

April 2019

# Retire Later for Greater Benefits

Updating today's retirement  
programs for tomorrow's  
retirement realities



© 2019 Canadian Institute of Actuaries

Canadian Institute of Actuaries  
360 Albert Street, Suite 1740  
Ottawa, ON K1R 7X7  
613-236-8196  
[head.office@cia-ica.ca](mailto:head.office@cia-ica.ca)

[cia-ica.ca](http://cia-ica.ca)

This statement is supported by the CIA membership through a robust process which identifies topics of importance to Canadians where actuarial expertise is central to the discussion and invites actuaries with diverse backgrounds and views to participate in the assembly of relevant research and the drafting of the statement. Input from CIA members not involved in the drafting of the statement has been sought throughout the process to ensure that all views are considered and that a reasonable degree of consensus in support of the statement is achieved.



**According to the 27th Canada Pension Plan (CPP) Actuarial Report, the life expectancy for Canadians at age 65 increased from 13.6 years in 1966 to 19.9 in 2016 for men, and from 16.9 years to 22.5 for women. With Canada's population living longer, along with the anticipated shortage of Canadian workers in the coming decades and the erosion of private sector pensions, the Canadian Institute of Actuaries (CIA) believes that it is time for federal, provincial, and territorial governments to refresh their approach to helping Canadians achieve retirement income security.**

Canada's retirement income security system is a complex set of interconnected arrangements, including programs funded by individuals, employers, and taxpayers. While there are many possible ways to fine-tune these arrangements, we believe that governments should consider updating retirement ages to reflect the fact that Canadians are already choosing to work past age 65 and the expectation that this trend will increase in the coming years.

The CIA wants all parties to understand that later retirement is a reasonable response to longer life expectancies, worker shortages, and lower interest rates. Adjusting retirement ages will foster a growing Canadian economy — we believe Canadian workers need to be nudged in this direction.

# Executive Summary

The CIA is proposing changes to the age at which benefits should be made available to Canadians under Canada's retirement income systems and tax-assisted private savings programs, specifically the Canada Pension Plan/Quebec Pension Plan (CPP/QPP), Old Age Security (OAS), and registered pension plans and Registered Retirement Savings Plans (RRSPs).

This document is intended to engage all Canadians in a healthy and much-needed discussion of changing societal needs and the best retirement program designs to support those needs.

Our proposal serves as a signal to Canadian workers as they plan for retirement, and will help those workers who have not yet prepared and saved adequately for retirement to make realistic decisions.

The CIA wants to highlight that the CPP/QPP and OAS/Guaranteed Income Supplement (GIS) as they are designed today are projected to be financially sustainable for the next 40 to 75 years, and that these plans provide the best available protection against the combined risks of inflation and longevity to Canadians with no other retirement income.

The proposed changes are designed to alter the timing of when benefits are collected by Canadians and will preserve the financial sustainability of these programs.



## We propose the following to legislators:

### CPP/QPP

- a. Defer the target eligibility age from 65 to 67 with a commensurate increase in the target retirement benefit of 16.8 percent. This proposal does not change the amount of CPP/QPP to be received at age 65 or at age 67.
- b. Defer the minimum early retirement age for the CPP/QPP from 60 to 62.
- c. Defer the maximum postponed retirement age from 70 to 75.

### OAS

- a. Defer the eligibility age from 65 to 67 with a commensurate increase in the target benefit payable of 14.4 percent. This proposal does not change the amount of OAS to be received at age 67.
- b. Defer the maximum postponed retirement age from 70 to 75.

### Registered pension plans and RRSPs

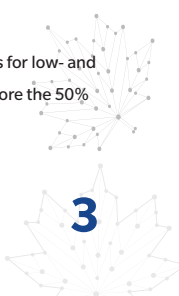
- a. Provide greater flexibility for individuals to manage retirement income by deferring the maximum age for commencing receipt of income from 71 to 75.
- b. Allow employers to change the target retirement age in registered pension plans from 65 to 67 on a go-forward basis, with any accrued benefits being subject to a commensurate adjustment. This proposal does not change the amount of pension for accrued benefits under private plans.

