Institut sur la retraite
et l'épargne
HEC MONTRÉAL

Retirement Incomes in Canada: Past, Present and Future

CAHIER DE RECHERCHE Nº 19
WORKING PAPER No. 19

David Boisclair, Xavier Dufour-Simard and Pierre-Carl Michaud

Septembre / *September* 2025

Retirement and Savings Institute

Les opinions et analyses contenues dans les cahiers de recherche de l'Institut ne peuvent en aucun cas être attribuées aux partenaires ni à l'Institut lui-même et elles n'engagent que leurs auteurs.

Opinions and analyses contained in the Institute's working papers cannot be attributed to the Institute or its partners and are the sole responsibility of the authors.

©2025 David Boisclair, Xavier Dufour-Simard and Pierre-Carl Michaud. Tous droits réservés. All rights reserved. Reproduction partielle permise avec citation du document source, incluant la notice ©. Short sections may be quoted without explicit permission, if full credit, including © notice, is given to the source.

Dépôt légal : Bibliothèque et Archives nationales du Québec et Bibliothèque et Archives Canada, 2025.
ISSN 2561-9039

SDG-13359

Retirement Incomes in Canada: Past, Present and Future[1]

David Boisclair
Xavier Dufour-Simard
Pierre-Carl Michaud

Retirement and Savings Institute
HEC Montréal

September 2025

Abstract

In this paper, we paint a portrait of the evolution of retirement incomes over the last 20 years, and highlight some of the burning policy questions we think are important and deserve in our view more research. We also discuss the potential outlook for retirement incomes in decades to come under the current retirement income system. Our analysis leads us to conclude that seniors have done well in the last decades and that the retirement income system has met both its income replacement and poverty alleviation objectives quite well, but that the changing landscape will soon expose cracks which policymakers should address now rather than later.

JEL Codes: J14, J26, H55
Keywords: income replacement rates, poverty, pensions, savings, retirement

[1] The authors wish to thank Francois Laliberté-Auger for conducting the simulations presented in the paper. We would like to thank participants at presentations given at ESDC and the Ottawa Council on Aging for comments and suggestions on some of the analysis used for this paper. The authors also thank Philippe d'Astous, Benoit Dostie, Peter Hicks, Bonnie-Jeanne MacDonald, Riel Michaud-Beaudry, John Stapleton, Michel St-Germain and Michael Wolfson for their feedback on earlier drafts of the paper. The authors would in particular like to acknowledge the tremendous intellectual heritage left behind by the late Bob Baldwin, one of the leading pension scholars in Canada, who left us in August 2025. Bob had generously passed on his feedback on this research on numerous occasions and helped shape our own views on pension policy. The analyses contained in this paper were carried out at the Quebec Inter-university Centre for Social Statistics (QICSS), a member of the Canadian Research Data Centre Network (CRDCN). The activities of QICSS are made possible by the financial support of the Social Sciences and Humanities Research Council (SSHRC), the Canadian Institutes of Health Research (CIHR), the Canada Foundation for Innovation (CFI), Statistics Canada, the Fonds de recherche du Québec and all the Quebec universities that contribute to their funding. Conclusions, interpretations and possible errors remain our own.

Motivation

The retirement income system is perhaps the largest component of the social policy architecture in Canada. Both the federal and provincial governments play an important role in managing that system with two key objectives: providing Canadians with means to sustain their standard of living in retirement (income replacement) and protecting them from financial hardship (poverty alleviation). Because of the importance of that system and of the growing size of the senior population, there is perhaps no other group in society that gets more attention from policy groups – including politicians – than seniors. Claims that they cannot make ends meet, live in poverty, or have trouble with the increase in the cost of living abound, resonate and attract votes. More broadly, there are signs that our retirement income system, once a proud jewel, is losing its shine. For example, Canada was given a grade of B and ranked 17th around the world by the Mercer CFA Institute Global Pension Index, down from 9th position in 2020.[2]

Since the policy discussion that led to enhancing the Canada (and Quebec) Pension Plan (CPP/QPP) in 2016, there has been little work looking at how seniors are faring, in terms of both the income replacement and poverty alleviation objectives. Leading up to that discussion, much had been learned in terms of both policy objectives. First, the arrival of the first cohorts with full CPP/QPP earnings histories has helped lower poverty among the elderly (Milligan, 2008). Decomposing trends, Schirle (2013) shows that changes in the generosity of the Guaranteed Income Supplement (GIS) and CPP/QPP are particularly responsible for the declining trend in poverty rates. Veall (2008) argues that the retirement income system has accomplished its poverty alleviation objective for the most part. If there is one thing that the policy discussion leading to CPP enhancement made clear, it is that overall replacement rates were high in the population (LaRochelle-Côté et al., 2008; Ostrovsky & Schellenberg, 2009); but that the group most at risk in our retirement income system has always been mid-earners without Registered Pension Plan (RPP) coverage, since public pensions offer relatively low replacement rates for them (Ostrovsky & Schellenberg, 2010).[3] The Canadian system was in part built on the premise that employers would cover those workers. At the time of CPP enhancement discussions, some prospective models indicated that only a small portion of the Canadian population was headed for low replacement rates in retirement (McKinsey, 2012), while others warned that group could be much larger (MacDonald et al., 2016; Wolfson, 2011). Assumptions on future RPP coverage in particular were at the core of the disagreement, although other

[2] https://www.mercer.com/en-ca/about/newsroom/mercer-cfa-institute-global-pension-index-2023/

[3] The OECD's *Pensions at a Glance* report of 2023 computes a gross replacement rate of 36.8% for public pensions in Canada for the average worker in terms of earnings, compared to an average of 42.3% for the OECD-38 and 49.5% for the EU-27 countries. See https://www.oecd.org/content/dam/oecd/en/publications/reports/2023/12/pensions-at-a-glance-2023_4757bf20/678055dd-en.pdf

differences in methodology could also explain the differences, in particular indexing in the pre-retirement earnings base (Baldwin, 2016).

Since 2016 there has been a pandemic; a surge in inflation; financial market fluctuations; and many other events. The continuing decline in RPP coverage, in particular DB coverage in private sector jobs, has turned off the retirement savings automatic pilot for many workers. New to the pension environment, Canadians are turning to Tax-Free Savings Accounts (TFSAs) as a new tool in their retirement income toolbox, a tax-preferred vehicle which is immune to means-testing from the first pillar of the retirement income system (Busby & LoRiggio, 2023). Old-Age Security (OAS) is still meeting its poverty protection objective despite inflation surges, thanks to its CPI indexation. However, it is falling behind in terms of income replacement for new cohorts since, unlike CPP, it does not index benefits to wage growth (which is typically higher than inflation) for new retirees.

This paper has three objectives. First, by taking the long view, it looks at two decades of seniors (2002 to 2022) in terms of the outcomes they obtained, in retirement, both in absolute and relative terms, comparing their incomes to the ones they earned while working. Because the issue cannot be looked at only with income data, household balance sheet data are also used to complete the picture. Second, the paper discusses likely paths for retirement incomes in decades to come using a prospective projection tool we developed and applied to a large cohort of Canadians currently of working age. Third, the paper discusses a number of important design issues which we should pay attention to as well as knowledge gaps which warrant further research in academia and policy circles.

The Past

How can we evaluate whether the retirement income system met its objectives in the recent past? We rely on the Longitudinal Administrative Databank (LAD), a subset of the T1 Family File (T1FF) provided to researchers by Statistics Canada. The data offers detailed financial information derived from the tax records of 20% of the Canadian population and is available for the years 1982 to 2022. This data allows us to obtain precise income measures at multiple points over a taxpayer's lifetime for a very large representative sample. It also provides information on household composition, which we will also use for some of the measures.

Ideally, one would want both income and consumption measures over a long period. But consumption, or more realistically spending, is difficult to piece together over time in Canada, in particular in recent years due to a reshuffling of the Survey of Household Spending in 2010. Sample sizes are also small at older ages, limiting the potential for clear inferences. Instead, we use the LAD after-tax income as a measure of disposable income. We convert measures into 2022 constant dollars using the CPI. We also make use of gross income for some of the analysis. Finally, we sometimes pool together disposable incomes of dual member households to look at family measures. In some instances, we also adjust measures for dissaving from TFSAs. Unlike Registered

Retirement Savings Plans (RRSPs) and Registered Retirement Income Funds (RRIFs, "post-retirement" versions of RRSPs), TFSA withdrawals are not included in tax data-based after-tax income measures.

To evaluate how the retirement income system helps with poverty alleviation, we use two key measures of poverty that can be constructed with tax data. As is clear from the literature, there is no single perfect measure of poverty (Government of Canada, 2018).[4] We use the LICO-AT (Low-income cut-offs, after tax) measure, created by Statistics Canada, and the Low-income measure, after tax (LIM-AT). They differ in terms of thresholds and of income measure used. The LIM-AT is certainly the easiest measure: an individual is income-poor if their after-tax income is below 50% of the median after-tax income in the population. In some sense, it is a synthetic relative poverty measure, comparing income of some groups to the median income of the entire population at one point in time. Mechanically, poverty rates with the LIM-AT will increase with age as income follows an inverted-U pattern over the life cycle for most individuals. In comparison, the LICO-AT is a measure which has not been updated since 1992 and relies on meeting expenditures on housing, food and clothing but does not account for the growing share of expenditures on transportation and communications (Noël, 2017). Another measure, the market-based measure (MBM), is a potentially superior alternative to LICO but data from the LAD is insufficient to compute the income concept necessary to apply that threshold (we are missing for example non-discretionary spending such as child support, childcare, medically prescribed health expenses and the tenure-type adjustment for housing). Hence, we have decided to consider only LIM-AT and LICO-AT measures.

To evaluate the retirement income system in terms of income replacement, replacement rates are simple measures to compute.[5] But one must first realize that there are many ways to compute replacement rates: we need a measure of pre- and post-retirement income at some given ages. For this analysis, we define pre-retirement income as the average income in the age range 50 to 54, so as not to rely on a single year of income in the denominator of the replacement rate.[6] This likely corresponds for most taxpayers to

[4] Government of Canada, "Canadian Poverty Reduction Strategy, What we heard about poverty so far", available at https://www.canada.ca/en/employment-social-development/programs/poverty-reduction/reports/what-we-heard.html.

[5] Many alternatives exist to replacement rates. Some involve modelling the life cycle of economic agents and figuring out optimal wealth and consumption in retirement compared to before retirement (Scholz et al., 2006; Scholz & Seshadri, 2009). Others emphasize the difficulty with measuring replacement rates and the importance of career trajectories (Wolfson, 2011). Finally, alternative measures have been proposed which combine multiple indicators (MacDonald et al., 2011).

[6] Some analyses using replacement rates use earnings over the entire career, or earnings over a longer period. These will have an effect on estimated replacement rates; see Wolfson (2011) for a discussion of this. We choose this relatively short period to have the longest time span available to look at cohorts given that the data is only available from 1982 onwards.

the peak of the income trajectory over their life cycle. The window is also early enough in the life cycle not to pick up too many early retirees.[7] We define the retirement window as the tax year in which the taxpayer turns 70. This age should allow most retirement pensions to contribute to retirement income.[8] The ages are picked to maximize the window of cohorts we can look at. The LAD starts off in 1982; therefore, the older cohort of 70-year-olds for whom we pick up age 50-54 pre-retirement income was born in 1932 (attained age 70 in 2002). The youngest cohort was born in 1952 and reached age 70 in 2022. We have a total of 980,000 taxpayers, roughly 34,000 of whom turned 70 in 2002 and 66,000 in 2022. Looking at later ages does not really change the picture but cuts the number of years we can look at. Conversely, looking at earlier ages increases the likelihood we catch non-retirees.

