



THE VALUE OF A GOOD PENSION

How to improve the efficiency of retirement savings in Canada



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value in a retirement arrangement and stress-test our assumptions; they also suggested ways the research could be more useful in informing conversations and action within the pensions and retirement community.

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TABLE OF CONTENTS



Executive summary	4
Introduction	6
Section 1: Quantifying the value of a good pension	
1.1 Many approaches to retirement: five archetypes	9
1.2 Value drivers in pension plans: synthesis of the evidence	13
1.3 Calculating the efficiency gap for individuals	21
1.4 Potential implications	26
1.5 Recommendations: continued support for what works.....	30
Section 2: Putting the value of pensions in context: Canada’s quiet shift from collective to individual	
2.1 Overall pension coverage.....	36
2.2 Shift from defined benefit plans to other arrangements	37
2.3 Coverage outside the public sector	38
2.4 Coverage of nonstandard workers and marginalized groups	39
2.5 Recommendations: expanding access to collective plans.....	40
Technical appendix: Detailed methodology, assumptions, and additional scenarios	
1 Detailed methodology	45
1.1 Base assumptions for hypothetical individual: defining Sophia’s life and career path.....	46
1.2 Modelling the efficiency of retirement arrangements: five scenarios	48
2 Additional scenarios	56
Appendix: Pension coverage facts and trends	58
Endnotes	65

EXECUTIVE SUMMARY

Retirement is one of life's biggest expenses. Yet while there has been vigorous debate about whether Canadians are saving enough for retirement, there has been much less discussion of how they are saving. Given stagnating income and strained household budgets, now is an important time to examine how best to achieve value for money in retirement savings. This study compares the efficiency of a variety of approaches to retirement, from a typical individual approach to a large-scale "Canada model" pension plan, as well as a variety of models in between.

The value for money in a retirement arrangement can be measured by the efficiency with which today's savings generates tomorrow's retirement income. In other words, how much does a person need to save, over a lifetime, to meet their retirement goals? This is influenced by saving behaviour, investment returns, and the ability to manage the post-retirement or "decumulation" phase in an efficient manner.

A review of evidence from both academic and industry literature reveals that good pensions create value for money for Canadians through five key value drivers:

1. Saving
2. Fees and costs
3. Investment discipline
4. Fiduciary governance
5. Risk pooling

The lifetime financial effect of combining these five value drivers can be dramatic. By participating in a top-performing pension plan—a plan with Canada-model characteristics, including independent fiduciary governance as well as scale, internal investment management, and risk pooling—a representative worker could achieve the same level of retirement security for a lifetime cost of nearly four times less than if they took a typical individual approach. This amounts to a lifetime savings of roughly \$890,000.¹ The largest savings comes from risk pooling (\$397,000), fees and costs (\$275,000), and investment discipline (\$116,000).² From a retirement "bang for buck" perspective, for each dollar contributed, the retirement income from a Canada-model pension is \$5.32 versus \$1.70 from a typical individual approach.³

Although these numbers may seem high, they are arguably calculated on a conservative basis and are directionally consistent with findings from a recent study of the Australian superannuation system.⁴ This efficiency advantage does not depend on where the contribution comes from, whether from the individual, their employer, or the government.

The value for money in a retirement arrangement can be measured by the efficiency with which today's savings generates tomorrow's retirement income

Pensions are often identified with cost. This research shows that a better way to characterize pensions, especially if they are well governed and managed, is as efficient vehicles to pay for something expensive: retirement. In an era of government fiscal restraint and tight household budgets, it is especially critical that policymakers continue to support existing high-quality pension plans, of which Canada has some of the best regarded and most efficient in the world.

A representative worker could achieve the same level of retirement security for a lifetime cost of nearly four times less

To take the opposite tack and move towards more individualized approaches to retirement would be to compromise value for money and efficiency. This would ultimately cost Canadians as savers, retirees, and taxpayers, and it would undermine a critical social and economic asset.

Policymakers should also encourage existing workplace retirement plan providers to adopt more of the characteristics of a good pension for their plans, including mandatory or automatic saving, lower costs, fiduciary governance, and risk pooling, especially during the post-retirement phase.

Unfortunately, outside the public sector, the past several decades have seen a trend away from pensions, resulting in a quiet but steady shift from collective to individualized approaches to retirement. Defined benefit pensions now cover only 10% of private sector workers—about a third of the coverage of the late 1970s—and overall workplace pension plan coverage has also declined. There is a growing number of uncovered workers who are disproportionately likely to be financially vulnerable Canadians, including lower-income people, women outside the public sector, young people, and new Canadians.

Economic and labour market trends, including automation, the rise of “nonstandard” work, and decreasing company longevity, suggest that, barring some intervention, this shift from collective to individualized retirement saving is likely to continue, if not accelerate. This will make retirement less efficient and thereby costlier for individuals, employers, and government.

In addition to continued support for good pensions, expanding access to pensions and other more collective retirement arrangements is a worthy goal for policymakers and other stakeholders that are concerned with the financial security of Canadians and their ability to make ends meet efficiently. Policymakers and other retirement system stakeholders, including employers, unions, associations, and private providers, could help more Canadians access a pension or other collective retirement plan by extending the reach of existing plans or by creating new plans to serve uncovered workers, including the growing portion of the workforce that is considered nonstandard.

For each dollar contributed, the retirement income from a Canada-model pension is \$5.32 versus \$1.70 from a typical individual approach³

A key focus of such efforts should be on the five value drivers identified in this report: saving, fees and costs, investment discipline, fiduciary governance, and risk pooling. Pursuing quality coverage expansion will be challenging, but unlike in other developed countries, Canada is in a strong position: we already have examples of well-regarded efficient pensions in the public sector, institutions whose principles and key features can be applied to build or improve collective retirement arrangements for other parts of the economy.

INTRODUCTION

Consider Canadians generally cease paid work—that is, they retire, whether by choice or necessity and regardless of income, wealth, profession, or political beliefs. For those who aspire to maintain their standard of living in their post-retirement years, building an adequate retirement income can be one of life’s biggest expenses. The question is, how do we fund retirement? How can Canadians achieve the maximum retirement security for every dollar of their hard-earned savings?

The past several years have seen a healthy and vigorous debate about the retirement readiness of Canadians. Assessments have ranged from the optimistic to the pessimistic. Whether Canadians are saving enough has become a central question in mainstream media and public policy discussion. It was largely through this lens that governments came to a consensus to enhance Canada/Québec Pension Plan (C/QPP) benefits by approximately 50%.

There has been far less debate about how Canadians are saving for retirement. There are many ways to save, and some are more efficient than others. With stagnating income, rising costs for core areas of spending like housing and post-secondary education, lower expected returns from capital markets, rising household debt ratios, and a feeling among many that they are falling behind relative to previous generations, the issue of value for money in how we finance retirement has taken on new importance.

Success in improving Canadians’ ability to efficiently save for retirement could put thousands or even hundreds of thousands of dollars in their pockets—either today or in retirement. Failure will mean Canadians could have far less to spend on other key needs in both their pre- and post-retirement years, with unfulfilled needs either being met by government or not at all.



This report examines the question of retirement security efficiency by comparing the two main ways, outside of government programs like Old Age Security (OAS) and the C/QPP, that Canadians prepare for retirement: collective arrangements (usually delivered through workplace pension plans) and individual arrangements (usually delivered through a retail relationship between an individual and a financial institution). While there are many nuances in the field of retirement finance—vigorous debates continue to play out over plan types (e.g., defined benefit versus defined contribution versus target benefit), investment approaches (e.g., passive versus active), and the role of advice (e.g., human-centred versus digital or “robo advice”)—we regard the collective-versus-individual distinction as perhaps the key point of difference in assessing the efficiency of a retirement arrangement. As we shall see, a wide array of evidence bears this out.

Section 1 of this report calculates the financial implications of good pensions using an evidence-informed model. It quantifies value for money from

the perspective of a hypothetical worker using various archetypes of retirement arrangements. In light of our findings, we offer recommendations for how governments and other stakeholders can continue to support existing high-efficiency pension plans, as well as build on what works by helping existing retirement plans incorporate more of the drivers of efficiency identified in this report.

Success in improving Canadians’ ability to efficiently save for retirement could put thousands or even hundreds of thousands of dollars in their pockets

Unfortunately, outside of the public sector and public retirement programs, the trend over the past several decades in Canada has been towards increasingly individual approaches and away from collective ones. In Section 2 of this report, we describe this shift, laying out a fact base on trends in retirement plan coverage. We conclude by discussing options for governments and other stakeholders to expand Canadians’ access to efficient pensions.

SECTION 1:

QUANTIFYING THE VALUE OF A GOOD PENSION



What does it mean for a Canadian to have or not have a workplace pension? What are the financial implications for an individual if they save on their own in a small workplace retirement plan or in a fully pooled defined benefit pension plan?

This section begins by defining five archetypal retirement arrangements and proposes a framework for describing the different sources of value that collective retirement plans create for their members. Using evidence from academic and industry literature, we quantify the realistic financial magnitude of these sources of value for an individual saver.

Over the lifespan of a hypothetical worker, we find that **the cost of retirement can be nearly four times less depending on what type of retirement plan the worker belongs to.**

In this section, therefore, we conclude that high-quality pension plans are significantly more *efficient* in turning a dollar of contribution into a dollar of retirement income, resulting in **\$5.32 for every dollar contributed for the Canada-model pension compared with \$1.70 using a typical individual approach.** While self-evidently significant for individuals, this efficiency

advantage of collective retirement plans has important implications for governments and society as a whole given the ongoing shift towards more individual retirement arrangements, which we will discuss at greater length in Section 2.

1.1 Many approaches to retirement: five archetypes

When it comes to financing retirement, the collective-versus-individual distinction is far from binary. Canadians prepare for retirement through a wide variety of arrangements, from highly individualized to highly collective. The distinction is better thought of as a spectrum. In an attempt to describe this spectrum in a relatively simple way, below we describe five archetypes of retirement arrangement. Further on, we will model the value for money of each of these archetypes.

In constructing the archetypes, we have considered the key characteristics of a retirement arrangement, including savings, scale, governance, costs, investments, and the treatment of the post-retirement or decumulation phase. While the retirement industry often compares arrangements based on their plan type or regulatory category (e.g., defined benefit, defined contribution, registered retirement savings plan [RRSP]), other

underlying characteristics are also critical. Many retirement arrangements have a combination of individual and collective features. For instance, a capital accumulation plan may be collective in its approach to savings (with mandatory savings deducted from payroll for a large group of employees), but individual in its approach to investment choice (e.g., members choose from an extensive fund lineup or create customized allocations among a wide range of asset classes).

Five retirement arrangement archetypes

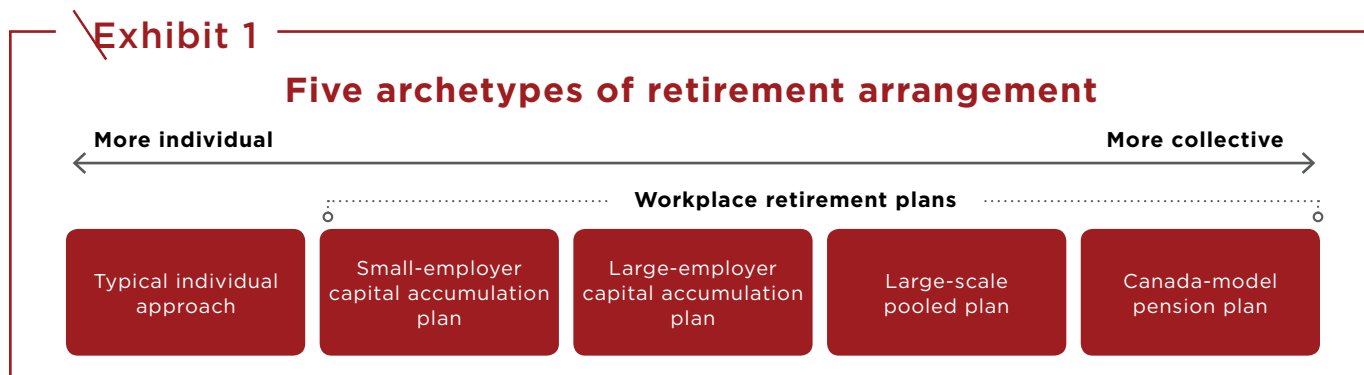
Before we can examine the impact that good pensions have on their members, we must first describe some of the alternatives we are comparing them to, as well as define what we mean by “good pensions.” Canadians make use of varied retirement arrangements that feature different regulatory categories, investment approaches, and structures. For this study, we define five retirement arrangement archetypes that describe the real-life arrangements used by a significant number of Canadians and materially differ from each other in terms of impact on their members. In each of the five arrangements, with the exception of the individual approach, total contributions may include employer contributions.

The arrangement archetypes are shown in Exhibit 1.

Typical individual approach

Half of Canadians do not have access to any form of workplace retirement plan beyond the compulsory government programs of OAS, Guaranteed Income Supplement (GIS), and C/QPP and, consequently, any retirement savings would be through an individual approach.⁵ Our analysis is conscious of the advances in behavioural finance over the past several decades. As such, the focus is less on how individual Canadians should behave, as prescribed by financial literacy guides, rules of thumb, financial advisors, or economic models, but on how they are, on a realistic basis, *likely to behave*.

In this arrangement, an individual makes the conscious choice on their own to begin and continue saving for retirement at the level of their choosing. They may have access to some form of advice,⁶ but their investment decisions will be influenced by individual choice and preference, in addition to the incentives and preferences of their advisor (if they have one). In general, they invest their retirement savings in mutual funds accessed through their financial institution or advisor, often using an RRSP or tax-free savings account (TFSA). According to The Investment Funds Institute of Canada, investments in mutual funds represent 32% of household financial wealth in Canada and



“serve as the main gateway to capital markets for the household sector.” This is particularly the case for households with less than \$500,000 in investable assets.⁷

Our interest here is in the approach that can most accurately be described as typical. We recognize that some people taking an individual approach, for example, those with a high level of financial acumen, might behave differently and achieve better financial outcomes than the typical Canadian. Similarly, the access to and quality of advice can vary significantly across individuals: sound, transparent, objective advice can be difficult to access for Canadians without significant assets.⁸

Small-employer capital accumulation plan

A number of Canadians work for small- or mid-sized employers that provide some form of workplace retirement plan.⁹ A common example of this type of arrangement is an employer-sponsored group RRSP, which is essentially a collection of individual accounts administered as a group, often with employer contributions.¹⁰ This type of arrangement is common among small- and mid-sized employers in the private and nonprofit sectors. These types of small capital accumulation plans have an average of about 100 members and assets of roughly \$2 million.¹¹

Participation in these arrangements is often optional for employees, with employers matching contributions up to a certain level. In Canada, small capital accumulation plans are typically administered by large life insurance companies and, due to their lack of scale, members typically pay higher fees than in larger arrangements.¹² The employer works with its broker or plan provider

to create an investment menu or fund lineup for employees to select from. Such menus can often include many funds: a recent industry report found that small capital accumulation plans offer, on average, 14 different funds to members.¹³ Each individual employee maintains control of their investment decisions within the restrictions of this menu. In the post-retirement phase, members are typically transitioned out of the employer-sponsored group plan and into some form of individual arrangement.

