



SOCIETY OF
ACTUARIES®

2019 **ANNUAL
MEETING**
& EXHIBIT

October 27-30
Toronto, Canada

Session 049: The Canada Pension Plan: Funding the Public Pension Promise to Canadians

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The Canada Pension Plan (CPP): Funding the Public Pension Promise to Canadians

Presentation to SOA 2019 Annual Meeting & Exhibit (Session #049):

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Office of the Chief Actuary, OSFI

Toronto, October 28, 2019



Office of the Chief Actuary: who we are

- The OCA is an independent unit within the 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) – **20M members**
 - Old Age Security Program (OAS) - **6M beneficiaries**
 - Federal public sector pension and insurance plans – **0.8M members**
 - Canada Student Loans Program – **0.5M loans**
 - Employment Insurance Program – **19M workers**



Our work is governed by multiple legislations

- Legislations governs the activities of the OCA
 - *Canada Pension Plan*
 - *Public Pensions Reporting Act* covers actuarial services in respect of
 - *Canadian Forces Superannuation Act;*
 - *Members of Parliament Retiring Allowances Act;*
 - *Public Service Superannuation Act;*
 - *Royal Canadian Mounted Police Superannuation Act;*
 - *Judges Act;* and
 - *Old Age Security Act*
 - *Canada Student Financial Assistance Act*
 - *Employment Insurance Act & Department of Employment and Social Development Act*

Office of the Chief Actuary is an Independent Entity

- The OCA serves the public interest by ensuring
 - good governance of the plans and programs, and
 - appropriate disclosure in actuarial reports
- It contributes to the overall accountability to plans and programs participants.
- By being outside of the departments that use its services, the Chief Actuary can exercise independent and impartial professional judgment in discharging its mandate.



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The OCA staff is solely responsible for the actuarial advice it provides

Canada's Retirement Income System

A Three-Pillar System

Public

Old Age Security Program

Tax-Financed
(Established in 1952)

First Pillar

Canada Pension Plan / Québec Pension Plan

Mandatory
Contributory
(Established in 1966)

Second Pillar

Private

Workplace Pension Plans and Private Savings (e.g. - RRSPs, TFSAs, etc.)

Mandatory/Voluntary
Contributory

Third Pillar

Canadian system is well diversified

- The three-tiered system uses 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, the first two pillars replace about 40% of pre-retirement earnings for a worker with average level of earnings.

Not all eggs in the same basket



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

The Canada Pension Plan: Overview

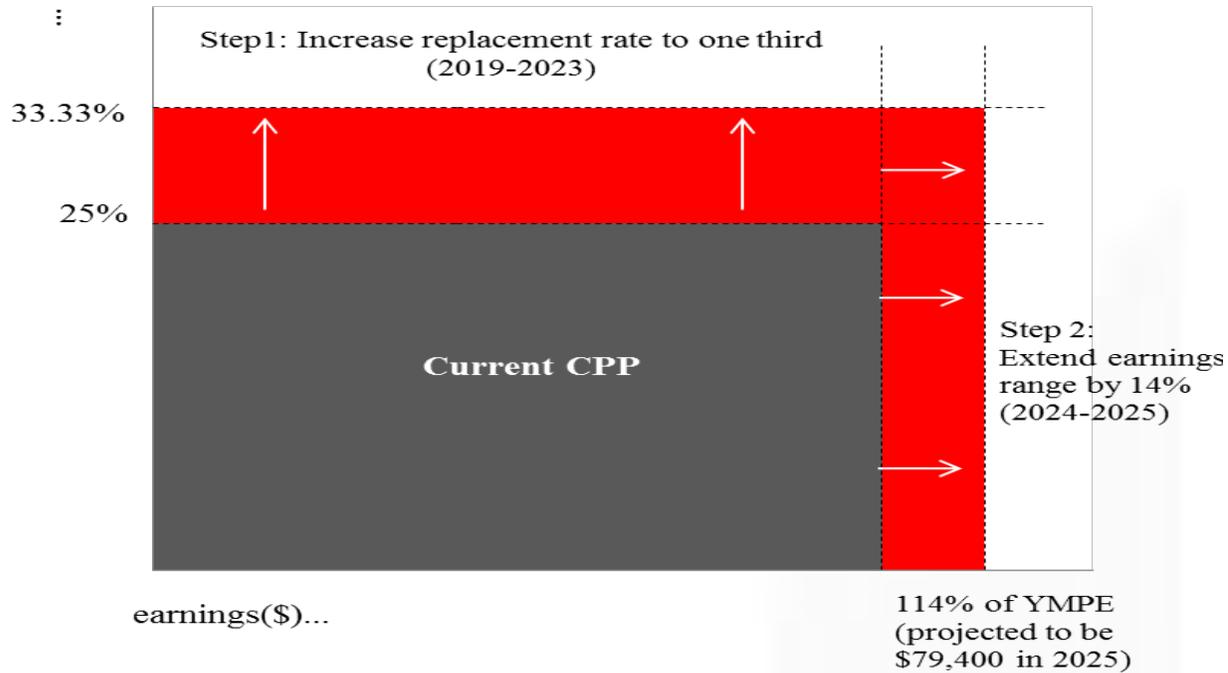
- Mandatory contributions.
- 9.9% contribution rate.
- Primarily a retirement income plan but also contains supplementary disability and survivor benefits.

The Canada Pension Plan: The Additional CPP

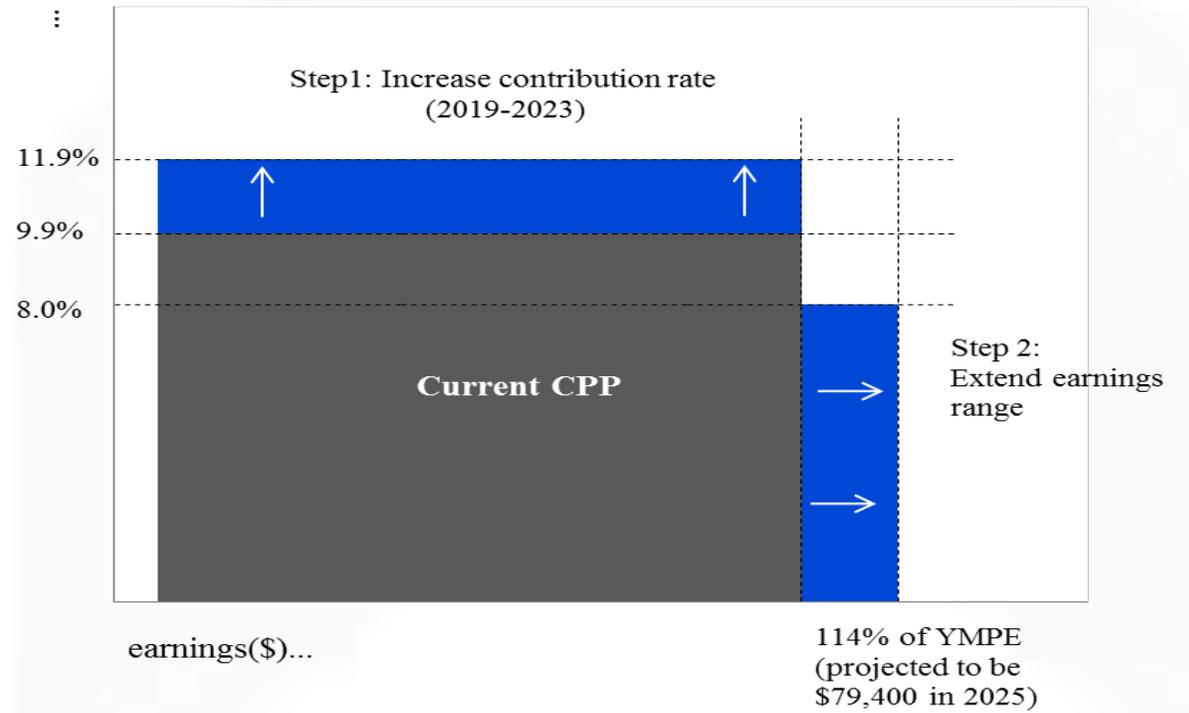
- Effective 1 January 2019
- The harmonization with Quebec Pension Plan enhancements
 - Ensures the equivalence of two plans
 - Provides the full portability of benefits for all Canadians
 - Facilitates the integration of the enhancement with the third pillar of Canadian retirement income system.

The Canada Pension Plan: Retirement Benefit and Contribution

Income replacement rate



Contribution rate



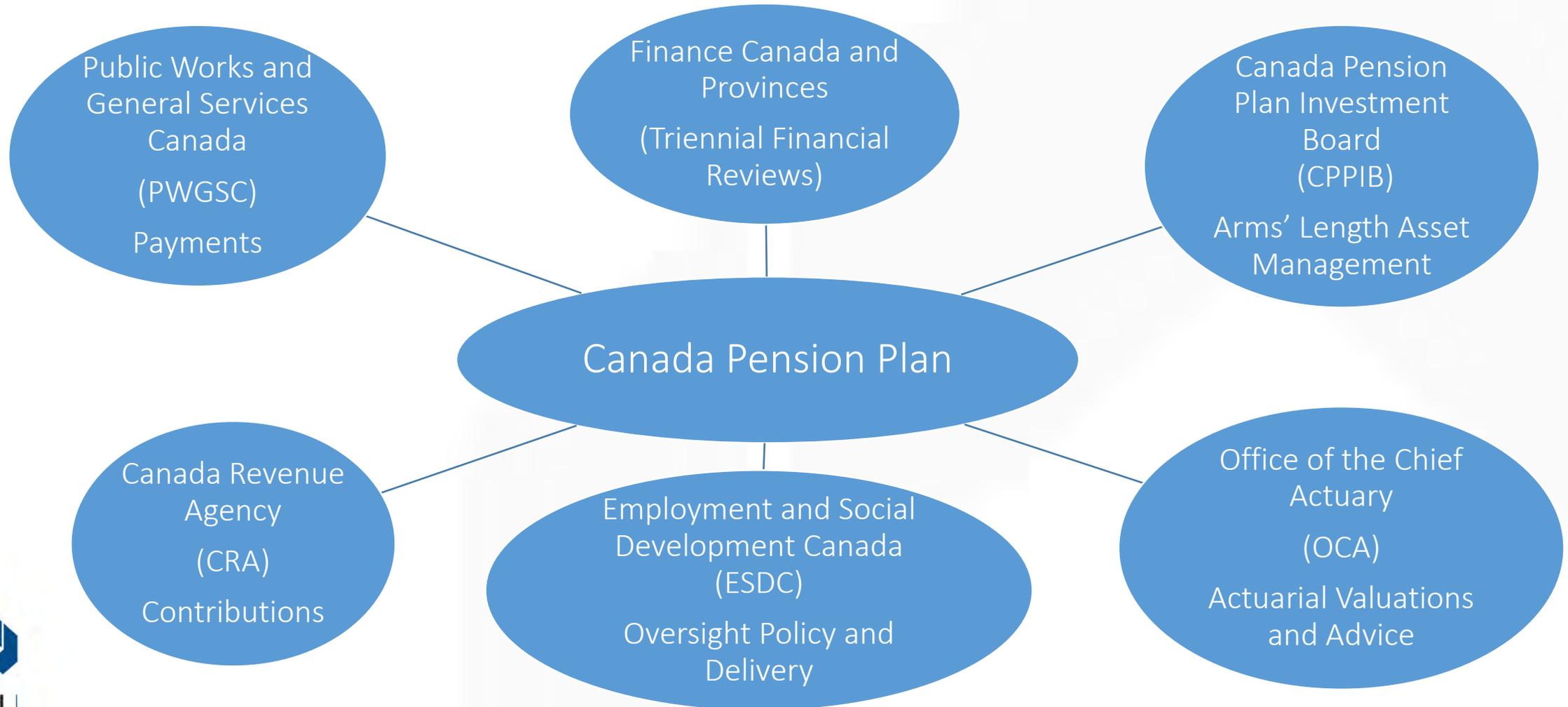
Year's Maximum Pensionable Earnings (YMPE) approximate the Canadian average wage and are equal to CAD\$57,400 in 2019



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The Canada Pension Plan: Joint Responsibility of Federal and Provincial Governments

Governance Structure



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The Canada Pension Plan: Triennial Review Process

- Financial review the Plan every three years
- Review Process:
 - Year 1 : Actuarial Report on the Plan.
 - Year 2 : Review by FPT Finance Ministers and agreement on any changes
 - Year 3 : Implementation of any agreed to changes
- Major changes to the CPP must be approved by Parliament, and at least 2/3 of the provinces representing at least 2/3 of the population.



