Population of Canada
(millions)

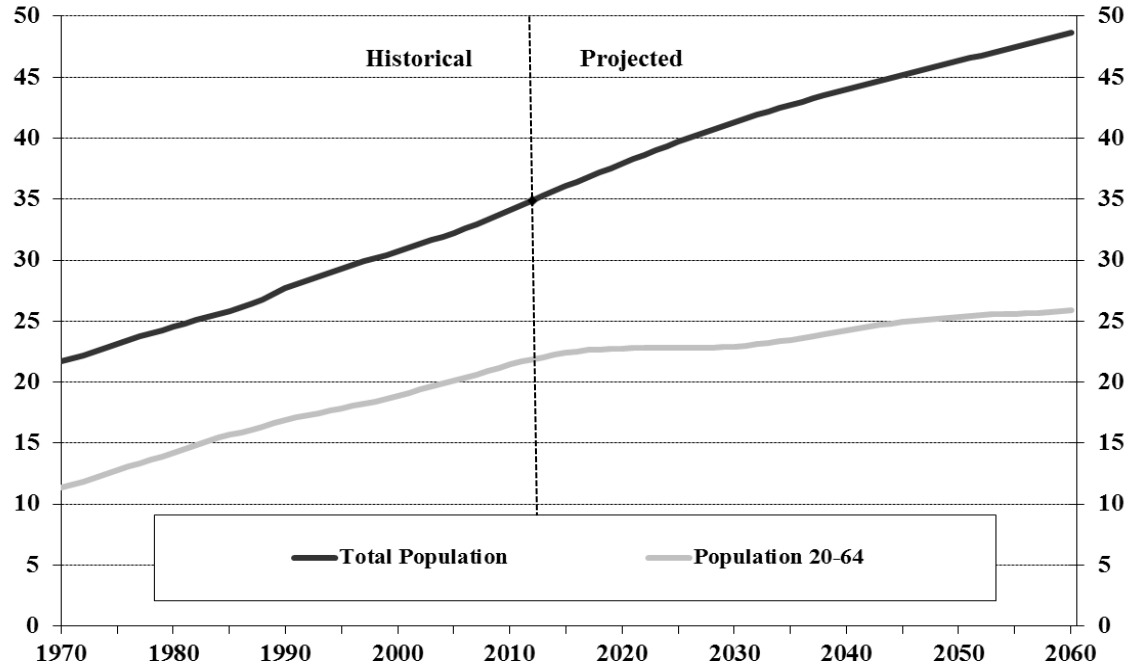


Table 27 Analysis of Population of Canada by Age

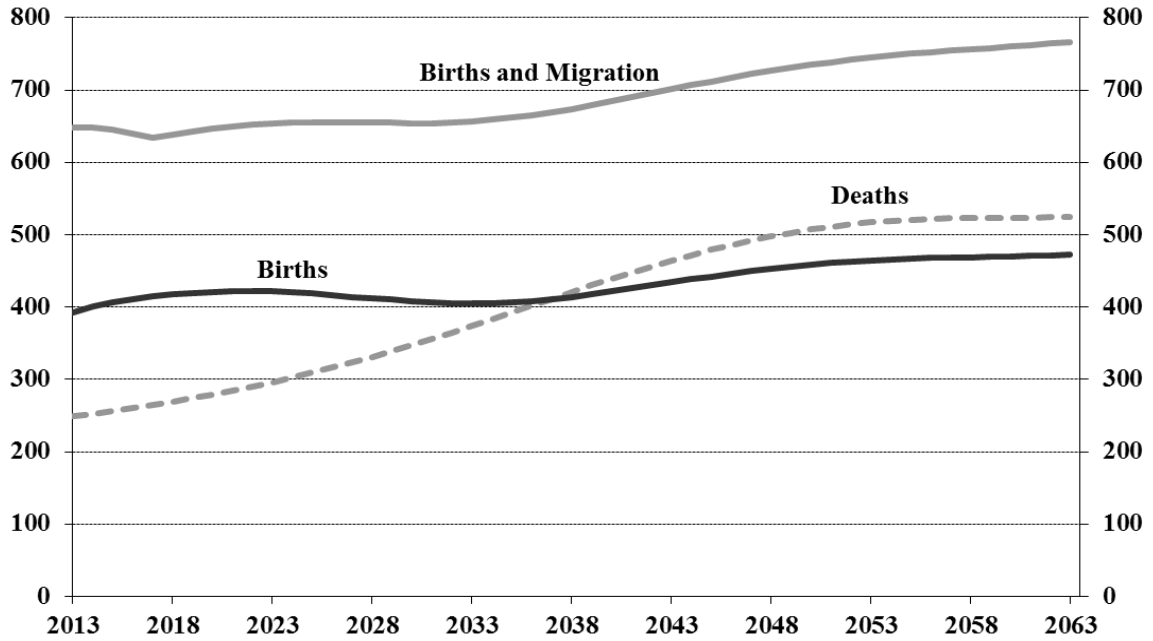
	% of Total Population			% of Total Population			Age 67+ as % of
Year	**0-19**	**20-64**	**65+**	**0-19**	**20-66**	**67+**	**Age 20-66**
2013	22.2	62.5	15.3	22.2	64.7	13.0	20.2
2014	22.0	62.3	15.7	22.0	64.5	13.5	20.9
2015	21.9	62.1	16.1	21.9	64.3	13.9	21.6
2016	21.7	61.8	16.5	21.7	64.0	14.2	22.2
2017	21.7	61.4	16.9	21.7	63.7	14.6	23.0
2018	21.7	61.0	17.3	21.7	63.3	15.0	23.7
2019	21.7	60.6	17.8	21.7	62.9	15.4	24.5
2020	21.7	60.1	18.3	21.7	62.5	15.8	25.3
2025	21.8	57.5	20.7	21.8	60.0	18.1	30.2
2030	21.6	55.5	23.0	21.6	58.0	20.4	35.1
2040	20.5	55.1	24.4	20.5	57.2	22.3	38.9
2050	20.2	54.7	25.1	20.2	57.1	22.7	39.7
2060	20.5	53.3	26.3	20.5	55.6	23.9	42.9

Table 28 shows the components of population growth, which is defined by the projected number of births plus net migrants less the projected number of deaths from 2013 to 2060, and Chart 8 presents these figures graphically for the same period. Over the period 2013 to 2020, the population of Canada is projected to grow at about 1.0% per year. The annual growth slows to about 0.7% between 2020 and 2040 and to about 0.5% thereafter. The population of Canada is expected to reach 48.6 million by 2060.

Table 28 Births, Net Migrants, and Deaths for Canada
(thousands)

Year	Population 1st July	Births	Net Migrants	Deaths	Change in Population	Annual Percentage Change 20-66	67+	Total
						(%)	(%)	(%)
2013	35,280	392	256	249	399	1.0	3.4	1.1
2014	35,676	401	247	252	396	0.8	4.4	1.1
2015	36,065	407	238	256	389	0.7	4.1	1.1
2016	36,444	411	229	260	380	0.7	3.8	1.1
2017	36,814	415	219	264	369	0.5	3.8	1.0
2018	37,183	417	221	269	370	0.4	3.7	1.0
2019	37,553	419	224	274	369	0.4	3.6	1.0
2020	37,920	421	226	279	368	0.3	3.7	1.0
2025	39,706	419	236	309	347	0.1	3.5	0.9
2030	41,322	408	246	348	307	0.1	3.0	0.8
2040	44,005	422	262	439	246	0.7	0.7	0.6
2050	46,340	459	277	507	228	0.3	0.8	0.5
2060	48,647	470	290	524	236	0.3	1.0	0.5

Chart 8 Components of Population Growth for Canada
(thousands)



III. Economic Projections

The list of assumptions required to project the various economic indices, benefit expenditures, and cost measurement bases is quite extensive. The following sections cover the more important assumptions.

The economic outlook rests on the assumed evolution of the labour market, that is, labour force participation, employment, unemployment, inflation, and the increase in average employment earnings, as well as the increase in GDP. All of these factors must be considered together and form part of an overall economic perspective.

The projected expenditures presented in this report are also expressed as cost ratios relative to three different measurement bases, namely total employment earnings, combined CPP/QPP contributory earnings, and the GDP. For this purpose, average employment earnings, the proportion of persons with earnings, and the proportion of CPP contributors are required and are assumed exactly as under the 26th CPP Actuarial Report. For calculation purposes, these measures are assumed to apply to Canada as opposed to Canada less Québec. Adjustments are then made in the projections of total employment earnings, combined CPP/QPP contributory earnings, and the GDP to reflect historical differences between Québec and the rest of Canada.

A. Economic Perspective

The future expenditures of the OAS Program and cost measurement bases depend on many demographic and economic factors. It is important to define the individual economic assumptions in the context of a long-term overall economic perspective. For this report, it is assumed that, despite the modest pace of recovery from the recent economic downturn and an uncertain short-term economic outlook for major foreign economies, a moderate and sustainable growth in the Canadian economy will persist throughout the projection period.

The actuarial examination of the Program involves the projection of its expenditures as well as cost measurement bases over a long period of time. Although best judgment is used regarding future economic trends, it is nonetheless difficult to anticipate all of the social and corresponding economic changes that may occur during the projection period. There will always be some degree of uncertainty. The projected aging of the population combined with the retirement of the baby boom generation over the next few decades will certainly create significant social and economic changes. It is possible that the evolution of the working-age population, especially the active population, will be quite different from what has been historically observed and what has been assumed for the purpose of this report.

B. Annual Increase in Prices (Inflation Rate)

The inflation rate assumption is needed to determine the Pension Index for any given calendar year. It is also used in the determination of the annual nominal increase in average employment earnings.

Price increases, as measured by changes in the Consumer Price Index, tend to fluctuate from year to year. Over the last 50 years, the trend was generally upward through the early 1980s then downward until the introduction of the inflation-control targets in the early 1990s, at which point inflation began to stabilize. For example, the average annual increases in the CPI for the 50, 20 and 10-year periods ending in 2012 were 4.2%, 1.9% and 2.0%, respectively. Going forward, the Bank of Canada has reaffirmed its objective of keeping the inflation rate within a control range of 1% to 3%, with a target of 2%, until the end of 2016.

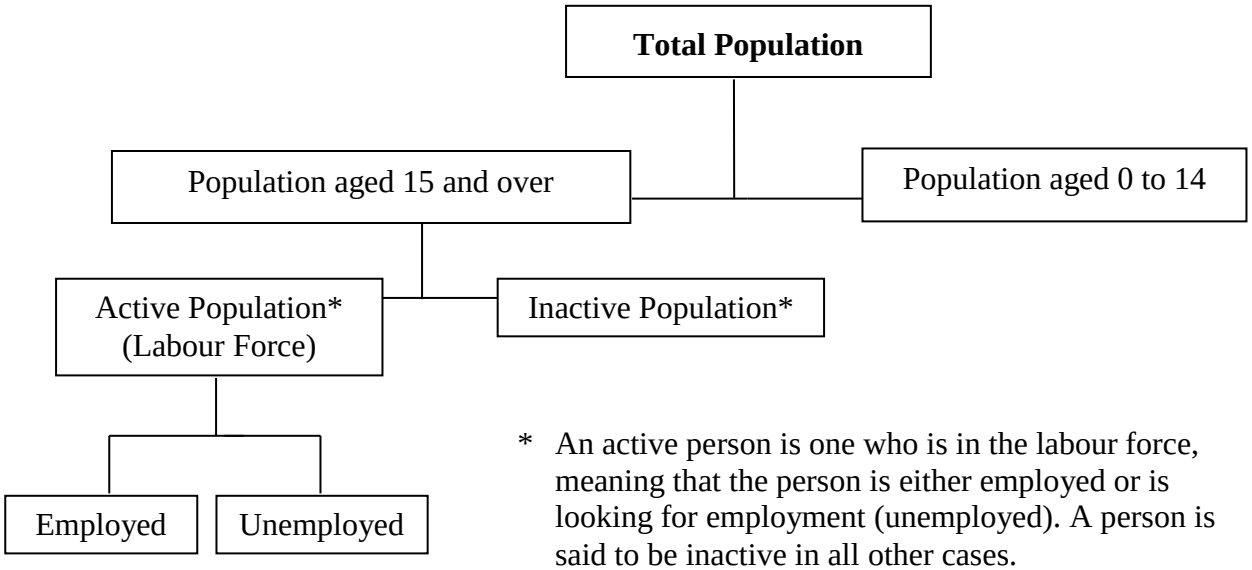
To reflect recent experience and the short-term expectation that inflation will remain subdued in the coming quarters, the price increase assumption was set at 1.5% in 2013. For 2014 to 2019, it is assumed that the Bank of Canada will maintain its inflation target policy. An assumption of 2.0% is set for this period, which corresponds to the average forecast from various economists and falls in the middle of the Bank of Canada control range. Subsequently, the inflation rate is assumed to increase to 2.1% in 2020 and the ultimate assumption for price increases for 2021 and thereafter has been set at 2.2%. This is lower than the assumption of 2.3% used in the previous triennial 9th OAS Program Actuarial Report but remains higher than the level of inflation that has been experienced over the last decade, and is slightly higher than the Bank of Canada's target. The main reasons for the choice of an ultimate assumption of 2.2% are as follows:

- The long-term nature of the projection period of the OAS Program.
- The expected upward pressure on real wages due to a possible labour shortage may create upward pressure on prices.
- The uncertainty about future energy costs.

C. Labour Market

Chart 9 shows the main components of the labour market that are used to determine the number of earners to calculate the total employment earnings shown in Table 14. The number of earners is defined as the number of persons who had earnings during a given calendar year. The proportion of earners assumption (described in section F) relies on the projected active population given in this report.

Chart 9 Components of the Labour Market



* An active person is one who is in the labour force, meaning that the person is either employed or is looking for employment (unemployed). A person is said to be inactive in all other cases.

1. Active Population

The overall labour force participation rates in Canada (the active population expressed as a proportion of the population aged 15 and over) from 1976 to 2012 clearly show a narrowing of the gap between male and female rates. Although the increase in participation rates of females aged 15 to 69 has slowed down since the mid-2000s, the increase has been significant over the past decades. Furthermore, participation rates for those aged 55 and older have increased significantly over the last decade for both men and women.

In 1976, overall male participation was about 78% compared to only 46% for females, which represents a gap of 32%. This gap has narrowed to 9% in 2012, with male and female participation at 71% and 62%, respectively. It is assumed that females will continue to narrow the gap in participation rates but at a slower pace, with the gap gradually reducing to about 8% by 2030 and further reducing slightly by the end of the projection period. In addition, over the next two decades, it is assumed that the participation of males and females aged 55 and over will continue to increase. Tables 29 to 31 provide projections of the active and employed populations and associated participation, employment, and unemployment rates for Canada.

Table 29 Active Population (Canada, ages 15 and over)

	Population[(1)]			Active Population			Employed		
Year	Males	Females	Total	Males	Females	Total	Males	Females	Total
	(thousands)			(thousands)			(thousands)		
2013	14,140	14,533	28,674	10,081	9,029	19,110	9,316	8,430	17,747
2014	14,300	14,688	28,988	10,184	9,114	19,298	9,424	8,519	17,943
2015	14,454	14,838	29,292	10,281	9,194	19,475	9,526	8,604	18,130
2016	14,598	14,978	29,576	10,368	9,266	19,634	9,619	8,681	18,300
2017	14,734	15,109	29,843	10,441	9,328	19,769	9,700	8,748	18,448
2018	14,869	15,242	30,111	10,508	9,386	19,894	9,776	8,812	18,587
2019	15,008	15,377	30,384	10,574	9,442	20,017	9,850	8,875	18,725
2020	15,145	15,511	30,655	10,637	9,495	20,132	9,922	8,934	18,855
2025	15,858	16,220	32,079	10,921	9,804	20,725	10,227	9,254	19,481
2030	16,556	16,923	33,479	11,247	10,175	21,423	10,533	9,604	20,137
2040	17,818	18,245	36,062	11,870	10,749	22,619	11,114	10,148	21,262
2050	18,725	19,221	37,946	12,365	11,184	23,549	11,578	10,558	22,136
2060	19,612	20,101	39,713	12,785	11,564	24,349	11,972	10,916	22,888

(1) Adjusted to the basis used by Statistics Canada in its Labour Force Survey.