Large-employer capital accumulation plan

Large employers in the private or nonprofit sector often have a larger capital accumulation plan. This can be a larger group RRSP or a defined contribution pension plan. A plan like this might have 1,000 members and \$30 million in assets.¹⁴ Compared to a smaller capital accumulation plan, this kind of arrangement is more likely to have mandatory or automatic contributions. Plan members are still responsible for making their own investment decisions as in a smaller plan, but the investment choices available within the plan are more likely to reflect some expert input from the employer’s human resources department, investment or pension committee, and/or professional consultants. After retirement, members may be able to remain in the plan; typically, however, they must manage the drawdown of their assets, receiving their retirement nest egg as a lump sum rather than as a stream of payments. Although the industry has been debating ways to improve the decumulation phase for capital accumulation plans, the use of annuities or other risk-pooling instruments in employer-sponsored capital accumulation plans remains exceedingly rare.¹⁵

Large-scale pooled plan

While differing in specific structure and regulatory category, a significant number of workplace retirement plans offer increased value to their members through pooling and scale. We call this type of arrangement a large-scale pooled plan.

Through scale, such a plan can access low-cost asset management and economies of scale in administration, resulting in lower fees for members. Members are offered highly curated choices in investment management (or no choice, in the case of a defined benefit or target benefit plan), and contributions in these types of arrangements are usually mandatory. These plans also provide greater assistance in the post-retirement phase, including making use of investment- and longevity-risk pooling to varying degrees. These plans generally have a good governance structure with a fiduciary duty to members.

While plans like this can be sponsored by a single employer, especially if that employer is very large and its employees tend to have long job tenures, many of them are multi-employer and may involve an umbrella group, such as a union or association, whose membership cuts across multiple employers.

In Canada, most of the plans in this category are either defined benefit or target benefit. Multi-employer large-scale defined contribution plans—especially those that include some form of risk pooling—remain rare in Canada,¹⁶ and the Canadian defined contribution market remains immature relative to that in other developed countries. However, other countries, including Australia with its superannuation funds, the UK with multi-employer arrangements such as the National Employment Savings Trust (NEST), and the US with large-scale defined contribution

arrangements such as the Thrift Savings Plan, have examples of collective defined contribution arrangements that are high-quality and have many of the characteristics laid out above.

Canada-model pension plan

A small number of large public sector Canadian pension institutions have been highlighted as a distinct Canada model of retirement arrangement. These institutions serve as a standard against which we measure the definition of a good pension.

Global publications such as *The Economist*, *Fortune*, and *The Financial Times* have highlighted the unique approach and success of these institutions.¹⁷ A recent World Bank report defined a Canada-model pension as a public pension plan or public asset manager that is typically defined benefit, has at least one public sector sponsor or sponsors, and has the following characteristics: independent governance, scale, in-house management, diversification, talent (at board and management levels), and a long time horizon.¹⁸ Canada-model pensions tend to be defined benefit arrangements and in the public sector. Additionally, Canada-model pension funds tend to have higher exposure to alternative asset classes such as real estate, infrastructure, and private equity, and they often invest directly in these asset classes.

The governance of Canada-model plans is a key element that differentiates them from other large pension funds.¹⁹ The top 10 public pension funds in Canada manage over \$1.2 trillion²⁰ of the retirement assets of Canadians or approximately two-thirds²¹ of Canadian pension assets. Moreover, they manage (and in many cases administer) these assets for approximately 20 million Canadians.²²

1.2 Value drivers in pension plans: synthesis of the evidence

According to one well-known analysis,²³ the purpose of any retirement system is to provide individuals with a mechanism for “consumption smoothing” as well as a means of insurance to manage uncertainty. We can further describe retirement arrangements by breaking down these processes into three goals:

1. Saving income earned while working for future use in retirement
2. Growing these savings through productive investment
3. Converting these savings into a reliable stream of post-retirement income

A wide range of evidence suggests that individuals face significant challenges in achieving these three goals. Evidence also shows that good pensions can help overcome these challenges in significant, and quantifiable, ways. In Exhibit 2 we divide these ways into the five key value drivers. We then synthesize the evidence drawn from academic and industry research to quantify them.

Exhibit 2

Five value drivers in retirement arrangements

Description



Saving

In a purely voluntary system (a do-it-yourself approach), people tend to save less, save later, and save less consistently than under a collective plan with mandatory contributions or automatic enrolment.



Fees and costs

The costs of investment management and administration for good pension plans tend to be significantly lower than the costs of retail investing and advice.



Investment discipline

When investment decisions (e.g., asset allocation, security selection, market timing) are made by professionals, they tend to produce better results than when these decisions are made by individuals who “have a striking ability to do the wrong thing”.⁴¹



Fiduciary governance

When investments are managed on a non-profit basis by in-house professionals with a fiduciary responsibility to members, they tend to perform better than retail funds offered by for-profit organizations.



Risk pooling

Most individual investors must manage their longevity and investment risk on their own, adopting costly strategies (e.g., larger nest egg, smaller draw down, highly conservative post-retirement asset allocation) to avoid outliving their money. By contrast, a good collective retirement plan can create efficiencies by pooling longevity and investment risk.

Goal 1: Saving income earned while working for future use in retirement

Value driver: saving

In a purely voluntary or individualized system, people tend to save less, save later, and save less consistently than under a collective plan with mandatory contributions or automatic enrolment. A significant body of research has highlighted and explained the challenges most people have in saving and thereby deferring consumption. These challenges include myopia, lack of understanding, psychological biases, present bias, and self-control issues.²⁴ Participants in voluntary retirement arrangements tend to defer savings decisions or save less than they think they need to.²⁵ A recent study by TD Ameritrade found that millennials, on average, do not plan to start saving for retirement until age 36.²⁶

Collective retirement plans create value for individuals by helping them overcome these

behavioural biases and prepare for the future. One obvious way they do this is through mandatory participation: membership in a workplace pension plan, for example, is often a condition of employment. However, this mechanism can be less direct: many workplace retirement plans are voluntary, but they help make the choice to save more convenient through automatic enrolment (where employees are automatically enrolled in the plan but may opt out).

Participation in a workplace retirement plan has a significant impact on saving behaviour. For example, recent research from Richard Shillington finds that just over two-thirds (67%) of workers who indicate they do not have a workplace retirement plan say their assets total less than \$1,000, compared with only 9% of workers who

Exhibit 3



Without pensions, most lower-income Canadians who are nearing retirement have little savings in RRSPs and TFSAs

Retirement savings of Canadian families (with the oldest member aged 55-64) without an employer pension plan*

Income 2011	Income group for the economic family				Overall
	< \$25,000	\$25,000-\$50,000	\$50,000-\$100,000	> \$100,000	
Average income	\$12,600	\$38,000	\$71,000	\$199,000	\$64,000
Average retirement assets	\$17,600	\$57,000**	\$77,000	\$280,000	\$85,000
Median retirement assets	-	\$250	\$21,000	\$160,000	\$3,000

*"Without an employer pension plan" is defined as having no employer pension plan or being in a plan with assets less than \$10,000

**Based on the underlying data, could be +/- 25%

Source: Richard Shillington, "An Analysis of the Economic Circumstances of Canadian Seniors" (2016).

have a plan.²⁷ The same study found that the average retirement assets of lower-income, near-retirement workers without a pension plan was \$57,000 (see Exhibit 3 on page 14). US data also suggests that access to a retirement plan is a major driver of saving behaviour. Research from the Employee Benefit Research Institute has found that close to three-quarters of US workers without a workplace retirement plan have less than \$1,000 in savings and investments (see Appendix: Pension coverage facts and trends, Exhibit 9).²⁸

One clear indicator of the power of collective retirement plans to influence saving behaviour is the effect of automatic enrolment on savings. There is clear evidence that automatic enrolment results in higher plan participation rates, especially for lower-income and younger workers. Research from Vanguard shows that plans with automatic enrolment have an overall participation rate of 90% compared to 63% for plans with voluntary enrolment.²⁹ Lower-income and younger workers have significantly higher participation rates in plans with automatic enrolment. For example, for employees ages 25 and under, voluntary enrolment plans have a participation rate of 27%, while it is 85% for automatic enrolment plans.³⁰ Research from Brigitte Madrian of Harvard University shows a 30% increase in participation in workplace plans introducing automatic enrolment for new hires.³¹

Goal 2: Growing these savings through productive investment

Value driver: fees and costs

The fees and costs associated with an individual's retirement arrangement are a significant determinant of the rate of growth of their retirement investments. Evidence shows that the costs of investment

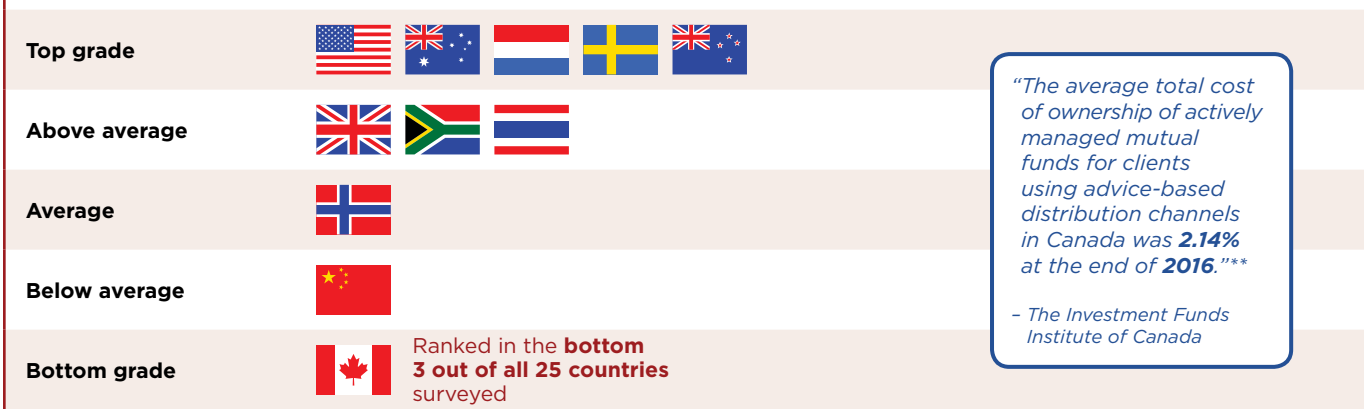
management and administration for good pension plans tend to be significantly lower than the costs of retail investing and advice.

When workers seek to invest their retirement assets in the retail market, the most common product they turn to is mutual funds.³² Canadian mutual fund investors pay among the highest fees in the world.³³ Morningstar's Global Fund Investor Experience Study 2017 ranked Canada in the bottom three of 25 countries surveyed—a ranking driven primarily by Canada's high investment management fees.³⁴ Recent data from the industry body representing Canadian mutual fund providers noted that the average total cost of ownership of actively managed mutual funds for clients using advice-based distribution channels in Canada was 2.14% of assets under management (see Exhibit 4 on page 16).³⁵ Recent years have seen an increase in the number of lower-cost investment alternatives in the retail market, such as exchange-traded funds (ETFs) and technology-driven robo-advisors providing investment management with minimal human intervention. These alternatives, however, have yet to be widely adopted in Canada.³⁶

In comparison, larger-scale, more pooled retirement plans tend to deliver services at lower cost to members. Industry publications indicate that the cost for workplace capital accumulation plans ranges from 0.6% to 2.1% of assets under management.³⁷ At the other end of the spectrum, large-scale pooled plans and Canada-model plans can cost participants even less (see Exhibit 5 on page 16). The typical cost of these arrangements, drawn from global pension benchmarking data, is \$120 per member for administration³⁸ and 0.5% of assets for investment management³⁹.

Canadian mutual fund investors pay among the highest fees in the world

Mutual fund fees and expenses rankings*

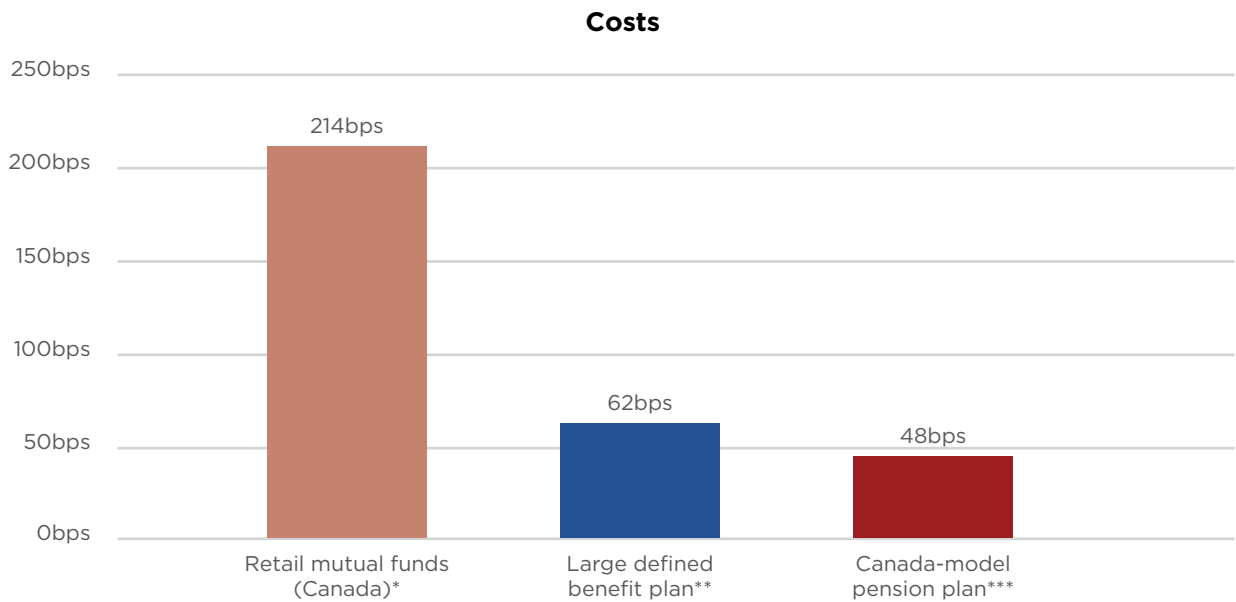


*Not all countries in Average, Below average, and Bottom grade are shown.