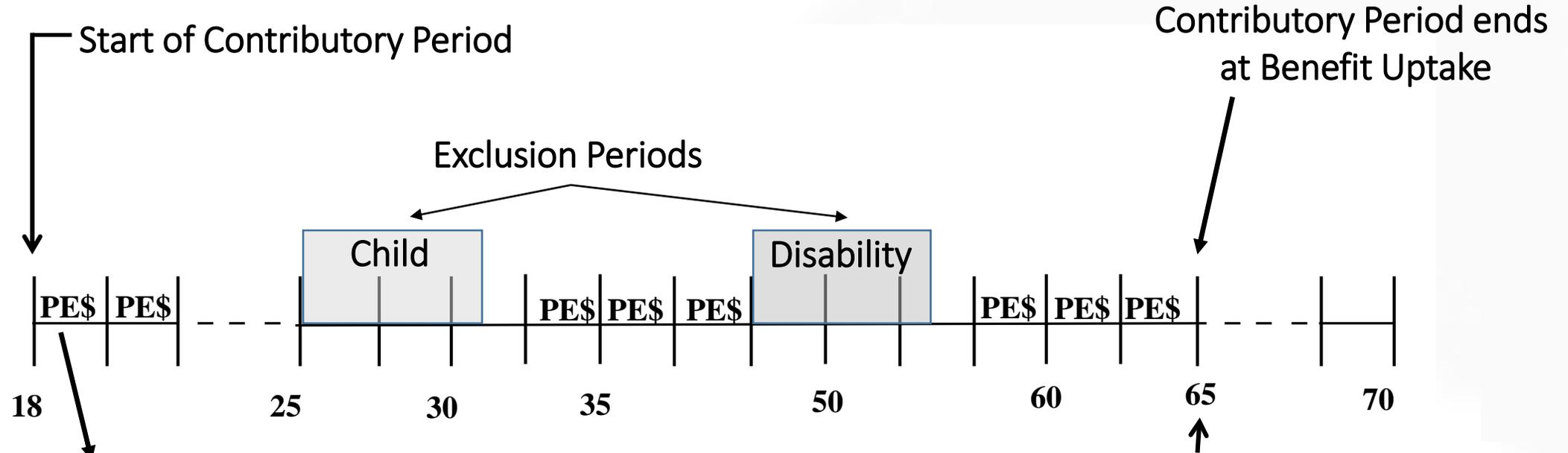
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The Canada Pension Plan: Base CPP Benefits

Pensionable Earnings (PE) are all employment and self-employment earnings up to the annual limit (\$57,400 in 2019) called the Year's Maximum Pensionable Earnings (or YMPE).



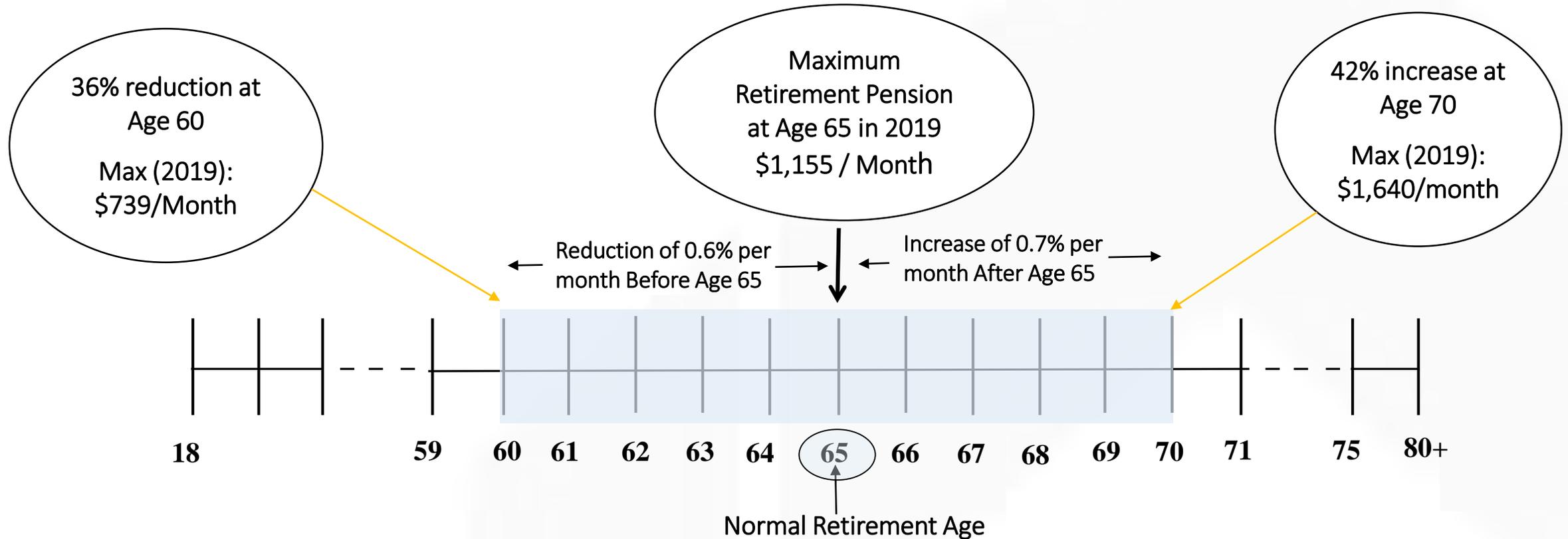
Pensionable Earnings (PE) are wage indexed to the year of benefit uptake

Benefit:
25% of Average Career Adjusted Pensionable Earnings



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The Canada Pension Plan: Base CPP Retirement Pension



Working beneficiaries under age 70 may continue to participate in the Plan and increase their retirement income via the Post-Retirement Benefit. Participation is mandatory for those under 65, voluntary after 65.

Once in pay the pension is fully indexed to price increases each January 1st.

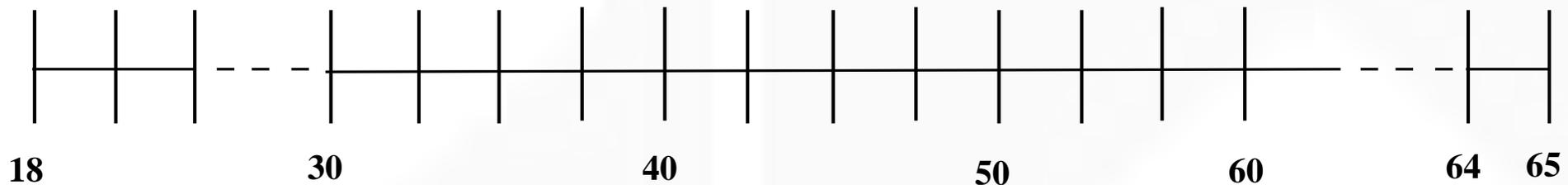
The Canada Pension Plan: Base CPP Disability

Eligible between age 18 and 65 if:

1. Severe and prolonged disability, and
2. Contributed in: 4 of last 6 years or, -3 of last 6 if 25+ years of contributions

Maximum Disability Pension:
75% of Retirement Pension + Flat-Rate
in 2019:
\$1,362 / Month

Disability pension is automatically converted to a retirement pension at Age 65.



A separate flat-rate benefit is paid to the children of disabled contributors (\$250 / month in 2019).

As of 2019, individuals under 65 collecting a retirement pension who become disabled can receive a disability Benefit equal to flat-rate component of the disability benefit (\$496 / month in 2019).



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The Canada Pension Plan: Base CPP Survivor Pension

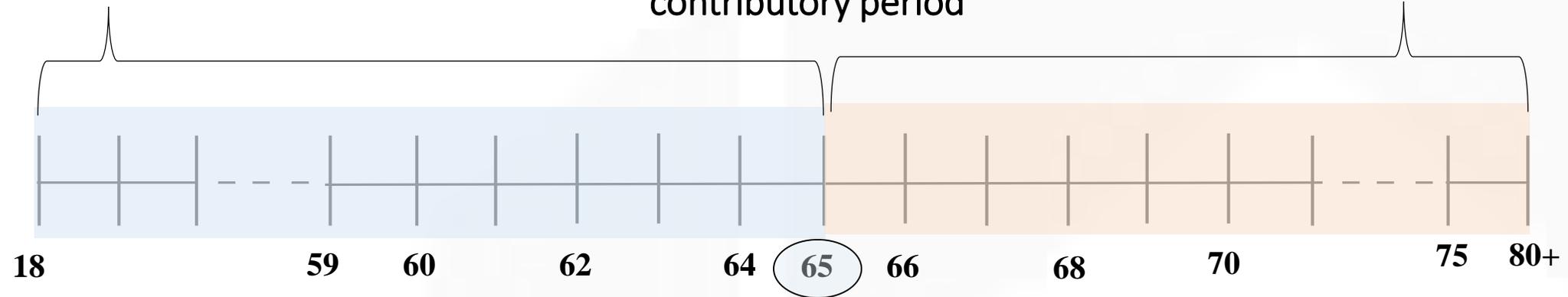
Maximum
Survivor Pension Below age 65:

37.5% of Deceased Retirement Pension
+ Flat-Rate
in 2019: \$627 / Month

Eligible if Deceased Contributor:
Contributed for a minimum of 3
years or in 1/3 of his/her
contributory period

Maximum
Survivor Pension Above age 65:

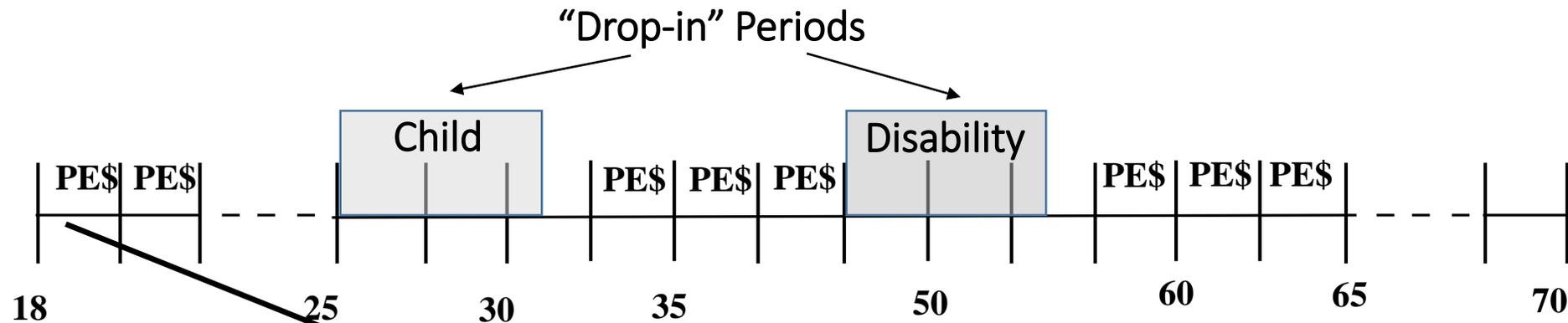
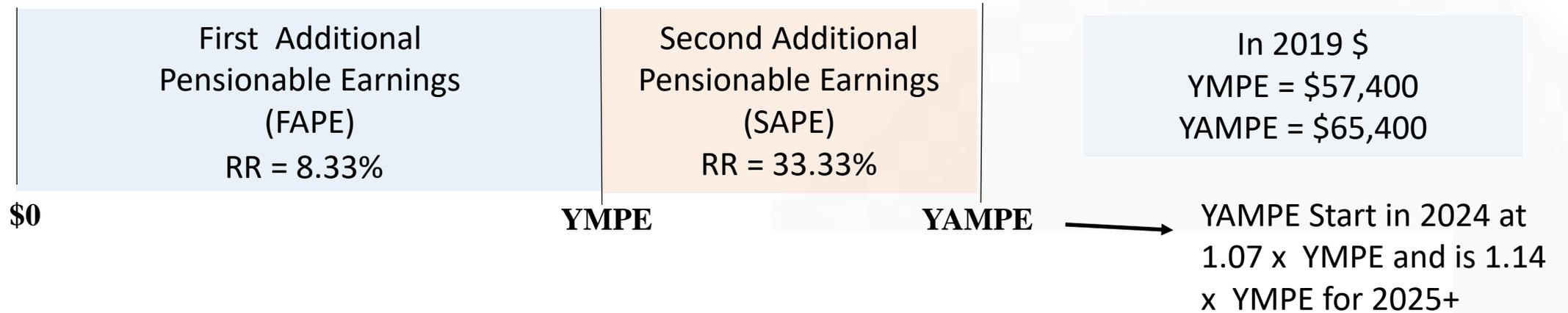
60% of Deceased Retirement Pension
in 2019: \$693 / Month



Dependent children of deceased contributors may be eligible for a flat-rate benefit (\$250 per month in 2019).