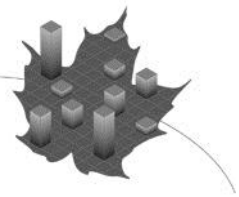
Table 30 Labour Force Participation, Employment, and Unemployment Rates (Canada, ages 15 and over)

Year	Labour Force Participation Rate			Employment Rate			Unemployment Rate		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
	(%)			(%)			(%)		
2013	71.3	62.1	66.6	65.9	58.0	61.9	7.6	6.6	7.1
2014	71.2	62.1	66.6	65.9	58.0	61.9	7.5	6.5	7.0
2015	71.1	62.0	66.5	65.9	58.0	61.9	7.3	6.4	6.9
2016	71.0	61.9	66.4	65.9	58.0	61.9	7.2	6.3	6.8
2017	70.9	61.7	66.2	65.8	57.9	61.8	7.1	6.2	6.7
2018	70.7	61.6	66.1	65.7	57.8	61.7	7.0	6.1	6.6
2019	70.5	61.4	65.9	65.6	57.7	61.6	6.9	6.0	6.5
2020	70.2	61.2	65.7	65.5	57.6	61.5	6.7	5.9	6.3
2025	68.9	60.4	64.6	64.5	57.1	60.7	6.4	5.6	6.0
2030	67.9	60.1	64.0	63.6	56.8	60.1	6.4	5.6	6.0
2040	66.6	58.9	62.7	62.4	55.6	59.0	6.4	5.6	6.0
2050	66.0	58.2	62.1	61.8	54.9	58.3	6.4	5.6	6.0
2060	65.2	57.5	61.3	61.0	54.3	57.6	6.4	5.6	6.0

Table 31 Labour Force Participation Rates (Canada)

Age Group	Males				Females			
	2013	2020	2030	2050	2013	2020	2030	2050
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
15-19	49.1	54.0	56.0	56.0	51.4	56.0	59.0	59.0
20-24	77.6	81.0	83.0	83.0	75.2	77.0	80.0	80.0
25-29	90.1	91.0	93.0	93.0	81.9	83.0	86.0	86.0
30-34	92.6	93.0	94.0	94.0	81.3	82.0	85.0	85.0
35-39	93.1	94.0	94.0	94.0	82.5	84.0	86.0	86.0
40-44	92.6	93.0	94.0	94.0	83.8	85.0	87.0	87.0
45-49	90.2	92.0	93.0	93.0	84.4	85.0	87.0	87.0
50-54	88.0	89.0	91.0	91.0	81.1	82.0	85.0	85.0
55-59	79.2	81.0	84.0	84.0	69.7	72.0	75.0	75.0
60-64	58.1	59.0	62.0	62.0	46.1	49.0	52.0	52.0
65-69	30.2	31.0	33.0	33.0	19.5	21.0	23.0	23.0
70 and Over	10.2	11.0	12.0	12.0	4.1	5.0	6.0	6.0
15-69	78.5	79.3	80.2	80.2	70.7	71.3	73.4	73.4
15 and Over	**71.3**	**70.2**	**67.9**	**66.0**	**62.1**	**61.2**	**60.1**	**58.2**

Given that participation rates start to decline mostly after age 50, the aging of the population will exert downward pressure on the overall labour force participation rate in Canada. If current participation rates by age and sex were to apply throughout the projection period, the effect of population aging would cause the overall participation rate from Table 30 to fall from 66.6% in 2013 to 58.5% in 2050, instead of 62.1% as projected under the best-estimate assumption.



However, it is expected that a number of factors will contribute toward partially offsetting the decline that results from population aging.

The main assumption underlying the future overall participation rate is a significant increase in participation rates for those aged 55 and over as a result of an expected continued trend toward delayed retirement. Government policies aimed at increasing participation rates of older workers, the ability to receive a CPP retirement pension prior to age 65 while remaining in the workforce (since 2012), the increase in life expectancy, and possible insufficient retirement savings are assumed to encourage older workers to delay their retirement and exit the labour force at a later age.

However, despite the assumed future increase in participation rates of older workers and a reliance on skilled immigrant workers, it is still expected that there will be moderate labour shortages in the future as the working-age population expands at a slower pace and as baby boomers retire and exit the labour force. The participation rates for all age groups are expected to increase due to the attractive employment opportunities resulting from labour shortages.

It is also expected that future participation rates will increase with the aging of cohorts that have a stronger labour force attachment compared to previous cohorts. The stronger labour force attachment of later cohorts is attributable to different reasons, including higher attained education. The aging of more educated workers with higher labour force attachment, and the exit from the workforce of less educated older workers is expected to create upward pressure on participation rates. Over the shorter term, the participation rates of younger age groups are assumed to gradually increase to their pre-recession levels. Finally, although historical increases in participation rates for women are not expected to continue in the future, their participation rates are expected to increase faster than the participation rates for men.

Based on the foregoing, the participation rates of both men and women are expected to increase over the projection period from their 2012 levels for all age groups, especially for those aged 55 and over. Nonetheless, these increases in participation rates are not sufficient to offset the decrease in the overall participation rate due to the demographic shift.

For the purpose of projecting the participation rates, the projection period has been divided into three periods: 2013 to 2020, 2020 to 2030, and from 2030 onward. From 2013 to 2020, and from 2020 to 2030, the projected participation rates are based on the expected impact of the above-mentioned factors through time for each age group and sex. From 2030 onward, the participation rates are kept constant. This long-term assumption combined with a slow growth in the working-age population, results in a low rate of growth of approximately 0.5% for the Canadian active population (that is, the labour force) after 2030.

2. Employment

In Canada, the average annual job creation rate (i.e. the change in the number of persons employed) has been about 1.6% since 1976. However, this rate has varied over the years. It is assumed that the job creation rate will be 1.4% in 2013, based on the most recent experience and various economic forecasts. It is further assumed that the job creation rate over the short term will be slightly higher than the labour force growth rate so that the unemployment rate slowly decreases from its 2012 level of 7.2%.

Over the long term, the job creation rate is assumed to be the same as the labour force growth of 0.5%. This is projected to occur since the unemployment rate is not expected to fall below 6.0%, which is in line with various economic forecasts and reflects moderate economic growth. It is assumed that the unemployment rate will be slightly lower than in the 9th OAS Program Actuarial Report, reaching 6.0% by 2023 and remaining at that level thereafter. Table 32 shows the projected number of employed persons, aged 18 to 69, in Canada.

Table 32 Employment of Population (Canada, ages 18 to 69)

	Population		Employed		Employment Rate	
Year	Males	Females	Males	Females	Males	Females
	(thousands)		(thousands)		(%)	
2013	12,367	12,318	8,964	8,139	72.5	66.1
2014	12,486	12,438	9,064	8,224	72.6	66.1
2015	12,591	12,543	9,159	8,305	72.7	66.2
2016	12,675	12,630	9,244	8,379	72.9	66.3
2017	12,727	12,683	9,313	8,440	73.2	66.5
2018	12,781	12,738	9,376	8,496	73.4	66.7
2019	12,832	12,788	9,435	8,549	73.5	66.9
2020	12,879	12,834	9,491	8,598	73.7	67.0
2025	13,082	13,029	9,710	8,852	74.2	67.9
2030	13,238	13,191	9,925	9,139	75.0	69.3
2040	13,779	13,748	10,405	9,618	75.5	70.0
2050	14,512	14,498	10,851	10,019	74.8	69.1
2060	14,919	14,924	11,174	10,335	74.9	69.2

3. Number of Earners

The number of earners for any given year, namely anyone who had employment earnings during the year, is always more than the employed population and sometimes even close to the labour force because it includes all individuals who had earnings at any time during the year, whereas the employed population only indicates the average number of employed in any given year. The projected number of earners is obtained by a regression based on a highly correlated historical relationship between the number of employed persons and the number of earners over the period 1976 to 2010.

D. Real Wage Increases

The assumed increase in average annual employment earnings (AAE) is used to project the total employment earnings, while the assumed increase in Average Weekly Earnings (AWE) is used to project the increase in the Year's Maximum Pensionable Earnings (YMPE) from one year to the next, which serves to determine the CPP/QPP contributory earnings basis. The difference between real (net of inflation) increases in the AWE and the AAE has been relatively small over the period from 1966 to 2011, that is, an absolute difference of approximately 0.01% per year. For several years in the 1990s this difference was more pronounced; however, the real increases in AAE and AWE have shown a tendency to converge toward each other over time. Taking these factors into consideration, the real increases in AWE and AAE are assumed to be the same for 2013 and thereafter.

The real wage increase has fluctuated significantly from year to year. For example, the ten-year average annual real wage increase, as measured by the difference between the increases in the nominal AWE and the CPI, was -0.1% for the period ending in 2002 and 0.9% for the period ending in 2012. The average annual real wage increase was 0.9% for the 46-year period ending in 2012.

The real wage increase can also be measured using the difference between the increase in the nominal average wage and the CPI. In this case, the nominal average wage is defined as the ratio of the total nominal earnings to total civilian employment in the Canadian economy as a whole. Historically, the nominal average wage increase has been similar to the nominal AAE increase, and therefore it is assumed that they can be used interchangeably.

The growth in the real wage increase is related to the growth in total labour productivity as follows:

> *Real Wage Increase = Growth in Labour Productivity + Growth in Compensation Ratio + Growth in Earnings Ratio + Growth in Average Hours Worked + Growth in Price Differential.*

In addition to the factors included in the above equation, labour demand has a significant impact on real wage increases. Real wages are subject to downward pressure as the demand for workers decreases. On the other hand, one could expect upward pressure on wages if the size of the labour force fails to keep pace with a growing economy.

Labour productivity in the above equation is defined as the ratio of the real GDP to total hours worked in the Canadian economy. The average annual growth in labour productivity was 1.7% for the 50-year period ending in 2011, and 0.8% for the 11-year period ending in 2011. Long-term productivity is expected to increase as a result of the anticipated labour shortages and the government's policies aimed at enhancing productivity growth. At the same time, increasing labour force participation rates of older workers and a reliance on immigration for future labour force growth are expected to moderate the labour shortage and its impact on productivity. Labour productivity growth of 1.3% is assumed for the long term.

The compensation ratio is the ratio of the total compensation received by workers to the nominal GDP. Changes in the compensation ratio reflect the extent to which changes in productivity are shared between labour and capital. The compensation ratio has decreased on average by 0.1% per year for the 50-year period ending in 2011 with a more significant decrease between 1991 and 2000 (an average decrease of 1.0% per year). However, starting in 2000 the compensation ratio stabilized with a negligible average increase over the period 2000 to 2011. It is assumed that there will be no growth in the compensation ratio over the long term.

The earnings ratio is the ratio of total workers' earnings, defined as the sum of total wages, salary disbursements, and total self-employment earnings, to total compensation. Changes in the earnings ratio reflect changes in the compensation structure offered to employees. The historical decline in the earnings ratio of 0.2% per year from 1961 to 2011 has been primarily due to the faster growth in supplementary labour income, such as employer contributions to pension plans, health benefit plans, the CPP, and the Employment Insurance program, compared to earnings. Given that a significant portion of the historical decrease in the earnings ratio can be explained by

the increase in CPP contributions resulting from the increase in the contribution rate from 3.6% in 1986 to 9.9% in 2003, the earnings ratio is not expected to decline as fast as it has in the past. However, as a result of the aging of the population, it is expected that the cost of pension plans and health programs will continue to increase in the future and exert downward pressure on the earnings ratio. Based on the foregoing, it is assumed that the long-term earnings ratio will decline by 0.1% per year.

The average hours worked is defined as the ratio of total hours worked to total employment in the Canadian economy. The average annual growth rate for average hours worked was -0.4% over the 50-year period ending in 2011. The decrease in the average hours worked was significant between 1976 and 1983, with an average annual decrease over that period of 0.7% per year. Despite short-term fluctuations, the average hours worked stabilized after 1983, with an average decrease of 0.1% per year between 1983 and 2011. In the future, the assumed steady increases in productivity and the higher participation rates of older workers, who generally work fewer hours, could continue to apply negative pressure on the average hours worked. However, higher wages due to productivity gains may encourage workers to work longer hours, and the assumed future increases in life expectancy may encourage older workers to work longer hours than in the past. It is assumed that in the long term, the average hours worked will decrease by 0.1% per year, which is at a slower pace than observed over various periods in the past, but in line with the average experience since 1983.

Finally, the price differential or "labour's terms of trade" is the ratio of the GDP deflator (defined as the ratio of nominal to real GDP) to the CPI. Including this ratio is necessary because labour productivity is expressed in real terms by using real GDP, while current dollar earnings are converted to real earnings using the CPI. The average annual growth in the price differential was 0.1% between 1961 and 2011. However, during this period, the price differential experienced significant fluctuations. It increased at an average rate of 1.1% per year between 1961 and 1976 and decreased at an average rate of 0.6% per year between 1976 and 2002. In more recent years, the decline has reversed, such that between 2002 and 2011 the price differential increased by 0.6% per year. This recent trend is due to Canada's improving international terms of trade. However, it is not clear for how long such growth could be sustained. It is assumed that the long-term increase in the price differential will be 0.1% per year, which is lower than recent experience, but in line with the average growth since 1961.

The result of the foregoing discussion is that the assumed real wage increase is 1.2% per year over the long term. Table 33 summarizes the historical information and the assumptions described above.

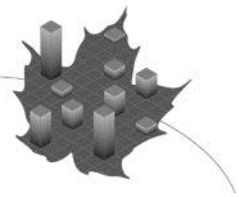


Table 33 Real Wage Increase and Related Components[(1)]

	1961-2011 Average	1990-2011 Average	2000-2011 Average	Ultimate Assumption
Labour Productivity Growth	**1.7%**	**1.3%**	**0.8%**	**1.3%**
+ Compensation Ratio Growth	-0.1%	-0.3%	0.0%	0.0%
+ Earnings Ratio Growth	-0.2%	-0.2%	-0.2%	-0.1%
+ Average Hours Worked Growth	-0.4%	-0.2%	-0.4%	-0.1%
+ Price Differential Growth	0.1%	0.1%	0.4%	0.1%
Real Wage Increase	**1.1%**	**0.6%**	**0.6%**	**1.2%**

(1) Components may not sum to totals due to rounding.

The real wage increase in 2013 is assumed to be 0.5%, which is based on the average annual increase in the real AWE over the last 15 years (1997 to 2012). The real wage increase is then assumed to rise linearly to 1.2% by 2020. This is consistent with the assumed moderate economic growth implicitly reflected in the assumption on the unemployment rate, which is expected to decrease linearly until it reaches its ultimate level in 2023.

Table 34 shows the assumptions regarding the annual increases in prices, real AAE, and real AWE.

Table 34 Inflation, Real AAE and AWE Increases

Year	Price Increases	Real Increases Average Annual Earnings (AAE)	Real Increases Average Weekly Earnings (AWE), (YMPE)
	(%)	(%)	(%)
2013	1.50	0.50	0.50
2014	2.00	0.60	0.60
2015	2.00	0.70	0.70
2016	2.00	0.80	0.80
2017	2.00	0.90	0.90
2018	2.00	1.00	1.00
2019	2.00	1.10	1.10
2020	2.10	1.20	1.20
2021+	2.20	1.20	1.20

E. Total Employment Earnings

Total employment earnings were obtained by applying the Canada less Québec proportion of earners and average employment earnings (both as determined under the 26th CPP Actuarial Report) to the entire population of Canada. The estimated total employment earnings were compared with historical statistics from Statistics Canada of total employment earnings for Canada. The estimates are on average for 2004 to 2013 about 2.0% lower than the corresponding experience data. For this reason projected employment earnings for Canada have been multiplied

by an experience adjustment factor, which is graded from its 2012 actual-to-expected ratio to the ultimate level over five years. The ultimate factor of 102% corresponds to the actual-to-expected ratio over the most recent ten years.