Many of the analyses presented in this report account for distributional considerations. Indeed, the Canadian retirement income system is quite progressive, in the sense that the dispersion of retirement incomes is less than that of income in the working age population. This means that averages potentially distort the picture considerably for replacement rates. Hence, we compute for each cohort deciles of pre-retirement after-tax income. To get a sense of what these deciles mean, Table 1 provides information on the average after-tax income in each decile for 2022, excluding individuals with an income under $7,500.

Table 1 - Average After-Tax Income at Age 50-54 by Decile, 2022

1	2	3	4	5	6	7	8	9	10
$12,400	$20,600	$28,900	$37,000	$44,500	$52,400	$61,600	$72,700	$88,000	$136,300

Source: Statistics Canada's LAD, 1982-2022.

To compute replacement rates, we need to be aware of two issues. First, replacement rates at the taxpayer level exhibit extreme values. This is largely due to low denominators. Some taxpayers have low incomes at age 50-54 and this generates very high replacement rates. This is particularly true when we sort taxpayers by decile of pre-retirement income. To mitigate this issue, we compute two sets of statistics. First, we report median individual replacement rates rather than average replacement rates. The median is less sensitive to outliers. Second, we also report ratios of aggregate income, pre- and post-retirement, within a decile (or in some cases another group). As we will see, both measures typically show very similar patterns. We favor the second type of measure in presenting results.

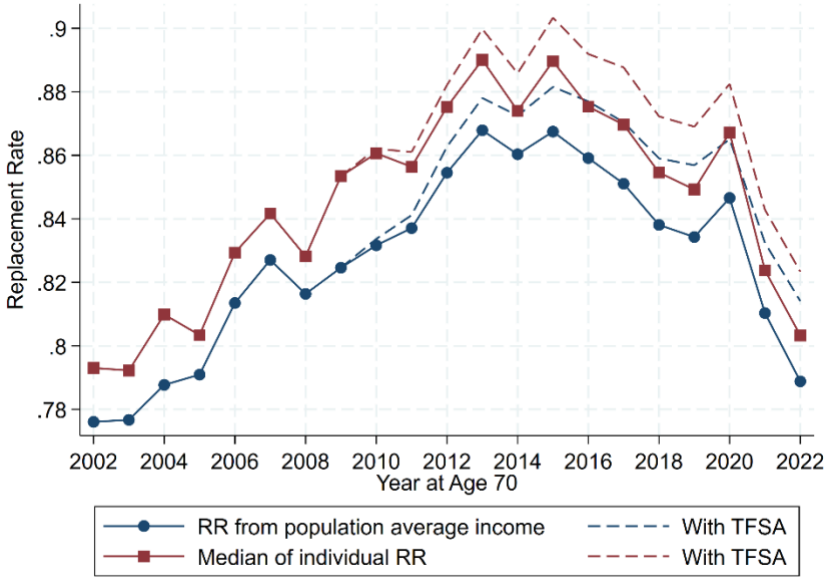
[7] That age range may, however, pick up households who still have substantial spending for children (such as tuition, etc.).

[8] As we discuss later, this is an age around which RRSPs must be converted into RRIFs. There is some variability around these ages (70 to 72), but we did not find a significantly different pattern to raise concerns about choosing 70.

Overall Evolution of Replacement Rates

We begin in Figure 1 by presenting the evolution of after-tax replacement rates over cohorts. First, replacement rates on average are high: 80% to 90%. RR have increased over the 2002-2014 cohorts by almost 10 percentage points (pp). However, they decreased after 2014 to pretty much the levels observed at the beginning of the period. Including TFSA net withdrawals as income increases RR by 2 to 3 pp, so this has little effect on replacement rates. This could change in the future with the increased use of TFSAs. Replacement rates are higher on an after-tax basis compared to before-tax. Tax rates are lower in retirement due to several tax measures, but also due to the progressivity of the income tax schedule. Our calculations lead to much higher values for average replacement rates than, say, the number published by the OECD in their *Pensions at a Glance* publication of 2023.[9] In that publication, the total gross replacement rate for the average earner is 57% while the after-tax replacement rate is 66%. The main reason for this difference is that we include all sources of income of seniors and look at the distribution of realized rather than modelled replacement rates.

Figure 1 - Individual After-Tax Replacement Rate for Cohorts of Taxpayers Turning 70 Between 2002 and 2022

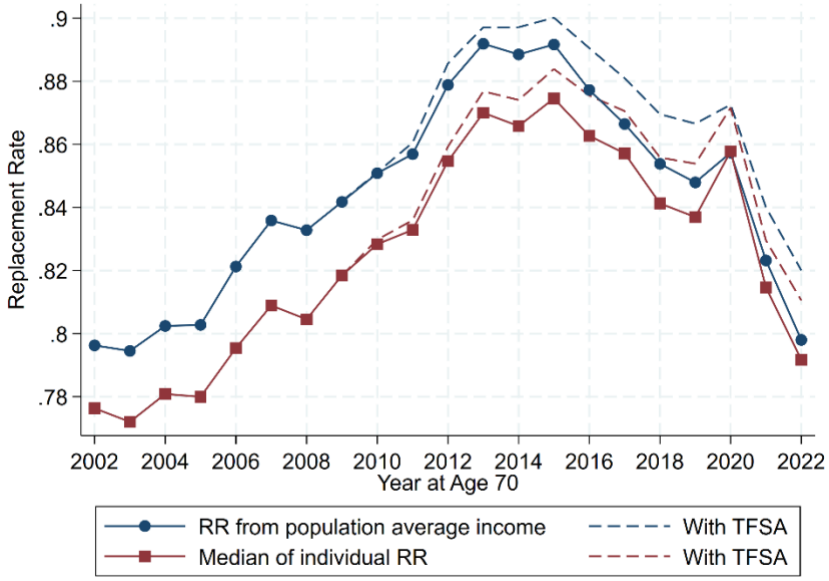


Source: Statistics Canada's LAD, 1982-2022.

[9] The report can be consulted at https://www.oecd.org/content/dam/oecd/en/publications/reports/2023/12/pensions-at-a-glance-2023_4757bf20/678055dd-en.pdf. Table 4.5 reports modelled replacement rates which include both public and private pensions.

Does it make a difference whether we use family or individual replacement rates? We compute size-adjusted family income using the square root of family size.[10] In the LAD, we can only observe the incomes of the taxpayer and the spouse. Hence, we only adjust for this using the square root of 2 for taxpayers with spouses. In Figure 2, we notice very similar RR to the ones reported in Figure 1. The main difference is that here RR from the population average are slightly higher than those reported in Figure 1. This could reflect the fact that considering family income reduces the number of (very) low incomes in the population (e.g., people living in a couple with one dominant earner). In what follows we focus on individual outcomes as we did not see particularly different profiles for families.

Figure 2 – Family After-Tax Replacement Rate for Cohorts of Taxpayers Turning 70 Between 2002 and 2022



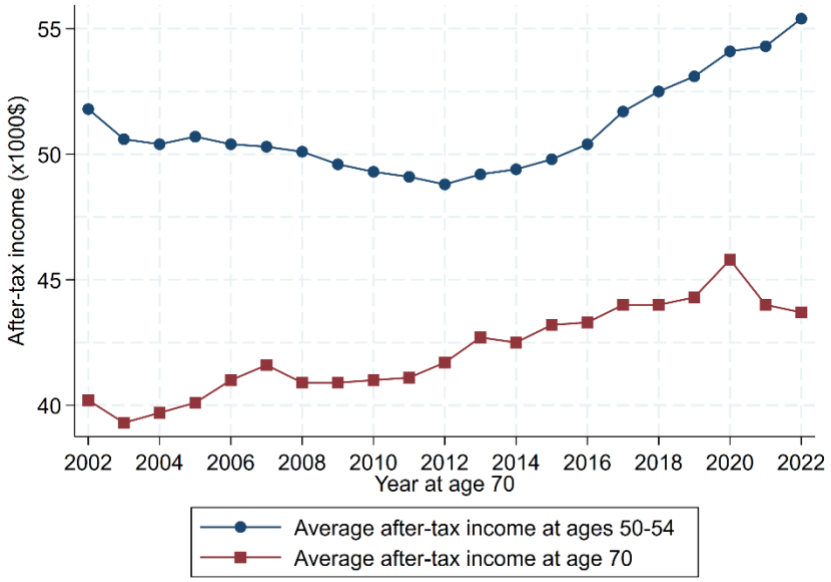
Source: Statistics Canada's LAD, 1982-2022.

Why is there an increase and then a bust? We can look separately at the two components of the ratio built with average incomes: the pre- and post-retirement after-tax income averages used to construct the RR measure. Figure 3 plots these averages. We see that most of the variation observed in Figure 1 comes from pre-retirement income variations. Average pre-retirement incomes are slightly declining (in real terms) for the 2002 to 2012 cohorts (which correspond to the 1982 to 1996 pre-retirement years). This could be due to the two economic downturns during that period. A change in trend is observed after 2012, with average income increasing by 10% in real terms between the 2016 and 2022 cohorts (corresponding to the 1996 to 2006 pre-retirement years). This puts downward pressure

[10] In this case, we exclude families with a size-adjusted income under $7,500 (i.e., <$7,500 for a 1-person family and <$10,607 for a family of 2 in 2022).

on replacement rates.[11] On the other hand, retirement income is on a slow and steady upward trend over the period in constant dollars. The last year of data shows a small decline. The year 2022 is a year with much higher inflation; it could signal a decline in real incomes after 2022. Unfortunately, the LAD data does not allow us to look at more recent years.

Figure 3 - Average After-Tax Income Pre-Retirement (at ages 50-54) and in Retirement (at age 70), by Cohort, in 2022 $

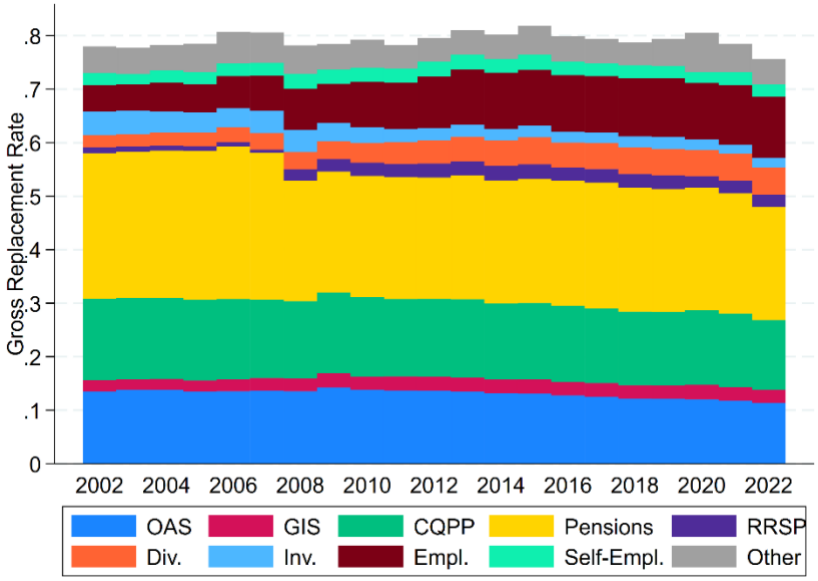


Source: Statistics Canada's LAD, 1982-2022.

While average incomes at age 70 have generally experienced a smooth growth over cohorts, have the sources of these revenues been constant over time? We use gross incomes for this as the tax treatment of each income source is different. We break down income at age 70 into its different components and look at their evolution by cohort. We express the population average value of each component as a fraction of the population average total income (before tax, excluding capital gains) in the pre-retirement window. This gives us a measure of the gross RR, which is plotted in Figure 4.