**Although ETFs have lower fees and are growing faster than mutual funds, they are approximately only one-tenth of the total assets invested in mutual funds (based on Canadian ETF Association and The Investment Funds Institute of Canada data).

Sources: Morningstar, Global Fund Investor Experience Study (2017); Investment Funds Institute of Canada, "Monitoring Trends in Mutual Fund Cost of Ownership and Expense Ratios" (2017).

Large pension plans offer lower costs to members than mutual funds, with Canada-model pension plans being among the lowest



*Average total cost of ownership of actively managed mutual funds for clients using advice-based distribution channels in Canada (Investment Funds Institute of Canada, "Monitoring Trends in Mutual Fund Cost of Ownership and Expense Ratios" (2017)).

**Global average total fund costs (investments and administration/member services) of defined benefit pension plans in the CEM Benchmarking database (Mike Heale and Paul Martiniello, "Managing Costs & Optimizing Outcomes" in Saving the Next Billion from Old Age Poverty (2018)).

***See Keith Ambachtsheer, "The 'Canada Model' for Pension Fund Management: Past, Present, and Future," The Ambachtsheer Letter (August 1, 2017) (using CEM Benchmarking data to find the average investment costs for eight Canada-model as 48bps. Note that this figure excludes administration costs).

Value driver: investment discipline

A significant body of evidence points to the fact that retail investors make predictable, costly mistakes.⁴⁰ One widely cited study concludes that “individual investors have a striking ability to do the wrong thing” when it comes to making decisions related to their investments.⁴¹

Poor decision-making extends to the three key sources of investment return: security selection, asset allocation, and market timing.⁴² Research from Vanguard has calculated the value of helping individuals avoid these types of mistakes in investment decision-making, finding that effective rebalancing adds 0.47%, while staying invested during downturns and avoiding attempts to time the market is worth 1% to 2% in net return.⁴³ A comprehensive study of Canadian mutual fund returns conducted by Morningstar has shown and quantified how mutual fund investors tend to buy

after a fund has gained value and sell after it has lost value. Morningstar calculates that the average cost of performance chasing and market timing across all Canadian mutual fund investors over the 2011 to 2016 period was 1.09% (see Exhibit 6 below).⁴⁴ Put differently, due to their suboptimal decision-making, the average mutual fund investor performed worse than the average fund by over 1% per year.⁴⁵ One of the reasons for this is the tendency of individual investors to purchase funds that have overperformed in recent years, even though recent outperformance is often an indicator of future underperformance. These estimates may be conservative, as the time period considered in the Morningstar research did not encompass any major financial shocks like the 2008 financial crisis, during which poor timing decisions by investors likely played an even bigger role in damaging investment outcomes.

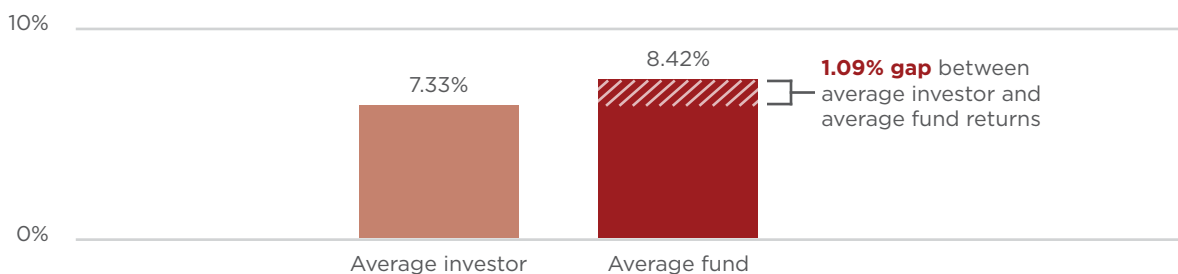
Exhibit 6



Investment discipline

Investors tend to underperform due to performance chasing and attempting to time the market

Five-year investor returns in Canada (across all funds, 2016)



Key Takeaways

- The average fund **outperformed**, in most cases, the average investor and returns on the portfolios if they were left untouched
- In general, investors tend to **buy after a fund increases in value and sell after it decreases in value**; as a result, the average investor return is lower than that of a fund's return

Source: Morningstar, “Mind the Gap: Global Investor Returns Show the Costs of Bad Timing Around the World” (2017).

Good pensions help avoid poor investment decisions. In a pension plan, investment decisions rest largely with professional institutional asset managers. At a minimum, these managers should be able to avoid the common mistakes individuals make, including inappropriate asset allocation, failure to rebalance a portfolio, and ill-conceived efforts to beat the market or invest in the latest aggressively marketed “hot” fund. Even in high-quality pension plans that contain some degree of investment choice, thoughtful plan design can help guide plan members towards better outcomes. This can include the use of a well-designed default investment option that members’ contributions are invested in unless they opt out.⁴⁶

It can be argued that more tools are becoming available to help people pursuing an individual approach make smarter investment decisions. Increasingly, technology-led investment providers (robo-advisors) are empowering individual investors to adopt index-based, passive approaches using ETFs that can help them avert poor investment decisions. However, even with more passive investing strategies, investors still have some ability to choose suboptimal funds and allocations and to inappropriately time the market. Recent years have seen a profusion of choice and specialization in the retail investment market, which is creating more opportunities for investors to make the kinds of investing mistakes described above.

Exhibit 7



Fiduciary governance

Fiduciary governance generates significant value for plan members, minimizing conflicts of interest and aligning incentives

Strong nonprofit governance generates value for members through:

- **Holding service providers accountable**, driving better, more efficient performance
- Driving **continuous improvement** in the plan as it scales by being strategic and **member-focused**
- Aligning all involved parties with the plan around serving the **best interests of members**, rather than shareholders (as with most retail fund governance structures)

Supporting evidence

International Centre for Pension Management, University of Toronto

Analysis of CEM global benchmarking data shows a net **value add of 1%-2% per year** due to good governance practices*

Organization for Economic Corporation and Development

Net 10-year investment returns of (generally well-governed) Canadian pension funds have been **-3% higher** than (generally poorly-governed) US pension funds**

Australian Prudential Regulatory Authority

Australian institutional funds with member-focused governance perform **~2% better** than retail funds with poor conflict-ridden governance***

World Bank Group

Member-focused governance identified as a **key driver of pension fund efficiency** in World Bank’s outcome-based framework†

*Ambachtsheer, Capelle and Lum, “Pension Fund Governance Today: Strengths, Weaknesses, and Opportunities for Improvement” (International Centre for Pension Management, 2006).

**Organization for Economic Corporation and Development, Pension Statistics 2017.

***Australian Prudential Regulatory Authority, “Superannuation fund governance: an interpretation” (2008).

†World Bank, “Outcome Based Assessments for Private Pensions” (2016).

Value driver: fiduciary governance

Good pension plans can generate significant value through a combination of fiduciary governance, a structure that aligns incentives, and professional investment management at scale. There is strong evidence that fiduciary members-first governance results in higher value for plan members. One study, based on CEM Benchmarking data, shows a net additional value of 1% to 2% per year due to good governance practices.⁴⁷ A study by the Australian Prudential Regulatory Authority found that institutional funds with member-focused governance perform about 2% better than retail funds with poor, conflict-ridden governance (see Exhibit 7 on page 18).⁴⁸

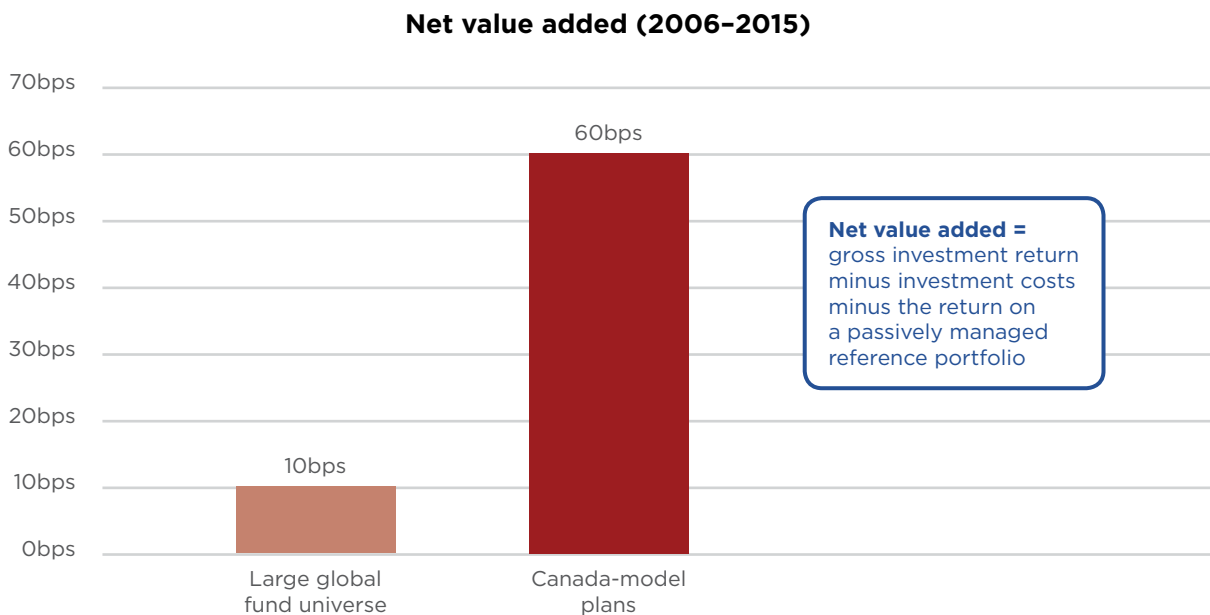
Some of the benefits of good governance are manifest in other value drivers described in this section, for example, in lowering fees and costs. However, there is evidence that entities that combine good governance, a nonprofit structure, and in-house professional investment management have been able to consistently outperform comparable arrangements lacking these features. Research from Keith Ambachtsheer and CEM Benchmarking has found that, over the past decade, pension funds with Canada-model characteristics have outperformed a passive reference portfolio and their peers by an average of 0.6% and 0.5% per year, respectively (see Exhibit 8).⁴⁹

Exhibit 8



Fiduciary governance

Canada-model pension plans, distinguished by their strong governance, have produced additional net returns compared with other large funds



Source: Keith Ambachtsheer, "The 'Canada Model' for Pension Fund Management: Past, Present, and Future," The Ambachtsheer Letter, August 1, 2017, using CEM Benchmarking data to compare the NVA (gross return minus investment costs minus the return on a passively managed reference portfolio) of eight Canada-model plans within a universe of 132 large global pension funds.

Goal 3: Converting these savings into a reliable stream of income post-retirement

Value driver: risk pooling

Good pension plans help create value for their members by pooling two forms of risk: longevity risk and investment risk.

Longevity-risk pooling

In retirement, most individual savers are confronted with the challenging task of managing their retirement assets and income without knowing how long they will live. To minimize the risk that they will outlive their retirement savings, these individuals would need to save and draw down their assets to account for a longer-than-expected life.

Some collective arrangements—for example, defined benefit plans—eliminate this need to oversave for retirement by pooling longevity risk. In these plans, members are promised a defined stream of income for the duration of their retirement years. The contributions of members who die at younger ages offset the retirement income of members who spend more years in retirement. The result is that the group collectively needs to fund only the average life expectancy of its members, rather than the age to which each member might (but is unlikely to) live. Research from the National Institute on Retirement Security in the US estimates that collective arrangements that enable longevity-risk pooling require 10% fewer contributions to achieve the same level of retirement security, while the Society of Actuaries in the US estimates the cost savings of longevity risk pooling at 15% to 25%.⁵⁰

The retail market does offer individuals ways to insure against the risk of outliving their money, for example, through the purchase of a life annuity. However, such products can be expensive when purchased on a retail basis and, for a variety of behavioural and market-based reasons, very few Canadians choose to purchase an annuity.⁵¹ Using current annuity price quotes provided by CANNEX Financial Exchanges Limited, a 65-year-old female with registered savings of \$100,000 could purchase an annuity with inflation-indexed payments of approximately \$4,500 per year in the current retail market.⁵² This annual income would jump by a third, to \$6,000, as a member of a Canada-model pension plan (as defined in this report).⁵³

Investment-risk pooling

Achieving investment returns during the post-retirement phase is an important element of an efficient retirement arrangement. This is especially true in an era of increased longevity when many Canadians will be retired for 25 years or more. Research by Don Ezra, which has recently been refreshed by Russell Investments, has found that about 60% of retirement income is derived from investment returns achieved during the post-retirement stage.⁵⁴

Individual investors tend to achieve lower investment returns during the post-retirement phase, resulting from their desire to take less risk with their savings as they age.⁵⁵ The closer a person is to retirement, the less able they are

to absorb investment shocks compared with a younger individual whose longer time horizon will enable them to recover from adverse investment events (for example, the 2008 financial crisis). To address this sensitivity, individual investors are typically advised to adjust the risk profile of their investments towards safer assets as they near retirement and during the post-retirement phase.

However, riskier assets, such as equities, also tend to result in higher returns over the long term. By shifting towards safer assets, these individuals sacrifice potential investment returns.

Certain types of collective plans, such as defined benefit arrangements, help overcome this challenge by pooling investments—and therefore investment risk—across all individuals in the plan. Pooling allows these plans to maintain an equity-oriented portfolio without putting older members' retirement incomes at risk. In the event of a market downturn, a pooled arrangement can spread investment losses across the entire membership and fund. Research from the National Institute on Retirement Security in the US estimates that the benefit of such investment risk pooling is an 11% cost savings in terms of contributions required to achieve the same level of retirement security.⁵⁶

Other risks

Pensions also offer the opportunity to pool other risks during both working and retirement years. These include health and dental benefit programs, as well as disability and life insurance coverage for members. Although outside the scope of this project, the group generally receives much more favourable rates on these benefits than an individual obtaining them directly in the retail marketplace.

1.3 Calculating the efficiency gap for individuals

In the above section, we developed an understanding of the mechanisms through which pensions help their members, as well as empirical evidence for the extent to which they do so. With this understanding, we can now ask, What cumulative impact do these effects have on retirement outcomes for an individual over a lifetime? What are the implications for an individual of contributing to a workplace retirement plan or “going it alone”?



Methodology

To answer this question, we compare the relative lifetime cost of retirement security for a representative individual across the five retirement arrangement archetypes described in Section 1.1.⁵⁷ We calculate the cost of achieving a target level of retirement income in each scenario. We express this cost as the total lifetime contributions required to achieve the target level of retirement income in each year post-retirement. Additional details on our methodology can be found in the Technical appendix to this report.