F. Combined CPP and QPP Contributory Earnings

Combined CPP and QPP contributory earnings were obtained by applying the CPP proportion of contributors and average contributory earnings (both as determined under the 26th CPP Actuarial Report) to the entire population of Canada. Total contributory earnings were then compared to actual combined CPP and QPP contributory earnings for 1966 to 2012. Such validation reveals that, on average, this approach produces combined contributory earnings about 2% higher than the actual figures. For this reason, projected contributory earnings for Canada have been multiplied by an experience adjustment factor, which is graded from the 2012 actual-to-expected ratio to the ultimate level over five years. The ultimate factor of 98% corresponds to the actual-to-expected ratio over the most recent ten years.

G. Gross Domestic Product

The GDP is perhaps the most suitable basis for a comparison of costs since benefits are financed through general revenues and not on the basis of employment earnings. Historical GDP was compared to historical total employment earnings from 1966 to 2012 and was found to be about 2.1 times as much. For this reason, GDP was projected as total employment earnings multiplied by an experience adjustment factor and further adjusted by a price differential. Including a price differential is necessary because total earnings are expressed in nominal terms by using the CPI, while the nominal GDP is expressed in terms of the GDP deflator. An experience adjustment factor of 2.3 that is equal to the average ratio of GDP to total employment earnings over the most recent five years is assumed for 2013 and thereafter, and the price differential is assumed to be equal to 0.1% per year.

IV. Recipient Rates and Distribution by Level of Benefit

Since benefits are computed for age-sex cohorts as opposed to individuals, recipient rates by age, sex, type and level of benefit are required. Data from Service Canada for each type of benefit consist of the number of beneficiaries as at June of each year (1983 to 2013) by sex, age, and six levels of benefit as a percentage of the maximum benefit (0-19%, 20-39%, 40-59%, 60-79%, 80-99%, and 100% and over). The highest level of benefit (100% of the maximum and over) includes those GIS beneficiaries with partial OAS pensions, who consequently see their supplement increased by the difference between the maximum OAS pension payable and the partial pension. The additional amount may result in the supplement exceeding the maximum GIS payable.

Service Canada also provided statistics on beneficiaries as at 31 December for each year from 2001 to 2013 and as at 31 July for 2013. The actual recipient rates in each of the cells described above are obtained by dividing the number of beneficiaries in each cell by the relevant population of Canada. The data include benefits paid outside Canada.

A. Basic Pension

The historical recipient rates of sex-distinct cohorts for the basic pension were studied to determine the best-estimate assumption. For cohorts reaching age 65 over the period 2013 to 2022, the ultimate basic pension recipient rates are set equal to the projected recipient rates for the cohort reaching age 65 in 2013. The assumed evolution of recipient rates by age for the cohorts aged 65 in the period 2013 to 2022 is based on historical trends in the increase in recipient rates from one age to the next as observed for cohorts that have reached age 65 prior to 2013. Each cohort reaching its eligible age after 2022 is assumed to experience recipient rates by age corresponding to those assumed for the cohort aged 65 in 2013, except that the recipient rates are applied to the new ages of eligibility instead of age 65.

Recipient rates for cohorts aged 66 and over in 2013 are projected from their 2012-smoothed values up to ages 90 and over using age-to-age increases based on the experience over the last five years. This approach is applied to both domestic and international recipient rates separately and produces basic pension recipient rates that increase from one age to the next for any of the given cohorts.

To project the effect of voluntary deferrals, it is assumed that, the recipient rates at the eligible age decrease by 5 percentage points, and then subsequently increase by 2.5 percentage points one year after the eligible age, 1.5 percentage points two years after, and by 1 percentage point three years after the eligible age. It is assumed that only those individuals with sufficient income, and who would thus not qualify for the GIS, would consider deferring their pensions.

The ultimate basic pension recipient rates for cohorts reaching their eligible age in 2013 are assumed to increase from 86% at the eligible age to 102% at ages 90 and over for males and from 88% at the eligible age to 101% at ages 90 and over for females. It is worth noting that basic pension recipient rates include benefits paid outside Canada under international social security agreements, and as such, can exceed 100%. For example, the recipient rates for the basic pension benefit paid outside of Canada were about 2.0% for males and 1.3% for females in 2013. These percentages are expected to increase over the projection period. Table 35 presents the projected OAS basic pension recipient rates by age and sex for cohorts reaching their eligible age in 2013 and thereafter.

Table 35 OAS Basic Pension Recipient Rates by Age (%)[1]

	Cohorts Reaching Age of Eligibility for Basic Pension in 2013 and Thereafter[2]					
	Males			Females		
Age	Age of Eligibility is 65	Age of Eligibility is 66	Age of Eligibility is 67	Age of Eligibility is 65	Age of Eligibility is 66	Age of Eligibility is 67
65	86.3	n/a	n/a	87.8	n/a	n/a
66	93.8	91.3	n/a	94.1	91.6	n/a
67	96.9	95.4	92.9	96.7	95.2	92.7
68	98.8	97.8	96.3	98.3	97.3	95.8
69	99.4	99.4	98.4	98.7	98.7	97.7
70	99.9	99.9	99.9	99.1	99.1	99.1
75	101.4	101.4	101.4	100.2	100.2	100.2
80	101.9	101.9	101.9	100.6	100.6	100.6
85	102.2	102.2	102.2	100.9	100.9	100.9
90+	102.4	102.4	102.4	101.1	101.1	101.1

(1) Recipient rates for the OAS basic pension are on a gross basis; that is, before application of the OAS Recovery Tax. The recipient rates shown include benefits paid outside Canada and for this reason can exceed 100%. The recipient rates shown also account for voluntary deferrals, effective 1 July 2013.

(2) The eligible age for the OAS basic pension is scheduled to increase from the current age of 65 to 67 over the period April 2023 to January 2029.

The basic pension recipient rates by age and sex were further broken down by level of benefit using distributions of recipient rates by level of benefit, expressed as a percentage of the maximum benefit (based on the number of years of residence in Canada). The historical distributions by level of benefit were derived based on OAS beneficiary data as at 31 December of each year over the period 2004 to 2012.

The distribution by level of benefit at age 65 is projected from its actual value in 2012 to year 2017 using historical trends by years of residence over the period 2004 to 2012. The projected distribution takes into account the introduction of partial benefits in 1977, which are to take full effect in 2017. The age 65 distribution projected to 2017 is assumed to apply thereafter to the age of eligibility for the basic pension (65 prior to April 2023, increasing to 67 after January 2029).

For any given cohort reaching its age of eligibility on or after 2017, the distributions by level of benefit for all subsequent ages are projected based on historical data that reveal that, for any given cohort, there is a large proportion of beneficiaries coming into pay who have only a small number of years of residence and thus receive partial benefits. As a result, as a cohort progresses in age the proportion of beneficiaries receiving a full pension is assumed to decrease while the proportion of beneficiaries receiving a partial benefit is assumed to increase. Finally, the distributions for cohorts aged 66 and over in 2013 are linearly interpolated from their actual values in 2012 to their ultimate values. Table 36 shows the evolution of male and female recipient rates by level of benefit.

Table 36 OAS Basic Pension Recipient Rates by Age, Sex, and Level of Benefit (%)[1]

	Cohort Reaching Eligible Age for Basic Pension[2]								
	2013			2030			2050		
	Level of Benefit			Level of Benefit			Level of Benefit		
Age	Partial	Full	Total	Partial	Full	Total	Partial	Full	Total
Males									
65	6.5	79.8	86.3	n/a	n/a	n/a	n/a	n/a	n/a
66	8.9	84.9	93.8	n/a	n/a	n/a	n/a	n/a	n/a
67	9.9	87.0	96.9	11.0	81.9	92.9	11.0	81.9	92.9
68	10.7	88.1	98.8	12.1	84.2	96.3	12.1	84.2	96.3
69	11.2	88.2	99.4	12.9	85.5	98.4	12.9	85.5	98.4
70	11.7	88.2	99.9	13.5	86.4	99.9	13.5	86.4	99.9
75	14.4	87.0	101.4	15.9	85.5	101.4	15.9	85.5	101.4
80	15.9	86.0	101.9	17.4	84.5	101.9	17.4	84.5	101.9
85	17.4	84.8	102.2	18.8	83.4	102.2	18.8	83.4	102.2
90+	19.4	83.0	102.4	19.5	82.9	102.4	19.5	82.9	102.4
All Ages	**14.2**	**85.8**	**100.1**	**16.4**	**84.4**	**100.8**	**16.5**	**84.4**	**100.9**
Females									
65	6.7	81.1	87.8	n/a	n/a	n/a	n/a	n/a	n/a
66	9.0	85.1	94.1	n/a	n/a	n/a	n/a	n/a	n/a
67	9.8	86.9	96.7	10.6	82.1	92.7	10.6	82.1	92.7
68	10.4	87.9	98.3	11.5	84.3	95.8	11.5	84.3	95.8
69	10.7	88.0	98.7	12.2	85.5	97.7	12.2	85.5	97.7
70	11.3	87.8	99.1	12.7	86.4	99.1	12.7	86.4	99.1
75	13.5	86.7	100.2	14.6	85.6	100.2	14.6	85.6	100.2
80	14.6	86.0	100.6	15.8	84.8	100.6	15.8	84.8	100.6
85	15.4	85.5	100.9	16.6	84.3	100.9	16.6	84.3	100.9
90+	16.7	84.4	101.1	16.7	84.4	101.1	16.7	84.4	101.1
All Ages	**13.3**	**86.0**	**99.3**	**15.0**	**84.8**	**99.8**	**15.0**	**84.8**	**99.9**

(1) Recipient rates for the OAS basic pension are on a gross basis; that is, before application of the OAS Recovery Tax. The recipient rates shown include benefits paid outside Canada and for this reason can exceed 100%. The recipient rates shown also account for voluntary deferrals, effective 1 July 2013.

(2) The eligible age for the OAS basic pension is scheduled to increase from the current age of 65 to 67 over the period April 2023 to January 2029.

The effect of the OAS Recovery Tax after pension income splitting (see section III of Appendix A) is estimated in this report. The OAS Recovery Tax reduces the amount payable for high-income pensioners by a repayment amount deduction. Recent experience data available for the period 2008 to 2012 have been used to estimate the effects of pension income splitting on the repayment amount. In addition, the effects of TFSAs on the repayment amount have been estimated. As such, these estimates relating to the repayment amount provide a means of validating and improving upon the estimates provided in the 9th OAS Program Actuarial Report. Nonetheless, given the limited amount of experience data, the results presented in Tables 37 and 38 should be interpreted with caution. Over time it is expected that these estimates will be further improved upon as more data become available.

The numbers of beneficiaries who are fully or partially affected by the OAS Recovery Tax were estimated from Service Canada and Canada Revenue Agency (CRA) historical data over the period 2009 to 2011. The actual proportions of beneficiaries affected (fully or partially) by the Recovery Tax in 2012 and thereafter were projected by assuming that initial retirement income

will increase in line with wage growth, while the Recovery Tax income limits increase in line with inflation. To simulate this, a formula was developed that is a function of each cohort's average career employment earnings (over the ages of 18 to the age of eligibility for the basic pension) and the inflation rate. The link with inflation is required since the income limit above which the Recovery Tax applies has moved in line with inflation since the year 2001.

The *Budget Implementation Act, 2008* introduced TFSAs starting in 2009. Investment income earned within TFSAs and any withdrawals made from such accounts are excluded in the determination of the basic pension repayment amount used to determine the Recovery Tax. TFSAs could thus result in lower repayment amounts, or equivalently, in higher basic pensions being paid than would be paid otherwise.

For years 2013 and thereafter, the effects of TFSAs on the number of beneficiaries affected by the OAS Recovery Tax and the corresponding change in their basic pensions have been estimated and included in determining the overall impact of the Recovery Tax. Table 37 presents the projected number and percentage of OAS beneficiaries affected by the Recovery Tax, which includes the impact of TFSAs and pension income splitting.

The proportion of beneficiaries affected by the OAS Recovery Tax is projected to increase from 6.4% in 2013 (2.4% full and 4.1% partial) to 6.8% (2.3% full and 4.5% partial) by 2050. Initially, the effect of TFSAs on the repayment amounts is expected to be small given that TFSAs were only recently implemented. However, it is expected that as an increasing number of individuals contribute to TFSAs over time, the projected impact from excluding TFSA-related income will likewise increase. If it were not for TFSAs, there would be an expected 850,000 individuals instead of 718,000 affected by the Recovery Tax in 2050. In 2050, TFSAs have the effect of reducing the number of individuals subject to a full repayment of their pensions by 63,000 or 20% and of reducing the number of individuals subject to a partial repayment by 69,000 or 13%.

Table 37 OAS Beneficiaries Affected by the OAS Recovery Tax[1]

(in thousands)

	Full Repayment of OAS Pension		Partial Repayment of OAS Pension		Total		
Year	Number	% All OAS Beneficiaries	Number	% All OAS Beneficiaries	Number[2]	% All OAS Beneficiaries	All OAS Beneficiaries
2013	124	2.4	213	4.1	337	6.4	5,262
2014	129	2.4	224	4.1	353	6.4	5,477
2015	135	2.4	233	4.1	368	6.5	5,684
2016	140	2.4	243	4.1	384	6.5	5,896
2017	146	2.4	253	4.1	399	6.5	6,110
2018	151	2.4	263	4.2	415	6.5	6,335
2019	158	2.4	275	4.2	433	6.6	6,574
2020	164	2.4	286	4.2	451	6.6	6,824
2025	177	2.3	326	4.2	503	6.5	7,700
2030	192	2.3	348	4.1	540	6.4	8,396
2040	227	2.3	415	4.2	642	6.6	9,796
2050	246	2.3	472	4.5	718	6.8	10,513
2060	276	2.4	552	4.8	828	7.1	11,612

(1) After taking into account the effect of pension income splitting and TFSAs.
(2) Components may not sum to totals due to rounding.

To estimate the total repayment amount due to the Recovery Tax, the number of beneficiaries affected by a full repayment of their pensions was further broken down between beneficiaries receiving a full basic pension (97.3%) and those receiving a partial basic pension (2.7%). This was also done for beneficiaries affected by a partial repayment and, in this case, 98.6% of beneficiaries receive a full basic pension while 1.4% of beneficiaries receive a partial basic pension.

The impact of the OAS Recovery Tax on total benefits payable is obtained using the projected number of beneficiaries who are affected and the assumed reduction in their average benefit (100% reduction for those with a full repayment and a 39.2% reduction in benefit for those with a partial repayment). It is estimated that in 2013, the Recovery Tax will have the effect of reducing the total amount of basic pensions payable by about $1,186 million or 3.6%. Table 38 presents the projected repayment amounts after taking into account the effect of pension income splitting and TFSAs. In 2013, pension income splitting is estimated to reduce the total repayment amount due to the Recovery Tax by $235 million (or 16%). TFSAs are estimated to reduce the total repayment amount due to the Recovery Tax by $1.2 billion in 2050.

Table 38 Financial Impact of OAS Recovery Tax[1]

Year	Repayment for Those Subject to Full Repayments		Repayment for Those Subject to Partial Repayments		Total Repayment	
	Amount ($ million)	% of Total OAS Pensions	Amount ($ million)	% of Total OAS Pensions	Amount[2] ($ million)	% of Total OAS Pensions
2013	747	2.3	438	1.3	1,186	3.6
2014	795	2.3	468	1.3	1,263	3.6
2015	845	2.3	498	1.4	1,343	3.7
2016	897	2.3	530	1.4	1,427	3.7
2017	950	2.3	563	1.4	1,513	3.7
2018	1,009	2.3	597	1.4	1,606	3.7
2019	1,073	2.3	635	1.4	1,708	3.7
2020	1,140	2.3	676	1.4	1,816	3.7
2025	1,369	2.2	858	1.4	2,228	3.6
2030	1,655	2.2	1,022	1.4	2,677	3.6
2040	2,437	2.3	1,513	1.4	3,950	3.7
2050	3,283	2.3	2,138	1.5	5,421	3.8
2060	4,583	2.3	3,111	1.6	7,694	3.9

(1) After taking into account the effect of pension income splitting and TFSAs.
(2) Components may not sum to totals due to rounding.