[11] We have investigated gender differences and have not found important differences by gender.

Figure 4 - Contribution of Income Components to the Gross Replacement Rate by Cohort



Source: Statistics Canada's LAD, 1982-2022.

Figure 4 shows us that despite similar gross replacement rates, incomes at age 70 have changed composition over the past decades. We can see that public pensions, defined as the sum of OAS, GIS and CPP/QPP, are a very important source of income for seniors on average. The share of pre-retirement income replaced by public pensions is declining, however. From 31% of total pre-retirement income in 2002, the share went down to 27% in 2022. We observe a similar declining trend for private pension income (27% to 21%). In the LAD, private pension income includes RPP but also RRIF and taxable annuity income. RRIFs are important as RRSP balances need to be folded into a RRIF upon reaching age 71, and minimum annual withdrawals from RRIFs are mandatory. The "Pensions" variable combines these sources of income. What may seem surprising perhaps is that private pension income is declining for these cohorts; but changes to RRIFs over time could explain at least part of this phenomenon.[12] Taken together, public and private pension incomes have gone down from representing 58% of pre-retirement income to 48%, a drop of 10 percentage points (pp) in less than 20 years. This is a large drop coming from the three pillars of the retirement income system.

What keeps gross replacement rates from declining accordingly? We find that there is an increase in several personal income sources, notably employment (+6 pp),

[12] These changes notably explain the sharp 5 percentage point drop observed between 2007 and 2008, as the maximum age to transfer RRSP balances to RRIFs increased from 69 to 71 years old. The figure also likely shows the effect of decreased minimum withdrawals introduced in 2015, and temporary pandemic measures in 2020 and the following years.

dividend[13] (+3 pp), and RRSP (+1 pp; excluding RRIFs and RRSP-purchased annuities) income. We also observe a decline in investment income (-3 pp), which could reflect the growing importance of tax favored savings vehicles (RRSPs and TFSAs) over time. One can conclude that there is more heterogeneity in income sources than there was 20 years ago and that traditional retirement income, coming from public and private pensions, has eroded substantially as a percentage of pre-retirement income.[14]

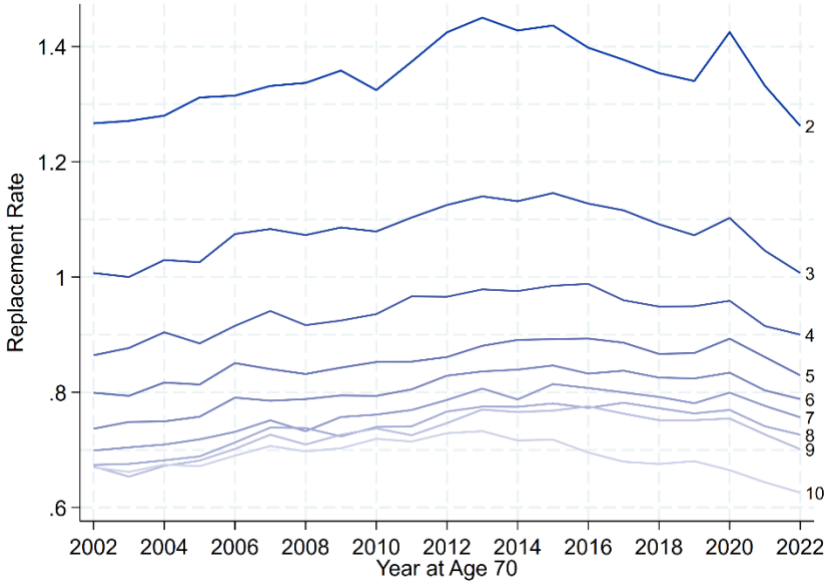
Along the Income Distribution

Replacement rates from public pensions decline as income rises. Hence, it is important to look at distributions. We start by dividing the income distribution in cohort-specific deciles of pre-retirement after-tax income. Figure 5 presents the RR computed from population averages for each decile over time. The RR of the first decile hover around 2 and are omitted to enhance readability. This means that someone in the first decile will see his or her real after-tax income double at age 70 relative to age 50-54; replacement rates are very high at the bottom of the distribution.

[13] The dividend component (Div.) in Figure 4 only includes dividends from Canadian corporations. Foreign dividends are included in the investment income variable (Inv.).

[14] An interesting question to ask is whether two individuals with the same replacement rate at age 70, but where one stopped working at age 55 while the other is still working, are comparable in terms of *permanent* replacement rates for the retirement years beyond age 70. One should recognize that income sources like employment income are not annuities and are unlikely to be relied upon at older ages.

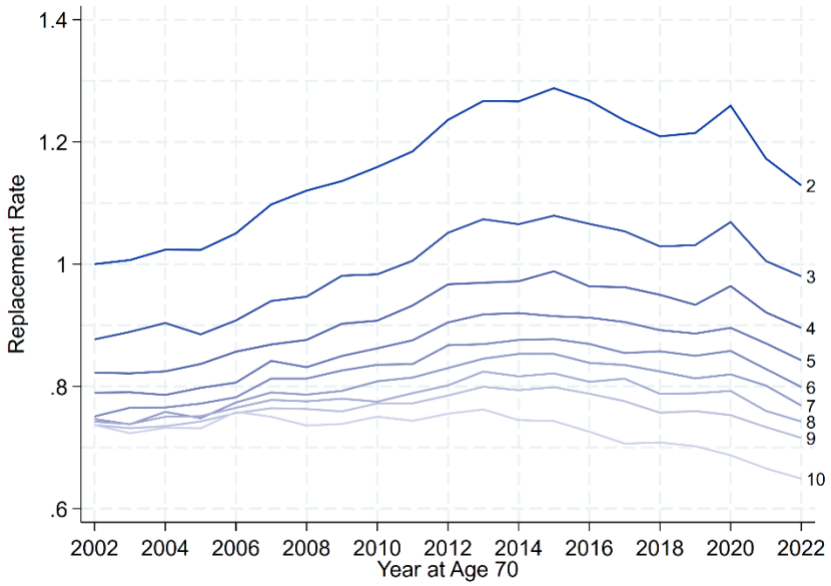
Figure 5 - Replacement Rates by Decile of Pre-Retirement Income and Cohort



Source: Statistics Canada's LAD, 1982-2022.

Figure 5 shows that the RR generally decrease as pre-retirement income increases. At the very top (10th decile), the replacement rate remains above 60%. Most deciles follow a trend similar to what Figure 1 reports: an increase until 2014-16 followed by a decrease of a similar magnitude. Deciles 2 and 3 exhibit no net variation from 2002 to 2022, whereas higher deciles have positive net variations, ranging from 3 pp (decile 4) to 6 pp (decile 7) over the entire period. The only decile that sees a net negative variation is the 10th, for which RR drop almost 6 pp over the period. The negative variation for this decile is again the result of faster growing pre-retirement income in years 2016+. Figure 6 shows the results for family size adjusted income.

Figure 6 - Replacement Rates by Decile of Family Size Adjusted Pre-Retirement Income and Cohort



Source: Statistics Canada's LAD, 1982-2022.

Our results show that despite a decline in RR in recent years, levels in 2022 were mostly similar to what was observed in 2002. Overall levels are fairly high when disaggregating by decile, especially for the bottom of the income distribution. Despite this finding, it is possible that the underlying variance of our measures has changed over time, leaving more taxpayers vulnerable to inadequate income levels in retirement. We tackle this next.

Incidence of Low Replacement Rates

How can we judge whether replacement rates are high or low? Defining retirement income adequacy based on replacement rates requires a normative judgment on what is adequate. Economists formalize these normative judgments by thinking about what individuals' preferences would dictate in terms of optimal consumption in retirement relative to before retirement. The first important point is that income replacement rates are not consumption replacement rates. One can save when income is high and dissave when income is otherwise low (in retirement) while maintaining the same consumption of goods and services. If prices are the same before and after retirement, comparing spending on goods and services before and after retirement – a "consumption replacement rate" – is a good metric. However, there are no panel data on consumption in Canada available to make this comparison. When most saving and dissaving is observed in income flows, such as for RRSPs and TFSAs, income replacement rates come closer to spending replacement rates. Therefore, we think that for most individuals, income replacement rates are probably close to consumption replacement rates, and this

is mainly what we use, absent data to do the alternative. The divergence might increase as one moves up the income distribution, as saving and dissaving from other wealth might become more important and unsynchronized with taxable income.

The second issue is to realize that retirement allows to consume much more leisure. This is a good that households also value. If the pleasure obtained from consumption is independent of leisure, one need not worry about this when using replacement rates – the optimal replacement rate might be close to one. But if leisure is a substitute for the consumption of good and services, then optimal consumption may decline in retirement: the optimal *consumption* replacement rate could be less than one. Surely, work related expenditures like transportation, clothing and food eaten away from home are likely substitutes with leisure. If, instead, leisure is a complement to consumption of goods and services, optimal consumption in retirement goes up, leaving us with an optimal consumption replacement rate which is larger than one. One could think of vacations and trips as a category which would be complementary to leisure. The optimal replacement rate thus depends on the overall substitutability (or complementarity) between the consumption basket and leisure. In box 1, we show how a simple calibration of this trade-off yields optimal replacement rates well below 100%. This model is unrealistic on purpose; it merely shows the kind of normative benchmark one should have in mind when thinking of whether replacement rates are too low or too high. More sophisticated approaches have been used in the international literature, notably by Scholz et al. (2006).

Box 1: A simple model of optimal replacement rates

To gather magnitudes of what optimal consumption replacement rates may look like, consider one of the simplest models of consumption and leisure, with preferences given by a constant elasticity of substitution (CES) utility function:

$$\mathrm{U} = \frac{1}{\gamma}(\alpha C^{\rho} + (1-\alpha)L^{\rho})^{\frac{1-\gamma}{\rho}}$$

where C is consumption spending on goods and services and L is leisure. The marginal utility of consumption is

$$U'_C = \frac{1}{\rho} D^{\frac{1-\gamma-\rho}{\rho}} D'_C$$

where $D = \alpha C^{\rho} + (1-\alpha)L^{\rho}$ and U'_C, D'_C are derivatives with respect to C. Life-cycle optimization requires that (discounted) marginal utility of consumption be the same pre- and post-retirement. Hence, we are looking for the compensating change in consumption spending when leisure increases, keeping the marginal utility of consumption constant. For these preferences, one gets the following expression for the required change in consumption following a change in leisure:

$$d\,log\,C = (1-\gamma-\rho)\frac{(1-\alpha)L^{\rho}}{(1-\rho)(1-\alpha)L^{\rho} + \alpha\gamma C^{\rho}} dlog\,L$$

The optimal replacement rate is therefore

$$RR^{*} = exp(d\,log\,C)$$

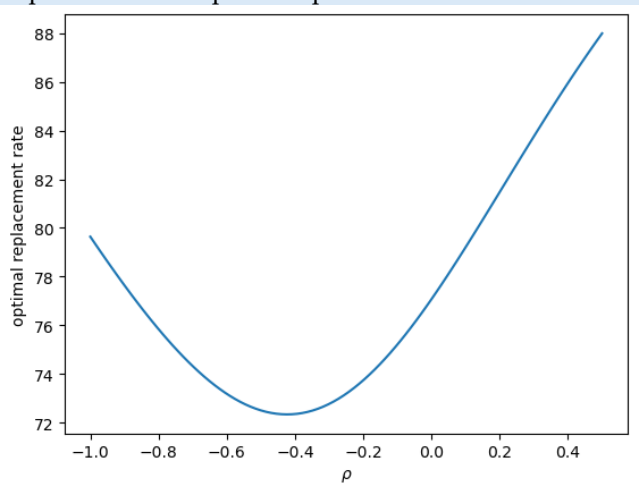
At retirement, the change in leisure is positive. Hence, the optimal change in consumption depends on the sign of the first term: $1-\gamma-\rho$. If positive, leisure and consumption are complements and consumption spending goes up in retirement. If negative, optimal consumption spending goes down in retirement (consumption and leisure are substitutes).