## In addition, the CIA also proposes that governments consider the following actions:

1. Establish an automatic review period for the age of eligibility for full benefits, such as five or 10 years, to consider future adjustments based on changes in the life expectancy and needs of Canadians.
2. Continue to undertake a regular review of the early and postponed retirement adjustment factors of CPP/QPP and OAS to ensure that they do not encourage early retirement or discourage deferred retirement.
3. With respect to the GIS, the government should revise existing GIS clawback provisions with the intent of providing incentive for workers to stay at work longer\*. Note, we are not proposing changes to the age of first receipt of GIS (currently 65). GIS should be available at age 65 because it is an important source of income for low-income earners.
4. Consider appropriate changes to other complementary programs such as provincial plans providing low-income seniors with additional income, such as Guaranteed Annual Income System (GAINS) or drug coverage.
5. Address any unintended consequences that deferring eligibility for retirement benefits under CPP/QPP and OAS may have on low-income and disabled workers by considering measures such as decoupling the eligibility for GIS from the eligibility for OAS, and possibly increasing the \$3,500 earnings exemption for contributions to the CPP/QPP. These measures would address concerns that low-income Canadians would not be treated fairly because of their lower life expectancy.

Sources and research used in preparing this statement appear in the Appendix.

\*Note: Since the time of writing, the 2019 federal budget has provided incentives for low- and middle-income Canadians to keep working and has increased the exemption before the 50% clawback on employment income is applicable.





## DISCUSSION

# Drivers of Change

### **Canada's population is living longer and the core of the baby boom generation is reaching retirement.**

These factors are expected to:

- Cause a slowdown in economic growth in the future;
- Put greater pressure on government budgets as revenues fall from having fewer workers while healthcare costs rise because of a larger population of seniors who are living longer; and
- Cause worker shortages in some industries.

Governments can use multiple approaches to address these issues, including increased participation by women in the workforce and increased immigration of labour-ready newcomers to Canada. These measures alone will not solve the challenges facing the Canadian economy. Deferring retirement for all Canadians can help sustain Canada's workforce and at the same time improve the dependency ratio — those not working and receiving government benefits compared to those who produce goods and services and pay taxes to support these programs.

The CIA submits to all parties that later retirement is a reasonable response to longer life expectancies, worker shortages, and lower interest rates. It will foster a growing economy and provide more tax revenue to governments that could be used, for example, on health expenditures.

There is evidence that Canadians are already working to later ages than in past decades, and this trend is expected to continue. However, workers are not deferring receipt of government benefits to the same degree as they are postponing retirement. This may mean that older workers are using government benefits as a supplement to income while working, rather than maximizing their retirement income by deferring receipt of these benefits.

In recent years, the government has made significant changes to Canada's retirement income security programs by increasing contributions and benefits for the CPP/QPP, by proposing (but then cancelling) changes to the eligibility age for OAS, and through the introduction of Tax-Free Savings Accounts. These changes show motivation by our government to rethink its approach to assisting Canadians in achieving retirement income security.



The CIA advises that encouraging Canadians to defer income from CPP/QPP, OAS, and tax-assisted private savings, while increasing the amount of benefits commensurately, may lead to more Canadians staying in the workforce longer. This approach is an effective way to address the coming challenges, for the following reasons:

- Canadians are living longer than they did in the 1960s, when today's programs were primarily established. According to the 27th CPP Actuarial Report, the life expectancy for Canadians at age 65 increased from 13.6 years in 1966 to 19.9 in 2016 for men, and from 16.9 years to 22.5 for women.
- The cost of retirement today is significantly greater than 50 or 60 years ago, as longevity has increased, and current interest rates are at historic lows.
- There is already more pressure for Canadians to work longer because fewer private sector workers have defined benefit pension plans to assist them in saving adequately for retirement. More and more workers have no workplace pension, or they contribute to defined contribution pension plans which have been less successful in delivering adequate retirement benefits to workers than the defined benefit pension plan model.
- With the retirement of the baby boom generation, the growth of Canada's workforce is expected to slow in the coming decades, which may cause worker shortages for some industries. This is already being seen in retail, hospitality, and construction.
- Improvements in technology and flexible work arrangements will make it more appealing to Canadians to continue working past age 65.
- The CPP, as it is designed today, is projected to be financially sustainable for the next 75 years. For QPP, the steady-state contribution rate ensures stable funding for the next 50 years. Deferring the age for full benefits, while increasing commensurately the amount of benefit payable, should not affect the sustainability of these programs.
- The cost of OAS and GIS is expected to remain in the range of 3 percent of gross domestic product through the projection period to 2060, including the effect of the baby boom bulge, peaking in 2031. By deferring the age for full benefits, while increasing commensurately the amount of benefit payable, the cost of OAS would neither increase nor decrease and the benefits payable to older Canadians will be higher.



# Updating Retirement Ages

With Canada's population living longer, the anticipated shortage of workers in the coming decades, and the erosion of private sector pensions, the CIA recommends that federal, provincial, and territorial governments provide greater flexibility and better support to Canadians in retirement.

Specifically, we propose that legislators make changes to the CPP/QPP, OAS, and registered pension plans and RRSPs.

## 1. CPP/QPP: Benefit Increase and Deferral of Receipt

We propose that legislators defer the target eligibility age for full benefits under the CPP/QPP from 65 to 67 while at the same time deferring the minimum early retirement age to 62 and the maximum postponed retirement age to 75. We are seeing increased participation rates at older ages in the working population and this trend is projected to increase over the years.

### Specifically, legislators should:

1. Increase the target eligibility age from 65 to 67, and increase commensurately the target retirement benefit, which would represent an increase of 16.8 percent based on current adjustment factors.
  - a. This would increase the current 25 percent benefit to 29 percent, and the new 33.3 percent benefit (under the CPP/QPP expansion to be phased in over 40 years) to 39 percent.
    - i. Based on 2019 levels, this would increase the monthly target benefit from \$1,155 to \$1,349 (i.e., an extra \$194).
    - ii. If we include the expansion (after phase-in, but still based on 2019 levels), this would increase the monthly target benefit from \$1,753 to \$2,053 (i.e., an extra \$300).
  - b. A Canadian could still retire at age 65 if he/she desires and have no changes whatsoever to his/her benefit entitlements.
  - c. Our proposal helps to achieve in the short term approximately half of the long-term increase from the CPP/QPP expansion at no additional cost – just by working two more years.

2. Increase the minimum early retirement age for the CPP/QPP from 60 to 62 and increase the maximum postponed retirement age from 70 to 75.
  - a. By deferring their retirement age, Canadians could significantly increase their replacement rate, depending on the retirement age they select.
3. Adjust certain ancillary benefits accordingly, such as extending the disability benefit to age 67 instead of 65.

It is our belief that 15 to 20 years from now the vast majority of Canadians will neither need to take nor choose to take their retirement income from governments at age 60. The intent of this proposal is to nudge Canadians' thinking by increasing the age at which they should plan for the receipt of CPP/QPP benefits while at the same time increasing the amount of benefit they can expect to rely on. The intent is also to minimize any impact on the cost of the program by increasing the amount of benefit by the same percentage as that available today to an individual choosing to defer retirement.

One key concern raised with this proposal is the impact on Canadians who are unable to work past age 60 and need access to CPP/QPP benefits before age 62. This is not a new problem, as there are likely Canadians unable to work past age 58 that must currently wait until age 60 to commence receipt of CPP/QPP. The view of the CIA is that deferring CPP/QPP benefits for most Canadians who can afford to do so is an overall improvement in public policy, and we expect that the government will continue to address the needs of the minority of Canadians through alternate programs.





## 2. OAS: Benefit Increase and Deferral of Receipt

We propose that legislators defer the eligibility age under the OAS from 65 to 67, along with a commensurate increase in the target retirement benefit of 14.4 percent, while at the same time deferring the maximum postponed retirement age to 75. Based on the January 2019 level, this would increase the maximum monthly benefit from \$601 to \$688 (i.e., an extra \$87).