Our model is based on the working career and post-retirement phase of a hypothetical individual Canadian. We call her Sophia. In each calculation, we hold constant the basic features of her career and post-retirement life. Sophia begins working at age 25, retires at age 65, and dies at age 92. She begins her career working full-time and earning \$40,000 per year, with her salary growing 3% per year. She is single (with no significant outside sources of retirement income other than from the arrangements we model) and receives an average level of Canada Pension Plan (CPP) benefits and full OAS benefits.

Next, we define a target retirement income that Sophia wishes to achieve to maintain her standard of living in retirement. Following a widely used (but hotly debated) rule of thumb, we use a target of 70% of Sophia's average yearly salary over the final five years of her career, including her CPP and OAS benefits.⁵⁸ Note that we use a 70% target here not to endorse that this rule of thumb will maintain Sophia's working-life standard of living, but rather because it is common and provides a convenient basis for a fair comparison of the cost of retirement across different kinds of arrangements. We assume inflation of 2% and a

gross annual rate of return (before adjustments for cost, poor investment decision-making, and other value drivers) of 5%.

With these constraints and inputs, we next calculate the individual's contributions, investment returns, and drawdown behaviour in five separate scenarios approximating the different types of retirement arrangements described in Section 1.1: typical individual approach, small-employer capital accumulation plan, large-employer capital accumulation plan, large-scale pooled plan, and Canada-model pension plan. In each scenario, we adjust inputs based on the value drivers discussed in Section 1.2: saving, fees and costs, investment discipline, fiduciary governance, and risk pooling. These inputs are varied based on evidence drawn from academic and industry literature. In several cases, to be conservative, we have used assumptions that show less of a gap between individual and collective approaches than the evidence suggests. For instance, while Morningstar data shows that poor investment decision-making by individuals can lead to a performance drag of over 1% per year,⁵⁹ our calculations assume a performance drag from poor decision-making of just over 0.5% per year. The Technical appendix contains a detailed overview of the assumptions used in the model, as well as a rationale for each assumption.

On the basis of these inputs, we then calculate the total contribution⁶⁰ (i.e., "cost of retirement") that will be required in each arrangement for the individual to achieve the target post-retirement replacement rate. Using the same method, we calculate a retirement "bang for buck" measuring the retirement income (plus any assets left over at death) generated per dollar of contribution.

Findings: almost \$900,000 of potential savings for Sophia

We find that, for the same level of retirement security, the efficiency disparity between Sophia belonging to a Canada-model pension plan and Sophia following an individual approach is significant, amounting to a difference of about \$890,000 over her lifetime.

Following a typical individual approach, Sophia must contribute \$1.2 million over her lifetime to achieve a 70% replacement rate in retirement. In contrast, it costs only about \$310,000 in total contributions to generate the same retirement income as a member of a Canada-model pension plan. We summarize these differences in Exhibit 9 below.⁶¹

Exhibit 9

Retirement security for a typical worker is 4x less expensive in a Canada-model pension plan

Results for one representative individual



Sophia

Working life

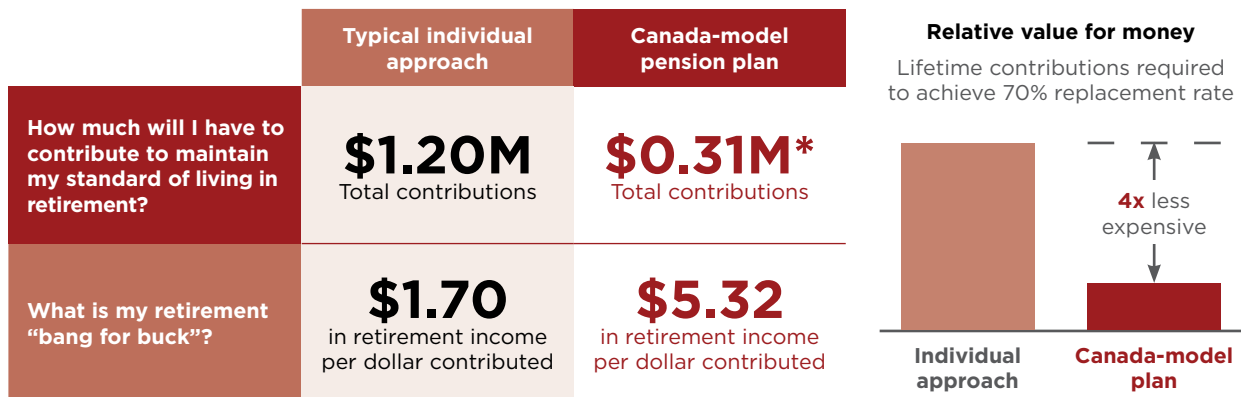
- Works from age 25–65
- Lives to age 92

Earnings

- Earnings start at \$40,000 per year
- 3% annual earnings growth

Target replacement rate

- 70% of final 5 years' pre-tax earnings (including average CPP and maximum OAS)



*Total contributions include employer contributions

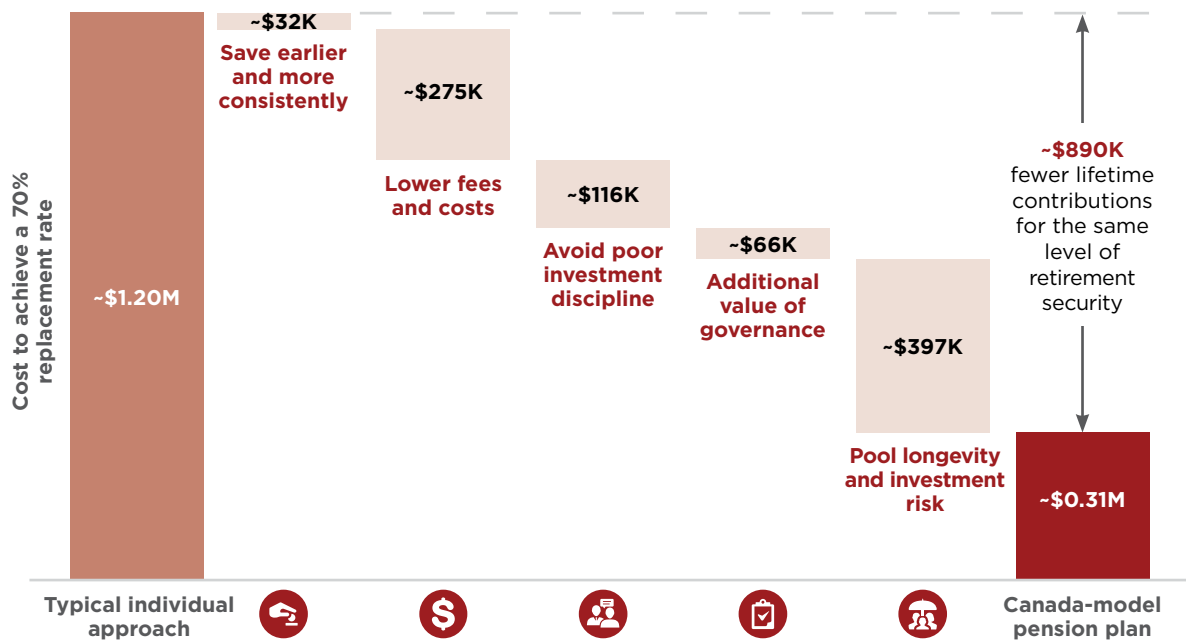
Another way to look at the differences between retirement arrangements is to consider the retirement “bang for buck” measuring the retirement income received (plus any assets left over at death) per dollar of contribution. Following a typical individual approach, Sophia will receive \$1.70 in retirement income for every dollar of contribution she saves during her working life. In contrast, in a Canada-model pension plan, Sophia will receive \$5.32 for every dollar contributed.⁶²

Exhibit 10 shows a disaggregated view of the factors driving the efficiency advantage of a Canada-model pension plan over a typical individual approach.

- Earlier saving behaviour translates into savings of about \$32,000. This is due to the fact that assets accumulated earlier have a longer time horizon during which they earn compounding investment returns.
- Lower fees and costs save Sophia \$275,000 over her lifetime. This saving is the result of a roughly 1.5% annual difference in fees and costs between a typical individual approach and a typical pension plan.
- Investment discipline saves Sophia \$116,000. These savings are a result of her avoiding a 0.55% annual “drag” on returns caused by attempting to time the market, chasing performance, and making other suboptimal decisions.

Exhibit 10

A visual representation of the cumulative effects of the value drivers of a Canada-model pension for a representative worker



- The additional value-add of fiduciary governance adds \$66,000 in savings. This is because Sophia's gross investment returns in a Canada-model plan are assumed to be 0.3% higher (half the level of outperformance of such funds over the past decade⁶³), reflecting the outperformance effect of good governance and in-house professional investment management.
- The ability to pool investment and longevity risk is the largest driver of efficiency, saving Sophia an additional \$397,000: her contributions do not have to account for the risk that she may live past her expected age of 92 and the Canada-model plan is able to maintain exposure to a diversified investment portfolio compared to an individual approach where Sophia must adopt a more conservative investment strategy as she ages.

Impact across different types of plans

The analysis above compares efficiency between the two archetypes at either end of the spectrum of retirement arrangements between individual and collective. Our model also shows significant differences in the cost of retirement security among the other archetypes of retirement arrangements that lie in between these two endpoints. Exhibit 11 shows the results for all five archetypes. Notably, this efficiency advantage increases in step with the scale and degree of collectivity of the individual's retirement arrangement: the more Canada-model features an arrangement displays—for example, significant scale, pooling of investment and longevity risk, and lower fees and costs—the higher the efficiency gain and cost savings for the member. Ultimately, for an individual, going it alone in investing for retirement can mean paying significantly more for one of life's biggest expenses.

Exhibit 11

Calculations show significant differences in efficiency between retirement arrangements

More individual ←






→ More collective

	Typical individual approach	Small-employer capital accumulation plan	Large-employer capital accumulation plan	Large-scale pooled plan	Canada-model pension plan
How much does retirement cost?*	\$1.20M	\$1.05M	\$0.79M	\$0.39M	\$0.31M
What is my retirement "bang for buck"?**	\$1.70	\$1.94	\$2.58	\$4.19	\$5.32

*Total contributions required to achieve a 70% replacement rate for a worker earning \$40K at the start of her career

**Total retirement income, plus assets remaining at death divided by total lifetime contributions

Summary of scenario assumptions

Value driver	Typical individual approach	Small-employer capital accumulation plan	Large-employer capital accumulation plan	Large-scale pooled plan	Canada-model pension plan
 Saving	Begins saving at optimal rate at age 30	Saves at 50% of optimal rate from age 25 to 30	Saves at 50% of optimal rate from age 25 to 30	Begins saving at optimal rate at age 25	Begins saving at optimal rate at age 25
 Fees and costs	2%*	1.7% in accumulation and 2% in decumulation phase**	1% in accumulation and 1.5% in decumulation phase***	\$120/yr plus 0.5%†	\$120/yr plus 0.5%†
 Investment discipline	-0.55% rate of return††	-0.4% rate of return†††	-0.2% rate of return†††	—	—
 Fiduciary governance	—	—	—	—	+0.3% rate of return‡
 Risk pooling	-1.5% rate of return post-65 due to de-risking portfolio; must plan drawdown to live to age 97‡‡	-1.5% rate of return post-65 due to de-risking portfolio; must plan drawdown to live to age 97‡‡	-1.5% rate of return post-65 due to de-risking portfolio; must plan drawdown to live to age 97‡‡	-1.25% rate of return post-65 due to de-risking portfolio (group annuity); earns pension income (no need to plan to outlive savings)	No rate of return drag post-65 due to de-risking portfolio; earns pension income (no need to plan to outlive savings)

Sources: *Average Canada mutual fund fees through advice-based channels (IFIC); **Avg. small/micro group RRSP fees (Great-West Life, 2012); ***Average medium-size group RRSP fees (Great-West Life, 2012); †Average cost of a large pension plan (CEM Benchmarking); ††Gap between returns of avg. investor and avg. mutual fund (Morningstar, “Mind the Gap,” 2017); †††Mind the Gap” (Morningstar, 2017); †“The Value of the Canadian Model” (Keith Ambachtsheer/CEM Benchmarking, 2017); ††Financial Planning Standards Council, “Projection Guidelines” (2016)

1.4 Potential implications

The cumulative efficiency advantages of pension plans are more and more relevant given Canada’s ageing population and increasingly limited government resources. The challenge of achieving retirement security is one faced by workers for whom the combination of government programs will not sustain their standard of living.

As demonstrated above, pensions are an effective tool for Canadian workers and government to obtain retirement security at a much lower cost.

These results serve as a reminder of the value of good pensions or collective approaches to retirement security. Based on our analysis,

each step along our spectrum of five collective retirement arrangement archetypes—from a completely individual approach at one end to a Canada-model pension plan at the other end—results in an average cost reduction of approximately 28%—leaving more money in the pockets of Canadians, either during their working years or in retirement. The implications of the efficiency advantage of good pensions calculated above are not equally applicable to the situation of every Canadian. For example, some people, in particular those earning a low income, do not (and in some cases arguably should not) save for retirement outside the C/QPP.⁶⁴ However, the majority of Canadians do currently save for retirement outside of public programs.⁶⁵ If these individuals could capture even a small part of the value differential that we calculate in Sophia's example, the result would be a large net benefit to Canadians and the Canadian government.

