



Enhancement of the Canada Pension Plan and Actuarial Reporting for Federal Public Sector Pension Plans

Presentation to the Board of the National Association of Federal Retirees

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Presentation

- Canada Pension Plan (CPP) / Quebec Pension Plan (QPP)
- Public Sector Pension Plans
- Actuarial Assumptions



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Office of the Chief Actuary

- The OCA is an independent unit within Office of the Superintendent of Financial Institutions (OSFI)
 - The Chief Actuary reports to the Superintendent;
 - however, the accountability framework of the OCA makes it clear that the Chief Actuary is solely responsible for content and actuarial opinions in reports prepared by the OCA
- Mandate: conduct statutory actuarial valuations on the
 - Canada Pension Plan (CPP) – **19M members**
 - Old Age Security Program (OAS) - **5M beneficiaries**
 - Federal public sector pension and insurance plans – **0.8M members**
 - Canada Student Loans Program – **0.5M loans**
 - Employment Insurance Program – **17M workers**



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Canadian Retirement Income System is based on a diversified approach to savings

- Canadian retirement system is a three-tiered system with mixed funding approaches
 - Old Age Security Program – a universal basic pension/supplement aimed at poverty reduction (PAYG)
 - **Canada / Québec Pension Plan – mandatory earnings -related DB plans aimed at providing basic retirement income (partially funded)**
 - Occupational Pension Plans and tax-favoured individual savings – voluntary schemes aimed at providing adequate retirement income (fully funded)
- Today, first two pillars replace about 40% of pre-retirement earnings for an individual with average level of earnings

Not all eggs in the same basket



Canadian retirement income system is well recognized in the world for its capacity to adapt rapidly to changing conditions.



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Canada Pension Plan is managed jointly by 11 governments

- Canada Pension Plan is jointly governed by federal, provincial and territorial ministers of finance
 - All changes to the Plan require agreement of two-thirds of provinces covering at least two-thirds of the population
 - Québec participates in decision-making regarding changes to the CPP
- FPT finance ministers review CPP every three years
 - Actuarial reports prepared by the OCA are one of the main sources of information for these reviews
 - The actuarial reports are tabled in Parliament
 - The actuarial reports are reviewed by an independent external review panel and results of this review are publicly available



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- Québec Pension Plan is governed by the Government of Québec

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27th CPP Actuarial Report: the Plan is expected to be able to meet its obligations over the long term

- **27th CPP Actuarial Report as at 31 December 2015:**
 - The minimum contribution rate to sustain the Plan is **9.79%** of contributory earnings for the year 2019 and thereafter, below the legislated contribution rate is **9.90%**
- **Actuarial Valuation of the QPP as at 31 December 2015:**
 - The steady-state contribution rate that, applied as of 2018, would enable the ratio of the reserve to cash outflows to remain stable in 2045 and 2065 is **10.87%**. The statutory contribution rate in 2018 is **10.80%**.



CPP and QPP enhancements

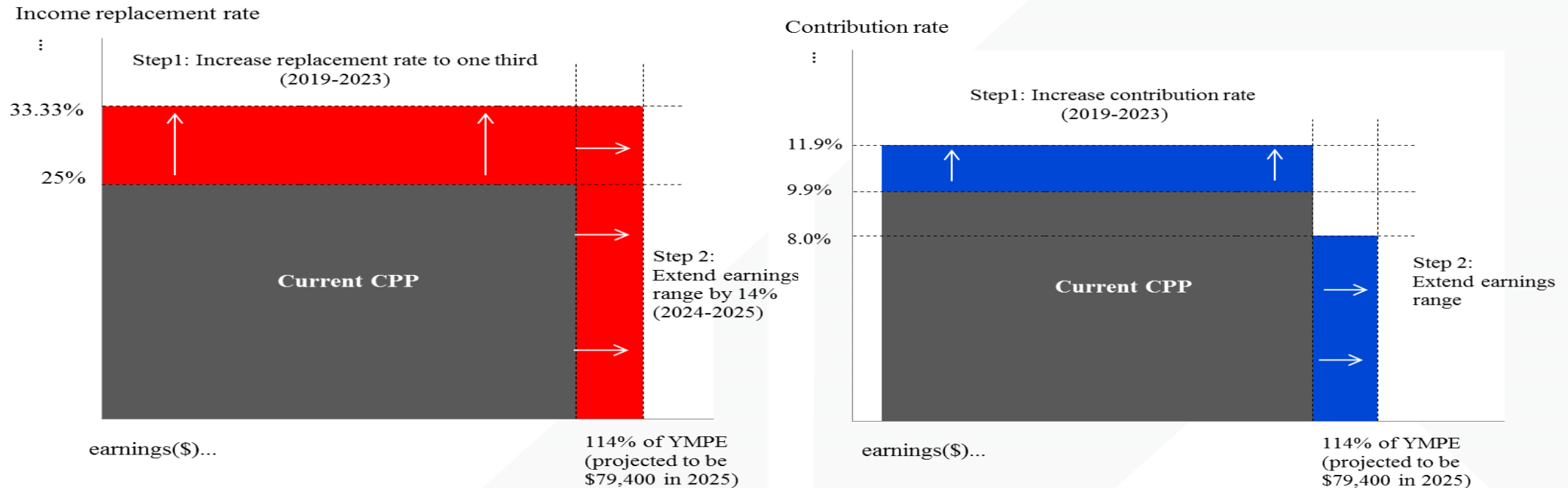
- Effective 1 January 2019
- Decision on the CPP enhancement was taken by Ministers in June 2016, and the legislation was put in place by the end of 2016
- The legislation on the QPP enhancement was passed at the end of February 2018
- The harmonization of CPP/QPP enhancements
 - Ensures the equivalence of two plans
 - Provides the full portability of benefits for all Canadians
 - Facilitates the integration of the enhancement with the third pillar of Canadian retirement income system.



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Additional benefits and contributions



Year's Maximum Pensionable Earnings (YMPE) approximate the Canadian average wage and are equal to CAD\$55,300 in 2017

- The Working Income Tax Benefit is increased to help offset CPP contributions for eligible low-income workers.