OAS provides all Canadians with a monthly benefit that is not tied to earnings but rather tied to residency, with the maximum benefit achieved at 40 years of residency. As a result, the replacement rate for the program varies by individual.

The intent of this proposal is to increase the age at which Canadians plan for the receipt of OAS benefits while at the same time increasing the amount of benefit they can expect to rely on. By increasing the target retirement benefit under OAS while deferring its availability, Canadians would be able to rely on a greater retirement benefit payable for their lifetime than under the current program. The intent is also to minimize any impact on the cost of the program by increasing the amount of benefit by the same percentage as that available today to an individual choosing to defer retirement.

Like the concern raised in respect of deferring the earliest eligibility for CPP/QPP to age 62, there is concern regarding the need for some Canadians to access benefits at earlier ages. The view of the CIA is that deferring OAS benefits for most Canadians who can afford to do so is an overall improvement in public policy, and we expect that the government will continue to address the needs of this minority of Canadians through alternate programs.

## 3. Registered Pension Plans and RRSPs: Deferral of Receipt and Target Ages

We propose that legislators provide greater flexibility for individuals to manage retirement income by deferring the maximum age for commencing receipt of income from tax-deferred retirement savings vehicles such as RRSPs from age 71 to age 75, while at the same time allowing employers to change the target retirement age in registered pension plans from 65 to 67, on a go-forward basis, with any accrued benefits being subject to a commensurate adjustment.

The intent of this proposal is to recognize that Canadians are increasingly choosing to work to later ages and it is reasonable to expect a significant portion of workers to work into their 70s. Also, given the increase in the cost of providing pensions over the past several decades, as well as the elimination of mandatory retirement, allowing employers to defer the target retirement age for workers will better align employer-sponsored retirement plans with the changes being proposed above for Canada's public programs.

One key concern raised in respect of this proposal is the possible impact of government tax revenues due to the postponement of receipt of income from tax-assisted registered pension plans and RRSP programs. We note that this is not a loss of tax income but rather a delay in the timing of the tax income — although the total amount may increase or decrease over time depending on investment returns on the deferred income as well as changes in tax rates during the years of deferral. We understand that this issue will need further consideration and may affect the number of additional years of deferral chosen by legislators.



# Call to Action

The CIA includes more than 1,700 members working in pensions and social security to ensure the financial sustainability of pension plans.

**We recommend that legislators use our proposal as a starting point for updating our current Canadian retirement programs. Changes could be phased-in over the next 10 years by increasing the target retirement age by three months each year starting January 1, 2021.**

The CIA would welcome the opportunity to work in partnership with government to refine this proposal.

This statement is supported by the CIA membership through a robust process which identifies topics of importance to Canadians where actuarial expertise is central to the discussion and invites actuaries with diverse backgrounds and views to participate in the assembly of relevant research and the drafting of the statement. Input from CIA members not involved in the drafting of the statement has been sought throughout the process to ensure that all views are considered and that a reasonable degree of consensus in support of the statement is achieved.

**Learn more about these recommendations by contacting us.**

## Lead authors

**Joe Nunes, FCIA**

[joe@actuarialesolutionsinc.com](mailto:joe@actuarialesolutionsinc.com)

**Michel St-Germain, FCIA**

[michel.st-germain@mercer.com](mailto:michel.st-germain@mercer.com)

**Jacques Tremblay, FCIA**

[jacques.tremblay@oliverwyman.com](mailto:jacques.tremblay@oliverwyman.com)

## CIA communications

**Sandra Caya**

[sandra.caya@cia-ica.ca](mailto:sandra.caya@cia-ica.ca)



## APPENDIX

---

# Summary of Research

The task force responsible for producing this statement accessed a number of different sources of research and other studies, to ensure there was a factual basis to the recommendations presented. These sources are listed below and are referred to throughout the following summary. We encourage readers who are interested in developing a deeper understanding of the retirement age issue to study these sources.