Given the overall trend towards individual approaches in retirement saving, how can countries help promote collective pension plans for large numbers of workers? Looking abroad, the UK and Australia have achieved shifts of great magnitude towards more efficient retirement planning. For example, under a policy of automatic enrolment combined with creating a high-quality default plan (NEST), the UK has successfully shifted nine million previously uncovered citizens into workplace retirement arrangements since 2012.⁶⁶ New Zealand's adoption of the automatic-enrolment-based KiwiSaver plan in 2007 has raised the proportion of workers covered by a voluntary occupational plan from 15% to more than 75%.⁶⁷

The Australian example is particularly relevant, as recent research from that country has highlighted significant differences in efficiency between for-profit, high-choice retail retirement plans and industry plans with a nonprofit governance structure and lower degree of member choice. A report to Australia's Productivity Commission by a former head of research for the country's pensions regulator cited "inefficient, profit-seeking operations, with excessive choices, high indirect costs, and conflicted governance" as costing retail superannuation plan members AUD 1 million (CAD 950,000) on average and resulting in more than AUD 12 billion a year in lost value to the system.⁶⁸

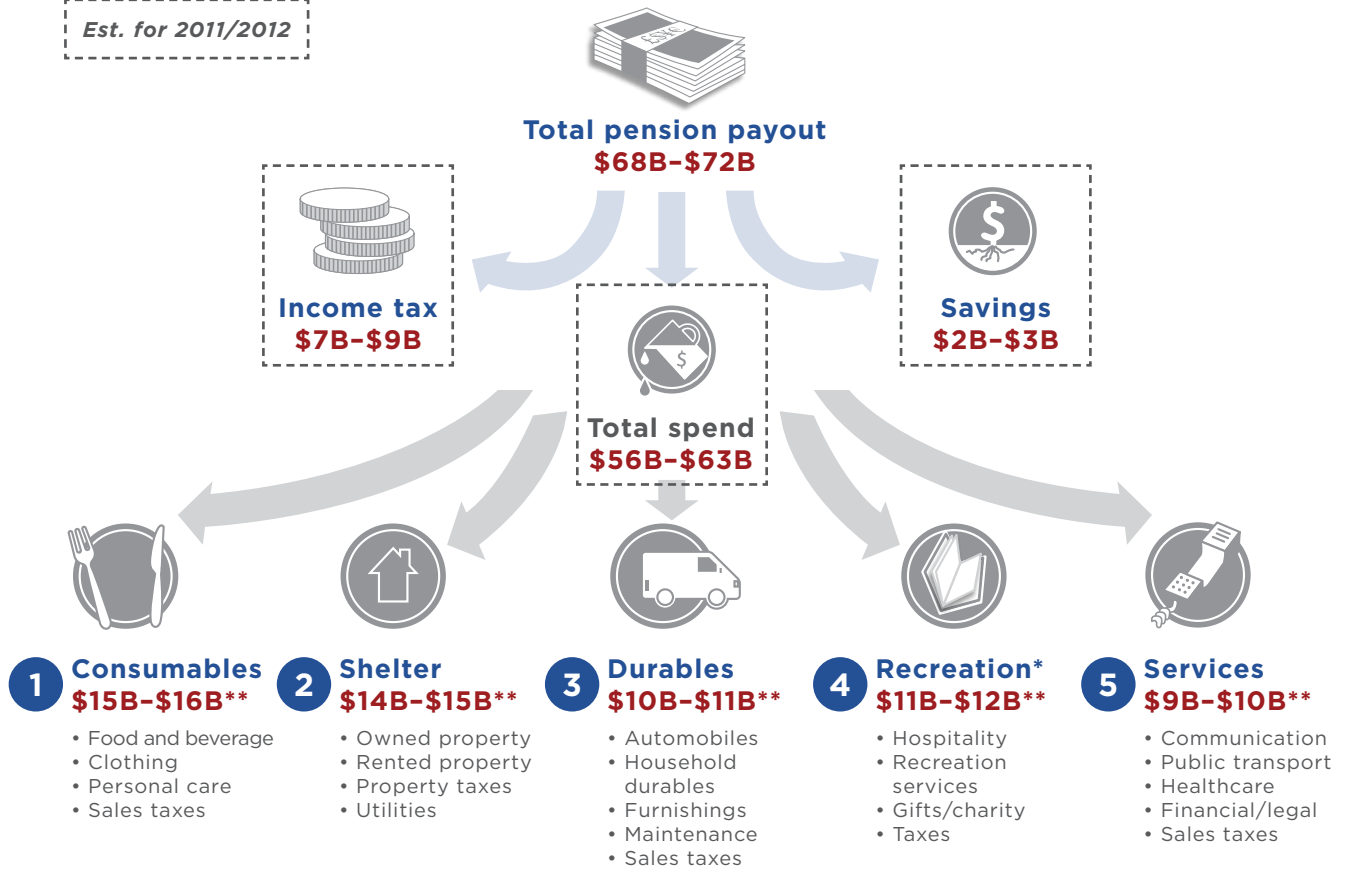
It is outside the scope of this study to investigate the economic impact of Canadians taking a more (or less) collective approach to retirement planning rather than an individual approach. But, at the aggregate individual level, our findings would suggest that significant financial value could be achieved by improving the access to and quality of collective retirement plans. In stretching each dollar (whether from taxpayer, employer, or employee) further in creating retirement income, collective plans free up economic resources to be put to better use elsewhere.⁶⁹ As one example, we have discussed in Section 1.2 above how the risk-pooling features of good pensions help individuals avoid the need to oversave in planning for a longer-than-expected life. The members of a good pension receive a guaranteed benefit payment each month which, rather than saving, they spend in the economy. Research in 2012 from the Boston Consulting Group calculated that defined benefit pension payments translated into approximately \$56 billion to \$63 billion in consumer spending in Canada (see Exhibit 13 on page 28).⁷⁰

Exhibit 13

Benefit payments translate into ~\$56B-\$63B in spending

Consumables and shelter are the largest consumer spend categories

Est. for 2011/2012



Note: Total expenditure on each consumption category has been computed by estimating the income quintile wise average household expenditures, of beneficiaries receiving defined benefit pensions, on that consumption category and summing over number of beneficiaries in each income quintile; ranges for spends were computed using inputs for the years 2011 and 2012.

*Includes other discretionary spends. **Note - numbers rounded.

Source: Data compiled by Boston Consulting Group, "Defined Benefit Impact Assessment" (2013)

There are also potential implications for government budgets. First, a higher cost of retirement implies that fewer people will be able to fund their own needs in retirement and will rely more heavily on government assistance. Each year, federal and provincial governments in Canada spend billions on income-tested assistance programs for retirees.

Benefits for the elderly are the single largest expense for the federal government, projected to grow from \$51 billion in 2018 to \$67 billion in 2023, and alone they constitute 2.4% of the GDP.⁷¹ Research in 2012 from the Boston Consulting Group estimated that Canadian defined benefit pension plans reduce the annual GIS payout by

between \$2 billion and \$3 billion annually.⁷² At the provincial level, an array of income-tested programs such as the Guaranteed Annual Income System (GAINS) in Ontario, income-tested drug benefits, long-term care and home care, and seniors' housing likewise constitute significant government expenditure. Helping individuals more efficiently generate retirement income can help reduce the cost of government providing such programs.

Second, since most retirement income is taxable, more efficient retirement savings could have positive tax revenue implications for governments. The Boston Consulting Group study found that defined benefit plan members contribute \$14 billion to \$16 billion annually to government tax revenues and spend \$56 billion to \$63 billion on goods and services (see Exhibit 14).⁷³

We find that retirement arrangements with collective features—in other words, good pensions—provide a much more cost-effective means of achieving retirement security. There is evidence that many Canadians are not on track to maintain their standard of living in retirement⁷⁴ and research suggests that retirement readiness could deteriorate in the future⁷⁵. Moreover, as we will discuss further in Section 2, the level of access to this increased efficiency is unevenly distributed, with already disadvantaged groups benefiting the least from pension plan access.

Exhibit 14

Defined benefit pension plan members contribute significantly to consumer spending and tax revenue while reducing GIS expenditure

Consumer spending	Tax revenue	Less GIS expenditure
\$53B-\$63B per year	\$14B-\$16B per year	\$2B-\$3B per year
Defined benefit retiree spending on goods and services	Property, income, and sales tax revenues from defined benefit retirees	Less GIS paid

Source: Data compiled by Boston Consulting Group, "Defined Benefit Impact Assessment" (2013)

1.5 Recommendations: continued support for what works

Pension plans are often identified by cost. This research shows that a better way to characterize pensions, especially if they are well-governed and managed, is as efficient vehicles to pay for something expensive: retirement. In an era of government fiscal restraint and tight household budgets, it is especially critical that policymakers continue to support existing high-quality pension plans, of which Canada has some of the best regarded and most efficient in the world. The question is not whether we can afford good pensions, but rather how we can deliver retirement security in the most cost-efficient manner.

Unfortunately, some discussions of pension reform, both in Canada and abroad, have suggested moving in the opposite direction.⁷⁶ They advocate converting collective arrangements, including defined benefit plans, to more individualized arrangements with a defined contribution structure. They advocate introducing much greater individual investment choice, rather than having minimal or no choice and having investment decisions made at the expert fiduciary level. These shifts, often advocated in the name of efficiency, are likely to have the opposite effect, ultimately costing Canadians as savers, retirees, and taxpayers, and undermining a critical social and economic asset.

Rather than make collective retirement arrangements more individualized, the thrust of pension policy should take the opposite tack: it should continue to support and improve existing good pension plans, with a focus on the value

drivers identified in this paper. What makes a pension plan good? A sensible place to begin is with the value drivers identified in this report. A good pension:

- Ensures saving by making saving mandatory or automatic
- Reduces costs and fees
- Helps members avoid poor investment decisions
- Achieves adequate long-term returns through a combination of fiduciary governance and professional investment management
- Pools longevity and investment risk
- Is funded adequately to achieve the desired retirement goal⁷⁷

Continuing to support existing good pensions should be a focus of policymakers and stakeholders.⁷⁸ One of the merits of doing this is that efficiency and continuous improvement can be achieved without significant regulatory or public policy intervention. When a pension plan has a good, independent governance structure—one that places plan members' interests first—it has been shown to result in the continuous improvement of the plan. As documented in a recent report for the World Bank, Canada's top pension plans have evolved over several decades.⁷⁹ They did not begin as top performers, but rather continuously improved through the years as they added scale under the guidance of a fiduciary governance structure.

Continuing to support existing plans also involves creating the right regulatory and public policy environment for plans to succeed. This includes:

- **Ensuring the pension regulator has the capabilities, powers, and flexibility** to oversee increasingly sophisticated pension plans and to adapt to a changing market environment. Ontario's move to create a new financial services regulator, the Financial Services Regulatory Authority of Ontario (FSRA), is a promising step in the right direction.
- **Removing regulatory barriers to innovation** in member service, plan design, and investments. For instance, prescriptive pension legislation and regulation sometimes prevents pension administrators from using digital technology to reduce cost and improve service to members. As one example, lack of regulatory clarity on electronic member communications has led many plan administrators to use paper as a default, requiring members to consent to receive digital communications.⁸⁰ Further, over the years, policymakers and regulators have removed many of the quantitative limits on pension investments, allowing pension assets to be invested in a wider range of geographies and asset classes.

In addition to continuing to support the good pensions that exist today, policymakers and other stakeholders can also take action to help existing retirement plans incorporate more of the value drivers identified in this report. Such opportunities include:

- **Enhancing the scale and portability** of existing plans by transitioning from a sole-sponsored retirement arrangement to a multi-sponsor arrangement with more reach and portability. HOOPP took this approach when it was founded in 1960, gradually moving from a regime in which each hospital had its own pension plan, to a founding group of 71 employers, to the more than 550 participating employers that are part of HOOPP today and the participation of four labour unions in the plan's governance.⁸¹ Another way plan sponsors can make this transition is to merge with an existing multi-employer plan. Such mergers are becoming more common in the public sector, as employers and governments seek efficiencies and opportunities to free up management share of mind from the complex and time-consuming task of pension administration.
- **Making savings easier and more automatic** by encouraging more capital accumulation plans to adopt behaviourally informed features, such as automatic enrolment and automatic escalation (where plan members agree in advance to have their contributions increase on a regular basis with the option to opt out). Adoption of these kinds of "auto features" appears to have been slower in Canada than in jurisdictions like the US and UK. This could be explained by numerous factors, including the continued existence of regulatory barriers to automatic enrolment and the relative immaturity of Canada's capital accumulation plan market.

- **Discouraging “leakage” from retirement accounts.** Early withdrawal of funds from retirement plans can significantly affect the efficiency of a retirement arrangement by removing some of the benefits of long-term compounding. Although we have not factored in this kind of leakage into our analysis of retirement value for money, the more efficient arrangements in our analysis are less prone to leakage (e.g., contributions into pension plans are locked in), and the less efficient arrangements are more prone to leakage (other than tax penalties for RRSP withdrawals, there are usually few, if any, restrictions on withdrawals from individual retirement savings accounts). Policymakers could consider decreasing the potential for leakage by allowing greater locking-in within group RRSPs and group TFSAs while tightening restrictions on pension unlocking rules, which have been loosened in recent years.⁸²
- **Promoting fee and cost transparency.** Fees and costs can be one of the most important determinants of the efficiency of a retirement vehicle. And yet many plan members, and even plan sponsors, have little awareness of the all-in fees associated with their plan or the potential impact of those fees on their nest egg. Policymakers and regulators could consider a more robust fee and cost disclosure regime that would, ideally, be as consistent as possible across all types of retirement arrangements. An effective regime would give members and sponsors access to clear, meaningful, and simple information and would have a medium- to long-term effect of decreasing the costs associated with retirement plans in Canada.
- **Streamlining choice,** particularly with respect to investments, is another important lever for improving investment outcomes. As discussed,

defined benefit and target benefit plans do not offer investment choice. For capital accumulation plans, which do offer investment choice, the evidence suggests that greater choice can often lead to worse retirement outcomes.⁸³ A simplified approach to investment choice, especially if the “choice architecture” is created by actors with the right expertise and a fiduciary duty to members, is preferable to a complex one.

- **Encouraging good governance and fiduciary standards.** The most efficient retirement arrangements tend to have a combination of a good governance structure and a clear legal duty to put the interests of members first—also known as a fiduciary duty. Policymakers and regulators could do more to promote strong fiduciary governance. They could do so through a variety of tools ranging from “soft” (e.g., education, documentation, and sharing of best practices) to “hard” (e.g., mandating certain governance practices, structures, or standards) to approaches in between (e.g., requiring plans to prepare a governance policy and file it with the regulator).
- **Introducing more risk pooling into the decumulation phase of capital accumulation plans.** More can be done to encourage capital accumulation plans to help their members navigate the post-retirement phase and use the power of the group to manage the common risks associated with that phase. For instance, policymakers and regulators could make it easier for plans to offer longevity pooling or longevity insurance, whether within the plan or through contracts with insurance companies.⁸⁴ They could also make it easier for such plans to pool investment risk, using approaches such as the Variable Payment Life Annuity approach used by the University of British Columbia Faculty Pension Plan.⁸⁵



SECTION 2:

PUTTING THE VALUE OF PENSIONS IN CONTEXT:

Canada's quiet shift from
collective to individual





Having established a calculation of the value of pension plans to an individual saver, we now put that value into context by turning our attention to wider trends in how Canadians are saving for retirement.

As noted earlier, Canada's public sector pensions are internationally recognized as some of the best in the world.⁸⁶ Other components or pillars of Canada's retirement income system are also seen as quite successful. Other countries, including major developing economies such as China, have studied the Canada Pension Plan as a successful and sustainable model for delivering basic retirement security to millions of Canadians.⁸⁷ More recently, the Australian *Financial Review* cited the Canadian pension industry as the ideal place to turn to when considering the future of Australia's superannuation system, referring to

the Canadian system as one that offers better investment performance, lower cost, and stronger governance.⁸⁸ The combined elements of the Canadian retirement income system, taken together, place Canada among the top-performing retirement systems globally.⁸⁹

Outside the public and mandatory OAS/GIS and C/QPP, Canada has experienced a steady and quiet shift in our overall approach to retirement saving over the past decades. This shift is best described as away from a collective approach, centred on workplace pensions, towards an individual approach focused on people saving on their own initiative in the retail financial services marketplace.