There is also a one-time lump-sum death benefit paid to the estate of deceased contributors. As of 2019, the CPP death benefit is a \$2,500 flat rate.

The Canada Pension Plan: Additional CPP Benefits



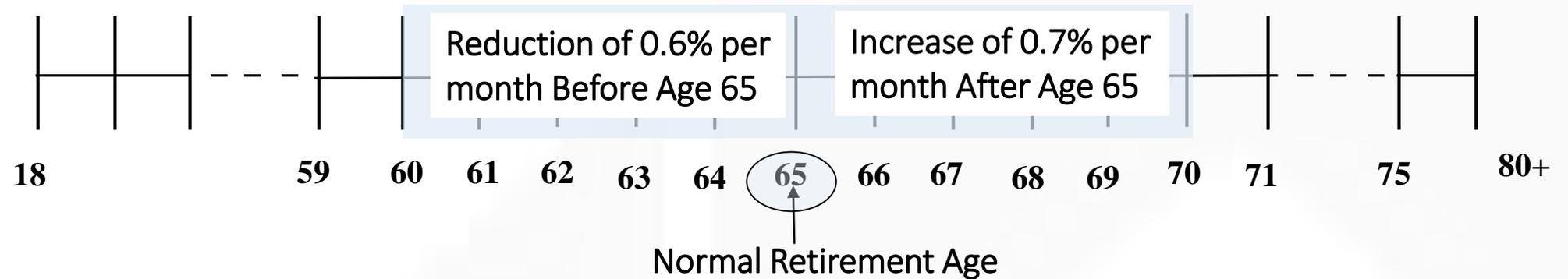
First and Second additional Pensionable Earnings (FAPE, SAPE) are wage indexed to the year of benefit uptake

The Canada Pension Plan: Additional CPP Retirement Pension

Disability = 75% of Retirement Benefit Before Age 65

Survivor = 37.5% of Retirement Benefit Below Age 65
= 60.0% of Retirement Benefit Above Age 65

Pension accrues at 1/40th per year of contribution



$$\text{Additional CPP Retirement Benefit:}$$

$$8.33\% \frac{\sum \text{Career Adjusted FAPE}}{40} + 33.33\% \frac{\sum \text{Career Adjusted SAPE}}{40}$$



Working beneficiaries under age 70 may continue to participate and increase their retirement income via the Additional Post-Retirement Benefit. Participation is mandatory for those under 65, voluntary after 65.

The Canada Pension Plan: a bit of history

- Introduced in 1966 as a pay-as-you-go plan with a small reserve
- From mid-1980 CPP started to show signs of weakness
 - Changing economic and demographic conditions
 - Assets were declining and contribution rate increases were necessary
 - In 1993, it was projected that by 2030 the Pay-as-you-go rate would be 14.2% and the reserve fund would be exhausted by 2015
- Main reasons for these problems were
 - less births,
 - longer lives,
 - lower real wage growth, and
 - overutilization of disability provisions.

Younger generations were losing confidence in the CPP



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Base CPP Financing

- 1997 Amendments Strengthened Governance. FTP finance ministers to review CPP every three years
- Governments and public agreed on nine principles for the reform
- Main reform points:
 - Increase in the contribution rate to 9.9% by 2003
 - Reduction in the growth of benefits
 - Creation of the Canada Pension Plan Investment Board to invest in financial markets
 - Introduction of self-adjustment mechanisms



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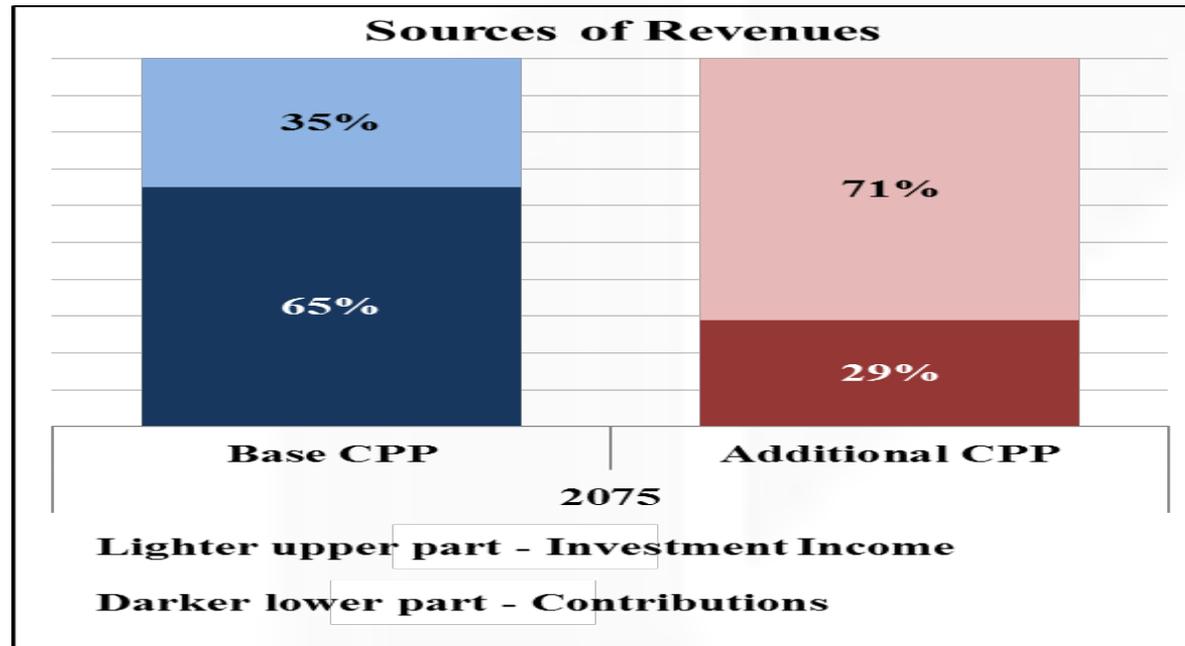
Additional CPP Financing

According to legislation, the additional Plan is to be financed through additional contribution rates that are

- Stable in the long term
- Sufficient: projected contributions and investment income are sufficient to fully pay the projected expenditures

Investment Income is the Main Source of Revenues for the Additional CPP

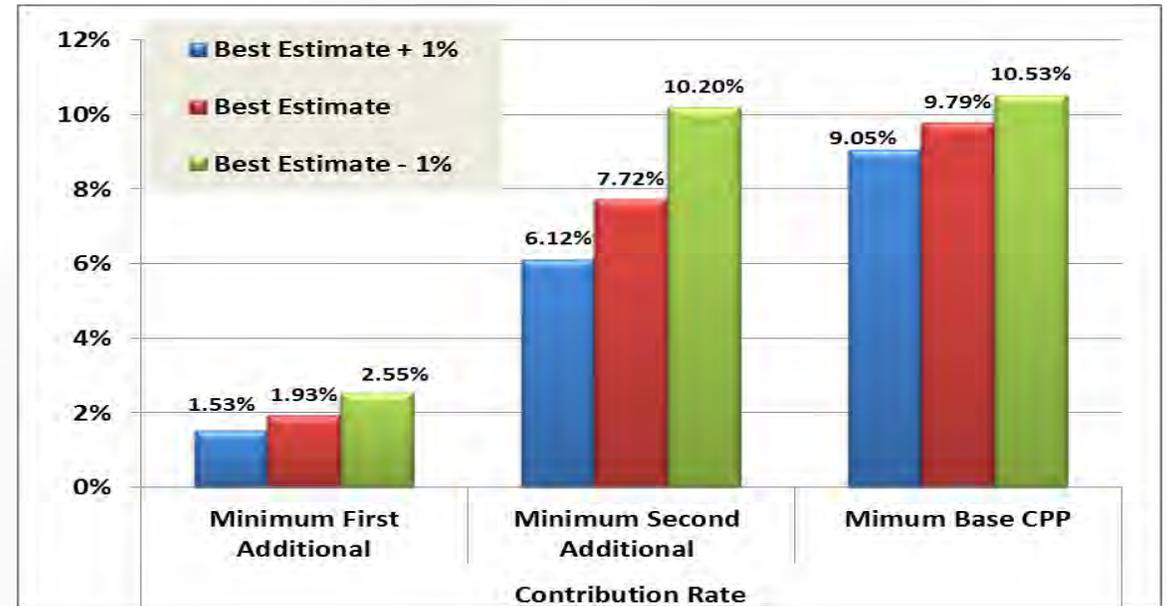
- Under 2%/8% contribution rates, contributions are projected to exceed benefits up to the year 2058. This will result in the accumulation of sizable assets
- The major source of financing: Contributions for the Base CPP, and investment income for the expansion.



Additional CPP Will be More Sensitive to Investment Returns

The additional CPP will be more sensitive to investment returns. For example, a decrease in the best-estimate rate of return of 1% generates a:

- **30%** relative increase in the minimum additional contribution rates
- **8%** relative increase in the minimum contribution rate for the base CPP.
- The CPPIB has different Reference Portfolios for two components:
 - Base CPP: 85% equity and 15% bonds
 - Additional CPP: 50% equity and 50% bonds



Both Components of the CPP are Sustainable Over the Long Term

29th CPP Actuarial Report as at 31 December 2015:

- **Base CPP:** The minimum contribution rate of the base CPP, which is the lowest rate sufficient to financially sustain the base CPP is 9.82% for years 2019 to 2033 and 9.80% for the year 2034 and thereafter.
- **Additional CPP:** the first additional minimum contribution rate is 1.98% applicable for the year 2023 and thereafter, and the second additional minimum contribution rate is 7.92% applicable for 2024 and thereafter.



The Canada Pension Plan: Base CPP Self-Adjustment Provisions

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

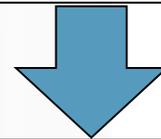
“ Insufficient Rates” Provisions

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



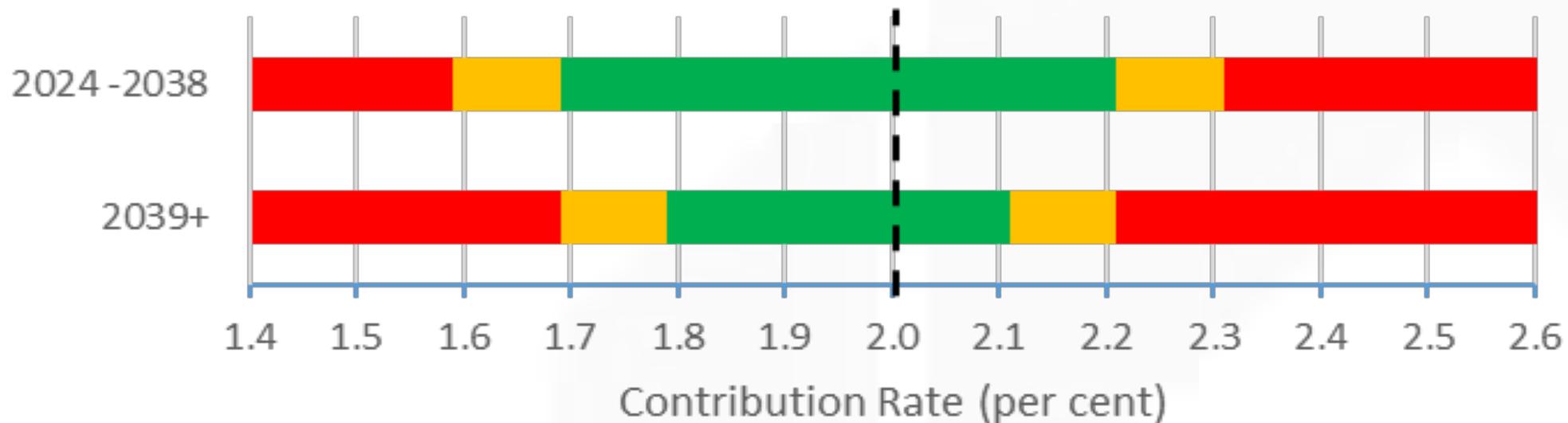
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The Canada Pension Plan: Additional CPP Sustainability Regulations

- The regulations aim to ensure that the enhanced portion of the Plan is appropriately funded over time while respecting intergenerational equity, consistent with the full funding principle underpinning the CPP enhancement.
- Default adjustment provisions differs between the base and additional CPP.