B. GIS and Allowance

The actual 2013 recipient rates for the GIS and Allowance benefits for each age, sex, type and level of benefit are used as the starting point for determining the best-estimate assumption.

The formulas used in the projection of GIS and Allowance recipient rates take into account the assumption that, for each cohort of individuals who may become eligible for these benefits, the initial retirement income will consist mainly of CPP and QPP pensions that reflect increases in line with wage growth prior to retirement. At the same time, it is assumed that the income limits for the GIS and Allowance will have increased in line with inflation prior to retirement. Together this would lead to a smaller percentage of individuals expected to become GIS or Allowance beneficiaries over the projection period. However, the projections also take into account that TFSA-related income is excluded from the determination of GIS and Allowance benefits, which leads to an increase in both the number of GIS and Allowance beneficiaries and amount of benefits.

For this report, experience adjustment factors were developed to adjust the projection formula so that characteristics and trends of historical recipient rates by age, sex, type and level of benefit observed over the last ten years would be reproduced more closely, while simultaneously incorporating the assumed future impact of TFSAs. The factors were used for the first five years of the projection period. Given the additive nature of the experience adjustment factors, minimum values of recipient rates were set in order to eliminate the possibility of negative recipient rates. Minimum recipient rates were set by type of benefit in relation to the lowest prevailing recipient rates in the year 2013 at the benefit level category for a given type of benefit.

Initially, the effects of TFSAs on GIS and Allowance benefits are expected to be small given that TFSAs were only recently implemented. However, it is expected that as an increasing number of individuals contribute to TFSAs over time, the projected impact on GIS and Allowance benefits will likewise increase. For the cohort reaching age 67 in 2050, excluding the effects of TFSAs, the projected GIS recipient rates at all ages would be 19% for males and 27% for females as compared to 24% and 32% for males and females respectively. For Allowance benefits, the projected effect of TFSAs is much smaller.

The change in the assumed distribution by level of benefit is also automatically taken into account by the formula as is the increasing pattern of recipient rates by age. Table 39 presents the projected GIS and Allowance recipient rates for cohorts reaching the ages of eligibility for benefits by age, sex, type and level of benefit, while Charts 10 through 13 present recipient rates by year of birth. Table 39 and Charts 10 to 13 reflect the scheduled increase in the ages of eligibility from 65 to 67 for the GIS and from 60 to 62 for the Allowance over the period April 2023 to January 2029. The impact of TFSAs is also reflected in the table and charts. Given that there are limited historical data on TFSAs, since such accounts were only implemented in 2009, the results presented in Table 39 and Charts 10 to 13 should be interpreted with caution. Over time it is expected that these estimates will be further improved upon as more data become available.

Table 39 GIS and Allowance Recipient Rates (%)

Age	Cohort Reaching Eligible Age for GIS in								
	2013 Level of Benefit:			2030 Level of Benefit:			2050 Level of Benefit:		
	Partial	Full	Total	Partial	Full	Total	Partial	Full	Total
GIS – Males									
65	12.1	3.4	15.5	n/a	n/a	n/a	n/a	n/a	n/a
66	16.0	4.0	20.0	n/a	n/a	n/a	n/a	n/a	n/a
67	17.9	4.4	22.3	16.9	3.9	20.7	14.7	3.4	18.1
68	18.9	4.5	23.4	18.0	4.0	22.1	15.7	3.5	19.3
69	20.1	4.6	24.7	19.0	4.2	23.2	16.6	3.6	20.2
70	20.9	4.7	25.6	19.7	4.3	24.0	17.2	3.7	20.9
75	25.6	5.0	30.6	23.8	4.5	28.2	20.7	3.8	24.5
80	28.1	5.0	33.0	24.9	4.3	29.2	21.6	3.6	25.2
85	27.8	4.7	32.5	24.4	3.9	28.4	21.3	3.2	24.5
90+	27.3	4.8	32.2	24.3	4.0	28.3	21.3	3.3	24.5
All Ages	**24.0**	**4.7**	**28.8**	**23.0**	**4.2**	**27.2**	**20.1**	**3.5**	**23.6**
GIS - Females									
65	15.0	3.9	18.9	n/a	n/a	n/a	n/a	n/a	n/a
66	19.0	4.3	23.3	n/a	n/a	n/a	n/a	n/a	n/a
67	21.1	4.6	25.7	19.6	4.1	23.7	17.0	3.5	20.6
68	22.3	4.9	27.2	21.0	4.4	25.3	18.2	3.8	22.0
69	23.6	5.2	28.8	22.1	4.7	26.8	19.2	4.0	23.2
70	24.6	5.5	30.1	23.0	4.9	27.9	20.0	4.2	24.2
75	30.0	6.7	36.7	28.4	5.9	34.3	24.9	5.0	29.9
80	34.2	7.0	41.3	30.9	6.1	37.0	27.1	5.2	32.3
85	37.2	6.7	43.8	33.2	5.8	39.0	29.2	4.9	34.1
90+	48.9	6.9	55.8	43.9	6.0	49.9	38.7	5.2	43.9
All Ages	**32.1**	**6.2**	**38.3**	**30.9**	**5.7**	**36.5**	**27.4**	**4.8**	**32.2**

Age	Cohort Reaching Eligible Age for Allowance in								
	2013 Level of Benefit:			2030 Level of Benefit:			2050 Level of Benefit:		
	Partial	Full	Total	Partial	Full	Total	Partial	Full	Total
Allowance – Males									
60	0.3	0.0	0.3	n/a	n/a	n/a	n/a	n/a	n/a
61	0.6	0.1	0.7	n/a	n/a	n/a	n/a	n/a	n/a
62	0.8	0.0	0.8	0.2	0.0	0.3	0.2	0.0	0.2
63	1.0	0.1	1.1	0.4	0.0	0.5	0.3	0.0	0.3
64	1.4	0.1	1.5	0.6	0.0	0.6	0.4	0.0	0.4
65	n/a	n/a	n/a	0.7	0.0	0.8	0.5	0.0	0.5
66	n/a	n/a	n/a	1.0	0.1	1.1	0.7	0.0	0.8
All Ages	**0.8**	**0.1**	**0.9**	**0.6**	**0.0**	**0.6**	**0.4**	**0.0**	**0.4**
Allowance - Females									
60	2.6	0.2	2.8	n/a	n/a	n/a	n/a	n/a	n/a
61	4.5	0.3	4.9	n/a	n/a	n/a	n/a	n/a	n/a
62	5.7	0.3	6.0	1.3	0.1	1.4	1.0	0.1	1.0
63	7.0	0.4	7.4	2.8	0.2	3.0	2.0	0.1	2.1
64	8.5	0.4	9.0	3.8	0.2	4.0	2.7	0.1	2.9
65	n/a	n/a	n/a	5.0	0.3	5.2	3.6	0.2	3.8
66	n/a	n/a	n/a	6.1	0.3	6.4	4.3	0.2	4.5
All Ages	**5.6**	**0.3**	**6.0**	**3.8**	**0.2**	**4.0**	**2.7**	**0.1**	**2.9**

Chart 10 GIS Single Recipient Rates (Males)

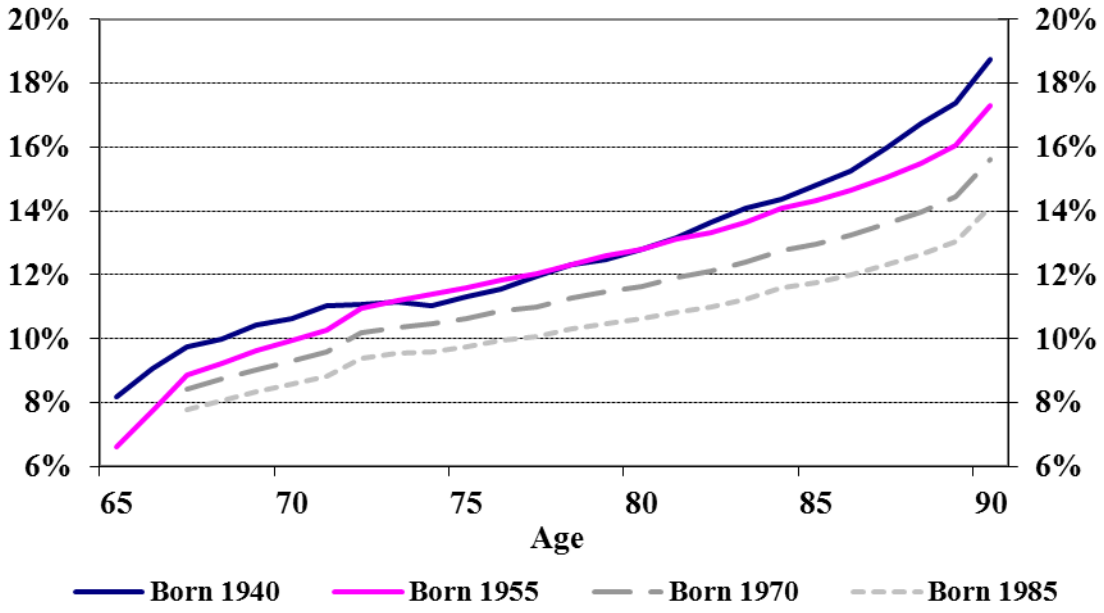


Chart 11 GIS Single Recipient Rates (Females)

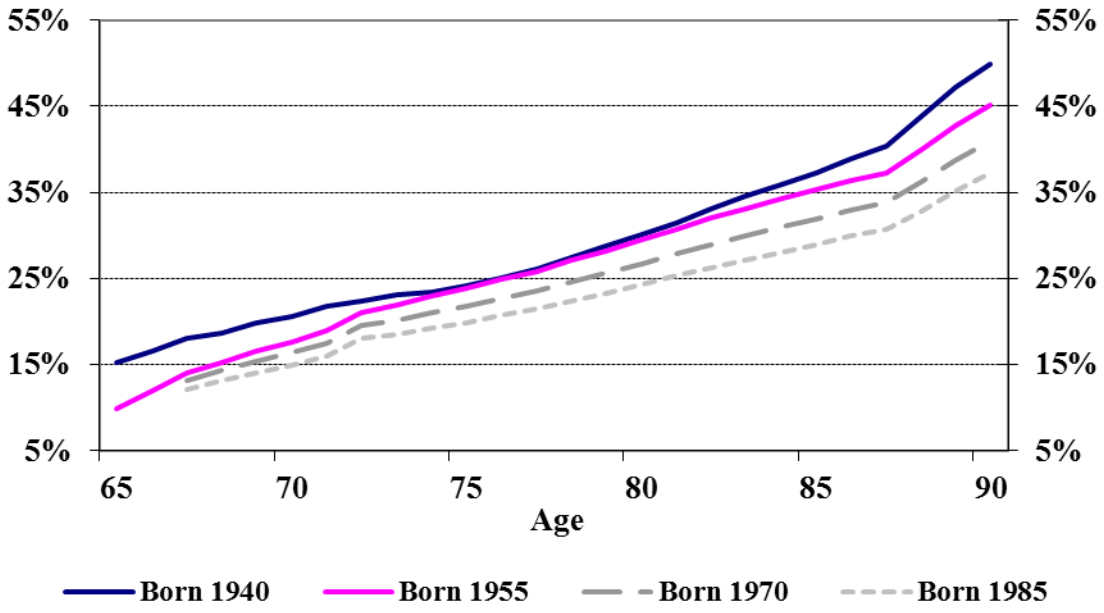


Chart 12 Allowance Recipient Rates (Males)

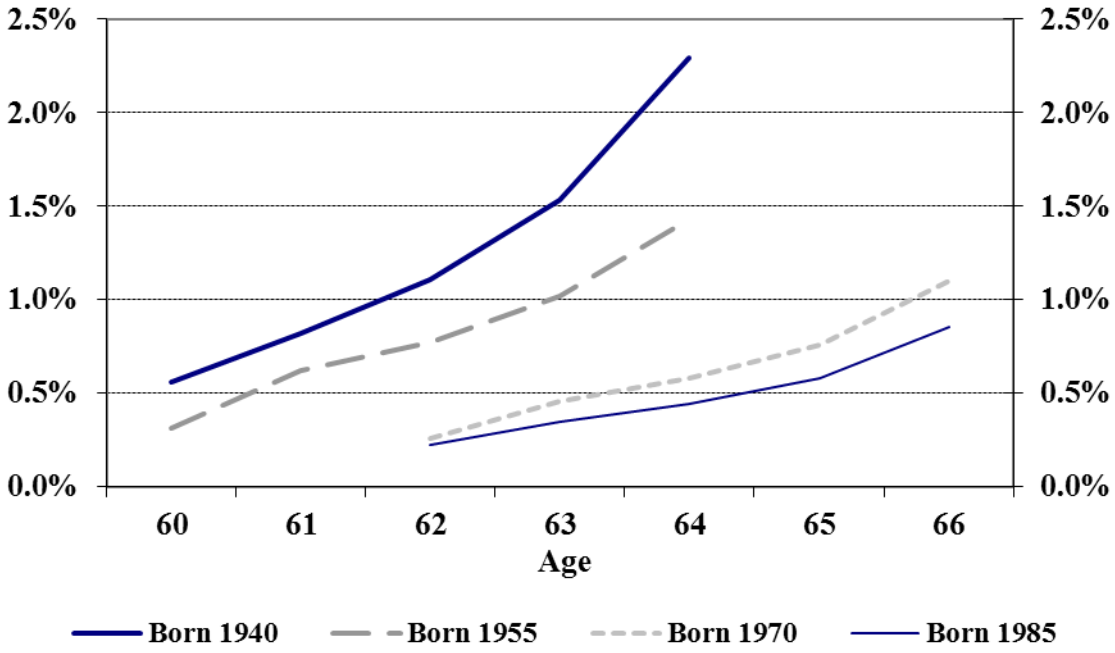
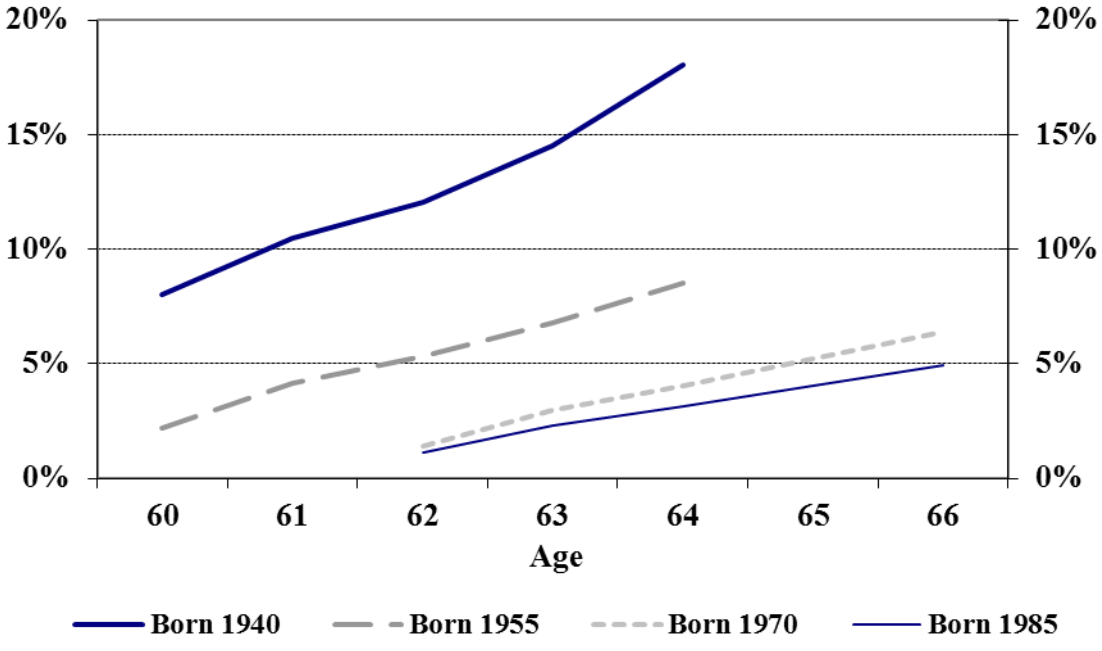


Chart 13 Allowance Recipient Rates (Females)



C. Average Benefits in Relation to Maximum Benefits

For each cell, determined by age group, sex, type and level of benefit, the average benefit paid was compared to the maximum benefit rate over the past five years ending in 2013. Except for the "Full" (100% and over) category for GIS shown in Table 41, it is assumed that these averages relative to the corresponding maxima will remain constant in future years in accordance with their average levels over the most recent five-year period. The projected maximum benefits by type are presented in Table 40, and the assumed average benefits as a percentage of their maximum amounts by level (partial, full, and overall average level of benefit) and type are presented in Table 41.