Consider a simple calibration. Take L to be 24 hours per day, minus 8 hours of sleep, times 365 days which yields 5,840 hours of potential leisure per year. Assume 2,000 hours of work annually (50 weeks at 40 hours per week). Hence, leisure is 3,840 hours when working. Therefore, upon retirement there is an increase in leisure of 52%. Preferences parameters determine the optimal replacement rate. Set the risk aversion parameter $\gamma = 3$, a common value in the retirement savings literature (Scholz et al., 2006). Consider a baseline value for spending of $40,000 per year. Figure 7 shows the optimal consumption replacement rate by values of ρ assuming $\alpha = 0.5$. As we show in the figure, the optimal replacement rate varies from 73% to 88% for plausible values of the substitution parameter ρ. The elasticity of substitution is $\sigma = 1/(1-\rho)$. Low negative values of this parameter yield little substitution between leisure and consumption, and eventually complementarity. The optimal replacement rate can be above one in the case of overall complementarity. High values of this parameter yield stronger substitution. Very large values yield a case where the marginal utility of consumption does not depend on leisure. In this case, the optimal replacement rate converges to one.[15] Overall, optimal replacement rates, in this arguably

[15] The common case of Cobb-Douglas preferences, often used in economic models, is where $\rho = 0$.

simple calibration, are not far from the after-tax income replacement rates we observe from the aggregate data (between 75% and 85% in Figure 1).

Figure 7 – Optimal Consumption Replacement Rate with CES Preferences

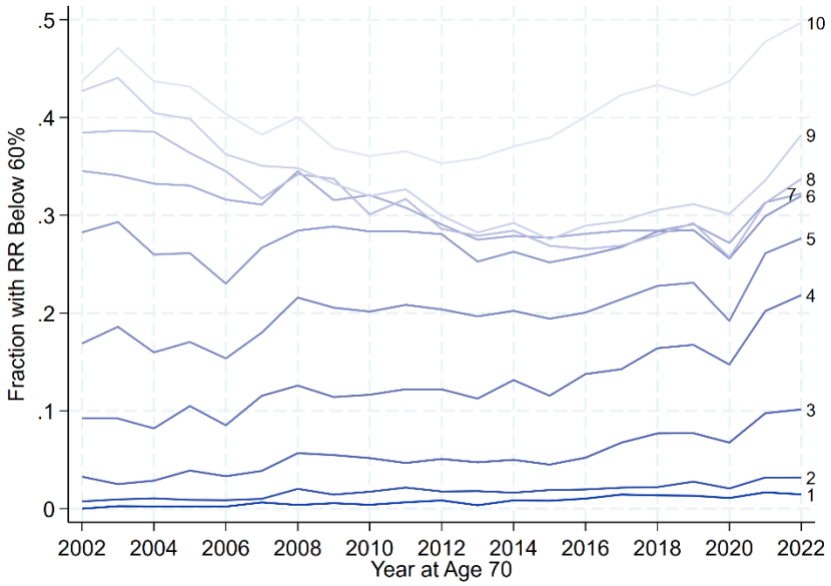


Arguably preferences can vary substantially in the population. There is no realistic prospect to compute the optimal replacement rate for each senior. In addition, we know that consumption derived from housing and non-registered wealth, among other sources, is not included in income replacement rates. Hence, even low replacement rates on an income basis may be optimal given that consumption in retirement may originate from housing consumption flows and other savings (Skinner, 2007). This is particularly true for individuals with higher pre-retirement incomes. We choose a level of 60% as a cut-off to document the presence of "low" income replacement rates. Indeed, it is much harder to rationalize replacement rates below 60% with sensible preference parameters. Hence, we will use this threshold as an indicator for worrisome levels of income replacement. Arguably, this calibration argument has its limits, but it provides some reasonable anchoring for choosing this value. Computations with alternative thresholds can be done.[16]

Figure 8 shows the fraction of taxpayers with RR below 60% by decile of pre-retirement income. We find that the majority of taxpayers with low RR are in higher deciles, with only few taxpayers in lower deciles having RR below 60%. That fraction is however increasing over cohorts, especially for deciles 3, 4 and 5 where we observe net increases of 7 to 13 pp.

[16] Substantial work has been done to uncover how different thresholds approximate retirement income adequacy in Canada; for instance, see MacDonald et al. (2016).

Figure 8 - Fraction of Taxpayers with RR Below 60%, by Decile of Pre-Retirement Income and Cohort

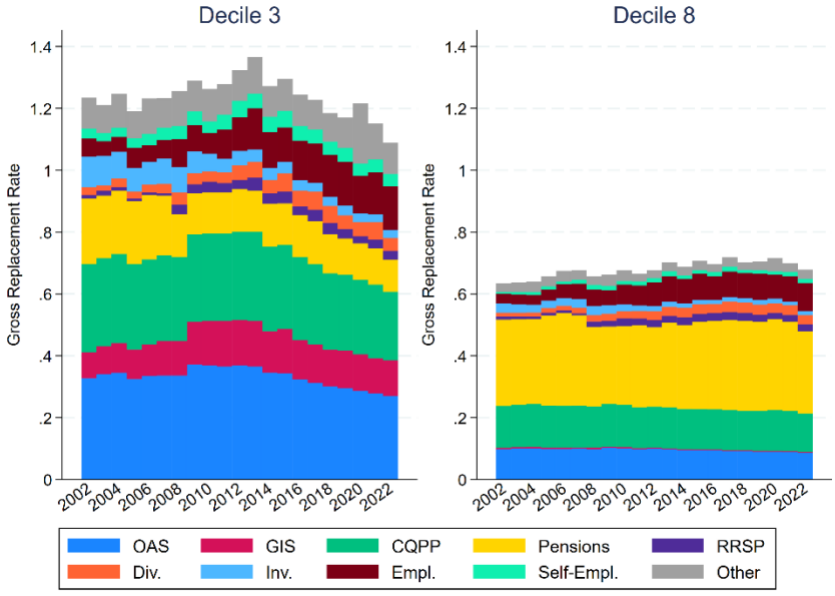


Source: Statistics Canada's LAD, 1982-2022.

To better grasp what causes the increase of low RR in the first deciles, we compare the contribution of income components to the gross RR for two deciles. We compare decile 3, the lowest decile that sees a large increase in its share of individuals with RR below 60%, to decile 8. This comparison showcases the differences in income composition evolution at opposite ends of the distribution.

Figure 9 highlights how different the magnitude of the gross RR is between the ends of the distribution. The graph shows how lower deciles are dependent on public pensions (OAS, GIS and CPP/QPP), which contributed almost 80% to their gross RR in the early 2010s. On the other hand, the upper deciles rely a lot more on private pensions (including RRIFs) and other income sources to replace income. Overall, this leaves the bottom of the distribution vulnerable to the erosion of public pensions and the top to the retreat of RPPs. We observe in the 3rd decile that public pensions have not followed the increase in pre-retirement income, resulting in a decreased contribution to the gross RR by more than 19 pp over the 2013-2022 period (from 80% to 61%). This trend is of a much lesser extent for the 8th decile, where the variation is of 2 pp (23% to 21%) over the same period. This suggests that the deteriorating income replacement function of the public pension system is disproportionately affecting lower income taxpayers.

Figure 9 - Contribution of Income Components to the Gross Income Replacement Rate for Pre-Retirement Income Deciles 3 and 8

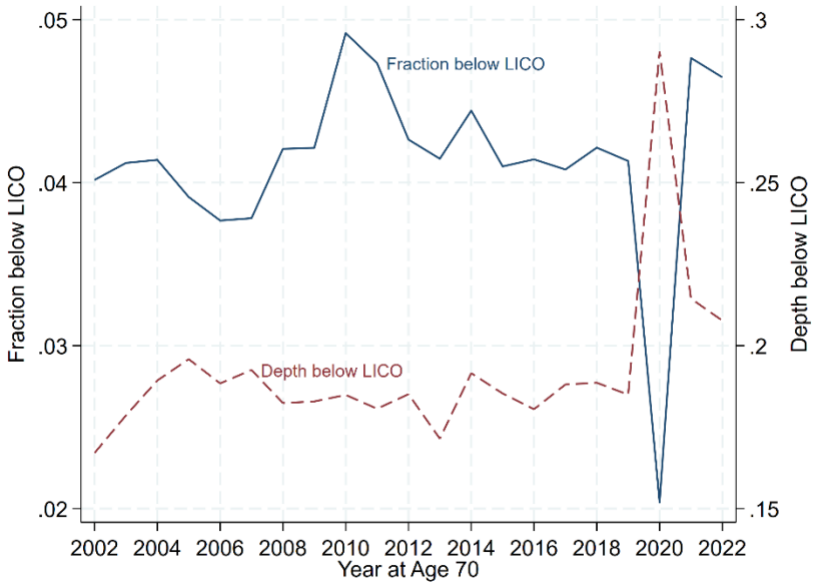


Source: Statistics Canada's LAD, 1982-2022.

What About Poverty Alleviation?

As discussed earlier, we first and mainly use Statistics Canada's Low-income cut-off (LICO) measure to study this aspect. This measure is an income threshold below which taxpayers are believed to spend a higher than desirable fraction of their income on necessities (i.e., shelter, clothing and food). The base for LICO has not been updated since 1992, but it is available over a long period. A more recent measure, the market-basket-measure (MBM), should be preferred, but missing components of the income concepts in the LAD prevent us from using it. We show later how the LICO, MBM and LIM compare on official Statistics Canada data. The LICO threshold is adjusted in a non-linear fashion for household size; here we consider households of 1 or 2 people and compare the after-tax family income to the corresponding threshold to identify taxpayers in low-income households. We also compute the depth relative to the LICO, in percentage among households below the threshold (percent deviation of income relative to the threshold in absolute value). Figure 10 summarizes the results.

Figure 10 - Fraction of Households Below the LICO and Average Depth by Cohort at Age 70



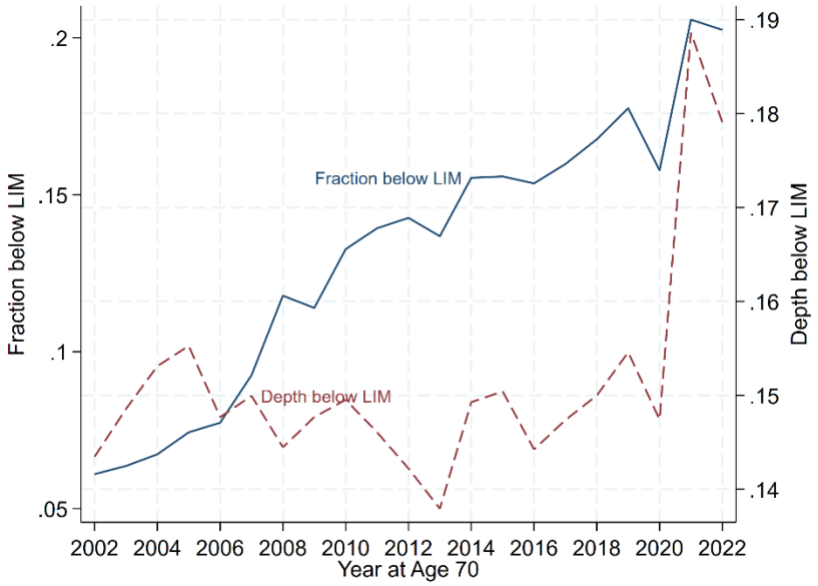
Source: Statistics Canada's LAD, 1982-2022.