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Source: Bill C-26: An Act to amend the Canada Pension Plan, the Canada Pension Plan Investment Board Act and the Income Tax Act received Royal Assent on December 15, 2016

Insufficient rates provisions of Base CPP serve as a safety net in case of political impasse

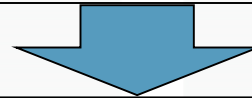
“ Insufficient Rates” Provisions

If the minimum contribution rate is higher than the legislated contribution rate

AND

if the federal and provincial finance ministers cannot reach an agreement

THEN insufficient rates provisions apply



- Contribution rate increased by $\frac{1}{2}$ of excess over three years
- Benefits frozen until next review (3 years)
- The next review will determine the financial status of the Plan



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Self-adjustment provisions of QPP touch only contribution rate

- From 2018, if steady-state contribution rate exceeds the legislated rate by at least 0.1%, then
 - the contribution rate for the year is equal to the contribution rate for the previous year plus 0.1%
- The Québec Government may decide that the contribution rate remains unchanged
- As a result of 2015 actuarial valuation
 - the difference between the steady-state contribution rate (10.87%) and the statutory contribution rate (10.80%) is 0.07%.
 - **Since this difference is less than 0.10%, no automatic adjustment of the contribution rate is required in 2018**



Financial stability provisions of the Additional CPP

- For the Additional CPP, if additional contribution rates fall outside prescribed ranges:
 - As for the Base CPP, the first priority is given to the recommendations of Ministers
 - Prescribed ranges and actions with respect to the benefits and contributions will be defined in regulations.



Considerations regarding financial stability provisions of the Additional CPP

- What are the actions triggers?
 - Surplus versus deficit
 - At inception vs maturity
- What are the actions?
 - Surplus versus deficit
 - Contributions vs benefits
- How impacts are shared?
 - Beneficiaries vs contributors vs employers
 - Different generations
- Are actions reversible?
- And many others...



Responsibilities of the Chief Actuary with respect to federal public sector pension plans

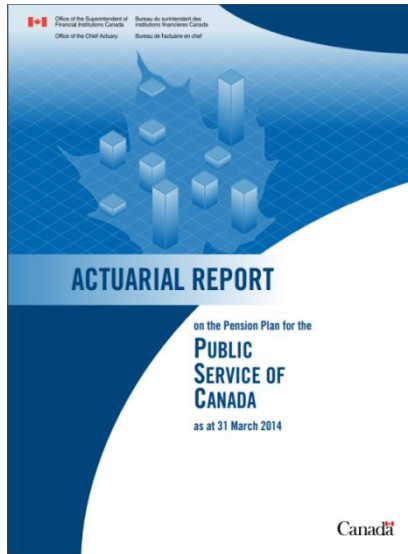
- In accordance with the *Public Pensions Reporting Act*, each pension plan legislation requires that an actuarial valuation report be prepared, filed with the designated Minister and tabled before Parliament.
- Actuarial valuations are conducted every three years



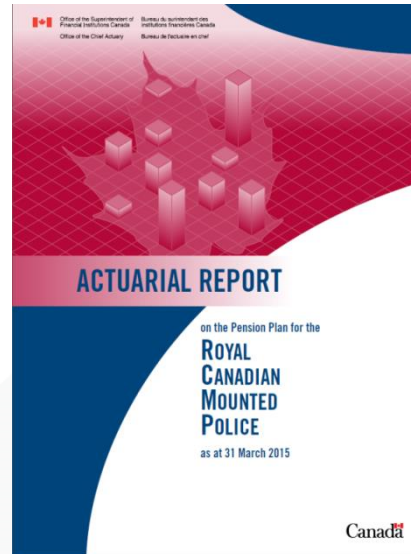
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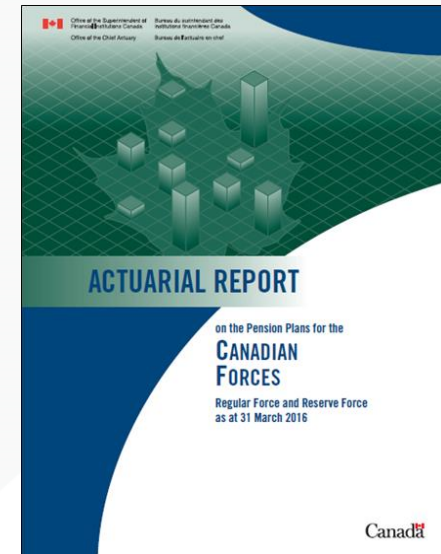
Actuarial Reports - Membership