For the GIS, it is possible for a beneficiary to receive more than 100% of the maximum benefit if he or she is receiving a partial OAS basic pension. In these cases, the maximum GIS benefit is increased by the difference between the full and partial basic pension. For this purpose, it is assumed that the average benefit as a percentage of the maximum will be kept at the 2009-2013 levels throughout the projection period.

The projected distributions of GIS and Allowance beneficiaries by benefit level as well as average benefit levels as a percentage of maximum amounts, with and without the expected effect of TFSAs are presented in Tables 42 and 43, respectively. Although the averages per category are projected to remain constant, it is expected that over time TFSAs will have the effect of increasing the amounts of benefits payable to individuals. As such, it is expected that there will be a shift over time in the number of people to higher benefit categories. However, the emergence of new recipients in the lower benefit categories is expected to more than offset the effect of this shift over time.

Table 40 Projected Maximum Monthly Benefits

		GIS[1]		Allowance[1]	
Year	OAS	Single	Married	Regular	Survivor
(1 July)	($)	($)	($)	($)	($)
2013	549.89	744.85	493.87	1,043.76	1,168.37
2014	559.98	758.52	502.93	1,062.91	1,189.81
2015	571.18	773.69	512.98	1,084.16	1,213.60
2016	582.60	789.16	523.24	1,105.85	1,237.87
2017	594.25	804.94	533.71	1,127.96	1,262.63
2018	606.14	821.04	544.38	1,150.52	1,287.88
2019	618.26	837.46	555.27	1,173.53	1,313.64
2020	631.04	854.77	566.75	1,197.79	1,340.80
2025	703.35	952.72	631.69	1,335.04	1,494.43
2030	784.20	1,062.23	704.30	1,488.50	1,666.22
2040	974.84	1,320.47	875.52	1,850.37	2,071.29
2050	1,211.84	1,641.49	1,088.37	2,300.21	2,574.83
2060	1,506.45	2,040.55	1,352.96	2,859.41	3,200.80

(1) GIS and Allowance maximum benefits shown account for the top-ups.

Table 41 Average Benefits as Percentage of Maximum Rates[1]

	Males					
	2013			2050		
	Level of Benefit:			Level of Benefit:		
	Partial	Full[2]	All	Partial	Full[2]	All
OAS	40.7	100.0	94.7	57.1	100.0	94.1
GIS-Single	56.3	125.6	65.8	53.1	128.7	62.2
GIS-Spouse a pensioner	42.2	164.3	65.1	36.8	163.4	57.2
GIS-Spouse not a pensioner	44.8	129.7	62.7	40.1	134.0	54.9
GIS-Spouse with Allowance	61.4	137.1	90.3	64.9	139.1	95.6
Allowance-Regular	38.5	100.0	41.5	36.7	100.0	39.7
Allowance-Survivor	50.9	100.0	57.1	49.9	100.0	57.7
	Females					
	2013			2050		
	Level of Benefit:			Level of Benefit:		
	Partial	Full[2]	All	Partial	Full[2]	All
OAS	39.3	100.0	94.7	56.6	100.0	94.5
GIS-Single	55.2	135.3	69.5	50.5	136.6	63.5
GIS-Spouse a pensioner	43.0	165.7	65.9	37.3	167.4	57.6
GIS-Spouse not a pensioner	64.0	129.7	77.6	65.9	129.2	77.4
GIS-Spouse with Allowance	60.8	123.8	82.9	61.3	120.8	83.1
Allowance-Regular	40.3	100.0	42.6	41.6	100.0	44.1
Allowance-Survivor	49.6	100.0	55.9	50.4	100.0	57.1

(1) GIS and Allowance average benefits shown relative to maximum rates account for TFSAs.
(2) The proportion exceeds 100% for GIS benefits, because the GIS maximum is raised for individuals receiving a partial OAS pension to the extent that such pension falls short of a full OAS pension.

Table 42 Distribution of GIS Beneficiaries and Average Level of Benefit by Percentage of Maximum Rates (%)

	Males – before application of TFSAs							
Year	0-19%	20-39%	40-59%	60-79%	80-99%	100%	Total[(1)]	Average Level of Benefit as % of Maximum
2013	14.3	16.7	21.0	17.0	12.9	18.1	100	66.2
2020	13.9	16.4	20.6	17.4	13.3	18.4	100	67.1
2030	13.4	16.8	20.6	17.9	13.5	17.8	100	67.3
2040	13.3	17.2	20.5	17.9	13.5	17.6	100	67.2
2050	13.2	17.1	20.3	18.0	13.8	17.6	100	67.3
2060	12.9	16.7	20.3	18.2	14.2	17.6	100	67.7
	Males – after application of TFSAs							
Year	0-19%	20-39%	40-59%	60-79%	80-99%	100%	Total[(1)]	Average Level of Benefit as % of Maximum
2013	14.5	17.0	20.9	16.9	12.8	17.9	100	65.8
2020	15.0	17.2	20.2	16.9	12.9	17.7	100	65.4
2030	16.7	18.4	19.8	16.5	12.4	16.1	100	62.8
2040	17.7	18.8	19.4	16.2	12.2	15.7	100	61.8
2050	18.5	18.7	19.0	16.0	12.3	15.4	100	61.1
2060	19.1	18.3	18.8	16.0	12.5	15.3	100	60.9
	Females – before application of TFSAs							
Year	0-19%	20-39%	40-59%	60-79%	80-99%	100%	Total[(1)]	Average Level of Benefit as % of Maximum
2013	12.1	16.1	20.0	19.6	14.2	18.0	100	68.0
2020	12.2	16.2	20.1	19.4	14.2	18.1	100	68.2
2030	11.9	16.3	20.3	19.4	14.0	18.0	100	68.3
2040	11.8	16.5	20.4	19.7	13.9	17.8	100	68.0
2050	11.7	16.5	20.4	20.1	13.9	17.4	100	67.8
2060	11.6	16.3	20.3	20.1	14.2	17.5	100	68.0
	Females – after application of TFSAs							
Year	0-19%	20-39%	40-59%	60-79%	80-99%	100%	Total[(1)]	Average Level of Benefit as % of Maximum
2013	12.4	16.3	20.0	19.5	14.1	17.8	100	67.6
2020	13.2	16.5	20.2	18.9	13.8	17.4	100	66.7
2030	15.0	17.1	20.3	18.1	13.1	16.3	100	64.2
2040	15.7	17.3	20.2	18.2	12.8	15.8	100	63.3
2050	16.1	17.2	20.1	18.5	12.8	15.4	100	62.6
2060	16.7	17.1	19.8	18.3	12.9	15.2	100	62.2

(1) Components may not sum to totals due to rounding.

Table 43 Distribution of Allowance Beneficiaries and Average Level of Benefit by Percentage of Maximum Rates (%)

	Males – before application of TFSAs							
Year	0-19%	20-39%	40-59%	60-79%	80-99%	100%	Total[(1)]	Average Level of Benefit as % of Maximum
2013	25.4	27.9	17.3	10.4	12.5	6.4	100	46.2
2020	26.6	27.4	17.4	10.2	12.5	5.9	100	45.5
2030	30.0	26.9	15.5	9.4	11.8	6.4	100	43.7
2040	30.4	26.9	15.2	9.3	11.8	6.4	100	43.5
2050	30.3	26.7	15.0	9.4	12.0	6.6	100	43.8
2060	29.6	26.4	14.7	9.6	12.1	7.6	100	44.9
	Males – after application of TFSAs							
Year	0-19%	20-39%	40-59%	60-79%	80-99%	100%	Total[(1)]	Average Level of Benefit as % of Maximum
2013	25.1	28.0	17.4	10.5	12.5	6.5	100	46.3
2020	25.7	27.8	17.5	10.5	12.5	6.1	100	45.9
2030	28.4	26.9	16.0	10.1	11.9	6.7	100	44.6
2040	29.1	26.7	15.6	10.0	11.9	6.7	100	44.2
2050	29.5	26.4	15.3	10.0	11.9	6.9	100	44.2
2060	29.3	25.9	14.9	10.0	12.0	7.8	100	45.0
	Females – before application of TFSAs							
Year	0-19%	20-39%	40-59%	60-79%	80-99%	100%	Total[(1)]	Average Level of Benefit as % of Maximum
2013	23.6	26.9	19.2	12.8	11.9	5.7	100	46.6
2020	24.3	25.5	19.2	12.9	13.0	5.1	100	46.9
2030	26.6	24.7	18.0	12.3	13.2	5.2	100	46.4
2040	27.1	25.0	17.7	12.0	13.2	4.9	100	46.0
2050	27.2	25.3	17.6	11.8	13.3	4.8	100	45.9
2060	27.1	25.6	17.6	11.6	13.5	4.7	100	45.9
	Females – after application of TFSAs							
Year	0-19%	20-39%	40-59%	60-79%	80-99%	100%	Total[(1)]	Average Level of Benefit as % of Maximum
2013	23.4	26.9	19.3	12.8	11.9	5.7	100	46.8
2020	23.9	25.6	19.2	12.9	13.1	5.3	100	47.2
2030	25.5	25.1	18.0	12.3	13.3	5.6	100	46.9
2040	26.4	25.5	17.6	11.9	13.3	5.3	100	46.3
2050	27.1	25.7	17.3	11.6	13.2	5.1	100	45.8
2060	27.6	25.9	17.0	11.3	13.2	4.9	100	45.4

(1) Components may not sum to totals due to rounding.

V. Expenditures

A. Benefits

The expenditure for each year for a given type of benefit was computed as the sum, over all relevant population cells, of the product of:

- the population as at 1 July (by age and sex);
- the recipient rates (that vary by type of benefit, level of benefit, age, sex, and calendar year);
- the average benefit of those in the level-of-benefit cell as a percentage of the maximum benefit (varies by type of benefit, age, sex, and calendar year); and
- 12 times the maximum benefit as at 1 July.

As part of the methodology validation process, the number of beneficiaries and amounts of total annual benefits computed as above were compared to the actual results for 1983 through 2012 by type of benefit. Based on these comparisons, adjustments were made to the projected results, as described below.

The numbers of beneficiaries projected as described above were multiplied by experience adjustment factors. Furthermore, after adjusting the projected numbers of beneficiaries, the calculated total annual benefits tended to be lower than the actual benefits. Therefore, the projected amounts of benefits were also multiplied by experience adjustment factors.

The resulting experience adjustment factors by type of benefit are presented in Table 44 and correspond to the ratio required to reflect as closely as possible actual results for 2013. Detailed tables for the projected number of beneficiaries and total expenditures by sex, type and level of benefit are presented in Appendix E.

Table 44 Experience Adjustment Factors

		GIS				Allowance	
	OAS	Single	Spouse a Pensioner	Spouse not a Pensioner	Spouse has Allowance	Regular	Survivor
Beneficiaries	0.998	0.952	0.934	0.921	0.942	1.010	0.987
Benefits	1.002	1.043	1.049	1.086	1.101	1.069	1.043

B. Administrative Expenses

Based on experience over the last five years, annual administrative expenses have averaged about 0.34% of total annual benefit payments. This has been assumed to continue throughout the projection period.

Appendix C – Detailed Reconciliations with Previous Triennial Report

The ratio of expenditures to GDP in a given year is an important measure of the cost of the Program. One way of understanding the differences between the best-estimate projections in this report and those presented in the 9th OAS Program Actuarial Report as at 31 December 2009 is by looking at the effects of various factors on this cost ratio. The most significant effects are identified in the reconciliation presented in Table 45 and the discussion below.

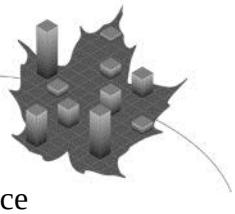
The results presented in this report differ from those previously projected for a variety of reasons. Differences between the actual experience from 2010 through 2012 and that projected in the 9th OAS Program Actuarial Report for the same period were addressed in the Reconciliation with Previous Report section (V) of this report. Since historical results provide the starting point for the projections shown in this report, these historical differences between actual and projected experience have an effect on the projections. The impact of the experience update and changes in the assumptions and methodology that have significantly changed the projected results are addressed in this section.

The recent amendments made to the *Old Age Security Act*, namely the provision of top-up benefits for the GIS and Allowance, the increase in the age of eligibility for the Program's benefits, and the provision for voluntary deferrals of the basic pension in exchange for actuarially-adjusted higher benefits, lead initially to an increase in the cost ratio over the medium term followed by a decrease over the long term. In 2013, the amendments cause the ratio to increase (in absolute terms) by 0.02%. By 2050, the amendments lead to an absolute decrease in the ratio of 0.19%.

Overall, the experience update had the effect of reducing the cost ratio by about 0.08% in 2013 as well as ultimately in 2050.

Key assumptions and changes made from the previous triennial report are outlined in Table 1 of this report. The effects of these changes are also shown in Table 45 and are summarized below:

- The assumed total fertility rates are similar to those assumed in the previous triennial report, and as such, have little impact on the cost ratios.
- The assumed level of net migration is higher than in the previous triennial report, and this decreases the long-term cost ratios, because the resulting effect of accelerating the growth in earnings and GDP outweighs the ultimate increase in expenditures.
- The higher mortality improvement rates at ages 65 and older assumed for this report increase the cost ratios, because beneficiaries are expected to receive their benefits over longer periods of time.
- The higher assumed labour force participation and employment rates decrease the cost ratios, since it results in higher levels of earnings and projected GDP relative to projected expenditures.
- The change in the real wage increase assumption causes the cost ratios to rise due to the lower increase in earnings and GDP compared to the previous triennial report.
- The lower assumed inflation rate has no effect on the cost ratios. The reason for this is twofold. First, expenditures increase at a slower rate due to lower benefit indexation. Second, although nominal GDP continues to increase, its rate of growth slows to the same



extent, since its rate of growth depends on the real wage increase, inflation, and the price differential between nominal GDP and total employment earnings.

- Changes to the recipient rates increase the cost ratios over the near to medium term, but eventually lead to lower cost ratios.

Some other assumptions, which are described in Appendix B, were also changed. For example, the experience adjustment factors used in the projection of earnings, the GDP, and benefits were revised to reflect more recent experience. Overall, the changes in these other assumptions had the effect of decreasing the cost ratios over the long term.