We find that the fraction of taxpayers below the LICO is low (about 4%) and has remained very stable over cohorts abstracting from the effect of the pandemic. The average depth below the LICO over the period is also stable at around 18%. Thus, few seniors are poor according to the LICO definition. The dip in the low-income rate for 2020 is probably a reflection of larger transfers to households (e.g., CERB benefits).

We also present the same results using Statistics Canada's Low-income measure, after-tax (LIM-AT). This measure defines the poverty threshold as half of the median income adjusted for household size. A key difference between this measure and the previous one – which was simply indexed to inflation over time – is that real wage growth increases the LIM threshold over time.

Figure 11 clearly shows a steep increase in the fraction of households with income below the LIM at age 70. This is no surprise as real wage growth generally exceeds the indexation of public pensions (especially OAS and the related programs, like GIS). As to which measure best describes the situation of low-income households in retirement, it is important to understand the different roles both measures play. The LICO assesses poverty in absolute terms while the LIM does so in relative terms. Figure 10 (LICO-based) probably best describes precarity of income at retirement, which is mostly constant over cohorts, while Figure 11 (LIM-based) shows a growing difference between the income of seniors and that of the "working-age" population.

Figure 11 - Fraction of Households Below the LIM-AT and Average Depth by Cohort at Age 70

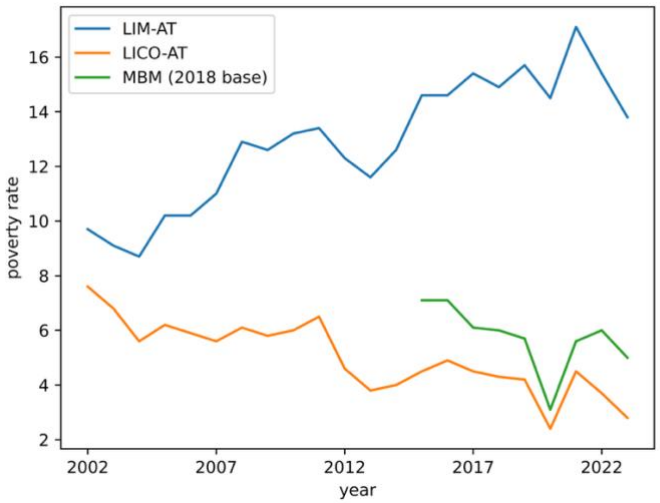


Source: Statistics Canada's LAD, 1982-2022.

The preferred poverty line in Canada is now defined using the Market Based Measure (MBM). It has been rebased a number of times; the most recent rebase we can use is 2018. We can compare the evolution of the different measures among the population 65+ in the following figure. Clearly, the LICO-based measure moves relatively in parallel with the MBM and has followed a downward trend in recent years. Hence, both LICO and MBM do not point to a significant upward trend in senior poverty rates.[17] An interesting dimension of the problem we do not look at here is the persistence of poverty in retirement. It may matter for policy whether it is always the same (few) households who are in poverty in retirement, or whether it is different households having a small probability of a short spell. El-Attar & Fonseca (2023) suggest that the former prevails: persistence appears to be high.

[17] Some authors argue that we should not focus on age to look at poverty, as age itself is not a characteristic likely to be associated with poverty (for example see this note by Peter Hicks, https://policyoptions.irpp.org/2025/07/poverty-measures/). Poverty has many causes, such as disability, shocks early in the working life, immigration which leads to low pensions, etc. Mechanically, poverty rates are low among seniors because of the combined effect of OAS and GIS.

Figure 12 - Fraction of Households Age 65+ Below the LIM-AT, LICO-AT and MBM (2018 base)



Source: Table 11-10-0135-01, Statistics Canada.

What about the Balance Sheet of Seniors?

Income flows can be different from spending flows. When income flows include withdrawals from RRSPs and TFSAs, one also captures spending coming from the decumulation of these accounts (unless these monies are then transferred to taxable savings or to another investment use). However, this will not include decumulation from other accounts and, more generally, consumption out of wealth. This is important. A wealthy individual or household with a modest income may very well be better off financially, and spend more, than a counterpart with a high income but no wealth.

Canada collects some information on wealth holdings of Canadians. The most comprehensive source currently available to researchers is a Statistics Canada cross-sectional survey, carried out every few years with varying sampling sizes. The Survey of Financial Security (SFS) was fielded 6 times from 1999 to 2023 inclusively. Since this is not longitudinal data, Table 2 shows cross-sectional statistics over time in constant 2023 $ for households[18] 65 years old and over. Specifically, the table reports both the proportion of households that hold various types of assets and debts as well as the median value of those assets among those who own a type (medians conditional on positive balances). Median net worth is also included (100% of Canadians have a net worth).[19]

[18] In this case, economic families as defined by Statistics Canada (where the head is 65 or over) and "persons not in economic families".

[19] One should be careful with composition effects within the population with one member being older than 65. First, due to increases in longevity, the fraction of two member or more households has probably increased, therefore increasing wealth holdings. This would inflate the numbers.

Start from the bottom of that Table. The median household net worth (assets minus debt) of those age 65+ has risen from $503,600 in 1999 to $1.1 million in 2023. Hence it has increased by 120%, therefore doubling over a bit more than 20 years. This is a very important increase in the potential living standards of the elderly. Of course, there is considerable dispersion. But the median senior household has a very high net worth. More seniors have RRSP assets (rise from 57.8% to 72.7%) while the median value of those assets also increased substantially (more than 77% over the period). TFSAs were introduced in 2009 and 65% of households with at least one member aged 65+ have positive account values. The median was just shy of $60,000 in 2023. Very importantly, while the share of households who had RPP assets increased slightly over the period, the average value of those assets has increased by 32%. Overall, traditional retirement savings, trough pension plans and tax-favored saving vehicles, have increased substantially over time.[20]

A key asset that many households hold (a steady 83%) is a principal residence. The median value of principal residences, among those who own one, has increased substantially over time, by 136% in constant dollars. Thinking of this asset in terms of consumption possibilities is notoriously complicated. Selling a house implies that one needs to find other housing. If one moves to renting, the present value of rents to be paid needs to be subtracted from the value of the principal residence to get at the potential additional consumption possibilities that the sale of the asset offers. If purchasing a new home, one needs to account only for the net gain, originating perhaps from downsizing (and therefore less consumption of housing services), or from moving to a different location where consuming the same level of housing services can be done at a lower price (does it then provide the same services?). To the best of our knowledge, there are no studies in Canada explicitly computing the net present discounted value of consumption possibilities that housing equity yields among seniors. However, some studies have accounted for imputed rents from housing, or disposition of home equity (Wolfson, 2011).

While the median value of assets has increased substantially, median debt has increased as well (by 136.7%). But debt is low relative to assets: its evolution does not impact much the numbers of net worth (assets minus debt). Despite this, some interesting changes are occurring. Lines of credit, in particular home equity lines of credit, have more than doubled in prevalence and in median value. To a lesser extent, credit card and installment loans (unsecured loans) have also increased. Traditional mortgage debt still accounted for the lion's share of senior debt in 2023. The share of households with mortgage debt doubled over the period, to nearly one in five (20%). Over the period, households may have been able to borrow more on account of larger assets and rising income, but also lower interest rates (Bédard & Michaud, 2021).

Second, there is ageing within the 65+ as the fastest growing groups among this population are the 75+. Given wealth likely goes down with age this should put downward pressure on the estimates. The SFS does not have enough sample size at older ages to allow for very granular analyses of age patterns.

[20] Those with RPP assets also have higher asset balances in other categories as documented by Messacar & Morissette (2015).

Table 2 - Assets and Debts of Households Aged 65+, Canada

	OWNERSHIP (HAS ASSET OR DEBT), IN %			MEDIAN (CONDITIONAL ON OWNERSHIP), 2023 THOUSAND DOLLARS		
	1999	**2023**	**Variation (pp)**	**1999**	**2023**	**Variation (%)**
RRSP, RRIF AND LIRA	57.8	72.7	14.9	84.6	150	77.3
TFSA	0	64.9	64.9	0	60	-
RPP ASSETS	59.4	61.8	2.4	213.2	281.6	32.1
PRINCIPAL RESIDENCE	83	83.8	0.8	211.4	500	136.5
TOTAL ASSETS				**515.8**	**1,148.4**	**31.6**
MORTGAGE DEBT	11.1	20	8.9	76.1	137	80
CREDIT CARD AND INSTALLMENT	17.7	24.1	6.4	2.5	4.0	60
LINE OF CREDIT	6.9	15.9	9	10.1	25	147.5
TOTAL DEBT	**34.1**	**50.8**	**16.7**	**16.9**	**40**	**136.7**
NET WORTH				**503.6**	**1,109.7**	**120.4**

Source: Statistics Canada, CANSIM Table 11-10-0016-01 (Survey of Financial Security).
Note: "Households" defined as economic families and "persons not in economic families".

In summary, paying attention only to income likely leads one to miss some important action on lifetime resources of the elderly. Seniors have much higher net worth, and financial equity, from which to finance consumption in retirement if they wish to do so. Even though counting home equity probably overstates the increase in net consumption opportunities coming from wealth, the overall portrait is quite positive for many in terms of private savings for retirement. However, this may not be available to some who have very few assets (Baldwin, 2022). In particular, there is an important divide between homeowners and renters. Further complicating the interpretation of wealth differences is the increase in the length of the retirement period, which means that one needs more financial wealth to sustain a given regular flow of consumption expenditures in retirement.

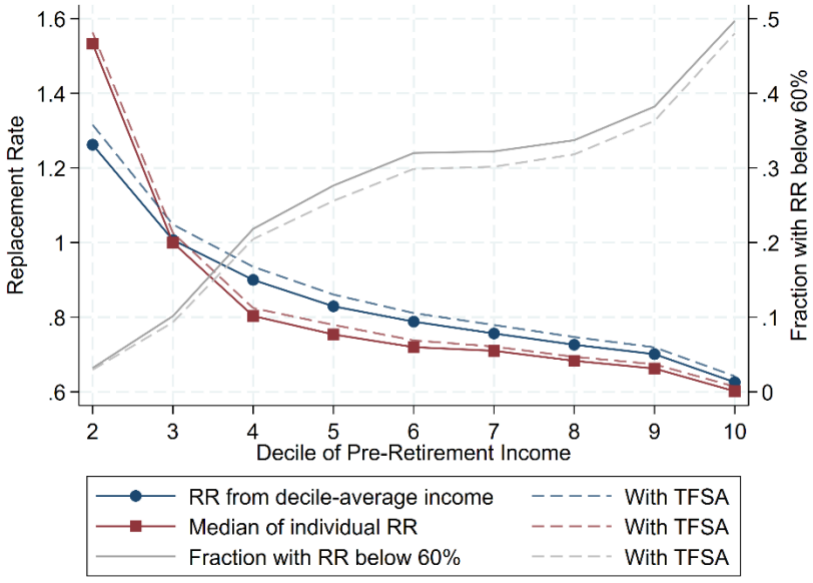
Current Design Issues and Research Priorities

With a better understanding of how incomes in retirement evolved over the last decades, we turn our attention to the current state of the retirement income system and highlight some of the key policy issues we see as important as well as knowledge gaps they create.

Are We Getting the Progressivity Right?