---

## Results from Canadian Social Programs

A number of studies produced by the Office of the Chief Actuary were reviewed as this statement was being developed, and they reinforce the findings discussed above. Old Age Security (OAS) study no. 17 (Office of the Chief Actuary 2016) confirmed that there is a gap in life expectancy between recipients of the Guaranteed Income Supplement (GIS) (i.e., lower-income individuals) and those who do not qualify for that benefit. However, it was noted that recent increases in life expectancy were consistent across both groups. Canada Pension Plan (CPP) study no. 16 (Office of the Chief Actuary 2015b) examined the experience of CPP recipients by income level and found that those receiving the maximum pension lived measurably longer than those receiving less than 37.5 percent of the maximum.

Both reports have several exhibits that demonstrate the various differences in life expectancy, which the reader is encouraged to review. Particularly, the charts on pages 26 and 34 of CPP study no. 16 provide information on the relationship between mortality and income level (Office of the Chief Actuary 2015b).

The 27th CPP Actuarial Report (Office of the Chief Actuary 2015a) provided interesting insights into labour force trends. In general, higher labour force participation is expected for all working ages (15–69), for a number of reasons:

- Longer working lives;
- Labour shortages, which will compel more workers to stay in the workforce;
- Higher levels of education;
- Stronger labour force attachment among female workers; and
- Possibly insufficient retirement savings.

The removal of the work cessation test in 2012 did result in significantly higher retirement rates at age 60, but that effect has since diminished.

The report did perform sensitivity tests on the average retirement take-up age (62.7) by adjusting it by one year either way. However, because it was combined with changes in participation rates and unemployment rates, it is difficult to assess the impact of this change in isolation. Nonetheless, we encourage the reader to review the exhibits contained in the report, particularly tables 45, 67, and 125.

## Socio-economic Considerations in Changing the Eligibility Age

One of the main concerns expressed in a number of research papers was the regressive effect of a change in eligibility age. Specifically, there was concern that lower-income individuals, who tend to have a lower life expectancy than those with higher income, would see a disproportionately negative effect when eligibility ages are increased.

The relationship between socio-economic status and life expectancy has been studied. An International Actuarial Association study (Billig 2017) notes that income, education, and geographic location are often correlated, but socio-economic status is considered to be a cause of lower life expectancy, as opposed to simply being correlated. As a result, individuals from lower socio-economic groups are expected to experience fewer years in retirement, and thus be more adversely affected by an increase in eligibility age. Physical and mental health is also demonstrably worse for lower income levels (Billig 2017).

The UK state pension age review (Department for Work and Pensions 2017) considered this issue as well. Ultimately, the report acknowledged that there would be socio-economic inequities, but they should be solved through other means, and not through adjustments to the eligibility age. Similarly, the Organisation for Economic Co-operation and Development (OECD 2016) recommended that the ratio of years in retirement to years as a contributor remain constant across classes but did not address how this could be achieved in public plans.

---

## Experience in the UK

One of the best sources of research for this statement was the extensive work performed in the United Kingdom, as part of their recently completed review of the state pension age. The ultimate recommendation from the review was to raise the state pension age from 67 to 68 in 2037–39, which is seven years earlier than the previously legislated date of 2044–46. The independent review (Cridland 2017) and the final report (Department for Work and Pensions 2017) present substantial information in support of their recommendation.

One of the primary issues discussed in these reports is the regional variation in life expectancy, and the deprivation seen within each socio-economic group. Ultimately, it was decided that there was no effective way to address these regional variations through changes to the pension age.

A key principle adopted within the UK reports is that one-third of adult life (later changed to 32 percent in the final report) should be in receipt of a state pension. This principle provides an effective means to determine how much the pension age should ideally be adjusted as life expectancy changes.

The reports were also concerned with the frequency of future changes in pension age, and its impact on intergenerational fairness. As such, it was recommended that there be no more than one change to the pension age within every 10-year period.