295,000 contributors
270,000 beneficiaries



22,000 contributors
19,000 beneficiaries



90,000 contributors
122,000 beneficiaries

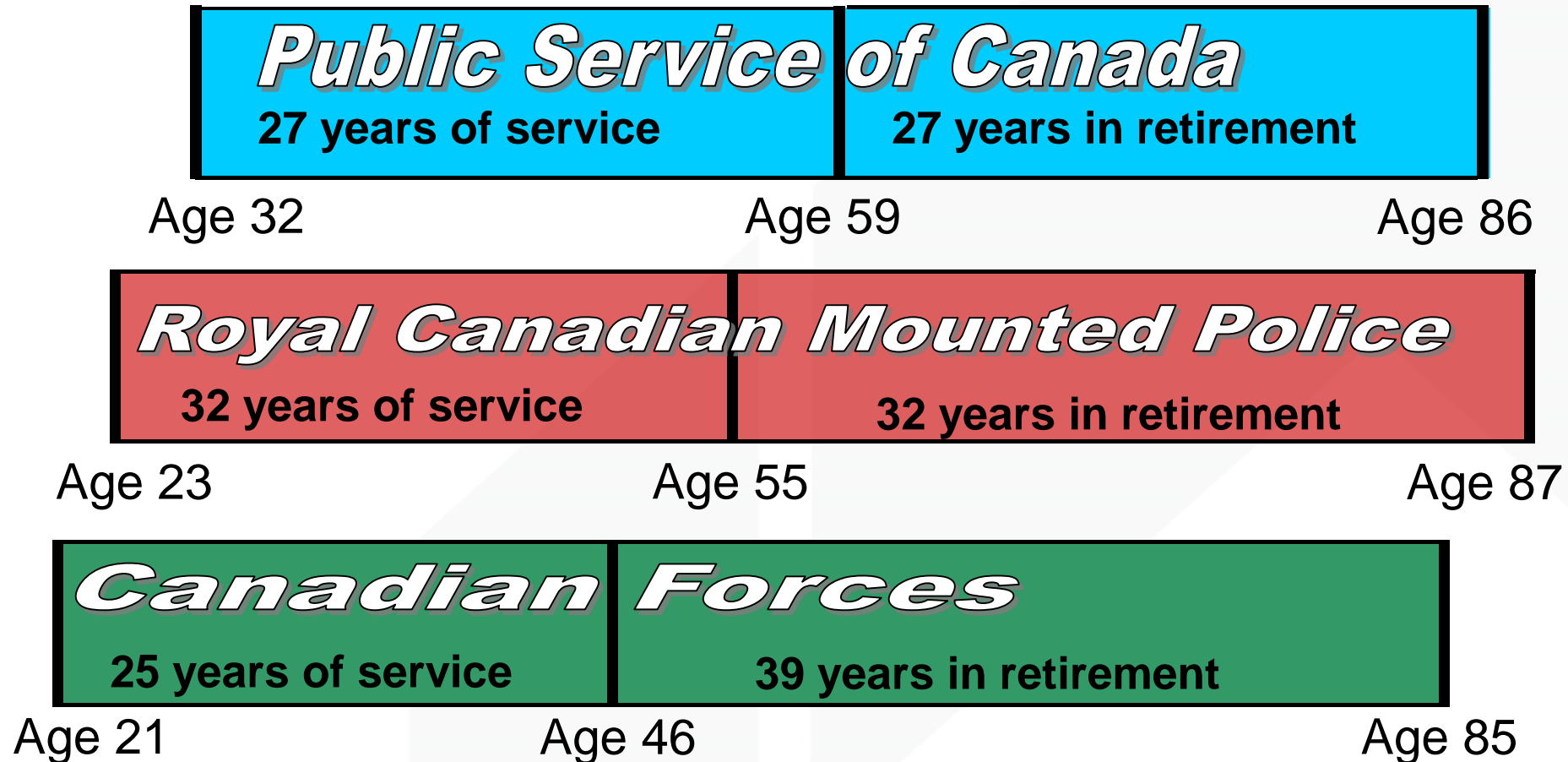
	PSSA (2014)	RCMP (2015)	CF (Regular) (2016)
Average Age Contributors/Retirement Pensioners	44/69	42/67	35/66
Average Service of Contributors	13	14	12
Average Salary of Contributors	76,000	89,000	70,000
Average Annual Pension of Retirement Pensioners	28,000	45,000	30,000



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For recent retirees average working life is less or equal to average retirement life



About 2 years more in retirement for women



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Actuarial Reports Include

- Financial position of the plan – actuarial surplus or deficit
 - Compare the actuarial liabilities with the actuarial value of assets (service since 1st April 2000) or the recorded account balances (service up to 31st March 2000)
 - Actuarial liabilities are the present values, discounted using actuarial assumptions, of all future benefits attributable to service up to the valuation date
- Cost certificate showing
 - Current service cost of the plan
 - Contributions for prior service elections
 - Special payments to be made by Government to cover any deficits

The actuary is responsible for all assumptions used in the actuarial reports



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Actuarial Assumptions

- The selection of the actuarial assumptions has a direct impact on the results of the actuarial reports
- Actuarial reports are based on “best-estimate” assumptions over a long period of time
- Although secondary, recent trends are also taken into account
- The actuarial assumptions are reviewed and modified with each actuarial valuation
- In accordance with the Standards of Practice of the Canadian Institute of Actuaries (CIA), the actuary must certify that the assumptions used are appropriate for the purposes of the valuation



The actuarial assumptions used in the actuarial reports affect the costs of the pension plans

- Demographic and economic environments determine the choice of assumptions used to calculate the cost of a plan
 - Short term experience vs. structural change
- Increases in longevity mean that pension benefits are paid for a longer period of time
- Fiscal and financial market environments affect the assets and the expected rate of return on assets

Experience gains and/or losses, including investment losses, affect the actuarial surplus/(deficit) and may result in additional costs



Actuarial Assumptions

Economic Assumptions

- Inflation rate
- Real wage increases
- **Real rate of return on assets**

Demographic and Other Assumptions

- Promotional and seniority salary increases
- Rates of retirement
- Rates of termination / Rates of disability
- **Mortality and Mortality improvement rates**
- Number, age, sex, initial salary of future new members
- Proportion of members married
- Administrative expenses



Mortality Assumptions for Public Sector Pension Plans

- An assumption for the mortality of plan members is necessary to estimate the period of pension payments
 - Lower mortality results in higher costs for the pension plan
- Mortality assumptions in our actuarial valuations have two components:
 - Mortality rates as at the valuation date, which are based on the experience of the plans
 - Expected mortality improvement rates, which are developed for the CPP actuarial reports and are used to project the mortality rates into the future