First, it is important to think of distributions. Our multi-layered system provides varying protection to different income groups which means that at least some design issues will be group specific. We start off by comparing RR in 2022 over deciles (Figure 13). We compare our RR measure constructed from the decile-average after-tax income, again in pre-retirement years (age 50-54) and in retirement (age 70). We also add the median of the taxpayers' RR for each decile. We exclude the first decile to improve the graph's readability. We again see fairly high RR that decrease along the distribution. We present results with and without net TFSA withdrawals. It is interesting to see that TFSAs increase RR along the whole distribution, with the effect ranging from 5 pp in the 2nd decile to 1.5 pp in the 10th. The contribution is higher when looking at RR from population averages than with individual RR, suggesting a limited adoption among each decile. As well, the figure shows on the right axis that there is a fraction, up to a third of seniors under the median, who have relatively low replacement rates, accounting for both RRSP and TFSA withdrawals. One question that can be raised is whether the degree of progressivity in income replacement remains optimal today. Clearly, replacement rates are very high at the bottom of the distribution and much lower once we get to the top of the distribution. But assessing progressivity requires also looking at contributions. A related question is what should be the normative benchmark on which to base this judgment? For example, should it account for differences in life expectancy by income? How should it account for the risks faced by the elderly, notably long-term care expenditures?

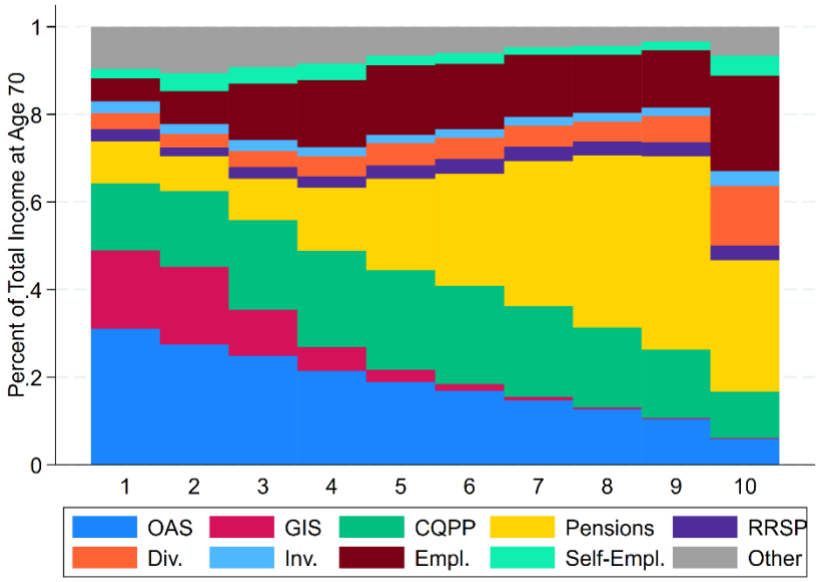
Figure 13 - Replacement Rates for Taxpayers Turning 70 in 2022, by Decile of Pre-Retirement Income



Source: Statistics Canada's LAD, 1982-2022.

Next, we present the contribution of different income components to total income at age 70. Figure 14 clearly shows the reliance on public pensions among lower deciles, with a cumulative contribution of more than 60% in the first 2 deciles. It also shows how higher deciles receive proportionally more from private pensions (including RRIFs), dividends, and employment income.

Figure 14 - Decomposition of Retirement Income by Decile of Pre-Retirement Income, 2022



Source: Statistics Canada's LAD, 1982-2022.

Table 3 shows the composition of gross replacement rates in 2022. First, it is important to note here again the reliance of bottom deciles on the public system (OAS, GIS and CPP/QPP). Beyond the median, RPP and other private pension income take up a much larger share. Hence, two issues worth paying attention to seem to emerge: 1) how the future evolution of public pensions will impact bottom deciles, but also higher deciles due to CPP/QPP enhancement; and 2) how the evolution of RPP and other pension income arrangements will impact replacement rates of individuals above the median. We discuss those in turn.

Table 3 - Composition of (Gross) Replacement Rates by Income Source and Decile of Gross Income at Age 50-54 in 2022, in %

	3	4	5	6	7	8	9	10
OAS	27.04	19.37	15.43	12.79	10.51	8.59	6.82	3.59
GIS	11.48	4.97	2.26	1.13	0.51	0.25	0.13	0.05
CPP/QPP	22.22	19.90	18.52	17.00	14.80	12.43	10.19	6.27
PENSIONS	10.37	13.09	17.08	19.36	23.65	26.67	28.66	17.91
RRSP	2.85	2.33	2.47	2.53	2.35	2.15	2.09	1.93
DIVIDEND	4.07	4.19	4.12	3.70	3.46	3.05	3.91	8.10
INVESTMENT	2.67	1.83	1.58	1.45	1.38	1.36	1.27	2.09
EMPLOYMENT	14.07	13.87	12.96	11.28	10.10	9.04	8.55	12.92
SELF-EMP.	4.07	3.40	1.81	1.85	1.26	1.36	1.27	2.73
OTHER	10.00	7.59	5.35	4.55	3.32	2.94	2.18	3.91
TOTAL	108.85	90.55	81.58	75.64	71.34	67.82	65.10	59.51

Source: Statistics Canada's LAD, 1982-2022.

Retreating RPP Coverage in the Private Sector: A Problem?

The landscape is changing rapidly for employer-sponsored Registered Pension Plans (RPPs). There has been an erosion in coverage in the private sector. It has always been low despite high hopes when the retirement system was put in place: 35% of private sector workers were covered in 1980 (Table 4). It is now less than one out of four workers who are covered. Defined benefit plans require very little action from workers: they do not need to figure out how much to save and how to invest (as opposed to DC plan members), and there is an automatic conversion into an annuity at retirement (protecting against longevity risk). In 1980, 90% of private sector workers with RPPs had DB pensions. In 2023, it is less than 10% of private sector workers who have access to a DB RPP (in Table 4, 41% of the 24% who have RPPs). Even when we include workers in the public sector, who are largely covered by DB RPPs, the overall DB coverage rate among Canadian workers only reaches 26% in 2023 (68% of the 39% who have RPPs). This puts a significant burden on individual Canadians to plan and manage their retirement savings.

There is nothing in the data to suggest that this trend may flatten out. If the U.S. serves as a guide for what is to come, the downward trend in the private sector could continue. But one interesting and unanswered question is what dynamics, at the firm level, led to this decline. Is it a higher survival rate of firms who do not offer pensions; firms transitioning by closing or changing their pension plans; or new firms emerging without pension plans at a faster rate? This question is important to understand what is the likely dynamic ahead.

Table 4 - Defined Benefit Plan Members as Share of All Workers Covered by an RPP, in %

	PRIVATE SECTOR		PUBLIC SECTOR		BOTH	
	RPP coverage	Share DB	RPP coverage	Share DB	RPP coverage	Share DB
1980	35	90	80	98	47	94
1990	33	85	82	94	45	93
2000	30	76	87	94	43	85
2010	27	55	91	94	42	75
2016	26	42	92	91	41	67
2023	24	41	87	92	39	68

Source: Statistics Canada, CANSIM Tables 11-10-0106-01 and 14-10-0027-01 (employment).

Understanding how these trends are impacting workers and the labor market should be high in terms of research priorities. Workers with pensions, in particular DB pensions, are likely paid less, therefore bearing part of the employer's cost of offering pensions. The cost of offering DB pensions for employers may have increased while workers may value those plans less, due for example to job mobility. It is not clear that the policy response is to force employers to go back to offering DB pensions. What are the alternatives? What is the value for workers and employers of offering private pensions? In what form? What are the impacts on savings?

A very important question raised by the increase in DC and hybrid pension arrangements is that of decumulation. One could say that RRSPs (and therefore RRIFs) should also be part of this discussion. DB pensions pay life annuities automatically, with some automatic indexation. Other types of pensions do not allow for automatic conversions and there is a large literature showing that many households may find it difficult to annuitize and would rather decumulate on their own. The decision to purchase annuities is subject to timing risk (when the purchase occurs, the current rate of interest impacts the price, making this a risky proposition ex ante). The problem of decumulation is very complex and recent research shows that behind the decumulation decision is also a decision of insurance against various risks, and that current private decumulation solutions are rarely purchased by households (Michaud & St Amour, 2023). What are the solutions that are currently available to Canadians to convert pension wealth into a steady and stable income stream? Which new ones should be developed? Should it be a responsibility for governments to force pension providers to offer such solutions? To what extent can financial planners and advisors help with these choices? Is encouraging delays for CPP/QPP and OAS claiming one way of increasing annuitization?

CPP/QPP Enhancement: What Will be the Effective Impact?

In 2016, the CPP (and shortly after the QPP) implemented scheduled increases in generosity: an increase of 8.33% in the replacement rate of CPP/QPP for incomes below the pre-reform YMPE, taking the statutory replacement rate from 25% to 33%; and an

increase in the YMPE itself, 14% higher than the then-current YMPE (also with a 33% replacement rate for this additional income range). Contribution rates increased correspondingly and gradually from 2019 to 2025 for this new portion of CPP/QPP. Since this new component of CPP/QPP is fully funded and given the benefit formulas, the first cohort to benefit entirely from this expansion will reach age 65 in 2065, a long way ahead. In the meantime, thus, for many years this expansion will have a limited effect.

The effective change in replacement rates is complicated by the fact that OAS and GIS are means-tested against CPP/QPP income. The effective change in retirement income is lower for those currently receiving or who will receive GIS. Two studies have computed that many seniors will see much lower increases in their retirement benefit due to means testing (Boisclair et al., 2018; MacDonald, 2019).

Although the primary goal of the expansion is to cover those without RPP, a very important consideration is whether the expansion will materialize in increased replacement rates for those with RPP coverage. Many plans do have a so-called "integrated" structure with CPP/QPP (when those benefits theoretically kick in, usually at age 65, RPP benefits are decreased with – in principle – no net effect on the combined replacement rate). It is too early to tell how many RPPs have accounted for the CPP/QPP enhancement into their design and whether this differs substantially between private and public sectors. But this is a significant knowledge gap currently: the size of the likely impact of the expansion on replacement rates.

OAS-GIS Indexation: Are we Comfortable with OAS-GIS Only Playing a Role in Poverty Alleviation Down the Road?

The initial retirement benefit paid by the CPP/QPP is effectively indexed to wage growth during the recipient's career. This is because the entire earnings history is revalued using the YMPE's value in the few years just prior to benefit claiming. After that initial payment, CPP/QPP payments are indexed to the CPI (inflation). Hence, the benefit automatically adjusts to meet its income replacement and poverty alleviation objectives.

This is not the case for OAS and GIS. While they certainly are indexed to inflation to meet poverty alleviation objectives, they are not indexed to wage growth and therefore fall behind over time for income replacement – unless they are adjusted periodically through legislation. In other words, assuming wage growth exceeds inflation by 1% (an historically valid assumption), the income replacement power of OAS will fall back by more than 22% over 20 years if there is no political intervention to raise it further – as was done ad hoc on a number of occasions. But this is not the end of the story, as both OAS and GIS benefits are clawed back against CPP/QPP benefits. This means, in particular for low earners, that CPP/QPP wage indexation and enhancement reduce GIS benefits, effectively eating up some of the income replacement effectiveness of the public system (high earners are more affected on the OAS front). Thinking of ways to change the OAS

program to restore some of its income replacement role, or analyzing ways of transitioning the program towards a larger role for CPP/QPP, should be high on the research agenda.