There were a number of other noteworthy factors, which may or may not apply to the Canadian experience, but nonetheless offer interesting insights into how the UK arrived at their recommendations:

- For individuals who are unable to work due to ill health, or who act as caregivers, the state pension age will not be changed; i.e., it will remain at 67 for this group when it rises to 68 for others.
- The report recommended lump-sum rewards for those who offer to defer their pensions. It was also recommended that partial drawdowns be allowed, with the balance eligible for the deferral reward.
- Somewhat surprisingly, the reports recommended against making a reduced pension available at an earlier age. The rationale was that the basic pension was intended to be a minimum benefit, and that it would not be appropriate to provide a benefit that would be less than that minimum.
- Historically, the UK had distinct pension ages for males and females, but that difference is in the process of being eliminated.
- The report also advised that the government set parameters ahead of time for future reviews of the pension age.

## Other Worldwide Trends

In 2016, the IAA issued a paper (IAA 2016) on the actuarial, social, and economic impacts of changes in eligibility age. There were a number of useful findings from this report that influenced the CIA statement.

The report acknowledges that changes to the eligibility age are necessary to maintain sustainability, fairness, and intergenerational equity. That being said, it also expresses a concern over the potential inequity between socio-economic groups that was discussed above. As a result, the paper recommends that countries consider options such as the following:

- Maintaining a minimum floor of protection;
- Establishing appropriate relationships between benefits and contributions; and
- Considering inter-population or inter-generation transfer payments.

Charts 1.1A and 1.1B in the paper illustrate the wide variation in eligibility ages around the world. Although some countries have historically had lower eligibility ages for females, the gap has been closing, even though labour market inequities make this a challenging exercise. As well, the paper illustrates some of the unintended consequences of early retirement options, particularly in countries such as Denmark, Saudi Arabia, and Iran.

The paper identifies a number of considerations that enter into the determination of when to retire. These include the following:

- Availability of employment;
- Health status of participants and their dependents;
- Expected future lifetime;
- Retirement status of spouse/partner;
- Cultural practice and peer actions;
- Economic conditions (i.e., affordability of being retired);
- Availability of retirement savings; and
- Availability of family and other caregivers during the retirement period.

The paper also illustrates that there is often a misalignment between the eligibility age and the actual effective retirement age, which demonstrates that there are challenges in setting the eligibility age at an appropriate level. That being said, the paper does see benefits in an increased eligibility age, since it encourages older workers to stay in the workforce, meaning that their experience and expertise is not lost.

A paper produced by the International Social Security Association (ISSA 2017) examines worldwide life expectancy and mortality improvements, with a focus on “healthy” life expectancy; i.e., the expected number of years lived in good health. As with the other papers, it too looks at socio-economic status and regional differences in life expectancy.

One of the main findings of the ISSA paper is that changes to eligibility age need to be coordinated carefully with other social programs, such as disability insurance or unemployment insurance. Because different subgroups will see different effects, no changes to any one program should be done unilaterally.

The paper presents a good summary of different approaches to population aging, including the following:

- Ad hoc increases to eligibility age;
- Age increases linked to an external demographic factor;
- Pension amount adjustment based on change in life expectancy;
- Encouragement of later retirement and/or increasing early retirement disincentives;
- Stricter eligibility requirements;
- Preventive measures (health, safety) to facilitate longer working lives; and
- Strategies to improve fertility rates.

The main message is that changing the eligibility age is not necessarily the only solution available.

According to Axelrad and Mahoney (2017), 19 of 34 OECD countries included in their analysis have increased their retirement age, and 20 are planning to increase retirement age in the coming years.

---

# Sources

Axelrad, Hila and Kevin J. Mahoney. 2017. "Increasing the Pensionable Age: What Changes Are OECD Countries Making? What Considerations Are Driving Policy?" *Open Journal of Social Sciences* 5:56–70.

<https://doi.org/10.4236/jss.2017.57005>

Billig, Assia. "Impact of Inequality and Socio-economic Differences on Morbidity and Mortality." Presentation at International Insights on Mortality, Population and the Public Interest, Chicago, IL, October 2017.