Table 45 Detailed Reconciliation of Expenditures as a Percentage of GDP
(OAS, GIS and Allowance combined)

	2013	2030	2050
9th OAS Program Actuarial Report	**2.45**	**3.14**	**2.60**
I. Legislated amendments:			
10th OAS Program Actuarial Report	0.02	0.02	0.01
• top-up of GIS and Allowance benefits			
11th OAS Program Actuarial Report			
• increase in benefit eligibility ages	0.00	(0.32)	(0.21)
• voluntary deferral of basic pension	0.00	0.00	0.01
Total amendments	**0.02**	**(0.30)**	**(0.19)**
II. Improvements in methodology	0.00	0.00	0.00
III. Experience update (2010 to 2012)			
Demographic	(0.02)	(0.02)	(0.02)
Economic	(0.02)	(0.04)	(0.04)
Benefits	(0.04)	(0.03)	(0.02)
Subtotal:	**(0.08)**	**(0.09)**	**(0.08)**
IV. Changes in assumptions			
Fertility	0.00	0.00	0.00
Net migration	0.00	(0.03)	(0.05)
Mortality	0.00	0.04	0.05
Labour market	(0.01)	(0.04)	(0.02)
Real wage increases	0.02	0.10	0.13
Price increases	0.01	0.00	0.00
Recipient rates	0.01	(0.03)	(0.02)
Other assumptions	(0.14)	(0.06)	(0.05)
Subtotal:	**(0.11)**	**(0.02)**	**0.04**
Total of I to IV	**(0.17)**	**(0.41)**	**(0.23)**
12th OAS Program Actuarial Report	**2.28**	**2.73**	**2.37**

Appendix D – Uncertainty of Results

The future expenditures of the OAS Program depend on many demographic and economic factors, including fertility, mortality, migration, the labour force, average earnings, inflation, recipient rates, indexation of benefits, and savings in TFSAs. The expenditures will depend on how these factors affect the size and composition of the beneficiary population and the general level of benefits. The cost measurement bases, which expenditures are measured relative to, namely combined CPP and QPP contributory earnings, total employment earnings, and the GDP, will depend on how the factors affect the size and composition of the working-age population, and the level and distribution of earnings.

This actuarial report on the Old Age Security Program is based on the projection of its expenditures over a long period time. The information required by statute, which is presented in the Results section of this report, has been derived using best-estimate assumptions regarding future demographic and economic trends. The key best-estimate assumptions, i.e. those for which changes within a reasonable range have the most significant impact on the long-term financial results, are described in Appendix B. Both the length of the projection period and the number of assumptions required ensure that actual future experience will not develop precisely in accordance with the best-estimate assumptions. Individual sensitivity tests have been performed that consist of projecting the financial status of the Program using alternative assumptions.

Some of the individual assumption (labour market, recipient rates, benefit indexation) sensitivity tests use a purely deterministic model based on judgment, while the other individual assumption (fertility rates, mortality rates, net migration rates, and real wage increases) sensitivity tests are developed using a combination of judgment and stochastic modeling techniques. All of the tests are described in the sections below.

Stochastic modeling techniques estimate the probability distribution of an outcome for each selected assumption, and these distributions are used to quantify a range of possible outcomes. The fluctuation in each variable is projected by using standard time-series modeling, a method designed to make inferences based on historical data.

With the time series approach, a variable is modeled by an equation that captures a relationship between current and prior years' values of the variable. A year-by-year random variation consistent with the variation observed in the historical period is then introduced. Parameters for the equations are estimated using historical data for periods that range between 40 years and 84 years. Each time-series equation is designed such that, in the absence of random variation, the value of the variable is equal to the value assumed under the best-estimate assumption.

Future mortality rates are stochastically projected using the time series approach and assuming that, for each year, rates by age and gender are correlated. For each projection year and based on 1,000 outcomes, the life expectancies with future improvements are calculated and an 80% confidence is determined. In addition to the scenario based on the best-estimate mortality rates, two other scenarios based on mortality rates derived using deterministically defined low and high assumed future mortality improvement rates are considered. Alternative assumptions are then derived using the results of these scenarios.

For the remaining stochastically analyzed assumptions, a minimum of 10,000 outcomes are generated for each year in the projection period. Although the yearly outcome of each variable will fluctuate, it is the average outcome over the projection period that will determine the

financial status of the Program. Therefore, an 80% confidence interval is calculated for the cumulative average of each assumption to determine, with 80% probability, the range of possible outcomes over the entire projection period (until 2060). If a shorter projection period were to be considered, such as ten or fifteen years, one could expect the average 80% confidence interval to be wider since the outcomes will not have had enough time to stabilize. The upper and lower values of the 80% confidence interval are used as the low-cost and high-cost assumptions, or vice versa depending on the assumption, for these individual sensitivity tests.

The results should be interpreted with caution and a full understanding of the inherent limitations of stochastic modeling. Results are very sensitive to model specifications, degrees of interdependence among variables, and the historical periods used for the parameters estimates. For some variables, using the variations exhibited in relatively recent or instead, earlier historical periods may not provide a realistic representation of the potential variation for the future. Furthermore, additional variability could result from incorporating statistical approaches that would more fully model change in the long-range central tendencies of the variables. The historical periods chosen for most variables are relatively homogeneous and do not reflect substantial shifts. The time-series modeling reflects what occurred in these historical periods. As a result, the variation indicated in this section should be viewed as the minimum plausible variation for the future. Structural shifts, as predicted by many experts and as seen in prior centuries, are not reflected in the current models. Rather, the projection models or time series are adjusted to reflect the best judgment over a long period.

The sensitivity tests were performed by varying most of the key assumptions individually in a manner consistent with the results of the stochastic analysis and by keeping the remaining assumptions at their best-estimate levels. Each sensitivity test was categorized as either a low-cost scenario or a high-cost scenario. In the low-cost scenarios, the alternative assumptions have the effect of reducing the ratios of expenditures to GDP. Conversely, assumptions for the high-cost scenarios increase the ratios of expenditures to GDP.

The alternative assumptions selected are intended to represent a wide range of potential long-term experience. However, each individual result cannot simply be combined because a change in any one particular assumption may have an impact on other assumptions to various degrees.

Table 46 summarizes the alternative assumptions used in the individual sensitivity tests. It is followed by a brief discussion of each assumption and the impact that the variation in each assumption has on the results.

Table 46 Individual Sensitivity Test Assumptions

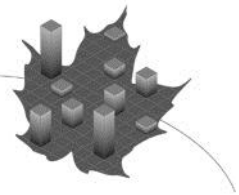
	Canada	Low-Cost	Best-Estimate	High-Cost
1	Total fertility rate	2.00	1.65	1.30
2	Mortality: Canadian life expectancy at age 65 in 2050 with future improvements	Males 20.7 Females 22.9	Males 23.0 Females 25.3	Males 25.6 Females 27.7
3	Net migration rate	0.69%	0.60%	0.53%
4	Labour Market: Participation rate (aged 15-69)(1)	82% (2030)	77% (2030)	73% (2030)
	Unemployment rate(1)	4.0%	6.0%	8.0%
	Change in percentage points (pp) of basic pension recipient rates due to voluntary deferrals	10 pp decrease at eligible age; subsequent increases of 5 pp, 3 pp, 2 pp at next higher ages, respectively.	5 pp decrease at eligible age; subsequent increases of 2.5 pp, 1.5 pp, 1 pp at next higher ages, respectively.	2.5 pp decrease at eligible age; subsequent increases of 1.5 pp, 0.75 pp, 0.25 pp at next higher ages, respectively.
5	Real wage increase	2.1%	1.2%	0.2%
6	GIS and Allowance Recipient rates – TFSA effect only(1)	2050 GIS: 27.4% Allowance: 1.7%	2050 GIS: 30.9% Allowance: 1.8%	2050 GIS: 37.2% Allowance: 1.9%
7	GIS and Allowance Recipient rates – All effects (+/– 20%)(1)	2050 GIS: 25.7% Allowance: 1.5%	2050 GIS: 30.9% Allowance: 1.8%	2050 GIS: 36.1% Allowance: 2.1%
8	Benefit indexation(1)	CPI less 1%	CPI	CPI plus 60% of the real wage increase

(1) For these tests, a deterministic instead of a stochastic approach was used to derive the low- and high-cost estimates.

1. Fertility Rate

The best-estimate assumption is that the total fertility rate for Canada will increase slightly from its 2010 level of 1.63 to an ultimate level of 1.65 in 2015. Based on fertility experience of the last 40 years (1971 to 2010), a stochastic approach was used to generate the low- and high-cost scenarios over the projection period ending in 2060. Factors such as higher labour force participation of women, later entry into marriages or common-law relationships, higher and longer periods of education, as well as others, make it unlikely that high fertility rates such as those experienced during the post-WWII baby boom period will be seen again in the future. Therefore, the experience period selected for the stochastic analysis excludes periods of high fertility rates.

It was projected that the average total fertility rate throughout the projection period until 2060 will be in the range 1.3 to 2.0 with 80% probability. Instead, if a 15-year projection period is considered, then the average total fertility rate will be in the range 1.3 to 2.0. The low-cost assumption has the total fertility rate increasing to an ultimate level of 2.0 in 2015, which is only slightly lower than the national population replacement rate. The total Canadian fertility rate has not been above 2.0 since 1971. Under this scenario, the population grows to a level in 2050 that is about 9.5% higher than under the best-estimate assumption. In addition, a higher ultimate total fertility rate leads to a younger population. Thus, the dependency ratio, defined as the ratio of



those aged 65 and over to the working-age population (20-64), is 0.43 (or approximately 2.3 workers per retiree) in 2050 compared to a dependency ratio of 0.46 (or approximately 2.2 workers per retiree) under the best-estimate assumption.

The high-cost assumption is that the total fertility rate decreases to an ultimate level of 1.3 in 2015. This is similar to the recent total fertility rates of Italy and Japan. Under this scenario, the population grows much more slowly, to a level in 2050 that is 9% lower than under the best-estimate assumption. A lower ultimate total fertility rate leads to an older population. In this scenario, the dependency ratio increases from the best-estimate value of 0.46 (or 2.2 workers per retiree) in 2050 to 0.49 (or 2.0 workers per retiree).

2. Mortality Rates

In addition to the stochastic projections of the mortality rates, a deterministic element has been introduced to the test to capture the impact of greater uncertainty regarding the long-term mortality improvement rates assumption.

A deterministic model was first used to generate two alternatives for the mortality improvement rate assumption. Under the first alternative, the best-estimate ultimate values of the mortality improvement rates have been reduced by 0.2% whereas for the second alternative, the best-estimate ultimate values of the mortality improvement rates have been increased by 0.2%. Under the alternative of reducing the ultimate improvement rates, the life expectancies of males and females at age 65 in 2050 are 0.5 of a year lower than under the best-estimate assumption. Under the alternative of increasing the ultimate improvement rates, the life expectancies of males and females at age 65 in 2050 are 0.6 of a year higher than under the best estimate.

Based on the mortality experience by age and sex of the last 84 years (1926 to 2009), a stochastic approach was used to generate scenarios over the projection period ending in 2060 under the best-estimate assumption and each of the two alternatives described above. The following table presents the life expectancies at the 10^{th} and 90^{th} percentiles determined by the stochastic analysis as well as the expected life expectancies determined with the deterministic approach. For example, under the best-estimate assumption, it was projected that, on average, the life expectancy of a male aged 65 in 2050 will be in the range of 21.0 to 24.9 years with 80% probability. For a female aged 65 in 2050, life expectancy is projected to be in the range of 23.4 to 27.1 years with 80% probability.

Table 47 Stochastic and Deterministic Projections of Life Expectancy at age 65 in 2050[(1)]
(Canada)

Mortality Improvement Rates Scenario		Life Expectancy		
		Stochastic 10th Percentile	Deterministic Expected	Stochastic 90th Percentile
Best Estimate	Males	21.0	**23.0**	24.9
	Females	23.4	**25.3**	27.1
Reducing Alternative	Males	**20.7**	22.5	24.4
	Females	**22.9**	24.8	26.7
Increasing Alternative	Males	21.8	23.6	**25.6**
	Females	24.0	25.9	**27.7**

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

The low-cost scenario corresponds to the lower end of the 80% probability range under the alternative of reducing the improvement rate assumption. Under this scenario, mortality is assumed to improve at a slower rate than under the best-estimate scenario, reflecting that current improvements above age 65 might not be sustainable. Under this scenario, the population grows to a level in 2050 that is 1.4% lower than under the best-estimate assumption. In addition, the dependency ratio decreases to 0.43 (or 2.3 workers per retiree) compared to a best-estimate of 0.46 (or 2.2 workers per retiree) since life expectancy is lower and there would be fewer retirees compared to the working-age population.

The high-cost scenario corresponds to the higher end of the 80% probability range under the alternative of increasing the improvement rate assumption. Under this scenario, mortality is assumed to improve at a faster pace than under the best-estimate scenario. Under this scenario, the population grows to a level in 2050 that is 1.5% higher than under the best-estimate assumption. The dependency ratio also increases to 0.48 (or 2.1 workers per retiree) compared to a best-estimate of 0.46 (or 2.2 workers per retiree) since life expectancy is higher and there would be more retirees compared to the working-age population.

Table 48 presents the life expectancies that would result in 2050 from the different rates of mortality improvements.

Table 48 Life Expectancy in 2050 under Alternative Assumptions[(1)]
(Canada)

		Low Cost	Best Estimate	High Cost
At Birth	Males	85.1	88.6	92.3
	Females	87.5	91.3	94.6
At Age 65	Males	20.7	23.0	25.6
	Females	22.9	25.3	27.7

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

3. Net Migration Rate

Under the best-estimate assumption, the net migration rate is assumed to gradually reduce from its current (2012) level of 0.77% of the population to an ultimate rate of 0.60% of the population for the year 2017 and thereafter.

Based on the net migration experience of the last 54 years (1959 to 2012) and taking into account the recent increase in the number of net-permanent residents, a stochastic approach was used to generate the low- and high-cost scenarios over the projection period ending in 2060. It is projected that average net migration throughout the entire projection period until 2060 will be in the range 0.53% to 0.69% of the population with 80% probability. Instead, if a 15-year projection period is considered, then average net migration will be in the range 0.51% to 0.72% of the population.

The low-cost assumption has net migration reaching a level of 0.69% of the population in 2017 and remaining constant thereafter. This is very close to the average net migration rate over the fourteen-year period ending in 2012. Under this scenario, the population grows to a level in 2050 that is 4.2% higher than under the best-estimate assumption. As well, the dependency ratio of those aged 65 and over to the working-age population (20-64) is 0.44 (or approximately 2.3 workers per retiree) in 2050 compared to a dependency ratio of 0.46 (or approximately 2.2 workers per retiree) under the best-estimate assumption.

The high-cost assumption has net migration reaching a level of 0.53% of the population in 2017 and remaining constant thereafter. This is very close to the average net migration rate experienced during the 1990s. Under this scenario, the population grows more slowly, to a level in 2050 that is 3.1% lower than under the best-estimate assumption. As well, the dependency ratio is 0.47 (or approximately 2.1 workers per retiree), which is slightly higher than the best estimate.

4. Labour Market

Employment levels are reflected in the actuarial projection model through the assumptions made regarding the level of labour force participation and job creation rates by year, age and sex. These rates vary not only with the rate of unemployment, but also reflect trends in increased workforce participation by women, longer periods of formal education among young adults, and trends in the retirement patterns of older workers.

This sensitivity test analyzes the impact of stronger and weaker labour demand on the cost of the Program.

Under the best-estimate scenario, the job creation rate assumption is determined on the basis of expected moderate economic growth and an unemployment rate that is expected to gradually decrease from its 2012 level of 7.2% to an ultimate rate of 6.0% by 2023. Furthermore, the participation rates for all age groups are expected to increase due to the attractive employment opportunities resulting from anticipated labour shortages and the aging of cohorts with stronger labour attachments, especially for women and individuals with higher education attainment. The assumed increase in participation rates of those aged 55 and over is even more significant, given that it is also affected by the expected continued trend toward delayed retirement. Under the best-estimate scenario, the participation rate of those aged 15 to 69 is expected to increase from 74.6% in 2013 to 76.8% in 2030.

Annual statistics of new OAS pensions payable are used to determine the distribution of the take-up ages of new OAS beneficiaries. The ultimate rates for the best-estimate scenario are based on

recent experience and the expected impact on take-up of voluntary deferral of the pension. This provision became effective 1 July 2013 and allows voluntary deferral of the OAS pension by up to five years, with an actuarial adjustment upward of 0.6% to the pension per month of deferral. By 2030, the best-estimate recipient rates, including the effect of voluntary deferrals, are assumed to be 92.8% at age 67, 96.0% at 68, 98.0% at 69, and 101.0% at ages 70 and older.