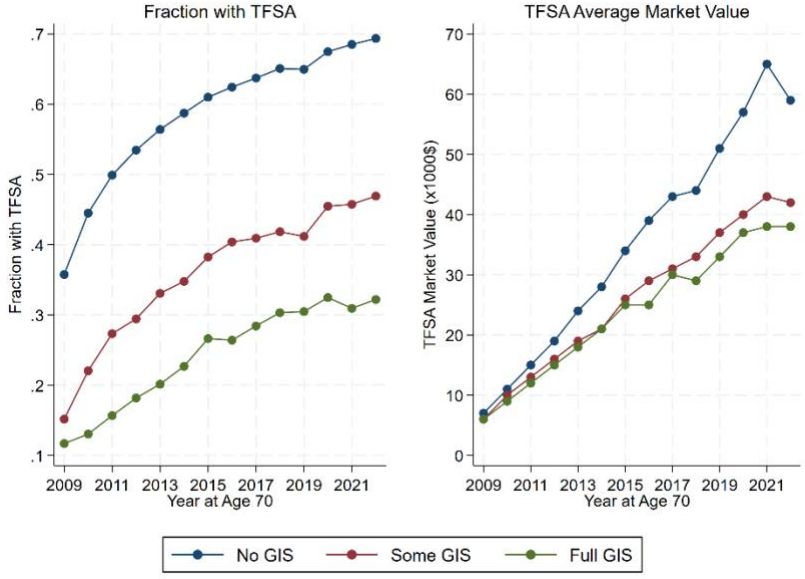
Another particularly important knowledge gap regarding OAS is that of inflation protection. Getting an overall portrait of the effective inflation protection that seniors have from their different income sources is quite urgent. The current perception from many seniors is that their purchasing power is eroding. There are no direct signs of this in the data for seniors as a group, with real incomes still rising. But trends in aggregates may hide substantial variation at the individual level. For many seniors, pension income declines in real terms with age, for example due to imperfect indexation of RPP benefits. Documenting inflation protection of seniors, in particular through DB plans, should be very high on the research agenda. In 2024, Statistics Canada reports that out of 8,379 active DB plans, 2,836 (33.9%) did not have any automatic adjustment to CPI; 4,453 (53.1%) had partial adjustment to CPI; and only 945 (11.3%) had full adjustment to CPI (Table 11-10-0121-01).

Is the Exclusion of TFSA Withdrawals from GIS a Good or a Bad Thing?

Our RR results highlight the importance TFSAs have gained in retirement since their introduction in 2009, even at lower income levels. Here we present some results on how this new reality interacts with a long-existing part of the public pension system: the GIS. TFSA withdrawals do not count towards income for GIS means-testing. For our analysis, we consider the cohorts of taxpayers turning 70 in 2009 and after, with a particular focus on 2022 as that cohort has had the longest contribution time (and has the largest cumulative contribution room). We define three groups based on the amount of GIS received: those who receive $0, those who receive the maximum benefit[21], and those in-between. We start by reporting the proportion of people with money in a TFSA in the left-hand side panel of Figure 15. We see that the prevalence is higher among higher-earning taxpayers but that a significant share of each group uses the savings vehicle. The right-hand side panel reports the average market value among those with positive balances. The cumulative contribution ceiling by 2022 was $81,500; what we report therefore seems to be large average balances given the limited contribution window. Interestingly, even among those receiving a full GIS pension (and so reporting an otherwise very low income) TFSA balances are non-negligible. The amounts accumulated are equivalent to multiple years of GIS payments.

[21] We define the maximum benefit by multiplying by 12 the monthly benefit a taxpayer could receive in January of each year had he reported no income in the previous year other than an OAS pension. This is a slight underestimate since GIS benefits are indexed for inflation quarterly (4 times per year). For couples, we take the benefit that a spouse can receive given a non-OAS couple income of $0.

Figure 15 - Proportion of Taxpayers with a Positive Balance in their TFSA (left-hand side) and Average Market Value among those with a Positive Balance (right-hand side), by Cohort and Amount of GIS Received

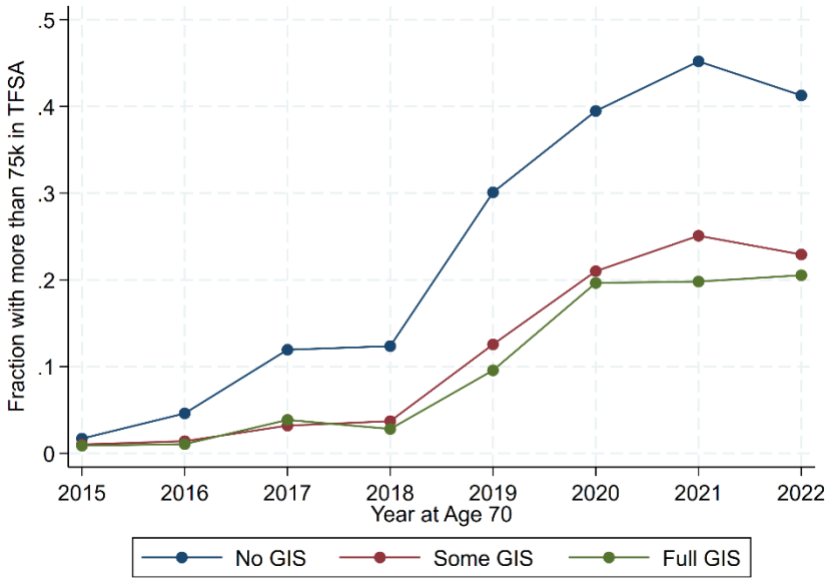


Source: Statistics Canada's LAD, 1982-2022.

We also report the proportion of taxpayers who have a TFSA market value above $75,000 among those with positive balances, by GIS group. Results are reported in Figure 16. We report a decreasing proportion as GIS income increases. Still, 20% of taxpayers that have a positive balance in their TFSA and receive a full GIS pension have over $75,000 in their account. The trend over cohorts is increasing for all groups. This is particularly interesting, since someone turning 70 in 2022 could only start contributing to their TFSA at age 57; thus, we can expect much, much larger market values among younger cohorts that will have had more time to contribute. This could point to an emerging dynamic where taxpayers report very low income in retirement and receive GIS despite having large, untaxed income from savings.

Thinking broadly of ways to account for TFSAs in GIS (and OAS) payments is another research priority that should definitely be on the list. Obviously, policymakers should avoid changing the rules for existing TFSA accounts. New contributions to these accounts could be limited – say to the current cumulative maximum that could have been contributed – and new TFSA accounts, with different rules for OAS and GIS integration, could be introduced. Alternatively, governments could look into the possibility of treating withdrawals from TFSAs differently depending on whether they represent investment returns or capital (the contributions made) – similar to the tax treatment of Registered Education Savings Plans (RESP).

Figure 16 - Proportion of Taxpayers with More than $75,000 in their TFSA Among Taxpayers with Positive Balances, by GIS Group



Source: Statistics Canada's LAD, 1982-2022.

A Peak at the Future Outlook

Given current trends, what can we expect in terms of replacement rates with the current retirement system? The Retirement Savings Institute has built a tool to project the current population of workers into the future and assess their retirement readiness.[22] The tool uses a large set of inputs on earnings, saving stocks and flows, debt stocks and debt repayment, real estate ownership, planned retirement age, and household characteristics. Then, using dynamic microsimulation techniques it projects earnings, savings and debts until the planned retirement age, using a detailed income tax calculator and several asset allocation rules to generate plausible figures and flows. At retirement, households stop working and all savings except defined-benefit RPPs are converted into an actuarially fair annuity, taking taxes into account (i.e., the source of the funds that purchase the annuity). The simulator then computes and adds public retirement benefits[23] to the flow of income in retirement, and deducts computed income taxes. This "retirement income" is computed for a single year, although it remains unchanged after 65 years old; and compared to a "pre-retirement income" (age 55, or the year immediately before retirement if it occurs earlier). The process is replicated a number of times (the *replications*), and results are averaged to account for the variance in the different stochastic processes.

[22] See https://ire.hec.ca/en/canadians-preparation-retirement-cpr

[23] OAS, GIS and CPP/QPP, which are assumed to start in the year of retirement or in the earliest year of eligibility.

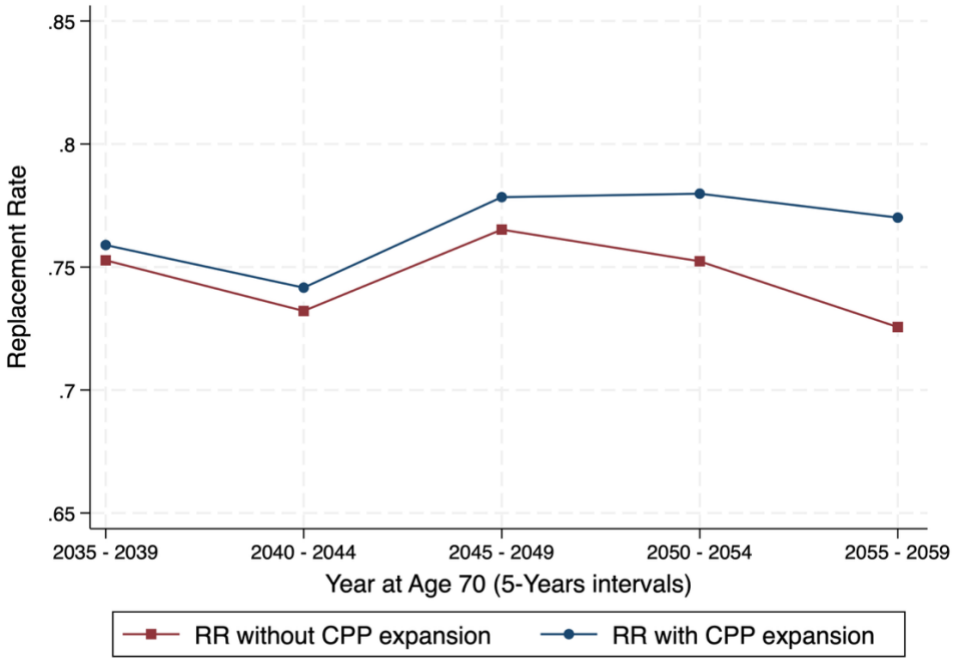
Most recently, this tool has been applied to a large survey conducted by Ipsos of current workers aged 25 to 64 in 2022 (Boisclair et al., 2025). A considerable amount of information was collected on the financial situation of these individuals. Crucially, the exercise projects forward the 2022 situation as it relates to the income tax and the retirement income systems – i.e., it assumes that known parameters will remain unchanged (in real terms). Here we use the tool to look at outcomes for the 70-year-old cohorts in the future, keeping to the same definitions for replacement rates that we used in the previous analysis based on administrative data. Trends – for example in RPP coverage – and other factors are already embedded in the host data, as younger respondents are less likely to have DB pension coverage than older respondents. Hence, this provides a good perspective on what comes ahead.

In Figure 17 (blue line), we show how replacement rates will likely evolve in the future, by cohort. It is apparent that, if nothing changes, the average replacement rate should be rather stable until 2045, at which point it will likely increase slightly for about a decade and then start declining. But this in in part due to the CPP and QPP expansion.

The red line in the figure illustrates the projection without the expansion, such that the difference between the blue and red lines can be interpreted as the effect of the expansion. By 2059, so before the full effect of the expansion is felt, this effect on replacement rates is about 5 pp. A significant effect, but clearly insufficient to maintain the average replacement rate beyond the 2050s – not to mention the fact that lower earners will receive the lesser part of this due the GIS interaction already explained. Hence, while CPP/QPP expansion may have delayed future declines in replacement rates, the situation remains fragile and replacement rates eventually decline due to a host of factors, among which OAS/GIS indexation and retreating RPP coverage. There is a need, in terms of research priorities, to explore other sensitivities of these projections beyond what we have mentioned already. In particular, there are important dynamics at work in terms of housing and elderly care; the latter is under tremendous pressure and could result in financial hardship for many seniors in decades to come. How should that impact our way of thinking about what is a good level of replacement rate going forward?