When Regulations are Activated?

By how much, and for how long, can the additional minimum contribution rates (AMCRs) deviate from the legislated rates (2%/8%) before action is required?



- Immediate Action Required
- Warning - Action Required ONLY after two consecutive reports
- No Action Required



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Adjustment mechanisms

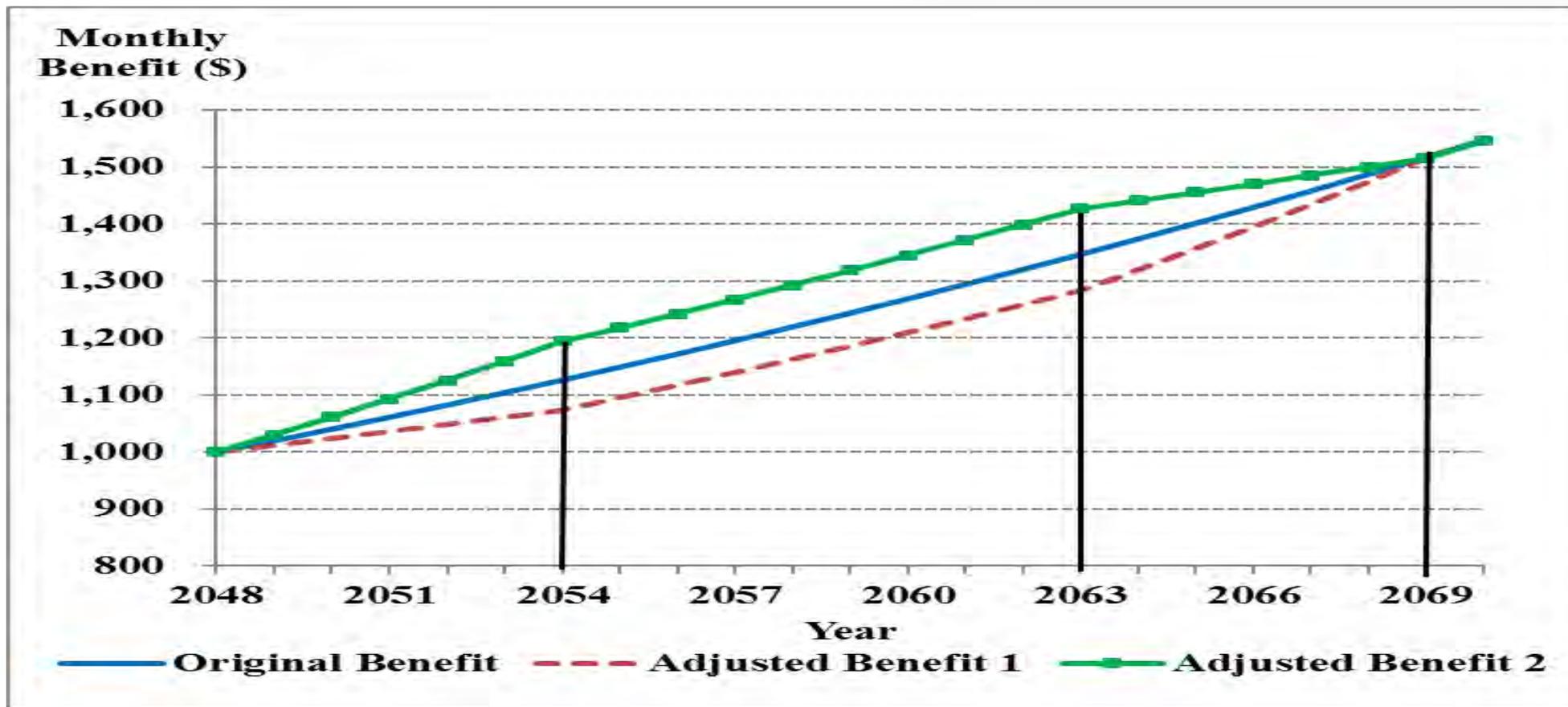
- Adjusting benefits of current beneficiaries
 - Modify indexation of benefits in pay for a specified period (6+ years)
 - Limits on indexation adjustment: 60% - 200% of CPI
 - **Benefits are not reduced from one year to the next**
- Adjusting benefits of future beneficiaries (current contributors)
 - Multiplying starting amount by “benefit multiplier” (depends on the year of uptake)
 - Benefit multiplier is aligned with the value of extra/forgone indexation
- Increasing additional contribution rates – last resort in the case of deficit

Adjustment mechanisms (cont'd)

- Adjustments may be reversed
- The first action to be taken when the sustainability provisions are activated is a reversal of any previous adjustments in an opposite direction made to the additional Plan.

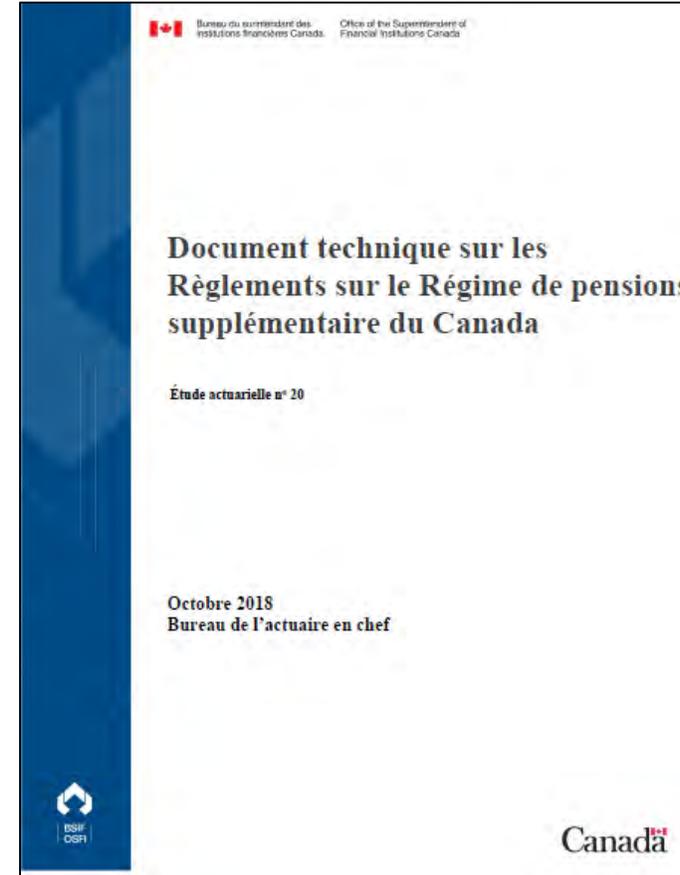
Application examples

Example of Evolution of Original Benefits and Adjusted Benefits with Later Reversal of Adjustments



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More Details on proposed Regulations Can be Found in:



<http://www.osfi-bsif.gc.ca/Eng/oca-bac/as-ea/Pages/default.aspx>

<http://www.osfi-bsif.gc.ca/Fra/oca-bac/as-ea/Pages/default.aspx>



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CPP Expenditures by Benefit Type

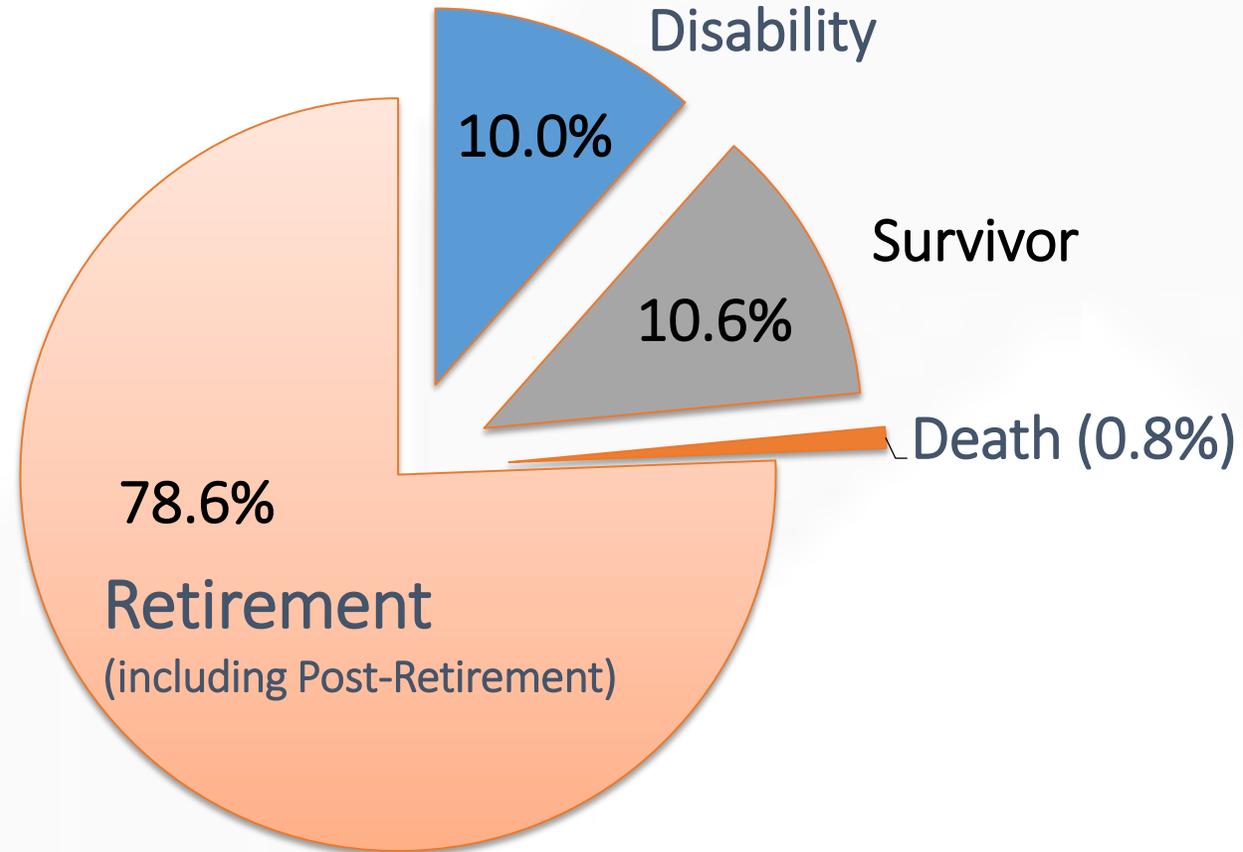
- Total contributions to the CPP from workers, employers and the self-employed in 2017-18 was \$48.5 billion

Type of Benefit	Average Monthly Number of Beneficiaries (2017-18)	Amount Paid (2017-18)
Retirement	5.1 million retirement pension recipients	\$34.6 billion
	1.2 million recipients of post-retirement benefit	\$0.44 billion
Disability	338,000 persons with disabilities	\$4.1 billion
	83,000 children of disabled contributors	\$0.31 billion
Survivors & Death	1.1 million survivors of deceased contributors	\$4.5 billion
	63,000 children of deceased contributors	\$0.21 billion
	160,000 payments to estates*	\$0.37 billion
Total Benefits paid:		\$44.5 billion