This section reviews this shift from the collective to the individual.

2.1 Overall pension coverage

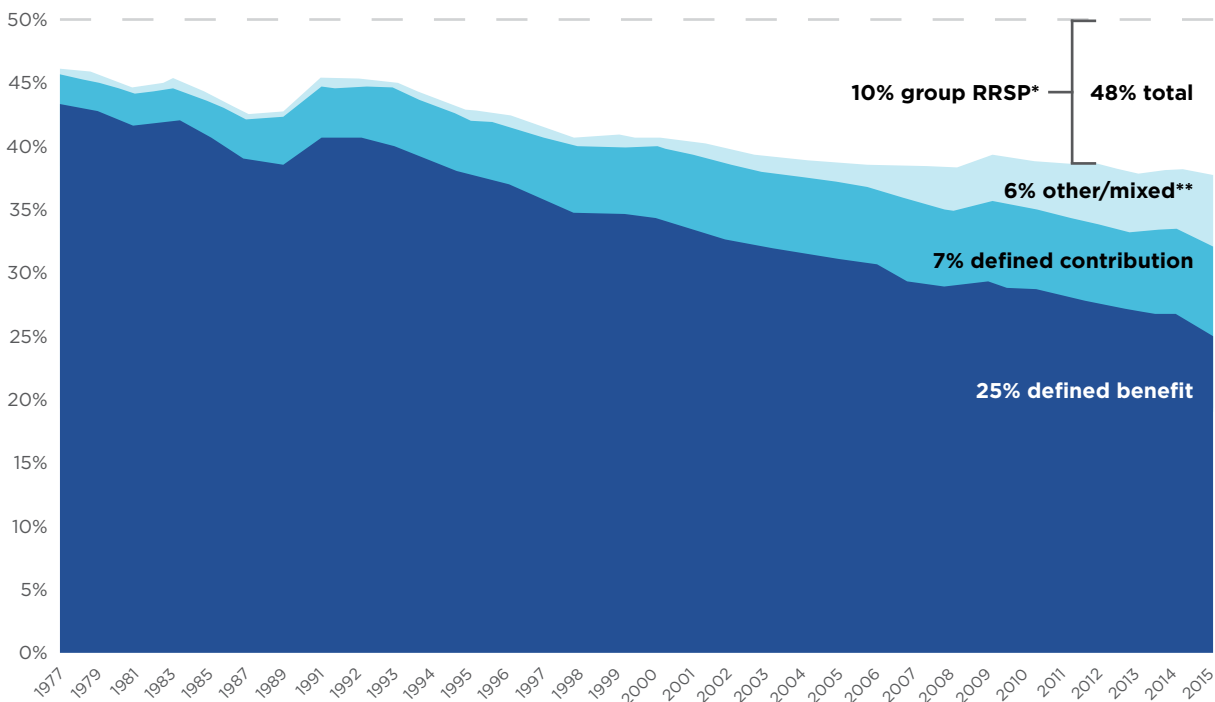
Historically, one of the primary pillars of Canada's retirement system has been the workplace pension plan. From the mid-1970s, when data becomes consistently available, to 2015, overall pension plan coverage has fallen from nearly half (46%) of employees to just over a third (38%) (see Exhibit 15).⁹⁰ However, registered pension plans are just one part of the collective retirement plan picture, as many employers offer group RRSPs and, to a lesser extent, deferred profit sharing plans

(DPSPs).⁹¹ Data for the number of Canadians participating in group RRSPs is tracked less systematically, but the Office of the Superintendent of Financial Institutions (OSFI) estimates that about 10% of employees have access to this kind of arrangement.⁹² At the same time, there has been an increase in the use of personal savings vehicles like the TFSA, typically used in the retail market rather than within a group arrangement. In the most recent census, 40% of Canadians indicated they contributed to a TFSA.⁹³

Exhibit 15

Canadian defined benefit and defined contribution pension coverage declined significantly since the 1970s

Proportion of Canadian employees in a registered pension plan, 1977–2015



*OSFI, "Registered Pension Plan (RPP) and Retirement Savings Coverage (Canada)" (2012), estimate based on 2012 data - trend series unavailable

**Includes members of hybrid plans (benefit is the better of that provided by defined benefit or defined contribution provisions); composite or combination plans (pension has both defined benefit and defined contribution characteristics); defined contribution and defined benefit (may be for different classes of employees or one benefit type may be for current employees and the other for new employees)

Sources: Statistics Canada, Pension Plans In Canada Survey, Labour Force Survey; OSFI, "Registered Pension Plans (RPP) and Other Types of Savings Plans" (2012).

2.2 Shift from defined benefit plans to other arrangements

This overall decline in pension plan coverage masks a more dramatic shift in the nature of the collective plans that covered workers have access to. Historically, defined benefit pension plans have been by far the most common form of workplace collective plan for employees in Canada. Mirroring a larger international trend, over the past few decades defined benefit pension plans have steadily lost ground to defined contribution and other types of arrangements.⁹⁴ In Canada,

the share of employees participating in defined benefit plans has fallen from 43% of all employees in 1977 to 25% in 2015.⁹⁵ Among employees with a workplace pension plan, the share of individuals belonging to defined benefit arrangements has fallen from over 90% in the mid-1970s to around 65% today. Among workers who are still participating in a pension plan, participation has shifted towards defined contribution arrangements. Among workers with registered pension plans, the share participating in defined contribution plans has risen from 6% in 1977 to 18% in 2015.



2.3 Coverage outside the public sector

The greater part of this shift away from collective plans has occurred outside the public sector.

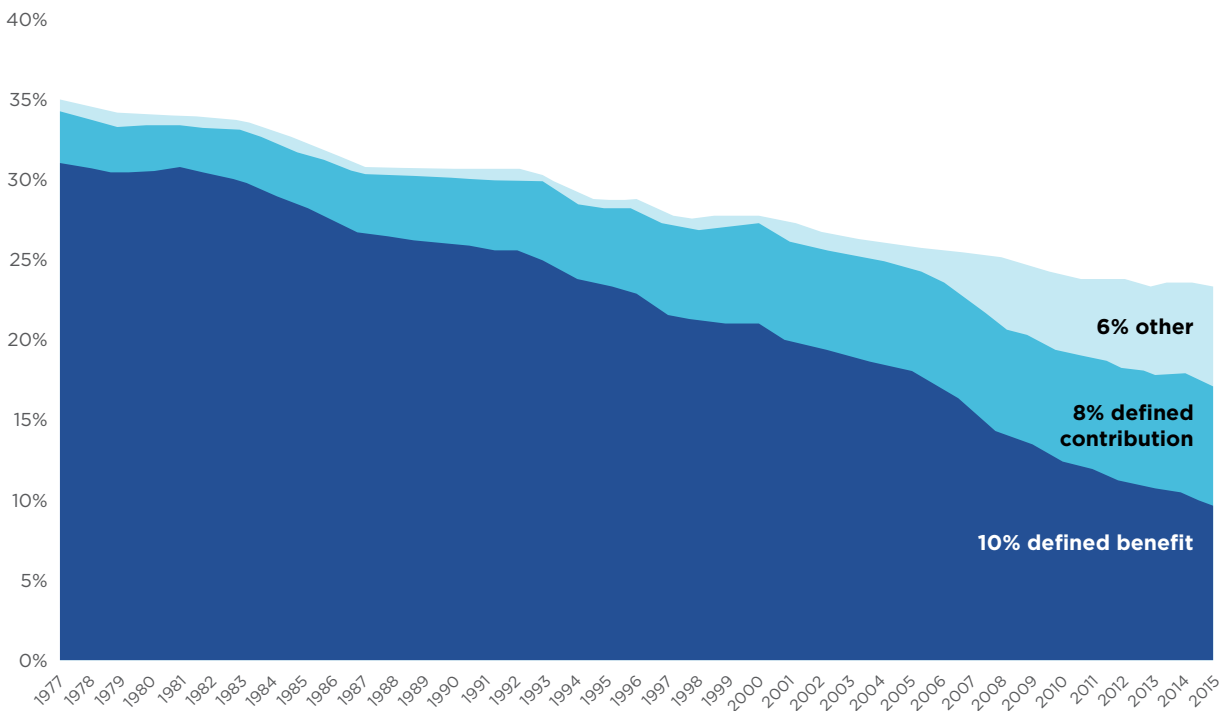
Retirement plan coverage in general differs vastly between the public and private sector: in 2015, almost 90% of public sector workers belonged to a pension plan, compared to only 24% in the private sector (see Appendix: Pension coverage facts and trends, Exhibit 2). The shift away from defined benefit arrangements has also been concentrated in the private sector. While the vast

majority of public sector workers with pensions participate in defined benefit plans, the picture in the private sector is much different. Among private sector workers with pension plans, the share of defined benefit arrangements has fallen from nearly a third (31%) in the 1970s to one in ten today (see Exhibit 16 below).

Exhibit 16

Defined benefit pension coverage in the private sector has declined to less than one third of 1970s levels

Proportion of Canada's private sector workers participating in a registered pension plan, 1977-2015



Estimate based on 2012 data

Source: Statistics Canada, Pension Plans In Canada Database, obtained through correspondence with René Morissette of Statistics Canada Pensions Section

2.4 Coverage of nonstandard workers and marginalized groups

This shift away from collective retirement plans is likely to accelerate given trends in the nature of work. Recent studies have drawn attention to the increase in the number of people whose employment can be described as “precarious” or “nonstandard.” One recent study, for example, found that around one-third of Ontario and Quebec workers could be classified as being in precarious work, which is defined as meeting three or more of the following criteria: not being in a union, working for a small firm, earning a low wage, and, relevant to this report, not having a workplace pension.⁹⁶

Similarly, nonstandard work in Ontario has grown nearly twice as fast as standard employment in the previous two decades, where nonstandard work is defined as either part-time work, temporary and on-call work, contract work, or self-employment.⁹⁷ While the very definition of precarious sometimes includes lacking access to workplace retirement benefits, data from the US indicates that nonstandard workers are much less likely to have

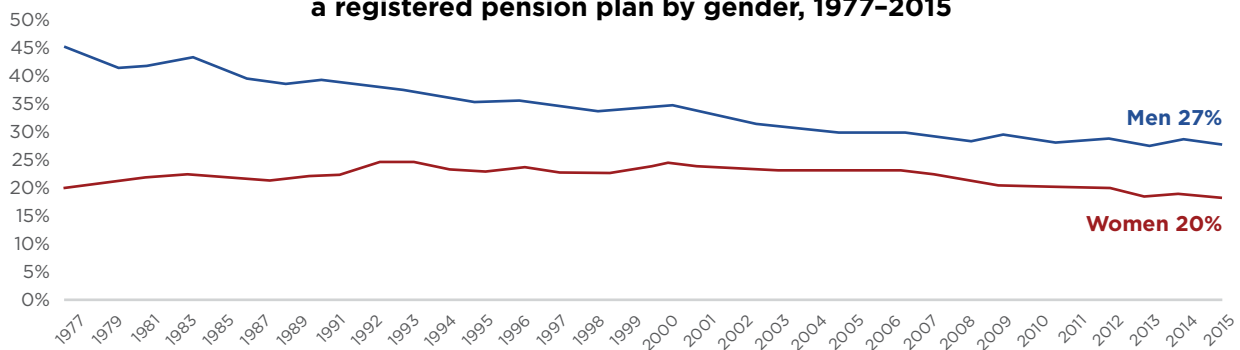
access to or participate in a workplace retirement plan than full-time workers. For example, while approximately 50% of US workers participate in a workplace retirement plan, that figure is only 18% for part-time workers (see Appendix: Pension coverage facts and trends, Exhibit 2).⁹⁸

The lack of workplace retirement plan coverage disproportionately affects marginalized groups. Pension plan coverage overall in Canada is now higher for women than for men, reflecting the greater proportion of women working in industries with high pension coverage such as educational services, health care, social assistance, and public administration.⁹⁹ However, in the private sector, and particularly in lower-income service industries such as retail, accommodation, and food services, women are significantly less likely to be covered than men (see Exhibit 17 and Appendix: Pension coverage facts and trends, Exhibit 4). Similarly, women with lower incomes are generally less likely to have access to a workplace pension plan than men with lower incomes (see Appendix: Pension coverage facts and trends, Exhibit 7).

Exhibit 17

Pension coverage in the private sector is still much lower for women

Proportion of private sector labour force who are members of a registered pension plan by gender, 1977–2015



Source: Statistics Canada, Canadian Socio-Economic Information Management System (CANSIM) data: Pension Plans in Canada Survey (Table 280-0008), Labour Force Survey (Table 282-0002).

A similar trend in decreased retirement plan coverage can be seen with new Canadians, visible minorities, and young people. A 2012 Statistics Canada survey found that 45% of Canadian-born male employees were members of a pension plan, compared with only 32% of new Canadians (see Appendix: Pension coverage facts and trends, Exhibit 5).¹⁰⁰

People with lower and moderate incomes are significantly less likely to have access to workplace retirement plans. In Canada, only one in ten of the bottom 10% of earners access a workplace pension plan, a figure that rises to 54% of men and 67% of women in the top 30% of earners (see Appendix: Pension coverage facts and trends, Exhibit 7).¹⁰¹

2.5 Recommendations: expanding access to collective plans

In Section 1 we have quantified the value of membership in a good pension, and in Section 2 we have shown that fewer people are benefiting from this membership. This suggests that more should be done to improve access to collective retirement arrangements.

First, there are numerous options to improve the public policy and regulatory environment.

- **Encourage the establishment and testing of innovative, portable retirement benefits in the private and nonprofit sectors.** These arrangements would have different designs and structures, but ideally should have as many characteristics as possible of existing Canada-

model pension plans, and they would not be dependent on any single employer. The role of policymakers in facilitating this innovation could range from creating a more pro-innovation regulatory environment and providing start-up capital to convening stakeholders to encourage them to play a leadership role.

- **Facilitate or mandate employers to automatically enrol their employees in some kind of collective retirement plan.**

This is similar to the approach taken by the UK government, some US state governments (e.g., California, Oregon, Illinois), and the New Zealand government. The Quebec government has taken a similar approach with its Voluntary Retirement Savings Plan (VRSP) regime. In some cases, automatic enrolment regimes are accompanied by the establishment of a government-sponsored default plan (e.g., the UK's NEST program). In other cases, the creation of retirement vehicles is left to the private market (e.g., Quebec's VRSP regime).