An overlooked dimension of the problem is the interaction between long-term care and pension policy. With provincial governments struggling to deliver services, many may need to depend on private services with increased associated costs. Current projection models typically assume those costs remain constant in the future at current levels. The potential for increased home and residential care costs to eat up the purchasing power of seniors in the coming decades is real and should be accounted for in our assessment of the retirement income system.

Figure 17 - Projected Average After-Tax Income Replacement Rates for Non-Retired Canadians Aged 25-64 Years Old in 2022



Source: CPR calculator applied to data from the proprietary *Survey on the Financial Readiness of Canadians with Respect to Canadians*, fielded by Ipsos in the summer of 2022.
Notes: For details about the CPR model and the survey data and methodology, see Boisclair et al. (2025). The replacement rates shown and used here differ from the Retirement Readiness Index computed in the report by omitting saving and debt repayment flows from the picture, among other elements, to provide a measure consistent with the one used elsewhere in this report.

Conclusion: Policy Implications

It is always very hard to come down on an overall judgment of the retirement income system and how it is meeting its objectives. Yet, we think that the evidence presented tends to suggest that Canadian seniors have been faring rather well in recent decades and that the retirement income system has met its objectives, both in terms of overall income replacement and of poverty protection. This conclusion emerges when looking at detailed, longitudinal, individual-level income data as well as balance sheet data on senior household wealth. Without diminishing or brushing aside the hardship endured by some, the conclusion may be surprising to many. It certainly contrasts with a certain public discourse referring to generalized financial difficulty among seniors.

Understanding how these perceptions come about and to what extent issues with our measurement of economic well-being may be distorting our own view of these issues should be an important research priority. For example, despite spotty spending data on seniors, one can conclude from Statistics Canada data that total current household consumption for the 65+ only increased by 4% from 2010 to 2023 once we adjust for inflation (Survey of Household Spending, CANSIM Table 11-10-0277-01). Spending on current consumption does not appear to grow as fast as disposable income for this group. Why? Many seniors are reluctant to draw down their assets in retirement. Some still contribute to TFSAs well after the age of 65. Why? To leave money tax-free to their children or other heirs? Is inflation based on the CPI a good measure of changes in purchasing power for the elderly? Budget shares – spending on a category as a percentage of total current consumption – are lower for shelter among the 65+ compared to those age 30-39; barely different for food; and lower for transportation. Seniors spend more on health, but at 7% of the budget, this is far from what is observed in countries such as the United States (where it is nearly double that). So budget share differences do not suggest vastly different experienced inflation for seniors compared to the rest of the population. These are interesting questions that deserve greater scrutiny.

Our positive conclusion regarding the retirement income system raises the question as to why we were collectively able to reach this outcome despite the current system's many flaws. Did we get there by chance? We tend to think that this was probably not a coordinated effort. Canada's complex multi-pillar system and its numerous, sometimes uncoordinated parts and parameters still delivered these outcomes. Public pensions remain the bedrock of the retirement income system. They play a crucial role toward the bottom of the income distribution while earnings, individual savings (including TFSAs), and more generally financial wealth have been at work higher in the distribution. Overall, public pensions play a decreasing role in replacing income and an important one in alleviating poverty. This dynamic should prevail in the near future if nothing changes.

However, beyond 10 to 20 years from now, several issues identified in this paper will only exacerbate and are likely to accentuate the projected decrease in average replacement rates. Public pensions will see their relative importance diminish with respect

to income replacement, especially the 1st-pillar programs. In the private sector, employer pensions are unlikely to return forcefully in their 20th century incarnation, beyond the newer forms like group RRSPs and their cousins (PRPPs and VRSPs) and target-benefit, multi-employer plans. And GIS spending may soar due to the rise of TFSAs, despite the break that CPP/QPP expansion will afford it over time (at the expense of low earners); and need periodic, ad hoc upgrades to maintain its antipoverty power. Both OAS and GIS are very exposed to short-sighted political maneuvers to attract votes.

At the very least, improving financial and retirement literacy will become increasingly urgent at both ends of the income distribution as individuals need to make ever more crucial and complex decisions and to manage their own risks. Financial literacy remains low and no one around the world has come up with the magic potion to increase it at levels where individuals could navigate these decisions easily. More fundamentally, however, what we find is a very clear need to comprehensively review the roles and objectives for the next several decades of each pillar of the retirement income system. More specifically we think that several areas are important to tackle, in both research and policy environments:

- Review the first pillar's overall objectives of income replacement and poverty alleviation. In practice:
    - Consider the future of OAS, especially its future insignificance for income replacement in retirement and the high cost of such a universal program.
    - Carefully consider the implications for GIS costs of the current TFSA course, despite the lower GIS costs that the current CPP/QPP expansion will entail.
- Review 3rd-pillar structures in the face of the increasing gap between the public and private sectors. Are target-benefit plans the way of the future? Should PRPPs or similar multi-employer vehicles be expanded, given 21st-century work tenure patterns? What about the self-employed and individuals who are saving by themselves?
- Once the foregoing has been analyzed, question the space occupied by the 2nd pillar in Canada. Should a further, fully funded expansion be considered? Would it be timely?

In short, the medium-term horizon for Canada's retirement income system, despite recent tweaks and reforms, reveals cracks even though it is still delivering good outcomes. Canada needs a long-view, comprehensive review of its fragmented system, which has – luckily? – performed well in recent decades, but seems poised to underdeliver for a large swath of the population 20+ years from now.

References

Baldwin, B. (2016). *Assessing the Retirement Income Prospects of Canada's Future Elderly: A Review of Five Studies*.

Baldwin, B. (2022). *The Evolving Wealth of Canadians: Who Is Better Fixed for Retirement? Who is Not?*

Bédard, N., & Michaud, P.-C. (2021). Playing with Fire? Household Debt near Retirement in Canada. *Canadian Public Policy / Analyse de Politiques*, *47*(1), 56–71. https://www.jstor.org/stable/27034142

Boisclair, D., Busby, C., Chejfec, R., Laliberté-Auger, F., LoRiggio, T., & Michaud, P.-C. (2025). *Canadians' Preparation for Retirement (CPR): An Update Report*.

Boisclair, D., Lacroix, G., Marchand, S., & Michaud, P.-C. (2018). Individual financial returns from Quebec pension plan reform options: Analyzing proposals to renew a second-pillar retirement income program. *Canadian Public Policy*, *44*(2). https://doi.org/10.3138/cpp.2017-038

Busby, C., & Loriggio, T. (2023). *The Rise of TFSAs: Trends in Savings Vehicle Usage in Canada*. https://ire.hec.ca/en/wp-content/uploads/sites/3/2023/09/Note-IRE-03-EN_final.pdf

El-Attar, M., & Fonseca, R. (2023). Public pensions and low-income dynamics in Canada. *Journal of Pension Economics and Finance*, *22*(2), 238–263. https://doi.org/10.1017/S1474747221000433

LaRochelle-Coté, S., Myles, J., & Picot, G. (2008). *Income Security and Stability during Retirement in Canada* (306).

MacDonald, B. J. (2019). New Canada pension plan enhancements: What will they mean for Canadian seniors? *Canadian Public Policy*, *45*(4), 403–427. https://doi.org/10.3138/CPP.2018-049

MacDonald, B. J., Moore, K. D., Chen, H., & Brown, R. L. (2011). The Canadian National Retirement Risk Index: Employing Statistics Canada's LifePaths to measure the financial security of future Canadian seniors. *Canadian Public Policy*, *37*(SUPPL. 1). https://doi.org/10.3138/cpp.37.suppl.s73

MacDonald, B. J., Osberg, L., & Moore, K. D. (2016). How Accurately Does 70% Final Employment Earnings Replacement Measure Retirement Income (In)Adequacy? Introducing the Living Standards Replacement Rate (lsrr). *ASTIN Bulletin*, *46*(3), 627–676. https://doi.org/10.1017/ASB.2016.20

McKinsey. (2013). *Are Canadians Ready for Retirement? Current Situation and Guiding Principles for Improvements*.

Messacar, D., & Morissette, R. (2015). *Employer pensions and the wealth of Canadian families*.

Michaud, P.-C., & St Amour, P. (2023). *Longevity, Health and Housing Risks Management in Retirement*. https://doi.org/10.3386/W31038

Milligan, K. (2008). The evolution of elderly poverty in Canada. *Canadian Public Policy*, *34*(4). https://doi.org/10.3138/CPP.34.4.S79

Ostrovsky, Y., & Schellenberg, G. (2009). *Pension Coverage, Retirement Status, and Earnings Replacement Rates Among a Cohort of Canadian Seniors* (321). https://www150.statcan.gc.ca/n1/en/catalogue/11F0019M2009321

Ostrovsky, Y., & Schellenberg, G. (2010). *A Note on Pension Coverage and Earnings Replacement Rates of Retired Men: A Closer Look at Distributions*.

Schirle, T. (2013). Senior poverty in Canada: A decomposition analysis. *Canadian Public Policy*, *39*(4), 517–540. https://doi.org/10.3138/CPP.39.4.517

Scholz, J. K., & Seshadri, A. (2009). What {Replacement} {Rates} {Should} {Households} {Use}? *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.1513387

Scholz, J. K., Seshadri, A., & Khitatrakun, S. (2006). Are {Americans} {Saving} "{Optimally}" for {Retirement}? *Journal of Political Economy*, *114*(4), 607--643. http://www.jstor.org/stable/10.1086/506335

Skinner, J. (2007). Are You Sure You're Saving Enough for Retirement? *The Journal of Economic Perspectives*, *21*(3), 59--80. http://www.jstor.org/stable/30033735

Veall, M. R. (2008). Canadian Seniors and the Low Income Measure. *Canadian Public Policy*, *34*(Supplement 1), S47–S58. https://doi.org/10.3138/CPP.34.SUPPLEMENT.S47

Wolfson, M. (2011). *Projecting the Adequacy of Canadians' Retirement Incomes*. https://irpp.org/research-studies/projecting-the-adequacy-of-canadians-retirement-incomes/

Appendix

Table A1 - Details on Individual Incomes, Replacement Rates and Alternative Statistics, 2022

DECILE	(1) AFTER-TAX INC. AGE 50-54	(2) AFTER-TAX INC. AGE 70	(3) (1) EXCL. LOW, AGE 50-54	(4) (2) EXCL. LOW, AGE 70	(5) RR (%): RATIO OF MEANS (2/1)	(6) RR (%): RATIO OF MEANS EXCL. LOW (4/3)	(7) RR (%): MEDIAN OF RATIOS
1	$3,700	$21,200	$12,400	$23,900	573.0	192.7	476.5
2	$14,600	$24,600	$20,600	$26,000	168.5	126.2	153.3
3	$23,500	$26,800	$28,900	$29,100	114.0	100.7	100.0
4	$32,500	$31,100	$37,000	$33,300	95.7	90.0	80.3
5	$40,900	$35,200	$44,500	$36,900	86.1	82.9	75.4
6	$49,200	$39,100	$52,400	$41,300	79.5	78.8	72.0
7	$58,700	$45,000	$61,600	$46,600	76.7	75.6	71.0
8	$70,100	$51,200	$72,700	$52,800	73.0	72.6	68.3
9	$85,600	$60,600	$88,000	$61,700	70.8	70.1	66.3
10	$133,200	$83,800	$136,300	$85,300	62.9	62.6	60.2

Source: Statistics Canada's LAD, 1982-2022.

Notes: Columns (3) and (4) show after-tax income deciles when excluding individuals with an income <$7,500, as in the body of this study. Columns (5) and (6) show the ratios of the mean for each decile, i.e., of columns (2) to column (1) and of column (4) to column (3), respectively. Column (7) reports the median of the individual ratios in each decile instead of the means, to eliminate the effect of extreme values.