[http://www.actuaries.org/CTTEES\\_TFM/Documents/Chicago2017\\_Seminar\\_Presentations/Impact\\_of\\_Equality\\_AssiaB\\_Final.pdf](http://www.actuaries.org/CTTEES_TFM/Documents/Chicago2017_Seminar_Presentations/Impact_of_Equality_AssiaB_Final.pdf)

Brown, Robert L. and Shantel Aris. 2017. *Greener Pastures: Resetting the Age of Eligibility for Social Security Based on Actuarial Science*. Toronto: C.D. Howe Institute.

[https://www.cdhowe.org/sites/default/files/attachments/research\\_papers/mixed/Commentary\\_475.pdf](https://www.cdhowe.org/sites/default/files/attachments/research_papers/mixed/Commentary_475.pdf)

Cridland, John. 2017. *Independent Review of the State Pension Age: Smoothing the Transition*. London: Department for Work and Pensions, UK.

<https://www.gov.uk/government/publications/state-pension-age-independent-review-final-report>

Department for Work and Pensions. 2017. *State Pension age review: final report*. London: Department for Work and Pensions, UK.

<https://www.gov.uk/government/publications/state-pension-age-review-final-report>

International Actuarial Association (IAA). 2016. *Determination of Retirement and Eligibility Ages: Actuarial, Social and Economic Impacts*. Ottawa: IAA.

[http://www.actuaries.org/LIBRARY/Papers/PIWG\\_Retirement\\_and\\_Eligibility\\_Ages\\_Paper\\_final\\_11March2016.pdf](http://www.actuaries.org/LIBRARY/Papers/PIWG_Retirement_and_Eligibility_Ages_Paper_final_11March2016.pdf)

International Social Security Association (ISSA). 2017. *Megatrends and Social Security: Demographic changes*. Geneva: ISSA.

<https://www.issa.int/en/details?uuid=1438fdf2-cd99-4b0a-bb13-8913b829db1d>

Office of the Chief Actuary. 2015a. *Actuarial Report 27th (Revised) on the Canada Pension Plan as at 31 December 2015*. Ottawa: Office of the Superintendent of Financial Institutions Canada.

<http://www.osfi-bsif.gc.ca/Eng/Docs/cpp27rev.pdf>

Office of the Chief Actuary. 2015b. *Canada Pension Plan Retirement, Survivor and Disability Beneficiaries Mortality Study Actuarial Study No. 16*. Ottawa: Office of the Superintendent of Financial Institutions Canada.

[http://www.osfi-bsif.gc.ca/Eng/Docs/PPP\\_BM-no16.pdf](http://www.osfi-bsif.gc.ca/Eng/Docs/PPP_BM-no16.pdf)

Office of the Chief Actuary. 2016. *Old Age Security Program Mortality Experience Actuarial Study No. 17*. Ottawa: Office of the Superintendent of Financial Institutions Canada.

<http://www.osfi-bsif.gc.ca/Eng/Docs/ocaas17.pdf>

Organisation for Economic Co-operation and Development (OECD). 2016. "Fragmentation of retirement markets due to differences in life expectancy." *OECD Business and Finance Outlook 2016*. Paris: OECD.

<https://doi.org/10.1787/9789264257573-11-en>

Robson, William B.P. and Alexandre Laurin. 2017. *Bigger CPP, Bigger Risks: What "Fully Funded" Expansion Means and Doesn't Mean*. Toronto: C.D. Howe Institute.

[https://www.cdhowe.org/sites/default/files/attachments/research\\_papers/mixed/E-Brief\\_256\\_0.pdf](https://www.cdhowe.org/sites/default/files/attachments/research_papers/mixed/E-Brief_256_0.pdf)



Canadian Institute of Actuaries  
360 Albert Street, Suite 1740  
Ottawa, ON K1R 7X7  
613-236-8196  
head.office@cia-ica.ca  
cia-ica.ca



The Canadian Institute of Actuaries (CIA) is the national, bilingual organization and voice of the actuarial profession in Canada. Its members are dedicated to providing actuarial services and advice of the highest quality. The Institute holds the duty of the profession to the public above the needs of the profession and its members.