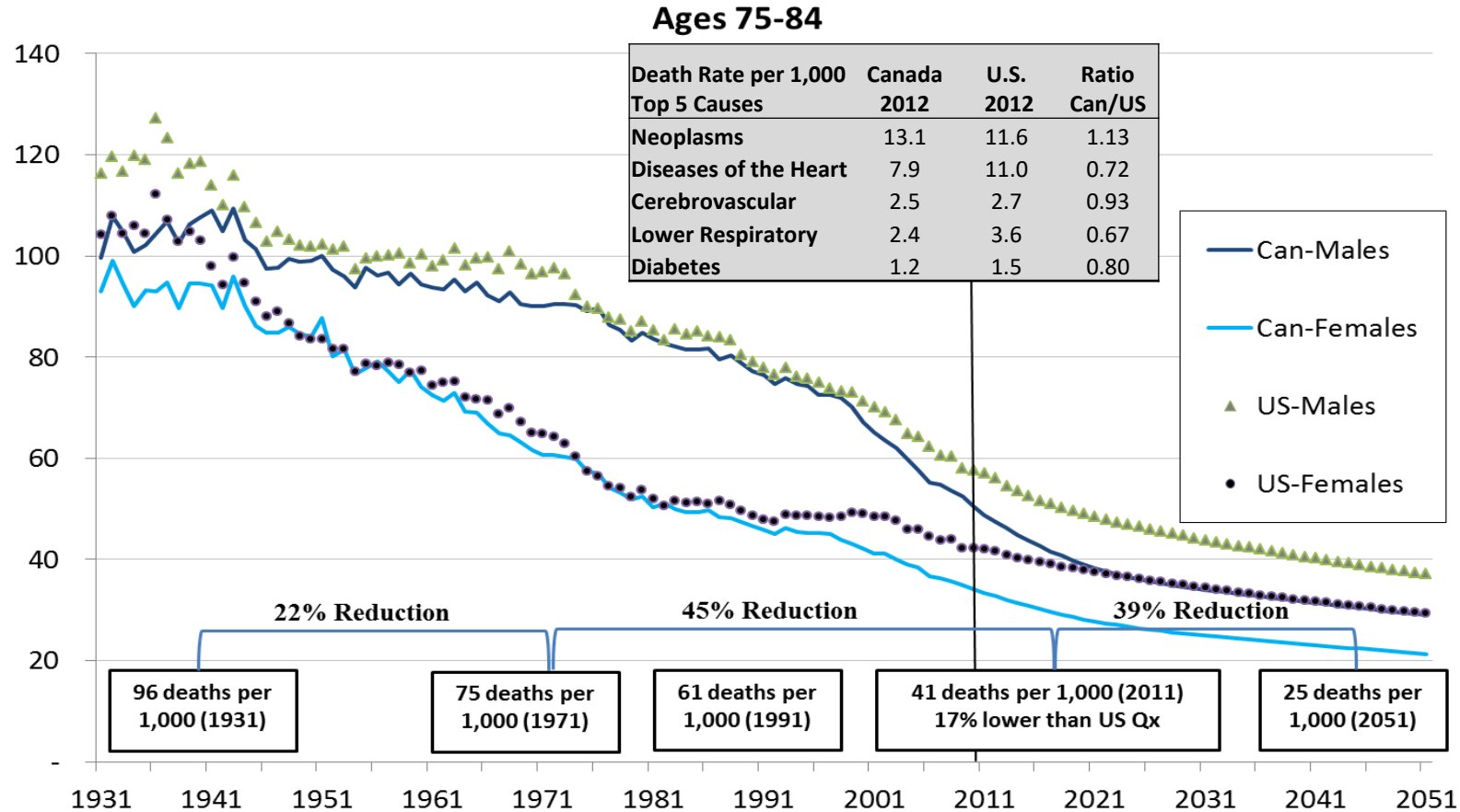


Life Expectancies at Age 65 as at 31 March 2016 (with future mortality improvements)

Plan and Year of Report	Males	Females
PS 2014	21.7	23.9
RCMP 2015	22.2	24.6
CF 2016 (Officers)	23.2	24.3
CF 2016 (Other Ranks)	20.7	24.3
Members of Parliament 2016	23.5	25.0
Judges 2016	24.1	25.0
CIA CPM Combined	22.3	24.6
CPP 27 th 2015	21.3	23.7



Mortality Rates have decreased over the last 80 years, more so over the last 40 years



Source: office of the chief Actuary, 27th CPP Actuarial Report and 2015 OASDI Trustees Report

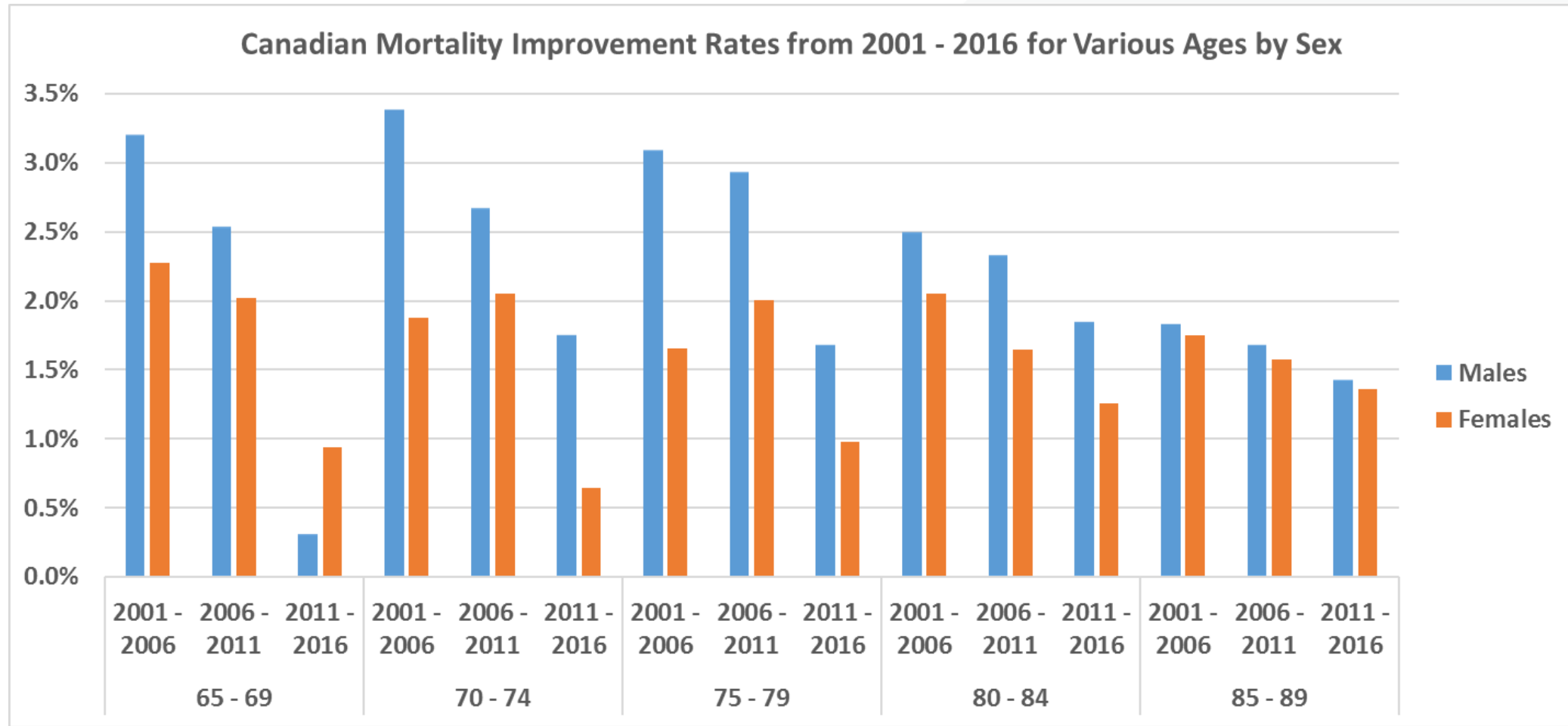
U.S. National Vital Statistics Report, Volume 65 No.3 and Statistics Canada catalogue 84-215-x Standardized using 2015 Canadian population