- **Make the expansion of collective retirement plan coverage an explicit goal of public policy and regulation.** Currently, pension regulators do not have a mandate to seriously address the coverage issue. Similarly, pension standards legislation tends not to refer to coverage as a specific public policy objective. Incorporating pension coverage outcomes into pension policy and regulation has international precedents. For instance, the World Bank's framework for improving private pension systems includes coverage as one of the five key outcomes associated with a successful pension system.¹⁰²



- **Allow nonstandard workers, including freelancers and the self-employed, to join certain kinds of collective plans from which they are now excluded.** For instance, membership in a registered pension plan requires an employer-employee relationship.

There is also an important role for non-governmental stakeholders, including employers, unions, associations, and the wide range of private service providers in the retirement, pensions, and benefits industries.

- **Employers that do not currently offer a plan** could consider introducing one for recruitment, retention, and efficiency reasons. Although cost and complexity continue to present barriers for small- and mid-sized employers to offer a high-quality plan, advances in financial technology and other innovations have lowered these barriers. Even if an employer does not contribute to the plan, a high-quality collective plan is likely to offer benefits to employees relative to the financial products and services they would likely access on their own.¹⁰³ Moreover, recent research commissioned by HOOPP shows that employers feel a strong sense of obligation towards contributing to workers' retirement security and feel that quality retirement plans help with recruiting and retaining staff.¹⁰⁴
- **Employers who currently offer a plan** might consider expanding the coverage of that plan to a broader portion of their workforce. Many existing plans have waiting periods and/or may not cover part-time employees or other portions of the workforce.


- **Labour unions** can play a number of roles to address the coverage issue. Where a union is a sponsor of an existing plan for its membership, it can work to expand membership in that plan. Where a union's members participate in a retirement arrangement, but the union is not a sponsor, union representatives can work with employers, within or outside of collective bargaining, to expand that plan's coverage. Finally, unions, whether on their own or in collaboration with other unions or non-union sponsors, can establish new collective retirement plans to reach parts of their membership or their sector of the economy that do not have coverage today.
- **Associations**, like labour unions, can use their scale and membership base to establish high-quality collective retirement plans for their members and other parts of their community. Such associations could include industry groups, professional associations, or other affinity-based groups. Such approaches can involve the association acting alone or a collaboration among different groups within the same or related sectors. HOOPP, for example, began as an initiative of the Ontario Hospital Association (OHA), but has since become a collaborative enterprise among the OHA and the four main unions representing workers, both public and private sectors, in Ontario's health care sector.¹⁰⁵

- **Private providers** in the pensions and group retirement industries have an important role to play in addressing the coverage issue. Arguably, it is in the industry's self-interest to do so, otherwise the overall size of the market for collective retirement plans is likely to continue to shrink. Some of this work could be undertaken collaboratively, including a greater focus on those without coverage at industry conferences and events and new industry-led initiatives focused on expanding the market for collective retirement arrangements. Other efforts to expand coverage can and should be led by individual providers introducing innovative new products and services into a competitive marketplace. For instance, technology is already demonstrating the potential to make plan sponsorship and administration more affordable and accessible for employers who do not offer a plan today.

Making a material impact on retirement plan coverage in Canada will require a concerted and collaborative effort among multiple governmental and non-governmental stakeholders. The coordination and collaboration effort required is compounded by the fragmented nature of Canada's regulatory environment around retirement security, which involves a combination of federal and provincial pension standards

rules, federal tax rules, securities rules and, occasionally, issues related to employment and labour standards. In addition to considering the opportunities enumerated above, governments and other leaders wishing to make an impact on the pension coverage issue should also examine ways to make collaboration easier, including creating new forums or institutions dedicated to the expansion of pension or collective retirement plan coverage.

Pursuing quality coverage expansion will be challenging, but unlike in other developed countries, Canada is in a strong position: we already have examples of well-regarded, efficient pensions in the public sector. These institutions' principles and key features can be applied to build or improve collective retirement arrangements for other parts of the economy.



TECHNICAL APPENDIX

Detailed methodology,
assumptions, and
additional scenarios



1. Detailed methodology

Our research objective is to estimate the lifetime cost of retirement for an individual in five different retirement arrangements. That is, how much will the individual be required to contribute to achieve a given level of retirement security in each scenario.

To conduct this analysis, we imagine a hypothetical archetypal individual, Sophia, and create a simplified model of her work and retirement path under five scenarios simulating the retirement arrangements (see Section 1.1 of the report for a description of each):

- 1. Typical individual approach
- 2. Small-employer capital accumulation plan
- 3. Large-employer capital accumulation plan
- 4. Large-scale pooled plan
- 5. Canada-model pension plan

Using the same model in each of the five arrangement types, we vary specific evidence-based inputs to determine how Sophia's total required contributions (her cost of retirement) change across each scenario.

1.1 Base assumptions for hypothetical individual: defining Sophia's life and career path

We start by defining the basic characteristics of Sophia's career and retirement trajectory, which we hold constant across all five scenarios. We specify the following:

- The age at which she
 - begins working
 - stops working and begins drawing retirement income
 - dies
- Starting salary and salary growth rate

In all scenarios considered, we make consistent assumptions about our hypothetical individual and the world she lives in, which are independent of her retirement arrangement:

Age at which she starts full-time work

Sophia begins working full-time at age 25, reflecting the increased likelihood of young Canadians to obtain post-secondary education and delay the transition into full-time work.¹⁰⁶ For simplicity, we do not account for interruptions such as parenthood, illnesses, or other events that could result in her receiving more or less income in a given year.

Starting salary and salary growth

We first model Sophia's employment income. For each year from starting work until retirement, we calculate her yearly employment earnings based on her starting wage and assumed wage growth. These remain constant in all scenarios.

We assume in all scenarios that Sophia earns \$40,000 in her first year of work and that her employment income grows at a rate of 3% per

year. Although historic trends in wage growth have been closer to 0.5%, we assume a higher rate to account for career progression and promotions Sophia might receive.¹⁰⁷

Inflation

We assume annual inflation of 2%. This is approximately equal to the current assumed long-term rate employed by the Bank of Canada, a representative sample of portfolio managers, and the Canada Pension Plan.¹⁰⁸

Modelling retirement asset accumulation and required contribution rate

We next model Sophia's accumulation of assets over her lifetime. For each year of her working life, we assume that she contributes a fixed percentage of her employment income towards her retirement savings. The age that she begins contributing depends on her retirement arrangement (see Technical appendix, Section 1.2).

We use the conventional 70% replacement rate as the target for retirement income (see "Target retirement income" section, page 47). Retirement income is made up of the OAS benefits and CPP benefits that Sophia would receive based on her work history and income bracket. Any shortfall in income between OAS and CPP, and her replacement rate target, is assumed to be made up by drawing from her savings.

The fixed percentage is therefore calculated by determining the necessary annual savings contribution rate required, such that her total

retirement contributions (plus investment return) exactly match the funds necessary to sustain her target replacement rate over her retirement to the age to which she expects to live.

We further assume that these savings are invested and that Sophia earns a rate of return on her retirement assets. From these accumulated assets, we subtract the annual costs that she incurs for investment management and other fees. This results in a figure for net retirement assets that Sophia has accumulated at the end of each year. The rate of return and fees are determined by her retirement arrangement (see Technical appendix, Section 1.2, for assumptions).

Target retirement income

We define a retirement income target for Sophia that achieves a replacement rate of 70% of the average of her final five years of working income and grows by inflation (2%) each year in retirement. This measure of retirement adequacy is a longstanding and widespread measure used by financial planners, actuaries, academics, and others. However, in adopting this target rate, we recognize that there is considerable academic debate over whether 70% is sufficient to ensure retirement security and, more broadly, whether the replacement rate is the correct measure of retirement security.¹⁰⁹ We use this assumption for the purpose of simplicity, as the relevant results of our modelling (the relative efficiency of retirement arrangements) are largely independent of which measure of retirement security is used.

Retirement age

For simplicity, we assume that Sophia retires and begins drawing CPP and OAS at the current standard age of 65. The average retirement age

for Canadians is currently around 63; however, age 65 is widely assumed as the norm in retirement financial analysis. Moreover, evidence suggests that people are increasingly working longer as life expectancy rises.¹¹⁰

Canada Pension Plan and Old Age Security income

Canada/Québec Pension Plan earnings are affected by multiple factors, including income before retirement and gaps in employment. For simplicity, we assume that Sophia receives the current average CPP benefit of \$7,998.72 per year, adjusted for inflation.¹¹¹ We also account for the upcoming expansion of CPP to take effect in 2019 by multiplying this average CPP amount by 33%, reflecting the additional CPP Sophia will be entitled to when it is fully phased in. Based on her income bracket, we also assume that Sophia receives the maximum OAS benefit of \$7,160 per year, adjusted for inflation. Sophia is not eligible for the Guaranteed Income Supplement benefit, as her expected income in retirement places her beyond the current maximum cut-off.¹¹²

Anticipated longevity

We assume that Sophia follows the advice of the Canadian Financial Planning Standards Council (FPSC), which recommends prudent individuals plan for their retirement assuming that they will reach a life expectancy where the probability of survival is no more than 25%.¹¹³ As a 25-year-old female, Sophia has a 25% chance of living to age 97.¹¹⁴

Actual longevity

Using the same guidelines, we assume that Sophia dies at age 92. According to the FPSC, Sophia has a 50% chance of living to this age.¹¹⁵

Modelling decumulation (drawdown after retirement)

In each year after Sophia's chosen retirement age, we assume that she draws down an income from her retirement assets that is equal to the amount required to meet her replacement rate target. We subtract this annual "required drawdown" figure from her accumulated retirement savings at the start of the year. In her post-retirement years, we continue to assume she earns an annual rate of return on her accumulated assets.

As Sophia dies before her anticipated age of death, there are savings remaining in the first three retirement arrangements (where there is no mortality risk pooling). Note that the remaining assets are included in her retirement consumption for the purpose of calculating retirement "bang for buck" (see below).

Results: calculating "total cost of retirement" and retirement "bang for buck"






Summing Sophia's lifetime contributions under these constraints (the cost to maintain a 70% replacement rate over her anticipated retirement lifetime) provides a cost of retirement figure: the total contributions required to achieve the defined level of retirement security. Dividing her total drawdown (i.e., the income she receives in retirement outside of OAS and C/QPP plus any remaining assets at death) by her total lifetime contributions provides a retirement "bang for buck" figure: how much retirement income is generated by each contributed dollar.

1.2 Modelling the efficiency of retirement arrangements: five scenarios

Using the method described above, we model the cost of retirement under five scenarios representing the retirement arrangement types outlined in Section 1.1 of the report. In each scenario, we adjust certain assumptions in the model to reflect empirical evidence related to the drivers of value in retirement arrangements described in Section 1.2 of the report.

We assume in all scenarios that Sophia earns a 5% gross annual nominal rate of return on her invested assets before fees and costs and other adjustments associated with the five retirement arrangement archetypes. Although in recent years nominal investment returns have been higher than 5%, evidence suggests that investors should prudently plan for a lower-return environment in the coming years. John Bogle, founder of Vanguard, has cautioned investors to expect lower returns on both equity and fixed income in the coming years.¹¹⁶ The Canadian Financial Planning Standards Council recommends assuming a portfolio return of 5.19% for a diversified balanced portfolio, based on a combination of assumptions made by the Canada Pension Plan and Québec Pension Plan actuarial reports, portfolio manager surveys, and an analysis of historical returns.¹¹⁷

Summary of scenario assumptions

Value driver	Typical individual approach	Small-employer capital accumulation plan	Large-employer capital accumulation plan	Large-scale pooled plan	Canada-model pension plan
 Saving	Begins saving at optimal rate at age 30	Saves at 50% of optimal rate from age 25 to 30	Saves at 50% of optimal rate from age 25 to 30	Begins saving at optimal rate at age 25	Begins saving at optimal rate at age 25
 Fees and costs	2%*	1.7% in accumulation and 2% in decumulation phase**	1% in accumulation and 1.5% in decumulation phase***	\$120/yr plus 0.5% [†]	\$120/yr plus 0.5% [†]
 Investment discipline	-0.55% rate of return ^{††}	-0.4% rate of return ^{†††}	-0.2% rate of return ^{†††}	—	—
 Fiduciary governance	—	—	—	—	+0.3% rate of return [‡]
 Risk pooling	-1.5% rate of return post-65 due to de-risking portfolio; must plan drawdown to live to age 97 ^{‡‡}	-1.5% rate of return post-65 due to de-risking portfolio; must plan drawdown to live to age 97 ^{‡‡}	-1.5% rate of return post-65 due to de-risking portfolio; must plan drawdown to live to age 97 ^{‡‡}	-1.25% rate of return post-65 due to de-risking portfolio (group annuity); earns pension income (no need to plan to outlive savings)	No rate of return drag post-65 due to de-risking portfolio; earns pension income (no need to plan to outlive savings)

Sources: *Average Canada mutual fund fees through advice-based channels (IFIC); **Avg. small/micro group RRSP fees (Great-West Life, 2012); ***Average medium-size group RRSP fees (Great-West Life, 2012); †Average cost of a large pension plan (CEM Benchmarking); ††Gap between returns of avg. investor and avg. mutual fund (Morningstar, “Mind the Gap,” 2017); †††Mind the Gap” (Morningstar, 2017); ‡“The Value of the Canadian Model” (Keith Ambachtsheer/CEM Benchmarking, 2017); ‡‡Financial Planning Standards Council, “Projection Guidelines” (2016)

Saving

To account for differences in saving across arrangement types, we make a simplifying assumption that the primary variable affected by saving behaviour is the age at which retirement contributions start.

For the typical individual approach scenario, we assume that Sophia does not begin contributing to her retirement savings until she has reached the age of 30, after which she continues to save consistently at the rate required to reach her 70% replacement goals. While data on Canadians saving behaviour is not comprehensive, a recent study by TD Ameritrade found that millennials, on average, do not plan to start saving for retirement until age 36, or approximately 10 years after starting full-time work.¹¹⁸ In modelling Sophia's behaviour, we conservatively reduce this delay in beginning to save by half to five years (i.e., she begins saving at age 30). The conservative nature of this assumption is further reinforced by recent research from the Ontario Securities Commission that found only one in two millennials had investments.¹¹⁹

In the small- and large-employer capital accumulation plan scenarios, we assume Sophia saves at 50% of her required rate in her early working years (from age 25 to 30) before finally reaching her full required saving rate at age 30 and continuing consistently thereafter. This assumption reflects that the availability of a capital accumulation plan at her workplace, even if it is not mandatory, will raise the likelihood of Sophia or her employer contributing to her retirement savings early in her career. Automatic enrolment can have a significant impact in raising participation rates of new employees and lower-income workers.¹²⁰ Compared to voluntary

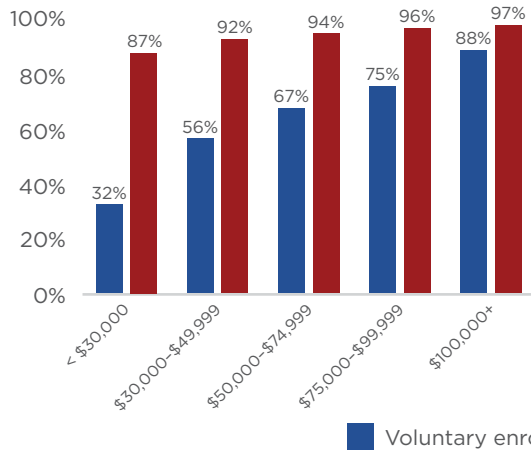
enrolment, lower-income employees under automatic enrolment programs had a participation rate of 87% compared to 22%. The results were similar for new employees, with participation rates doubling to 91% under automatic enrolment.¹²¹

In the large-scale pooled plan and Canada-model pension plan scenarios, we assume that Sophia is enrolled on a mandatory basis and therefore begins saving consistently from the time she starts full-time work at age 25.