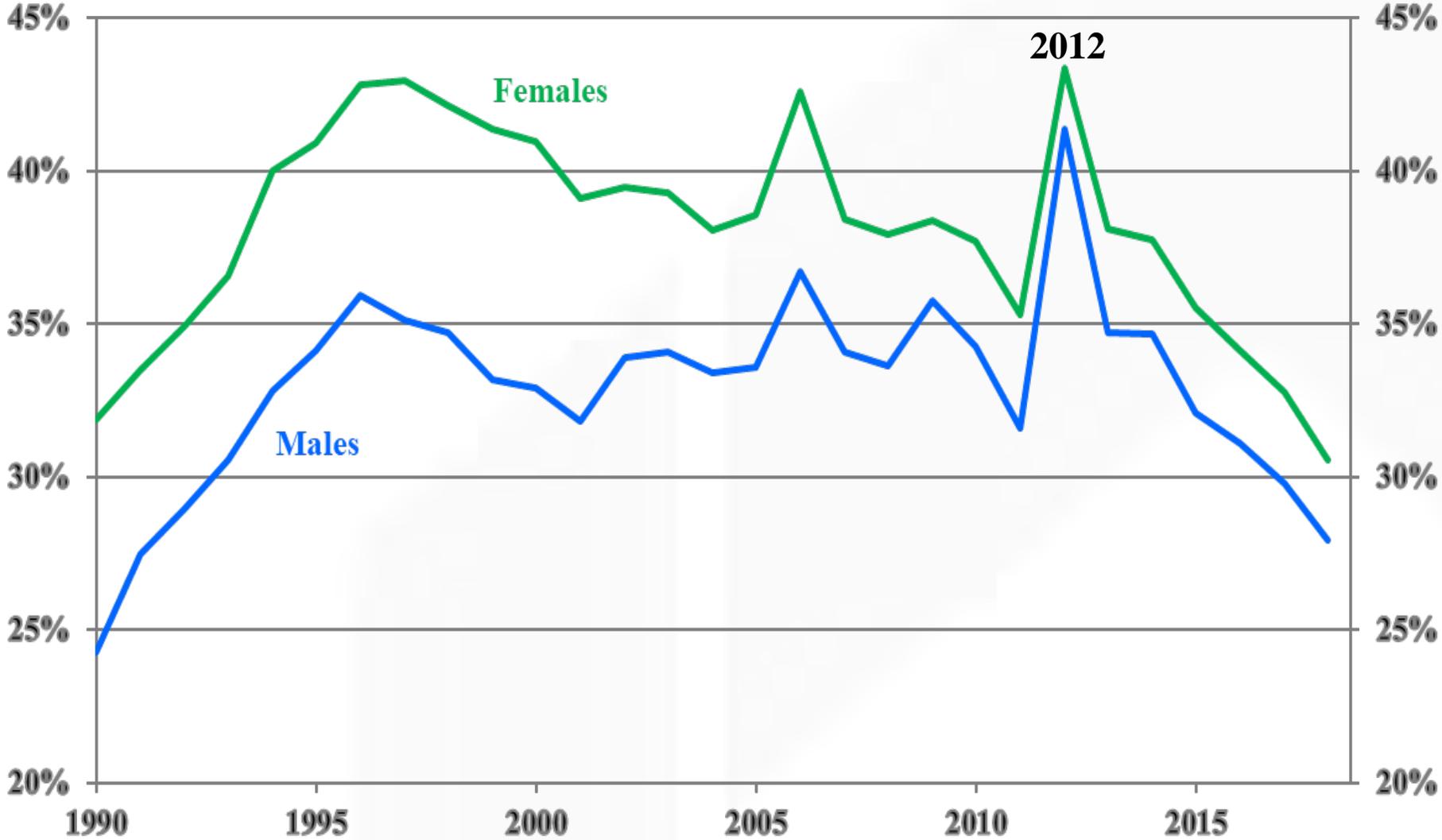
Retirement Benefits are 80% of Total Expenditures

Composition of CPP Expenditures 2017-18 : \$44.5B



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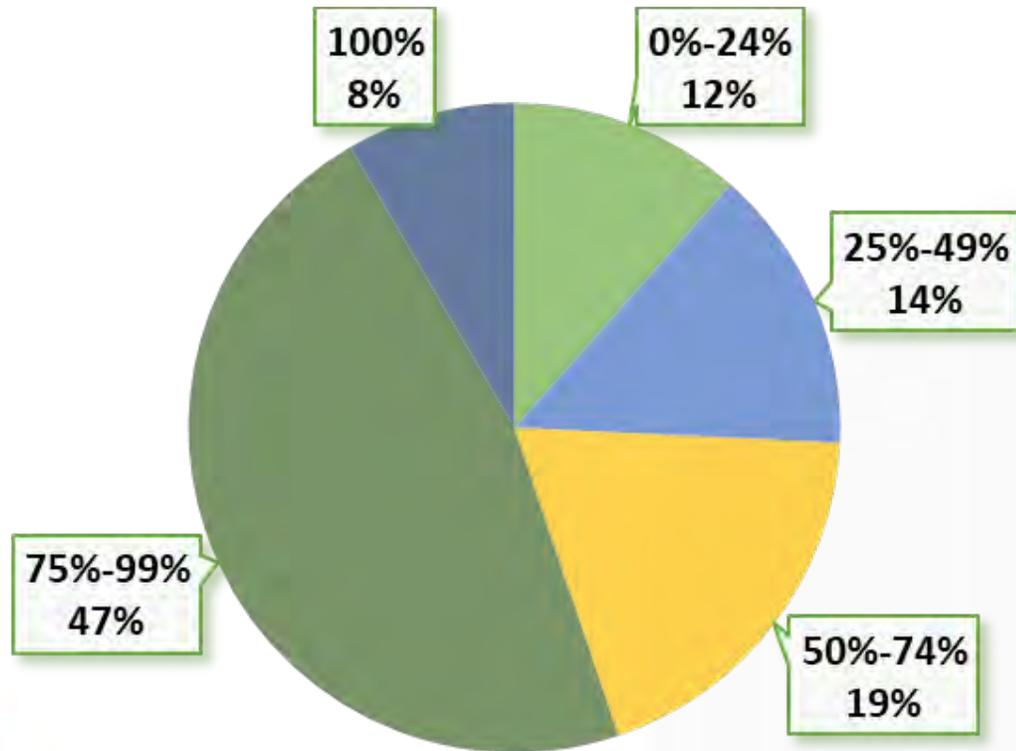
Base CPP Retirement Take up Rate at Age 60



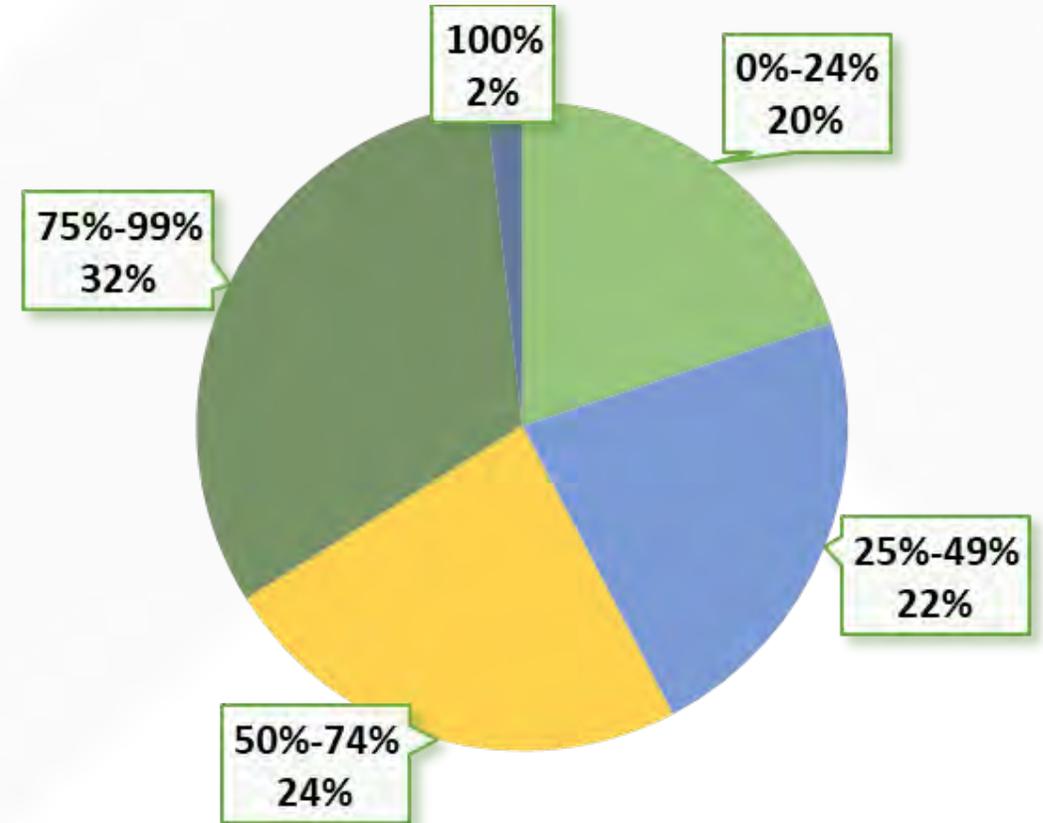
How Big are Retirement Benefits?

Distribution of 2018 New Retirement Beneficiaries by % of the Maximum Pension

MALES

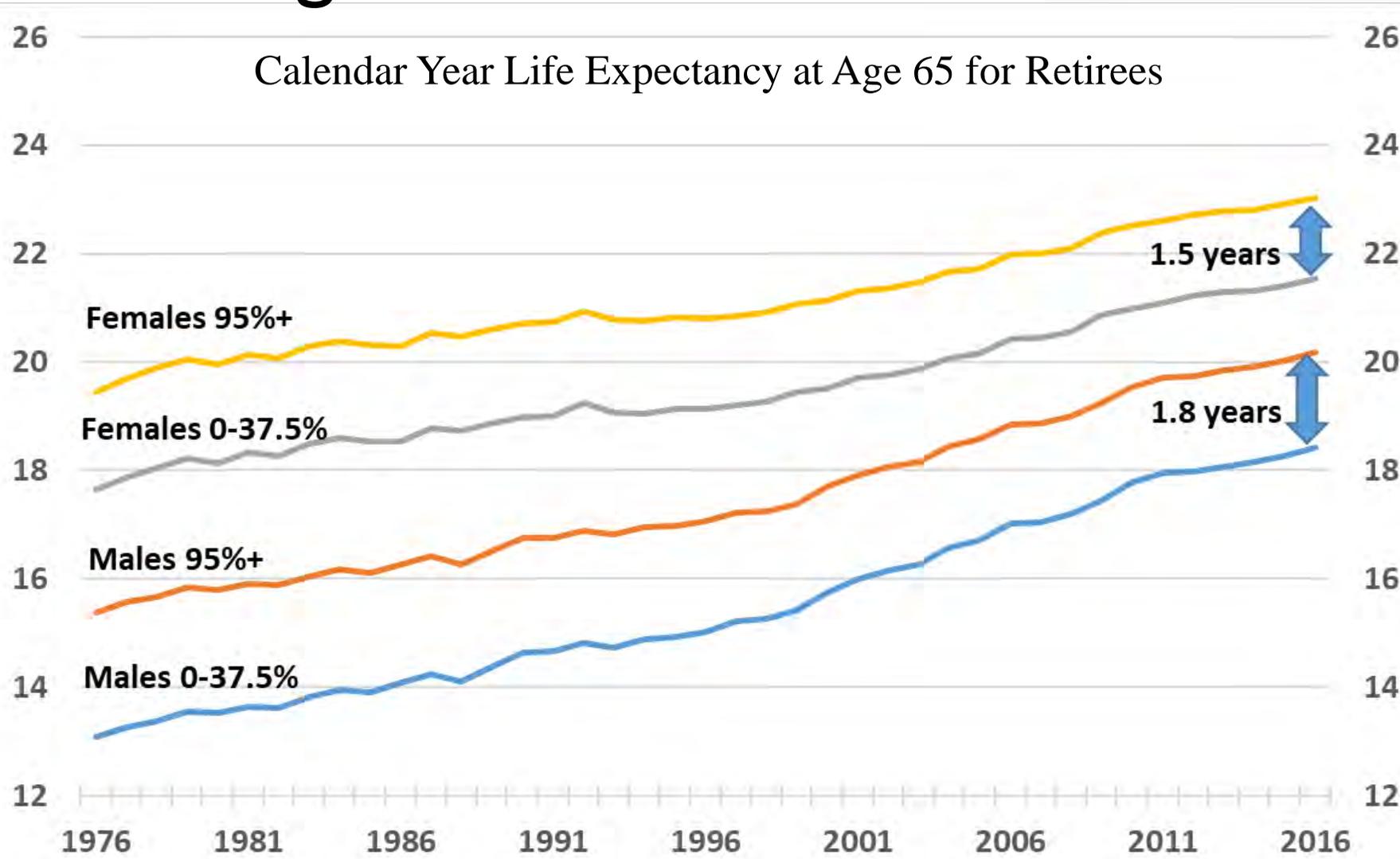


FEMALES



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Gap Between Mortality of CPP Retirement Beneficiaries with Low and High Pension is Stable