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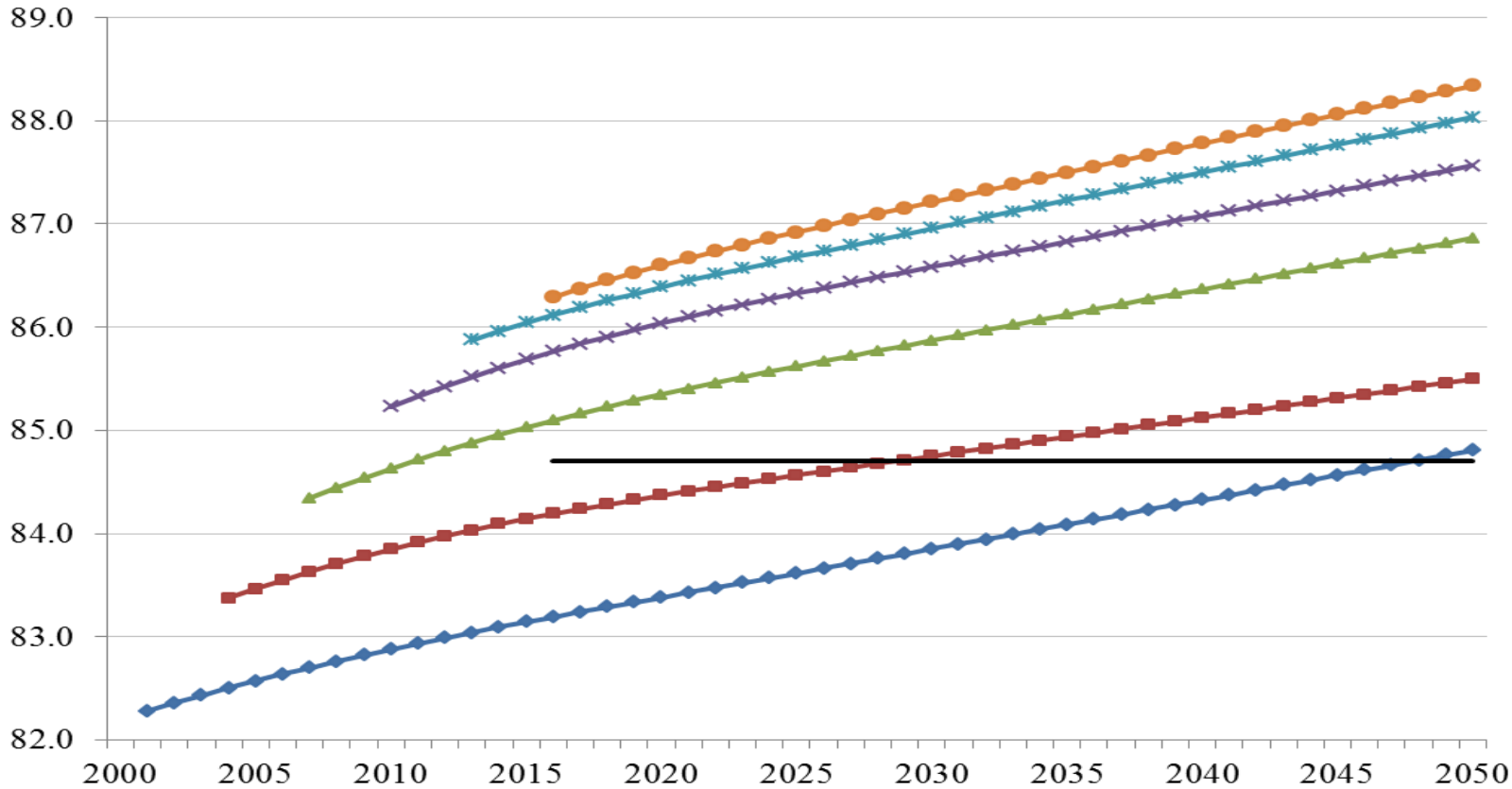
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Slowdown in mortality improvements in recent years: a blip or a new trend?



Evolution of CPP mortality projections over 15 years Males

Average Age at Death for those Aged 65 - Male Canada
(with future mortality improvements)



No future improvements:
the average expected age at
death of a male aged 65 in
2015 is 84.7