A deterministic model (instead of a stochastic model) was used to generate the low-cost and high-cost scenarios for these assumptions, since a stochastic model would not accurately reflect the assumed future trends in labour force participation and unemployment. The anticipated future labour shortage and the trend toward delayed retirement are unlike any labour situation experienced in the past, and thus the historical data do not reflect any substantial shifts like the one being projected. Therefore, it was decided to use judgment in determining the low and high cost assumptions for labour force participation and unemployment rates.

Under the strong labour demand scenario, the job creation rate is robust resulting in a lower unemployment level, higher labour force participation rates, and later retirement. Such an environment has the effect of lowering the cost ratios. For this low-cost scenario, the job creation rates are assumed to increase at a faster pace than under the best-estimate scenario, resulting in an unemployment rate of 4.0% in 2023 and thereafter. In addition, ultimate male participation rates in 2030 are assumed to increase more than expected as a result of a higher than anticipated impact of the labour shortage and the delayed retirement trend on future labour market participation. Furthermore, the ultimate gap in 2030 between male and female participation rates is equal to 3.4% as opposed to 6.8% under the best-estimate scenario. This results in an overall participation rate of 81.8% for those aged 15 to 69 in 2030. The lower unemployment rate and higher participation rate are assumed to encourage voluntary take-up at a later age of the actuarially-adjusted higher OAS pension. Therefore, by 2030, recipient rates at age 67 are assumed to gradually decrease by 10 percentage points compared to 5 percentage points under the best estimate, i.e. 87.9% and 87.7% for males and females, respectively.

Under the weaker labour demand scenario, the job creation rate is lower resulting in a higher unemployment level and lower labour force participation rates. Insufficient employment opportunities are likely to force some individuals to start their OAS pension at their earliest eligible age. Such an environment results in higher cost ratios. For this high-cost scenario, the job creation rates are assumed to increase at a slower pace than under the best-estimate scenario, resulting in an unemployment rate of 8.0% in 2023 and thereafter. In addition, male and female participation rates are assumed to remain constant at their 2012 levels. This results in an overall participation rate of 72.9% for those aged 15 to 69 in 2030. The higher unemployment rate and lower participation rate are assumed to encourage individuals to start their OAS pensions earlier rather than later. Therefore, by 2030, recipient rates at age 67 are assumed to gradually decrease less compared to the best estimate, i.e. by 2.5 percentage points compared to 5 percentage points, or 95.4% and 95.2% for males and females, respectively.

5. Real Wage Increases

Wage increases affect the financial balance of the OAS Program in two ways. In the short term, an increase in the average wage translates into higher combined CPP/QPP contributory earnings, total employment earnings, and a higher GDP, with little immediate impact on benefits. This results in lower cost ratios relative to these measurement bases. Over the longer term, higher average wages may be expected to result in higher incomes among the retiree population and

reduce the amounts of income-tested benefits that are indexed to inflation. This would also lower the cost ratios. However, the aging of the Canadian population has resulted in increased OAS Program expenditures over time, which acts to increase the cost ratios. Overall, the long-term projected financial position of the OAS Program is dependent on real wage increases, that is, the difference between the assumed annual rates of wage increase and price increase, which provides a comparison of earnings growth with inflation. In addition, the long-term financial position of the Program is dependent on the age structure of the population and the levels of old-age income other than that provided by the Program.

An ultimate real wage increase of 1.2% has been assumed in the year 2020 and thereafter for the best-estimate projections. The ultimate real wage increase assumption, combined with the ultimate price increase assumption of 2.2% yields the assumption for ultimate nominal annual increases in wages of 3.4% in 2021 and thereafter. During the initial years of the projection period, the real wage increase is assumed to rise gradually to its ultimate level.

Based on the overall real wage experience of the last 50 years (1962 to 2011), a stochastic approach was used to generate the low- and high-cost scenarios over the projection period ending in 2060. It was projected that the average real wage increase throughout the projection period until 2060 will be in the range 0.2% to 2.1% with 80% probability. Instead, if a 15-year projection period is considered, then the average real wage increase will be in the range -0.2% to 2.6%.

For the low-cost scenario, the assumed real wage increase rises to an ultimate level of 2.1% in 2020. For the high-cost scenario, the assumed real wage increase is held constant at the level of 0.2% for 2014 and thereafter.

6. GIS and Allowance Recipient Rates – TFSA effect only

The best-estimate projection uses a formula described in Appendix B to project GIS and Allowance benefit recipient rates. Two sets of low- and high-cost scenarios are considered. First, the impact of TFSAs on the recipient rates is considered. In the low-cost scenario, individuals save less in TFSAs than expected leading to less TFSA-related income, and as a result, there are fewer GIS and Allowance beneficiaries. This results in GIS and Allowance recipient rates that are lower by about 3.5 percentage points and 0.1 of a percentage point, respectively and GIS and Allowance benefits that are 5.6% lower than under the best-estimate scenario in 2050. In the high-cost scenario, individuals save more in TFSAs than expected, leading to more TFSA-related income and more GIS and Allowance beneficiaries. This results in GIS and Allowance recipient rates that are higher by about 6.3 percentage points and 0.1 of a percentage point, respectively and GIS and Allowance benefits that are 17% higher than under the best-estimate scenario in 2050.

7. GIS and Allowance Recipient Rates – All effects

For the second set of recipient tests, the same formula used for the best estimates is used except that, for the low-cost scenario, the resulting recipient rates for the GIS and Allowance are reduced by 20%. The reduction is phased in over five years and is maintained thereafter. It results in total GIS and Allowance benefits that are about 20% lower than in the best-estimate scenario. For the high-cost scenario, the same formula is used except that the resulting recipient rates for total GIS and Allowance benefits are increased by 20%. The increase is phased in over five years and is maintained thereafter. It results in total GIS and Allowance benefits that are about 20% higher than in the best-estimate scenario.

8. Benefit Indexation

The best-estimate projections are based on the Program provision for benefit rates to be indexed quarterly in accordance with price increases. Over time, indexing benefit rates more slowly than the rate of growth in average employment earnings means that benefits will replace a decreasing share of individuals' pre-retirement earnings. In the past, this issue has been addressed through occasional legislation providing ad hoc increases in the benefit rates.

For the low-cost scenario, the benefit indexation is assumed at CPI minus 1%.

For the high-cost scenario, the benefit rates are increased to partially reflect the growth in real wages. The assumption made for this test is that benefit rates would be indexed at rates equal to the assumed rate of growth in prices plus 60% of the assumed real wage increase. Accordingly, the ultimate annual benefit indexation rate is assumed to be 2.9% instead of 2.2% under the best-estimate assumptions. Over the medium term, about 30 years, the overall impact of this indexation formula on costs is roughly comparable to the indexation basis inherent in the CPP and QPP, which provide benefits based on wage increases prior to retirement and price increases thereafter.

9. Results

Table 49 summarizes the projected impact on the expenditures-to-GDP cost ratio under each of the alternative sets of assumptions.

Table 49 Sensitivity Test Results

			Expenditures as a Percentage of GDP		
	Assumption	**Scenario**	**2013**	**2030**	**2050**
		Best-Estimate	2.28	2.73	2.37
1	Total Fertility Rate	Low-Cost	2.28	2.71	2.19
		High-Cost	2.28	2.75	2.58
2	Mortality Rates	Low-Cost	2.28	2.62	2.19
		High-Cost	2.29	2.84	2.56
3	Net Migration Rate	Low-Cost	2.28	2.68	2.29
		High-Cost	2.28	2.76	2.44
4	Labour Market	Low-Cost	2.28	2.52	2.19
		High-Cost	2.28	2.93	2.55
5	Real Wage Increase	Low-Cost	2.28	2.38	1.71
		High-Cost	2.28	3.23	3.50
6	GIS and Allowance Recipient Rates – TFSA effect only	Low-Cost	2.28	2.70	2.34
		High-Cost	2.28	2.81	2.45
7	GIS and Allowance Recipient Rates – All effects	Low-Cost	2.28	2.61	2.28
		High-Cost	2.28	2.85	2.46
8	Benefit Indexation	Low-Cost	2.28	2.26	1.58
		High-Cost	2.28	3.08	3.14

Appendix E – Detailed Projections of Beneficiaries and Expenditures

The following tables present detailed projections of the number of beneficiaries and amounts of expenditures for the OAS basic pension, GIS, and Allowance benefits. All figures shown include benefits paid outside of Canada. In addition, the projected number of beneficiaries and amount of benefit expenditures shown reflect the corresponding increase in the eligible ages; that is, from 65 to 67 over the period April 2023 to January 2029 for the OAS basic pension and GIS, and from between 60 to 64 to between 62 to 66 for the Allowance over the same period.

The tables providing OAS basic pension projections account for voluntary deferrals, effective 1 July 2013. The tables providing GIS projections account for the increase in the supplement paid to individuals receiving partial OAS pensions. For these individuals, the GIS is increased by the difference between the full and partial OAS pension.

Table 50 OAS Basic Pension Beneficiaries (thousands)[1]

	Males			Females			Both Sexes		
	Level of Pension:			Level of Pension:			Level of Pension:		
Year	Partial	Full	Total[2]	Partial	Full	Total[2]	Partial	Full	Total[2]
2013	232	2,145	2,377	271	2,613	2,885	503	4,759	5,262
2014	252	2,230	2,481	291	2,705	2,996	543	4,934	5,477
2015	272	2,312	2,584	311	2,788	3,099	583	5,100	5,684
2016	294	2,397	2,690	332	2,873	3,205	626	5,269	5,896
2017	316	2,482	2,798	354	2,958	3,312	671	5,439	6,110
2018	340	2,570	2,910	377	3,048	3,425	717	5,618	6,335
2019	364	2,664	3,028	401	3,146	3,547	765	5,810	6,574
2020	389	2,763	3,152	425	3,247	3,672	814	6,010	6,824
2025	497	3,092	3,589	529	3,582	4,111	1,026	6,674	7,700
2030	588	3,344	3,933	618	3,845	4,463	1,206	7,190	8,396
2040	738	3,864	4,602	771	4,423	5,194	1,510	8,286	9,796
2050	798	4,127	4,925	838	4,751	5,588	1,635	8,877	10,513
2060	881	4,601	5,482	913	5,218	6,130	1,794	9,818	11,612

(1) The projected number of OAS basic pension beneficiaries is on a gross basis; that is, the numbers shown include those beneficiaries with pensions subject to full repayment by the OAS Recovery Tax.
(2) Components may not sum to totals due to rounding.

Table 51 OAS Basic Pension Expenditures ($ million)[1]

	Males			Females			Both Sexes		
	Level of Pension:			Level of Pension:			Level of Pension:		
Year	Partial	Full	Total[2]	Partial	Full	Total[2]	Partial	Full	Total[2]
2013	623	14,234	14,857	704	17,331	18,035	1,327	31,565	32,892
2014	716	15,040	15,756	800	18,240	19,040	1,516	33,280	34,796
2015	817	15,897	16,714	904	19,167	20,071	1,721	35,064	36,785
2016	928	16,806	17,734	1,016	20,142	21,158	1,944	36,948	38,892
2017	1,049	17,760	18,809	1,138	21,162	22,300	2,187	38,923	41,109
2018	1,178	18,773	19,951	1,268	22,259	23,526	2,445	41,032	43,477
2019	1,314	19,858	21,172	1,405	23,444	24,849	2,719	43,302	46,021
2020	1,458	21,034	22,493	1,551	24,714	26,264	3,009	45,748	48,757
2025	2,191	26,588	28,779	2,285	30,750	33,035	4,477	57,338	61,814
2030	2,953	31,757	34,710	3,053	36,499	39,552	6,007	68,256	74,263
2040	4,810	45,722	50,532	4,970	52,313	57,283	9,780	98,035	107,816
2050	6,626	60,746	67,373	6,899	69,918	76,817	13,525	130,664	144,189
2060	9,207	84,318	93,525	9,471	95,715	105,186	18,678	180,033	198,711

(1) The projected amounts of OAS basic pension expenditures are on a gross basis; that is, before application of the OAS Recovery Tax.
(2) Components may not sum to totals due to rounding.

Table 52 GIS Beneficiaries (Total, thousands)[1]

	Males			Females			Both Sexes		
	Level of Benefit:			Level of Benefit:			Level of Benefit:		
Year	Partial	Full	Total[2]	Partial	Full	Total[2]	Partial	Full	Total[2]
2013	539	122	661	881	196	1,077	1,420	318	1,738
2014	557	121	679	898	194	1,092	1,455	315	1,771
2015	577	126	703	922	199	1,121	1,499	325	1,824
2016	599	131	730	949	204	1,153	1,547	335	1,882
2017	623	136	759	979	210	1,189	1,603	345	1,948
2018	651	140	791	1,013	216	1,229	1,663	357	2,020
2019	675	146	821	1,047	222	1,269	1,723	368	2,091
2020	705	151	856	1,085	229	1,313	1,789	380	2,169
2025	841	170	1,012	1,258	255	1,513	2,099	425	2,524
2030	961	185	1,146	1,424	277	1,701	2,385	462	2,847
2040	1,077	200	1,278	1,623	305	1,928	2,700	505	3,205
2050	1,076	197	1,273	1,671	303	1,974	2,747	500	3,247
2060	1,114	201	1,315	1,707	307	2,014	2,821	508	3,329

(1) The projected number of GIS beneficiaries shown includes those beneficiaries in receipt of top-up benefits and accounts for TFSAs.
(2) Components may not sum to totals due to rounding.

Table 53 GIS Expenditures (Total, $ million)[1]

	Males			Females			Both Sexes		
	Level of Benefit:			Level of Benefit:			Level of Benefit:		
Year	Partial	Full	Total[2]	Partial	Full	Total[2]	Partial	Full	Total[2]
2013	2,044	1,233	3,277	3,821	2,237	6,059	5,865	3,470	9,335
2014	2,123	1,248	3,372	3,906	2,258	6,165	6,029	3,507	9,536
2015	2,244	1,326	3,569	4,072	2,359	6,432	6,316	3,685	10,001
2016	2,380	1,402	3,782	4,259	2,467	6,726	6,638	3,869	10,507
2017	2,536	1,482	4,017	4,479	2,584	7,064	7,015	4,066	11,081
2018	2,704	1,565	4,269	4,712	2,717	7,429	7,417	4,281	11,698
2019	2,842	1,659	4,501	4,955	2,844	7,798	7,797	4,503	12,300
2020	3,025	1,757	4,782	5,221	2,987	8,208	8,246	4,744	12,990
2025	3,970	2,229	6,199	6,665	3,746	10,411	10,635	5,975	16,610
2030	4,918	2,690	7,608	8,252	4,558	12,810	13,170	7,248	20,418
2040	6,768	3,649	10,417	11,669	6,301	17,970	18,437	9,950	28,387
2050	8,381	4,459	12,840	14,980	7,802	22,782	23,361	12,261	35,622
2060	10,784	5,668	16,451	18,908	9,803	28,711	29,692	15,470	45,162

(1) The projected GIS expenditures shown account for top-up benefits and TFSAs.
(2) Components may not sum to totals due to rounding.

Table 54 GIS Beneficiaries (Single, thousands)[1]

	Males			Females			Both Sexes		
	Level of Benefit:			Level of Benefit:			Level of Benefit:		
Year	Partial	Full	Total[2]	Partial	Full	Total[2]	Partial	Full	Total[2]
2013	231	37	268	635	137	772	866	174	1,040
2014	233	37	270	646	138	784	879	175	1,055
2015	244	39	283	662	140	802	905	180	1,085
2016	256	40	296	679	143	823	935	184	1,119
2017	269	42	311	701	147	848	970	189	1,159
2018	283	43	326	724	151	875	1,007	194	1,202
2019	292	46	337	748	155	903	1,040	200	1,241
2020	305	48	353	774	159	934	1,080	207	1,287
2025	365	54	419	904	179	1,083	1,269	233	1,502
2030	419	59	477	1,039	199	1,238	1,458	258	1,716
2040	487	67	554	1,232	228	1,460	1,719	295	2,014
2050	504	69	572	1,301	232	1,533	1,804	301	2,105
2060	525	71	595	1,325	235	1,560	1,850	305	2,155

(1) The projected number of GIS beneficiaries shown includes those beneficiaries in receipt of top-up benefits and accounts for TFSAs.
(2) Components may not sum to totals due to rounding.