Gains in Mortality are Shifting to Older Age Groups

Contribution to change in Life Expectancy at Age 65, CPP Retirement Beneficiaries

Change Attributable to Age Group	1993-2003				2003-2013			
	Males		Females		Males		Females	
65-74	0.75 yr	50%	0.20 yr	33%	0.63 yr	35%	0.38 yr	27%
75-79	0.29 yr	19%	0.13 yr	22%	0.45 yr	25%	0.28 yr	20%
80-84	0.29 yr	19%	0.13 yr	22%	0.36 yr	20%	0.28 yr	20%
85-89	0.09 yr	6%	0.07 yr	12%	0.27 yr	15%	0.28 yr	20%
90+	0.09 yr	6%	0.07 yr	11%	0.09 yr	5%	0.18 yr	13%
Total Change in Life Expectancy at Age 65	1.5 yr	100%	0.6 yr	100%	1.8 yr	100%	1.4 yr	100%

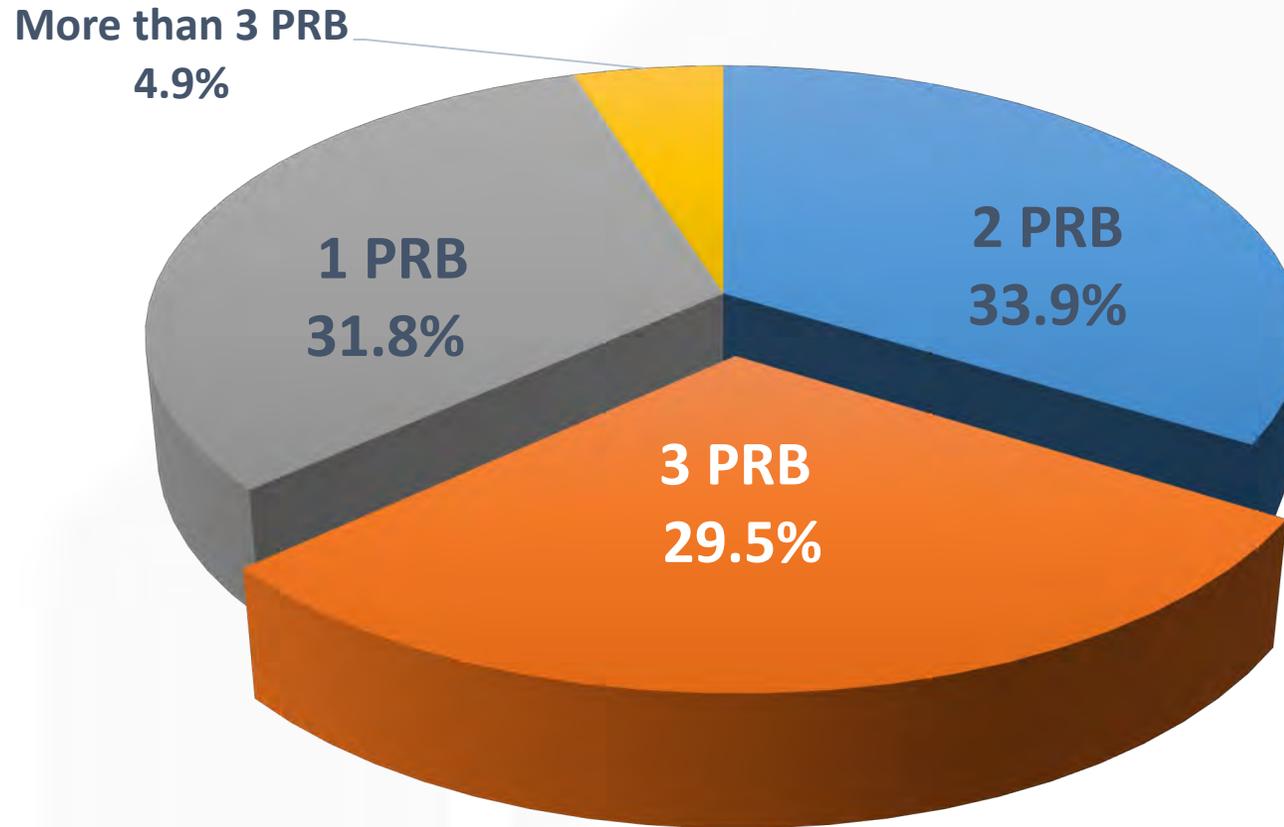
Source: Actuarial Study No. 16 - CPP Mortality Experience



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Profile of Base CPP Post-Retirement Benefit (PRB) Recipients

CPP Beneficiaries by number of PRB (2018)



2017-18

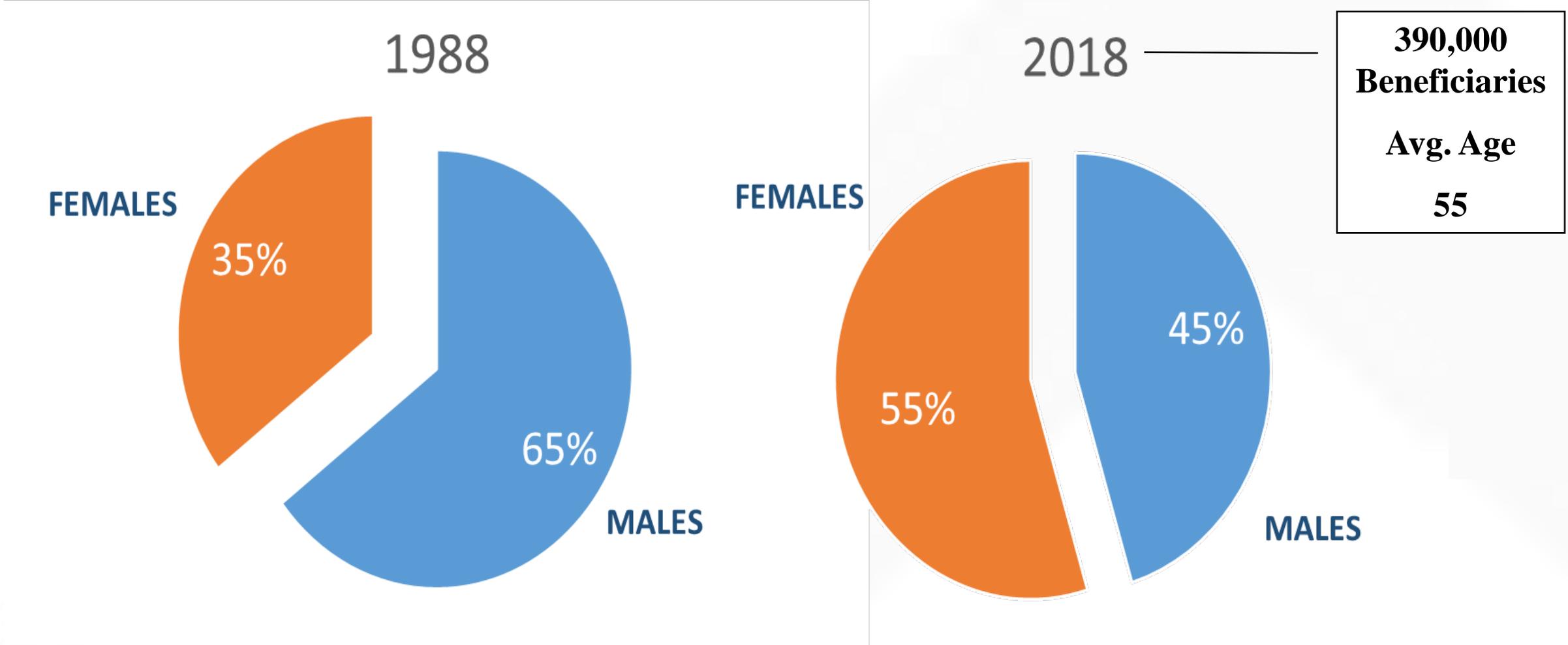
1.2M PRB

**Beneficiaries received
in total \$440M**

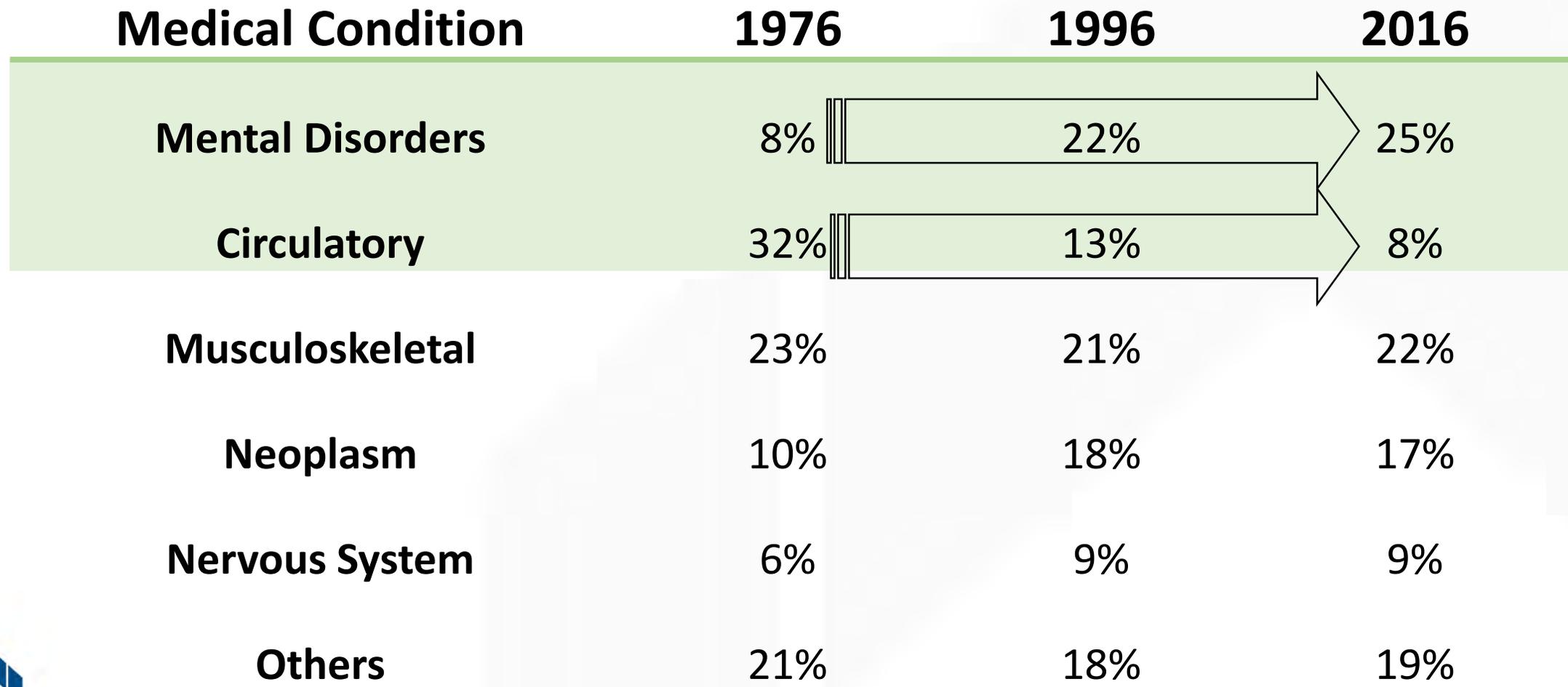


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Profile of Base Disability Benefit Recipients