84.7

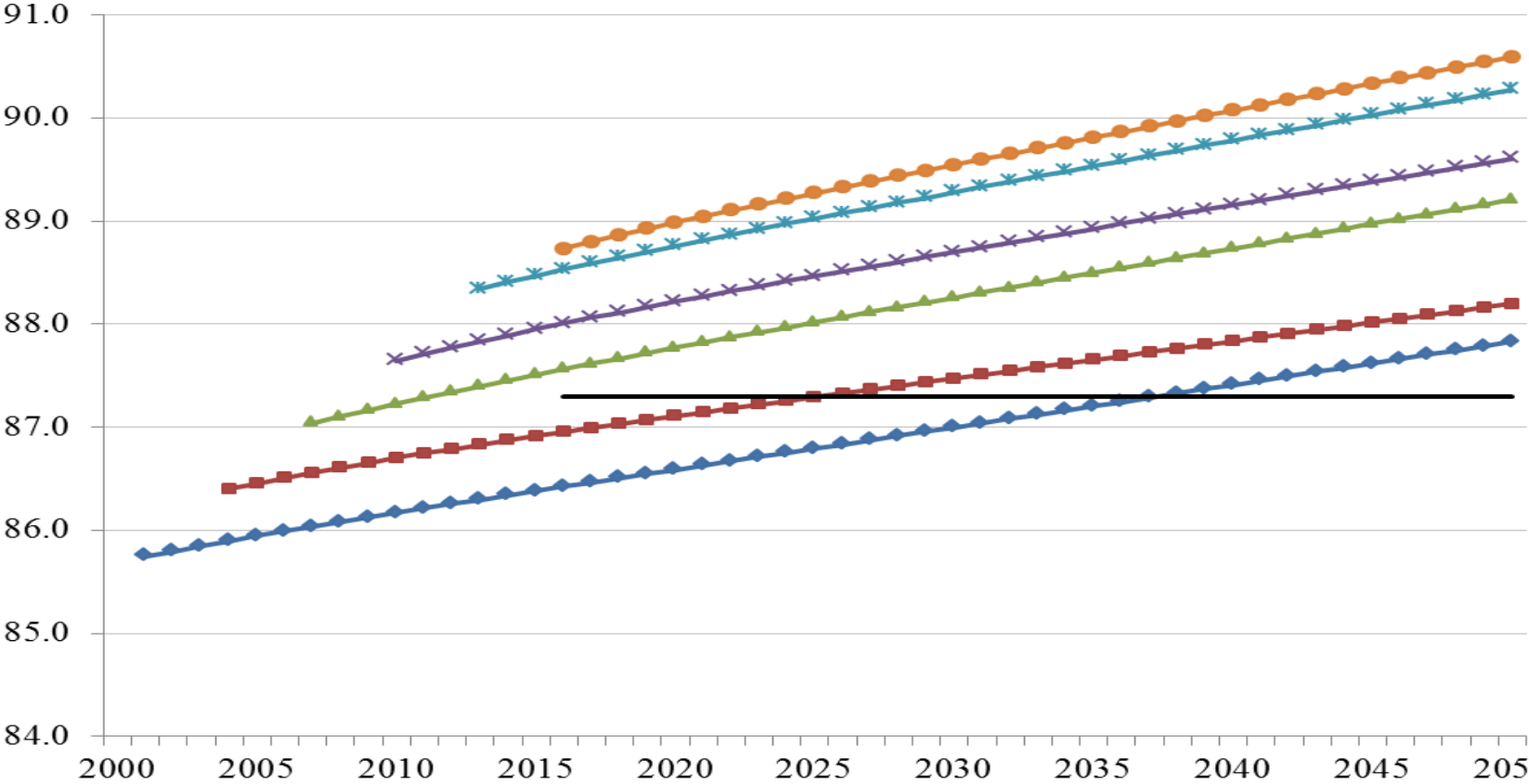
- CPP 27th 2015
- *— CPP 26th 2012
- x— CPP 25th 2009
- ▲— CPP 23rd 2006
- CPP 21th 2003
- ◆— CPP 18th 2000



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Evolution of CPP mortality projections over 15 years Females

Average Age at Death for those Aged 65 - Female Canada
(with future mortality improvements)



No future improvements:
the average expected age
at death of a female aged
65 in 2015 is 87.3

87.3

- CPP 27th 2015
- *— CPP 26th 2012
- x— CPP 25th 2009
- ▲— CPP 23rd 2006
- CPP 21th 2003
- ◆— CPP 18th 2000



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Future drivers of mortality are not easy to quantify

- “Easy” gains have been somewhat achieved:
 - Previous improvement in heart disease mortality will be tough to duplicate
 - Favorable effects of decreasing smoking prevalence should continue for a while but will diminish in 20-30 years.
- Other factors: obesity, income inequality, aging, marital status
- Future drivers of mortality could be:

FAVORABLE

- ✓ Enhanced medical treatment
- ✓ Pharmaceuticals
- ✓ Technology Breakthroughs
- ✓ Self-driving cars

UNFAVORABLE

- ✓ Pandemics
- ✓ Increasing drug resistance
- ✓ Natural and man-made disasters
(increasing with future climate change)



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Source: Longevity, The dark side, Sam Gutterman, Longevity 12, Chicago, Sept. 2016

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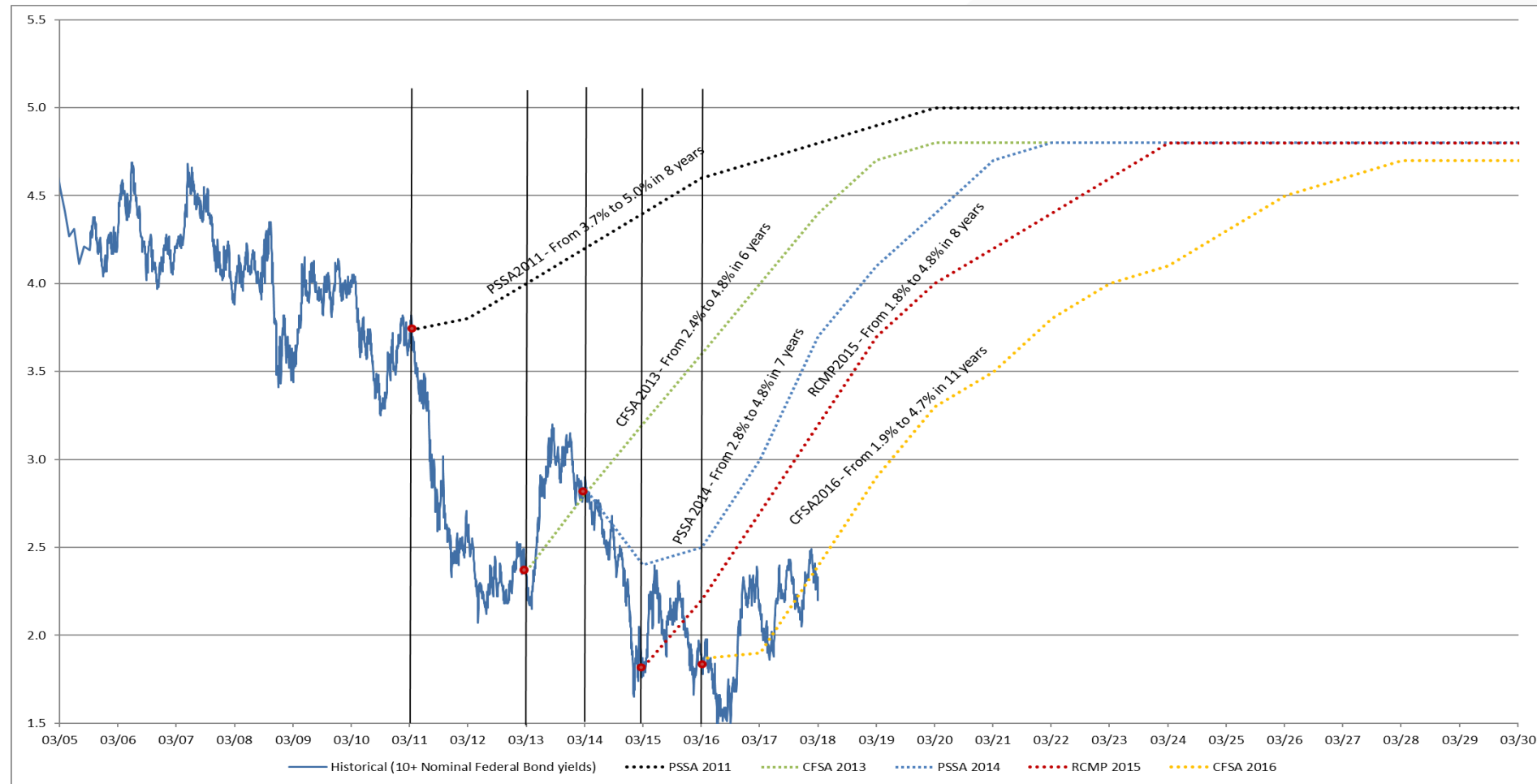
Real rate of return assumption for Public Sector Pension Plans