Table 55 GIS Expenditures (Single, $ million)[1]

	Males			Females			Both Sexes		
	Level of Benefit:			Level of Benefit:			Level of Benefit:		
Year	Partial	Full	Total[2]	Partial	Full	Total[2]	Partial	Full	Total[2]
2013	1,164	410	1,574	3,133	1,662	4,794	4,296	2,072	6,368
2014	1,193	425	1,618	3,208	1,698	4,906	4,400	2,123	6,524
2015	1,275	454	1,729	3,339	1,763	5,102	4,614	2,216	6,831
2016	1,368	479	1,847	3,488	1,834	5,322	4,856	2,313	7,169
2017	1,474	507	1,981	3,669	1,915	5,584	5,143	2,422	7,565
2018	1,585	536	2,121	3,859	2,011	5,871	5,445	2,547	7,992
2019	1,656	574	2,230	4,055	2,103	6,158	5,711	2,676	8,388
2020	1,768	612	2,380	4,272	2,209	6,481	6,040	2,821	8,861
2025	2,340	780	3,119	5,479	2,791	8,271	7,819	3,571	11,390
2030	2,921	945	3,866	6,852	3,451	10,304	9,773	4,397	14,170
2040	4,147	1,349	5,496	9,918	4,938	14,856	14,065	6,287	20,352
2050	5,272	1,738	7,010	12,935	6,239	19,174	18,207	7,976	26,183
2060	6,844	2,222	9,066	16,324	7,834	24,158	23,168	10,056	33,224

(1) The projected GIS expenditures shown account for top-up benefits and TFSAs.
(2) Components may not sum to totals due to rounding.

Table 56 GIS Beneficiaries (Spouse a Pensioner, thousands)[1]

	Males			Females			Both Sexes		
	Level of Benefit:			Level of Benefit:			Level of Benefit:		
Year	Partial	Full	Total[2]	Partial	Full	Total[2]	Partial	Full	Total[2]
2013	227	52	279	225	51	276	451	104	555
2014	227	49	276	227	49	276	454	98	552
2015	236	52	288	235	51	287	471	103	574
2016	246	55	300	244	54	297	489	108	597
2017	256	57	313	252	56	308	508	113	621
2018	267	60	327	261	58	319	529	117	646
2019	279	62	341	271	59	331	550	121	671
2020	291	64	355	281	61	343	573	125	698
2025	359	75	434	324	67	391	683	142	825
2030	428	85	513	354	70	424	782	155	937
2040	480	94	575	359	68	427	839	163	1,002
2050	463	89	552	337	62	400	800	151	952
2060	473	88	561	348	63	411	821	151	972

(1) The projected number of GIS beneficiaries shown includes those beneficiaries in receipt of top-up benefits and accounts for TFSAs.
(2) Components may not sum to totals due to rounding.

Table 57 GIS Expenditures (Spouse a Pensioner, $ million)[1]

	Males			Females			Both Sexes		
	Level of Benefit:			Level of Benefit:			Level of Benefit:		
Year	Partial	Full	Total[2]	Partial	Full	Total[2]	Partial	Full	Total[2]
2013	566	510	1,076	572	506	1,078	1,139	1,015	2,154
2014	570	489	1,059	574	485	1,059	1,144	974	2,118
2015	603	525	1,129	605	521	1,126	1,208	1,046	2,254
2016	639	562	1,201	638	555	1,193	1,276	1,118	2,394
2017	677	600	1,277	672	589	1,261	1,349	1,189	2,538
2018	718	637	1,355	708	622	1,330	1,426	1,259	2,685
2019	762	673	1,435	747	654	1,401	1,509	1,327	2,836
2020	809	711	1,519	788	687	1,475	1,596	1,398	2,994
2025	1,084	934	2,018	986	846	1,833	2,070	1,780	3,850
2030	1,397	1,183	2,580	1,163	985	2,149	2,560	2,169	4,729
2040	1,897	1,632	3,529	1,426	1,204	2,630	3,323	2,836	6,159
2050	2,224	1,898	4,122	1,642	1,365	3,007	3,866	3,263	7,128
2060	2,780	2,348	5,128	2,069	1,713	3,783	4,849	4,061	8,911

(1) The projected GIS expenditures shown account for top-up benefits and TFSAs.
(2) Components may not sum to totals due to rounding.

Table 58 GIS Beneficiaries (Spouse Not a Pensioner, thousands)[1]

	Males			Females			Both Sexes		
	Level of Benefit:			Level of Benefit:			Level of Benefit:		
Year	Partial	Full	Total[2]	Partial	Full	Total[2]	Partial	Full	Total[2]
2013	49	13	62	18	5	22	66	18	84
2014	63	14	77	20	5	25	83	19	102
2015	64	14	78	20	5	25	84	19	103
2016	65	14	79	21	5	26	86	19	105
2017	66	14	80	22	5	26	87	19	107
2018	68	15	82	22	5	27	90	19	109
2019	70	15	85	23	5	28	93	20	113
2020	73	15	89	24	5	29	97	20	117
2025	79	16	95	26	5	31	105	21	126
2030	77	15	92	26	6	32	103	21	124
2040	75	14	89	29	6	35	103	21	124
2050	73	14	87	28	6	35	102	20	122
2060	76	14	90	29	6	36	105	20	126

(1) The projected number of GIS beneficiaries shown includes those beneficiaries in receipt of top-up benefits and accounts for TFSAs.
(2) Components may not sum to totals due to rounding.

Table 59 GIS Expenditures (Spouse Not a Pensioner, $ million)[1]

	Males			Females			Both Sexes		
	Level of Benefit:			Level of Benefit:			Level of Benefit:		
Year	Partial	Full	Total[2]	Partial	Full	Total[2]	Partial	Full	Total[2]
2013	196	151	346	101	54	155	297	204	501
2014	234	161	395	108	56	164	342	218	560
2015	239	167	406	112	57	168	351	223	575
2016	247	173	419	116	57	173	363	230	593
2017	255	179	435	121	59	180	376	238	614
2018	267	187	454	126	61	187	393	248	641
2019	282	196	479	133	64	197	415	260	675
2020	299	206	504	140	67	207	439	273	712
2025	363	237	601	176	82	258	540	319	859
2030	399	254	653	213	96	309	612	350	962
2040	483	303	786	299	130	429	782	433	1,215
2050	580	361	942	370	161	530	950	522	1,472
2060	735	454	1,189	469	204	674	1,204	659	1,863

(1) The projected GIS expenditures shown account for top-up benefits and TFSAs.
(2) Components may not sum to totals due to rounding.

Table 60 GIS Beneficiaries (Spouse with Allowance, thousands)[1]

	Males			Females			Both Sexes		
	Level of Benefit:			Level of Benefit:			Level of Benefit:		
Year	Partial	Full	Total[2]	Partial	Full	Total[2]	Partial	Full	Total[2]
2013	32	20	52	4	2	6	36	22	59
2014	34	21	55	5	3	7	38	23	62
2015	33	21	54	5	3	7	38	24	62
2016	33	22	54	5	3	7	37	24	62
2017	32	22	55	5	3	7	37	25	62
2018	33	23	56	5	3	8	38	26	63
2019	34	24	58	5	3	8	39	26	65
2020	35	24	60	5	3	8	40	27	68
2025	37	26	64	5	3	8	42	29	71
2030	37	26	63	4	3	7	41	29	70
2040	35	25	60	4	2	6	39	27	66
2050	36	25	61	4	2	7	40	28	68
2060	40	28	69	4	3	7	45	31	76

(1) The projected number of GIS beneficiaries shown includes those beneficiaries in receipt of top-up benefits and accounts for TFSAs.
(2) Components may not sum to totals due to rounding.

Table 61 GIS Expenditures (Spouse with Allowance, $ million)[1]

	Males			Females			Both Sexes		
	Level of Benefit:			Level of Benefit:			Level of Benefit:		
Year	Partial	Full	Total[2]	Partial	Full	Total[2]	Partial	Full	Total[2]
2013	118	162	280	15	17	31	133	179	312
2014	126	173	299	17	19	35	143	191	334
2015	126	180	305	17	19	36	143	199	342
2016	126	187	314	17	20	38	144	207	351
2017	129	196	325	18	21	39	147	216	363
2018	134	205	339	19	22	41	153	227	380
2019	141	217	358	20	23	43	161	239	401
2020	149	229	378	21	24	45	170	253	423
2025	183	278	461	23	27	50	206	305	511
2030	202	307	508	23	26	49	224	333	557
2040	241	365	605	25	29	54	266	394	660
2050	305	462	767	33	38	71	339	500	838
2060	425	643	1,068	45	52	97	470	694	1,165

(1) The projected GIS expenditures shown account for top-up benefits and TFSAs.
(2) Components may not sum to totals due to rounding.

Table 62 Allowance Beneficiaries (Total, thousands)[1]

	Males			Females			Both Sexes		
	Level of Benefit:			Level of Benefit:			Level of Benefit:		
Year	Partial	Full	Total[2]	Partial	Full	Total[2]	Partial	Full	Total[2]
2013	9	1	9	70	4	75	79	5	84
2014	9	1	10	68	4	72	76	5	81
2015	9	1	9	64	4	68	73	4	78
2016	9	1	9	62	4	66	71	4	75
2017	9	1	10	61	3	64	70	4	74
2018	9	1	10	61	3	64	70	4	74
2019	9	1	10	61	3	64	70	4	74
2020	9	1	10	60	3	64	70	4	74
2025	9	1	10	60	3	64	70	4	74
2030	8	1	9	54	3	57	62	3	66
2040	6	0	7	42	2	44	49	3	51
2050	6	0	7	42	2	44	49	2	51
2060	6	0	6	37	2	39	42	2	45

(1) The projected number of Allowance beneficiaries shown includes those beneficiaries in receipt of top-up benefits and accounts for TFSAs.
(2) Components may not sum to totals due to rounding.

Table 63 Allowance Expenditures (Total, $ million)[1]

	Males			Females			Both Sexes		
	Level of Benefit:			Level of Benefit:			Level of Benefit:		
Year	Partial	Full	Total[2]	Partial	Full	Total[2]	Partial	Full	Total[2]
2013	50	9	59	408	63	472	459	72	531
2014	52	9	61	400	61	461	452	70	522
2015	53	9	62	390	57	447	443	66	509
2016	54	9	63	385	55	440	439	64	503
2017	55	9	64	387	54	441	442	63	505
2018	57	9	66	392	54	446	449	63	513
2019	59	10	68	401	55	456	460	64	524
2020	60	10	70	407	56	463	467	65	533
2025	64	11	75	433	59	492	497	69	566
2030	67	11	78	445	60	505	512	71	582
2040	62	10	72	423	54	478	485	65	550
2050	77	13	90	517	64	581	595	77	671
2060	82	15	97	555	66	621	637	81	718

(1) The projected Allowance expenditures shown account for top-up benefits and TFSAs.
(2) Components may not sum to totals due to rounding.

Table 64 Allowance Beneficiaries (Regular, thousands)[1]

	Males			Females			Both Sexes		
	Level of Benefit:			Level of Benefit:			Level of Benefit:		
Year	Partial	Full	Total[2]	Partial	Full	Total[2]	Partial	Full	Total[2]
2013	6	0	6	51	2	52	57	2	59
2014	6	0	7	50	2	52	56	2	58
2015	6	0	7	48	2	50	54	2	56
2016	6	0	7	47	2	49	53	2	55
2017	7	0	7	47	2	48	53	2	55
2018	7	0	7	47	2	49	53	2	55
2019	7	0	7	47	2	49	54	2	56
2020	7	0	7	47	2	49	54	2	56
2025	7	0	7	49	2	51	56	2	58
2030	6	0	7	45	2	46	51	2	53
2040	5	0	5	36	1	38	41	2	43
2050	5	0	5	37	1	39	42	2	44
2060	4	0	5	33	1	34	38	1	39

(1) The projected number of Allowance beneficiaries shown includes those beneficiaries in receipt of top-up benefits and accounts for TFSAs.
(2) Components may not sum to totals due to rounding.

Table 65 Allowance Expenditures (Regular, $ million)[1]

	Males			Females			Both Sexes		
	Level of Benefit:			Level of Benefit:			Level of Benefit:		
Year	Partial	Full	Total[2]	Partial	Full	Total[2]	Partial	Full	Total[2]
2013	31	4	35	265	25	290	296	29	325
2014	33	4	37	266	25	291	299	29	328
2015	33	4	37	266	25	291	299	29	328
2016	34	4	38	268	25	293	302	29	331
2017	35	4	40	274	25	299	309	30	339
2018	37	5	41	282	26	307	318	31	349
2019	38	5	43	290	27	317	328	32	360
2020	39	5	44	297	28	325	336	33	369
2025	43	5	48	325	31	356	368	36	404
2030	45	6	51	343	33	376	388	39	427
2040	44	5	49	343	33	377	387	39	426
2050	56	7	63	436	42	478	491	49	540
2060	60	8	68	481	46	527	541	54	595

(1) The projected Allowance expenditures shown account for top-up benefits and TFSAs.
(2) Components may not sum to totals due to rounding.

Table 66 Allowance Beneficiaries (Survivor, thousands)[1]

	Males			Females			Both Sexes		
	Level of Benefit:			Level of Benefit:			Level of Benefit:		
Year	Partial	Full	Total[2]	Partial	Full	Total[2]	Partial	Full	Total[2]
2013	3	0	3	20	3	22	22	3	25
2014	3	0	3	18	2	20	20	3	23
2015	3	0	3	16	2	18	19	2	21
2016	3	0	3	15	2	17	18	2	20
2017	3	0	3	14	2	16	17	2	19
2018	3	0	3	14	2	15	16	2	18
2019	2	0	3	13	2	15	16	2	18
2020	2	0	3	13	2	15	15	2	17
2025	2	0	3	12	2	13	14	2	16
2030	2	0	2	10	1	11	12	2	13
2040	1	0	2	6	1	7	7	1	8
2050	1	0	2	5	1	6	6	1	7
2060	1	0	1	4	0	4	5	1	5

(1) The projected number of Allowance beneficiaries shown includes those beneficiaries in receipt of top-up benefits and accounts for TFSAs.
(2) Components may not sum to totals due to rounding.

Table 67 Allowance Expenditures (Survivor, $ million)[1]

	Males			Females			Both Sexes		
	Level of Benefit:			Level of Benefit:			Level of Benefit:		
Year	Partial	Full	Total[2]	Partial	Full	Total[2]	Partial	Full	Total[2]
2013	19	5	24	143	38	182	162	44	206
2014	19	5	24	134	35	169	153	40	194
2015	19	5	24	124	32	157	144	37	181
2016	20	5	24	117	30	147	137	35	172
2017	20	5	25	113	29	142	133	33	166
2018	20	5	25	111	28	139	131	33	164
2019	21	5	25	111	28	139	131	33	164
2020	21	5	26	110	28	138	131	33	164
2025	21	5	27	107	28	135	129	33	162
2030	21	5	27	102	27	129	123	32	155
2040	19	5	23	80	21	101	98	26	124
2050	22	6	28	81	22	103	103	28	131
2060	22	7	29	74	20	94	96	27	123

(1) The projected Allowance expenditures shown account for top-up benefits and TFSAs.
(2) Components may not sum to totals due to rounding.

Appendix F – Acknowledgements

Service Canada provided statistics on the Old Age Security Program and the Canada Pension Plan.

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