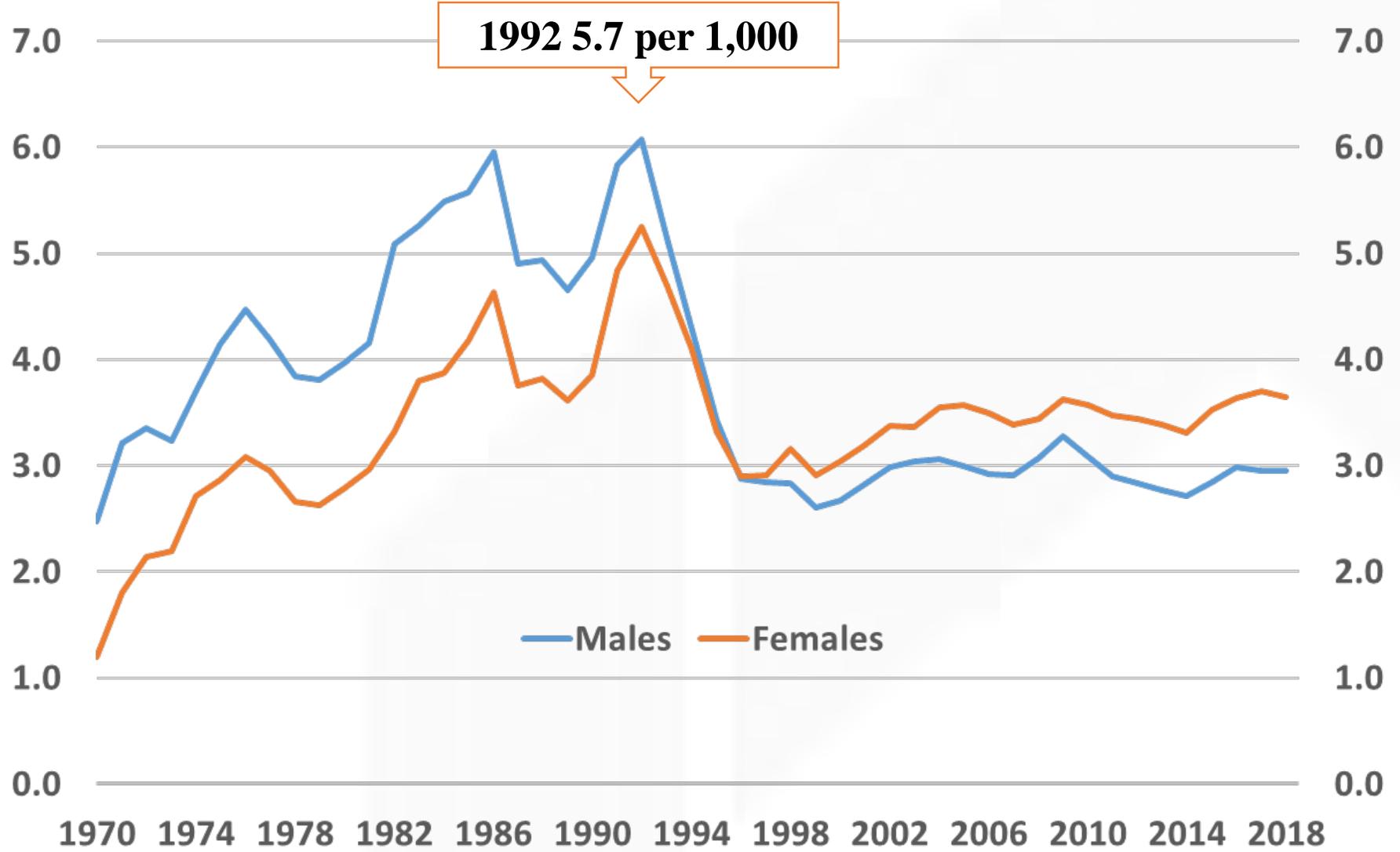


Medical Condition of Disability Benefit Recipients



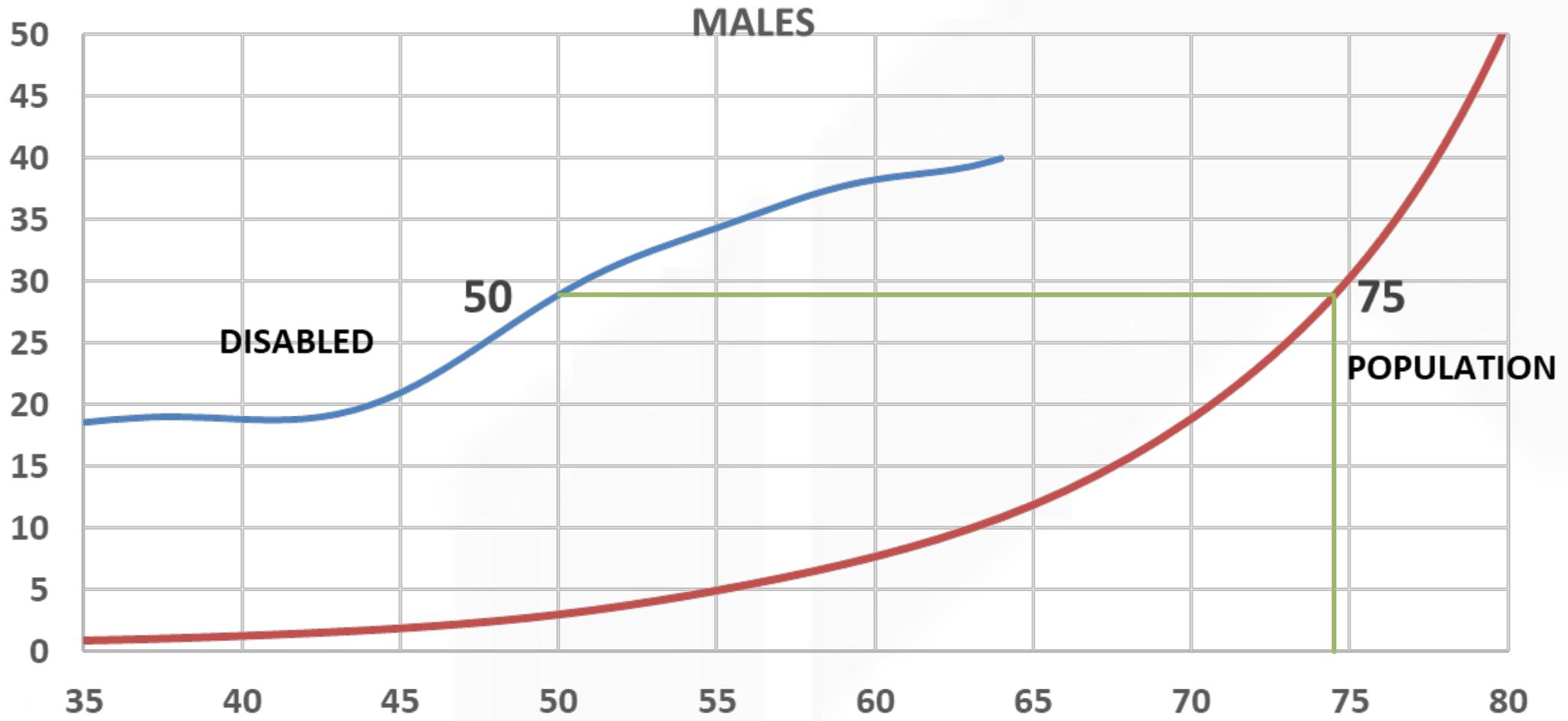
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Disability Benefit Incidence Rates are Stable over last 20 years