- Since 1 April 2000, government and employee contributions are invested in capital markets by the Public Sector Pension Investment Board
- The expected rates of return on the plans' assets are required to determine the liability for service since 1 April 2000 and the current service costs
- Start with “risk-free” interest rate and long-term Federal bond yield
- Add equity risk-premium to determine expected return on equities
- Determine projected portfolio return using projected asset mix
- Subtract assumed allowance for investment expenses (20 bps)



Government of Canada long-term marketable bond yields are very low

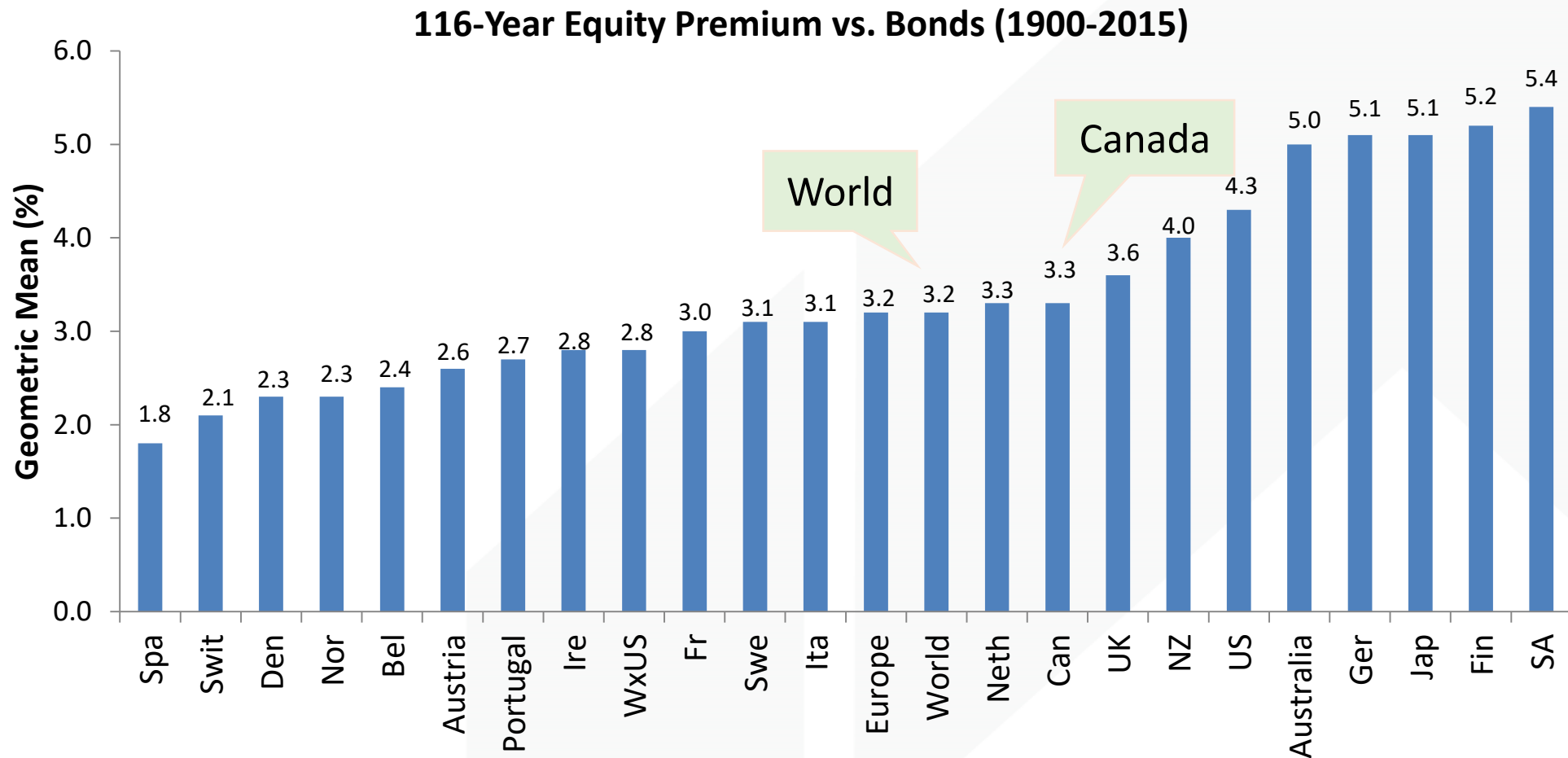
Nominal Yield on the Canada Long-Term Bonds (maturity 10 + years)