Mortality of Disability Benefit Recipients in 2011

Annual Deaths per Thousand

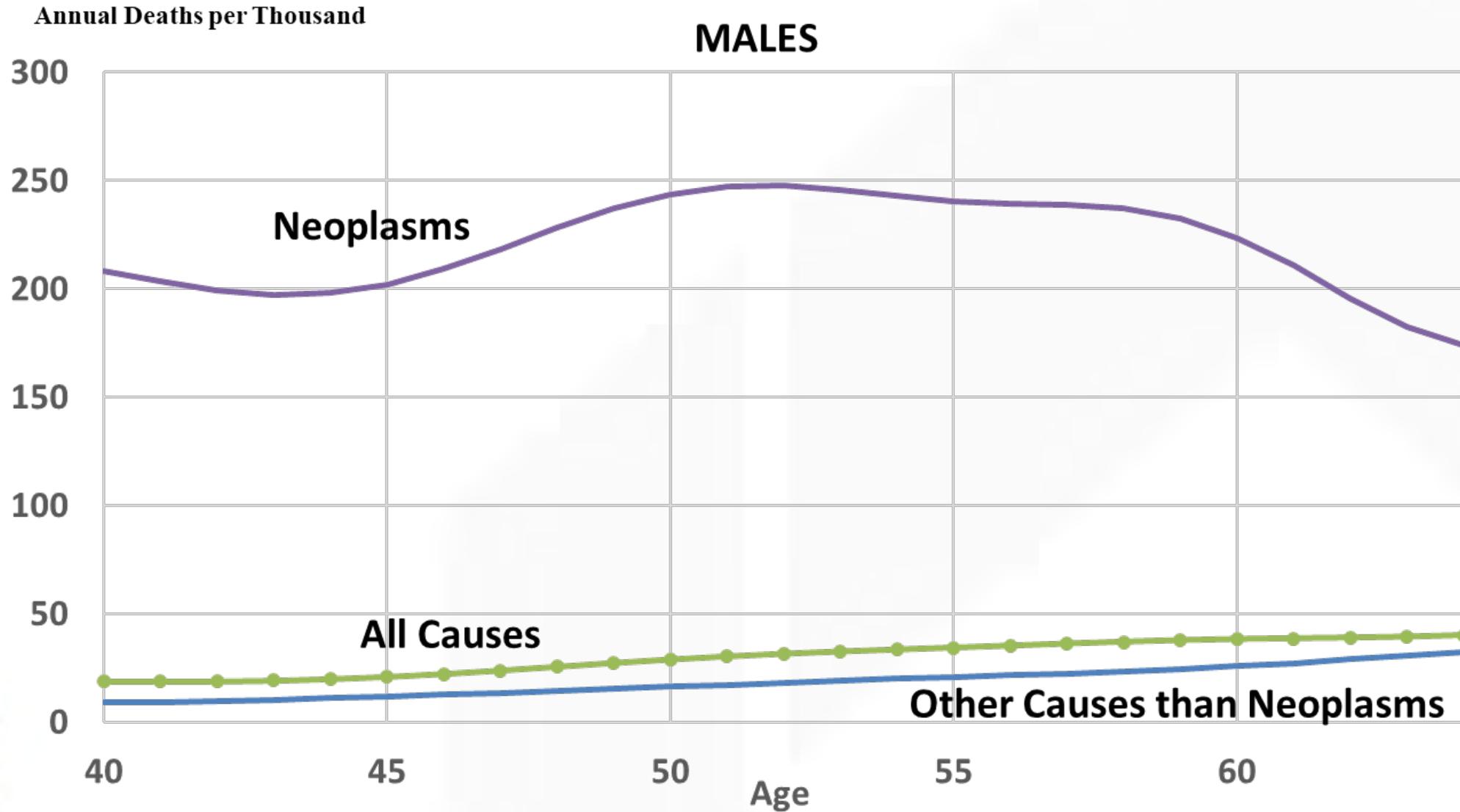


Source: Actuarial Study No. 16 - CPP Mortality Experience



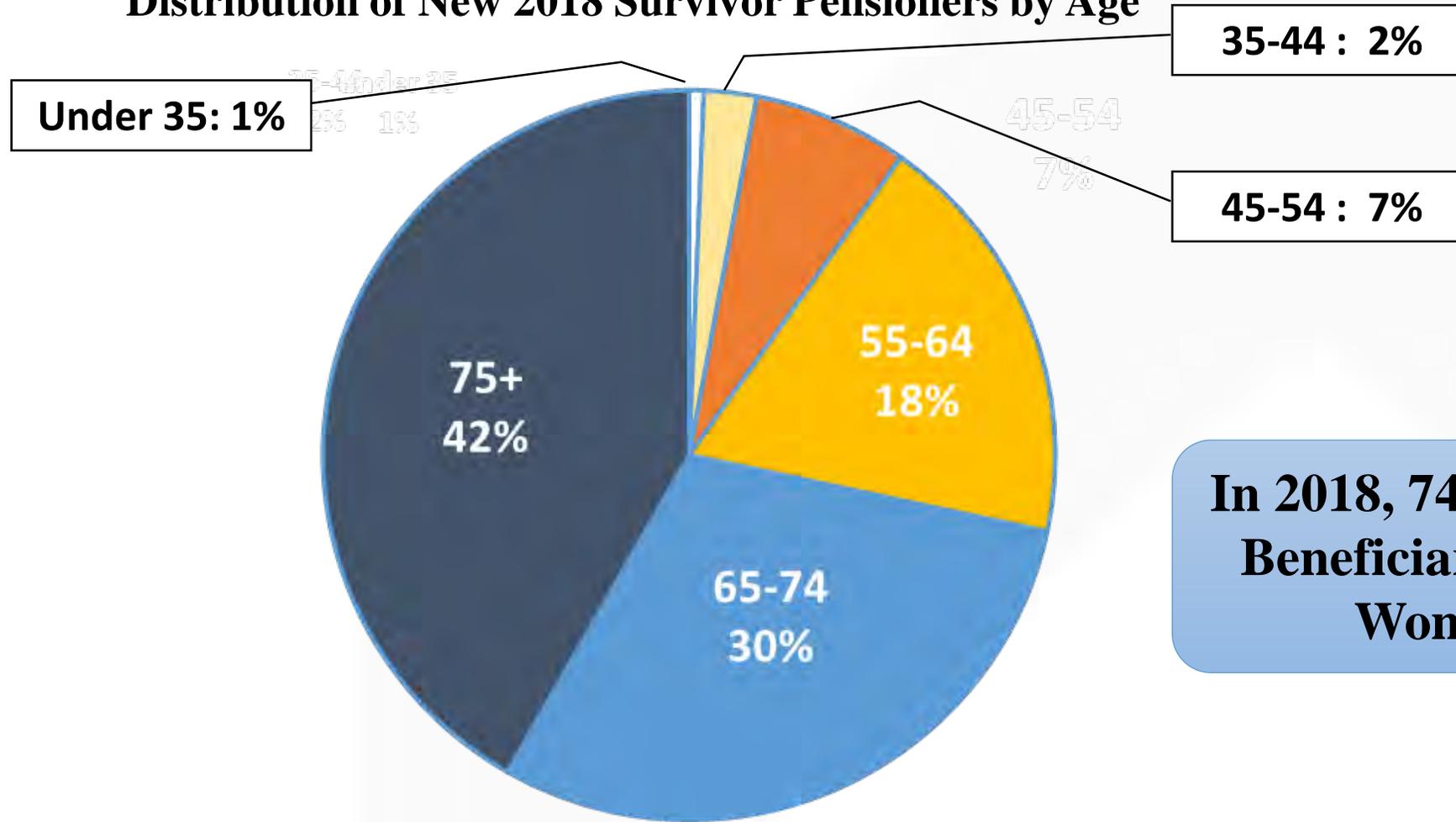
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Neoplasms are Leading Cause of Mortality among Disability Benefit Recipients



New Survivor Beneficiaries are mostly over age of 65

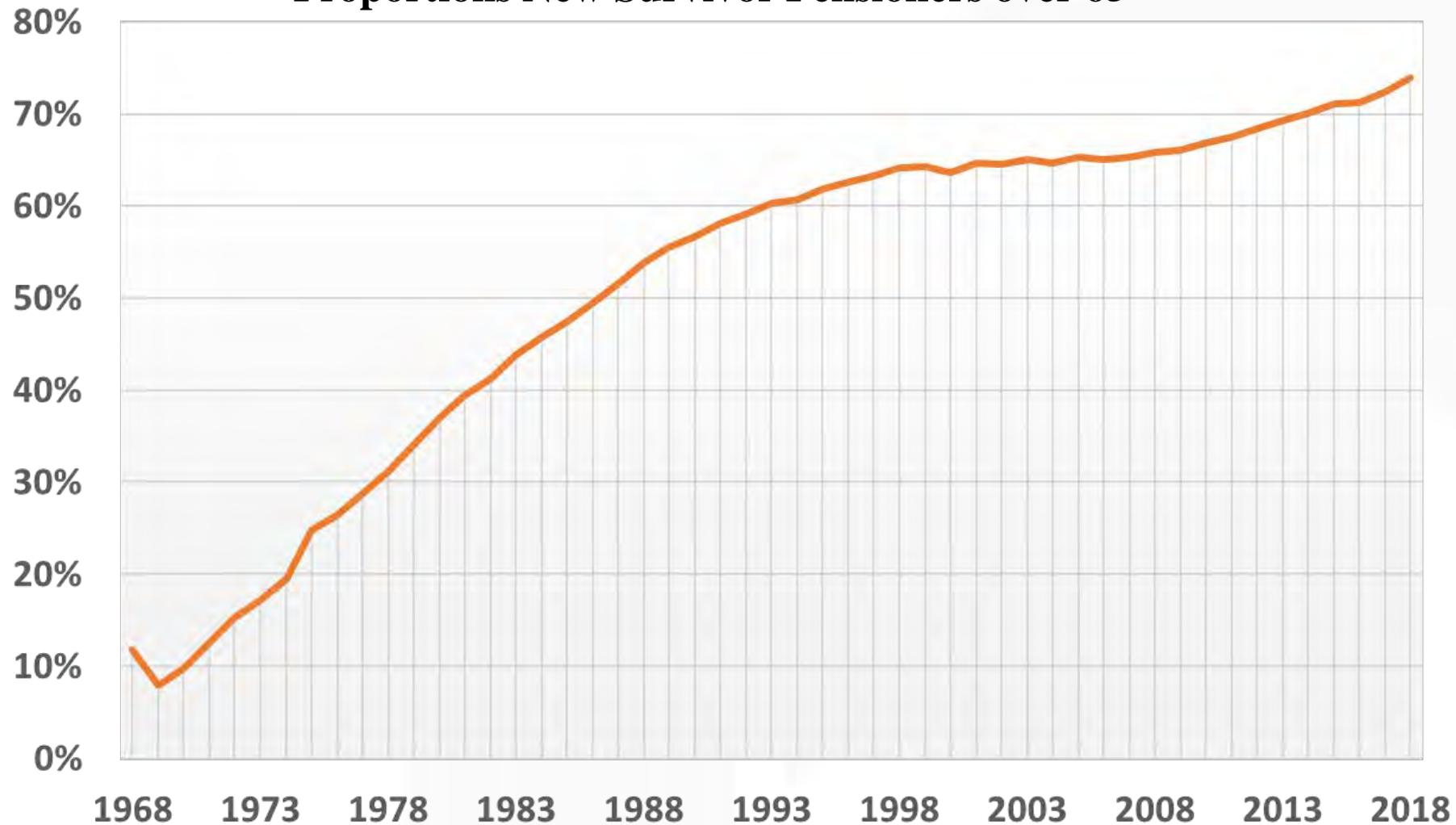
Distribution of New 2018 Survivor Pensioners by Age



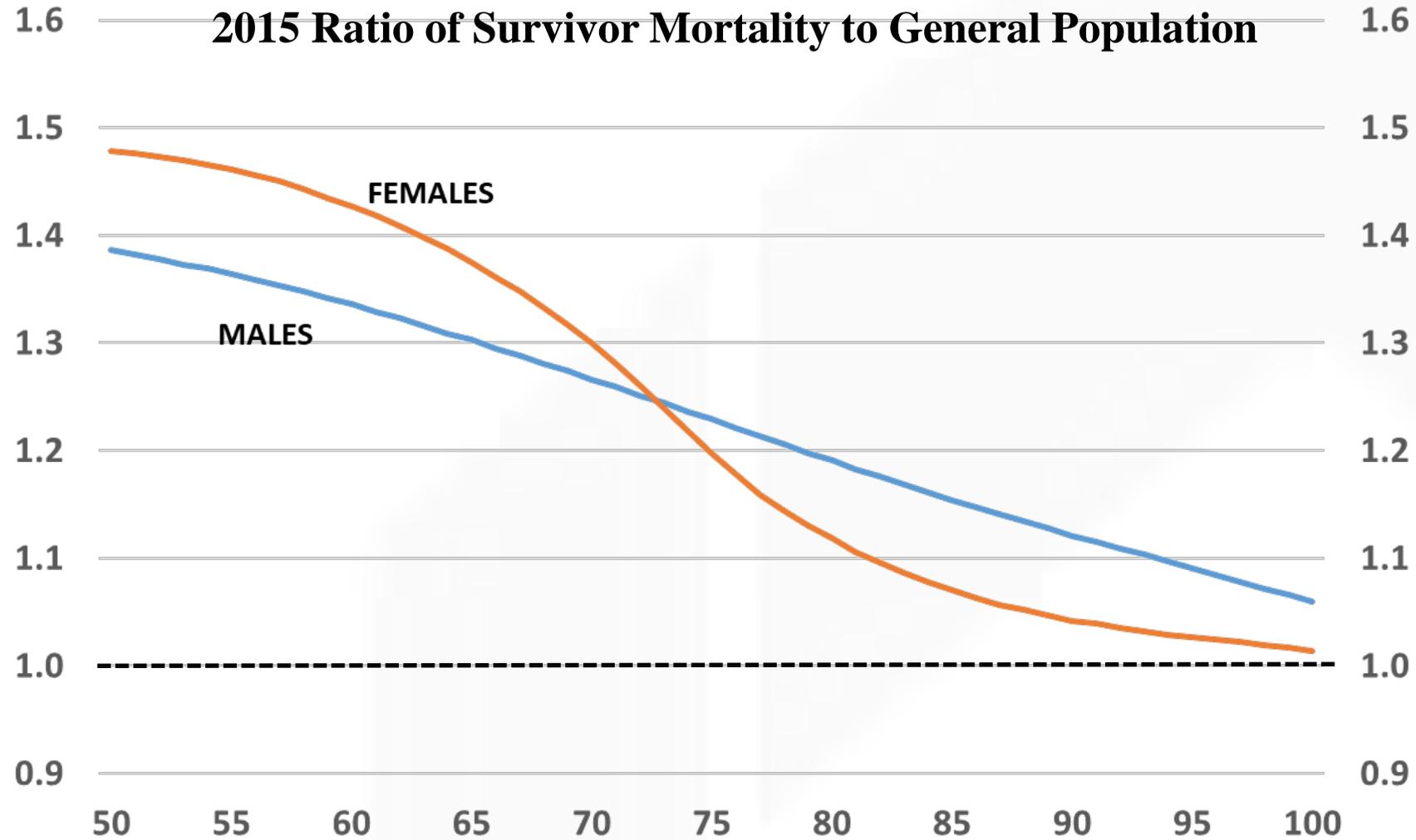
In 2018, 74% of New Beneficiaries were Women.

New Survivors are Older than Before

Proportions New Survivor Pensioners over 65



Survivor Beneficiaries have a Much Higher Mortality than the Population



Source: OCA, Survivor Mortality Study 2018



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THANK YOU!

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<http://www.osfi-bsif.gc.ca/Eng/oca-bac/Pages/default.aspx>