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The future ERP is expected to be lower than in the past



Source: Credit Suisse Global Investment Returns Yearbook 2016, Dimson, Marsh and Staunton

The ultimate equity risk premium for developed markets is set at 2.1% (CF 2016), compared to 2.2% in the previous report (RCMP 2015)



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Lower discount rate leads to higher pension plan costs

- The lower bond yields as well as the lower expected equity risk premium lead to a lower expected real rate of return on assets:

	Expected Real Rates of Return on Assets in Past Actuarial Reports								
	2005	2008	2010	2011	2012	2013	2014	2015	2016
First 5 Years	4.3%	4.0%	4.2%	3.6%	3.3%	3.4%	3.3%	3.1%	3.0%
First 10 Years	4.3%	4.2%	4.2%	3.9%	3.7%	3.7%	3.6%	3.5%	3.3%
Ultimate	4.3%	4.3%	4.2%	4.1%	4.1%	4.1%	4.1%	4.1%	4.0%
Flat equivalent rate	4.3%	4.2%	4.2%	4.0%	3.9%	3.9%	3.9%	3.8%	3.7%

- The lower discount rates result in higher current service costs and higher actuarial liabilities



Assumed real rate of return for the CF 2016 is in line with assumptions of peers

Asset mix and real rate of return assumptions

	Equities	Fixed Income	Alternative investments/RE&I	Real rate of return
CF	47%	23%	30%	3.70%
OTPP	38%	22%	40%	2.75%
HOOPP	34%	54%	13%	3.45%
ON PSPP	42%	25%	33%	3.70%
AB PSPP	55%	21%	24%	4.10%
RREGOP	49%	33%	18%	4.10%
OMERS	36%	23%	41%	4.20%

The CF valuation report uses a streamed assumption for the real rate of return on Pension Fund assets. The expected real rate of return of 3.0% for plan year 2017 decreases to 2.8% in 2018 then gradually increases to reach the ultimate rate of 4.0% in plan year 2028. The equivalent flat real rate of return as at 31 March 2016 is 3.7%.

Due to current low interest rate environment, the OCA assumes a real rate of return of 3.0% over the next five years.



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Conclusions

- The 2016 expansion of the CPP is aimed at enhancing the adequacy of benefits while respecting intergenerational sustainability
- The costs of the federal public sector pension plans are subject to upward pressure due to low interest rate environment and improved longevity
- Strong governance, political dialogue and sound actuarial analysis serve as a foundation for an efficient retirement income system





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THANK YOU!



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Additional CPP strengthens link between contributions and benefits

- Each year of contributing to the enhanced CPP will allow workers to accrue partial additional benefits
 - Full enhanced CPP benefits will be available after 40 years of making contributions.
 - Partial benefits will be available sooner and will be based on years of contributions

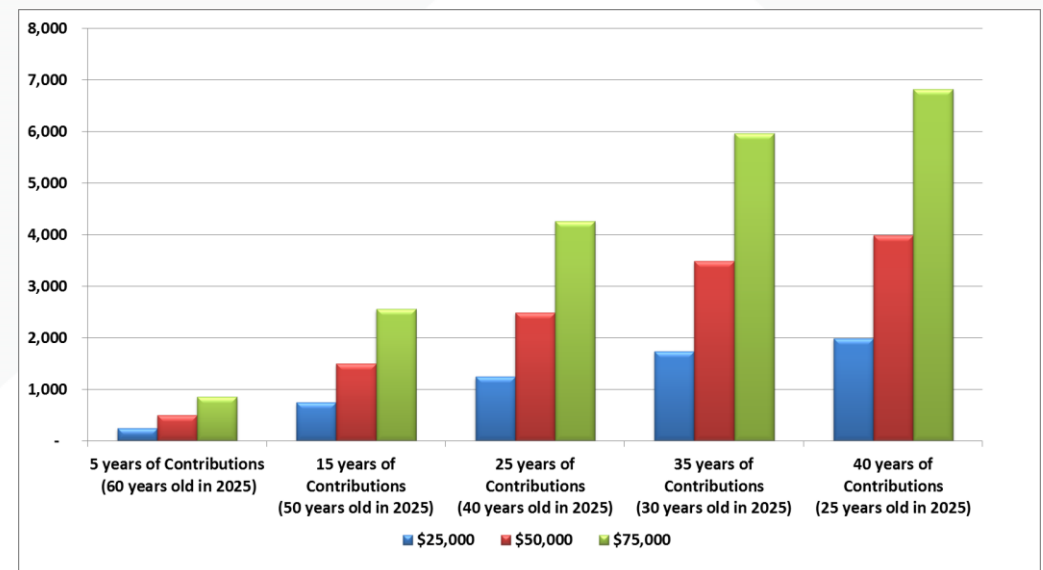
No past service liability is created and current young workers benefit the most from the expansion.



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Illustration of Additional Annual CPP Benefits for Different Age Cohorts and Income Levels (\$2016)



Portfolio Real Rates of Return

CF Actuarial Report – 31 March 2016

Asset Allocation and Real Rates of Return by Asset Type (before investment expenses)

Plan Year	Equity			Fixed Income Securities	Cash	Real Assets	Total
	Canadian	Foreign Developed Market	Emerging Markets				
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Asset Allocation							
2022+	10	30	7	21	2	30	100
Real rate of return before investment expenses							
2017	4.8	4.8	5.8	(3.2)	(0.9)	4.3	3.2
2023	4.8	4.8	5.8	0.3	0.3	4.3	3.7
2028	4.8	4.8	5.8	2.8	1.0	4.3	4.2

Total expected investment expenses of 0.6% are reduced by an additional rate of return due to active management of 0.4% for a net investment expenses assumption of 0.2% to reflect the expenses due to passive management.

Portfolio Real Rate of Return Net of Investment and Operating Expenses (%)

	CF 2016	RCMP 2015
First 5 years	3.0	3.1
First 10 years	3.3	3.5
Ultimate	4.0	4.1



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