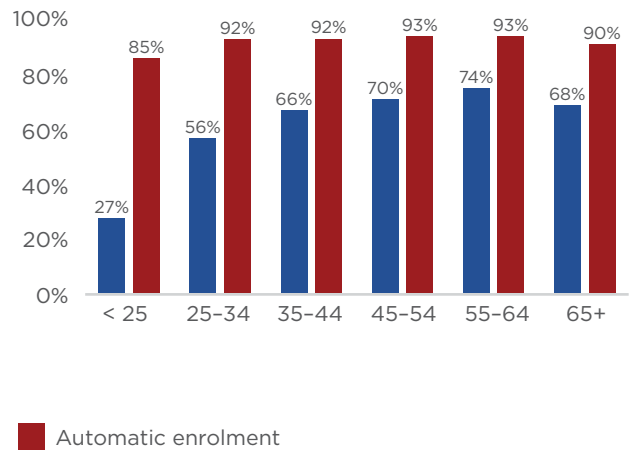
These assumptions about saving behaviour likely underestimate the difference between individual and collective approaches. For example, they do not account for missed contributions due to inattention, adverse events, or other factors and assume that Sophia works full-time from the start of her career through to retirement. Similarly, we do not account for leakage due to early withdrawal of assets that are not locked in, as can be the case with RRSPs and other voluntary savings vehicles, which evidence suggests is significant.¹²² Research from Richard Shillington shows that Canadians who do not have access to a pension plan end up with strikingly low levels of retirement assets.¹²³ Though there are important gaps in the data on the saving behaviour of Canadians, we suspect that more in-depth study of this issue would reveal that the difference in saving behaviour in the presence or absence of collective plan membership is more dramatic than assumed in this research.

Automatic enrolment results in higher plan participation rates, especially for lower-income and younger workers

Plan participation rates by income level



Plan participation rates by age group



Key Takeaways

- Plans with **automatic enrolment** have an overall **participation rate of 90%** compared to an overall participation rate of **63% for plans with voluntary enrolment**
- **Lower-income and younger workers** have significantly higher participation rates in plans with automatic enrolment
 - For example, for employees ages 25 and under, voluntary enrolment plans have a **participation rate of 27%**, while it is **85% for automatic enrolment** plans

Source: Vanguard Research, "How America Saves 2017 - Vanguard 2016 defined contribution plan data" (2017)

Fees and costs

In the typical individual approach scenario, we assume that fees and costs amount to 2% of assets under management each year. Our primary source for this assumption is self-reported industry data. For example, the Investment Funds Institute of Canada reports that average total cost of ownership of actively managed mutual funds for clients using advice-based distribution channels in Canada was 2.14% in 2016.¹²⁴ However, we recognize that individuals are free to take a multitude of approaches, which will vary in terms of their cost. For example, significant differences exist in fee levels for mutual funds accessed through full-service brokerages (2.27%), financial advisors (2.38%), branch-based advisors (1.89%), and purchasing directly from fund manufacturers (1.24%).¹²⁵ Given the importance of mutual funds and advice-based channels to Canadian retail investors (with advice channels accounting for more than 80% of Canadian mutual fund asset holdings¹²⁶), we find 2% to be a reasonable approximation of the costs incurred by individuals building retirement security in the retail marketplace. This figure may in fact be conservative, as industry-reported fees may not include other costs such as transaction fees, account fees, and sales costs such as front- or back-end load charges.¹²⁷

There is also some evidence for moderate fee compression in retail financial markets, which may continue or accelerate in the future. For example, one industry study has found that the all-in cost of mutual fund ownership in Canada fell by 0.06 percentage points between 2014 and 2017.¹²⁸ In our Additional scenarios section, page 57, we consider a scenario where fees and costs decline substantially in the future and measure the impact on the efficiency of Sophia's retirement savings.

For the small-employer capital accumulation plan scenario, we assume a pre-retirement fee of 1.7%, drawn from industry data that estimates the fee level of micro and small capital accumulation plan plans at 2.1% and 1.4%, respectively.¹²⁹ In the small-employer capital accumulation plan arrangements we further assume that, at retirement, Sophia is compelled to transition out of the arrangement and, as a result, is subject to the same fees as the typical individual approach scenario for the remainder of her post-retirement phase.

For large-employer capital accumulation plans, we assume a fee of 1%, reflecting industry data that estimates mid-sized (assets of \$10 million-\$100 million) capital accumulation plan fees at that level.¹³⁰ In these arrangements, we further assume that members pay an increased fee of 1.5% of assets in the post-retirement phase, reflecting the fact that some members of such plans are able to remain in the plan, while others are transitioned to retail arrangements.

To estimate the fees and costs of large-scale pooled plans and Canada-model pension plans, we employ data from CEM Benchmarking that estimates the cost of membership in a defined benefit plan as \$120 per year plus 0.5% of assets.¹³¹

Investment discipline

Morningstar's "Mind the Gap" research provides an empirical measure of the effects of poor investor decision-making, isolated from other factors such as fees and costs, across the entire universe of Canadian mutual fund investors.¹³² In modelling these effects on the typical individual approach scenario, we conservatively use the "investment drag" figure measured by Morningstar at 1.09%, and discount it by half. For the typical individual

approach, the result is a 0.55% reduction in investment returns each year. We note that this assumption may be conservative, as the data from Morningstar on which we base our assumptions measures performance drag across fund investors of all types and, therefore, it likely underestimates these effects on less sophisticated individual investors in particular. Similarly, research from Vanguard has estimated the added value of effective rebalancing and avoiding market-timing mistakes at approximately 2% per year relative to average investor experience.¹³³ Furthermore, as noted in the main report above, the five-year time period considered in Morningstar's "Mind the Gap" research is relatively short and does not encompass the 2008 financial crisis, a time during which poor investment decisions may have been costlier.

Because capital accumulation plans, including those associated with both small and large employers, typically offer a range of investment choices to plan members, we assume that there is still potential for members to suffer from losses due to poor investment decisions. However, we also assume that these effects are mitigated somewhat by the selection of funds and member support often provided by capital accumulation plans. We therefore further reduce the drag due to poor investment choices to -0.4% and -0.2% per year in small-employer and large-employer capital accumulation plans, respectively.

In the case of large-scale pooled and Canada-model pension plans, we assume that there is no drag on investment performance due to poor individual investment decisions. In other words, the large-scale pooled plan is able to achieve market returns, and the Canada-model plan is able to achieve market returns plus the incremental

outperformance discussed in the section below. We also assume that curated or "smart defaults" and limited or no investment choices (as in the case of defined benefit plans) result in individuals having minimal opportunity to make the types of investment errors described above.

Additional value-add due to fiduciary governance

While many types of collective arrangements may feature good governance that benefits members,¹³⁴ one may expect much of the impact of this governance to be reflected in lower fees, reduced losses from poor investment decision-making, and other areas already accounted for in assumptions used in our model. However, research from Keith Ambachtsheer and CEM Benchmarking has shown that Canada-model pension plans generated an average of 0.6% per year in after-cost value relative to a passive reference portfolio, compared with an average of 0.1% for global peer funds.¹³⁵ These funds tended to insource more of their investment functions and allocated more to private markets than their peers. To reflect this advantage, we adjust yearly investment performance in the Canada-model pension plan scenario upwards by 0.3%, or half of the outperformance achieved over the past decade.

Risk pooling: longevity risk

Canadians who are not members of defined benefit or target benefit pension plans do not have automatic access to effective pooling of longevity risk (and hedging that risk in the retail market is expensive for the average Canadian). The result is that these individuals must independently manage the risk of outliving their own savings. We capture this effect in our modelling by assuming that in the typical individual approach, small-employer capital accumulation plan and large-employer capital accumulation plan scenarios, Sophia makes contributions such that she will accumulate sufficient retirement assets to meet her replacement rate goals up until the FPSC-recommended age of 97 (an age she has a 25% chance of reaching), despite the fact that she only expects to live to age 92 (which she has a 50% chance of reaching).¹³⁶ Empirical research has often found that seniors will consume their savings at an overly conservative rate—even resulting in growing account balances after retirement.¹³⁷ Whereas for some individuals the motivation for this conservative consumption may be to leave a bequest, research from the Society of Actuaries has found that a more likely explanation is that people are taking precautions to protect against later-life financial risks, and that this precautionary saving is causing seniors to live an unnecessarily reduced lifestyle.¹³⁸

Members of larger collective pension plans can avoid unnecessarily reducing their retirement lifestyle in this way by pooling their mortality risk at a reasonable cost. In the large-scale pooled plan and Canada-model pension plan scenarios, for example, Sophia does not need to make contributions to account for the risk of living longer than she expects. We reflect this in the model by assuming that Sophia can hedge

her longevity risk at the same cost as the entire membership of these plans.¹³⁹

- **Large-scale pooled plan:** The assumption is that, as a member of this plan, Sophia would have access to and be part of a group annuity purchase. As of August 17, 2018, Sophia could purchase an annuity with inflation-indexed annual payments of \$4,978 for every \$100,000 in premiums. In technical terms, this would be an immediate annuity for a 65-year-old, using the current annuity purchase interest rate for medium duration, 50% male, Canadian pensioners' mortality (CPM) combined mortality table, life only. As of August 17, 2018, the non-indexed annuity purchase rate for a medium duration plan is 3.25% per year. Therefore, we use 1.25% per year to account for the assumed 2% per year inflation growth rate, producing an actuarial factor of 20.09.
- **Canada-model pension plan:** The assumption is that, as a member of this plan, the cost of Sophia's retirement income stream would be costed based on an actuarial valuation for an "ongoing" pension plan (with the appropriate underlying rate of return). As of August 17, 2018, the implicit cost for an annual pension with inflation-indexed annual payments was \$5,962 for every \$100,000 in contributions available. In technical terms, this would be an immediate pension for a 65-year-old, 50% male, CPM combined mortality table, life only. As of August 17, 2018, the non-indexed actuarial factor with the assumed asset net return of 4.8% per year (less 2% per year for inflation) was 16.77.

These two assumptions reflect the true market-value cost of the targeted income stream for a member currently within each plan.

Risk pooling: investment risk

The ability to pool investment risk across individuals is a feature unique to defined benefit arrangements. Individual investors, or those in non-defined benefit retirement plans, are typically advised to reduce their investment risk exposure as they approach retirement. Practically, this shift in investment risk is achieved by reducing the exposure to equities and increasing the exposure to fixed income or other types of less risky investment.¹⁴⁰ To capture this effect in our model, we assume that for all arrangements other than the large-scale pooled plan and the Canada-model pension plans, Sophia's gross investment return after age 65 drops from 5% (the assumed gross nominal rate of return for a diversified portfolio) to 3.5% (which financial planners recommend as the approximate rate of return to assume on fixed income investments).¹⁴¹

The group annuity purchase price assumed in the large-scale pooled plan matches the current pricing and therefore is much less subjective. In the Canada-model pension plan scenario, the underlying rate of return within an ongoing pension plan valuation depends on the investment strategy of the plan. A net nominal rate of 4.8% (2.8% real) was chosen to match the assumed rate throughout the report. For comparison, the 2017 real discount rates used by four major Canada-model public sector Ontario pension plans were HOOPP (3.5%), OMERS (4.0%), OPTrust (3.3%) and the Ontario Teachers' Pension Plan (2.75%).¹⁴²

2 Additional scenarios

Accounting for the increased impact of poor investment decision-making

As discussed above, our analysis employs what is likely a conservative assumption with regard to the loss from poor investment decision-making in individual arrangements. For example, one of the empirical data points anchoring our analysis (from Morningstar), measures the magnitude of the effect of investing mistakes made across all Canadian fund investors, not only individuals investing on their own. To be conservative, we

discounted this figure by half in our analysis. Some estimates put the value of avoiding or correcting investing behaviour mistakes much higher.¹⁴³ We therefore run our typical individual approach scenario, this time assuming the full investment decision-making impact measured by Morningstar. Accounting for this assumption, we see a \$230,000 increase in the cost of retirement for the individual approach (see Exhibit 3 below).

Exhibit 3

Accounting for increased impact of poor decision-making raises the cost of retirement by \$230,000

	Individual approach (initial scenario)	Accounting for increased impact of poor decision-making	Canada-model pension plan
“Drag” from decision-making	-0.55%	-1.09%	—
Cost of retirement	\$1.20M	\$1.43M	\$0.31M
Retirement “bang for buck”	\$1.70	\$1.43	\$5.32

Accounting for rapid fee compression

As discussed in the report, some analyses suggest that the fees paid by individual investors in the retail financial market will decline in the coming years. For example, industry-reported data highlights a modest decline in the asset-weighted management expense ratio of long-term funds in Canada from 2.08% at the end of 2011 to 2.03% at the end of 2014, and a further 6 bps decline from 2014 to 2016.¹⁴⁴ More downward pressure on fees may come from increased adoption of lower-cost passive ETF-based investment options accessed through robo-advisors. While ETFs

are still a relatively small portion of the retail investment picture,¹⁴⁵ current trends suggest these types of lower-cost individual arrangements can be expected to grow in the future. To estimate the impact of significant and sustained fee compression in the retail financial market, we modify our assumption for the fees and costs in the typical individual approach scenario, lowering the fee by half from 2% to 1%. The result (shown in Exhibit 4 below) is that the cost of retirement in the typical individual approach is reduced to about \$850,000.

Exhibit 4

Accounting for rapid fee compression in an individual approach lowers the cost to \$850,000

	Individual approach (initial scenario)	Accounting for rapid fee compression	Canada-model pension plan
Fees	2%	1%	\$120/year plus 0.5%
Cost of retirement	\$1.20M	\$0.85M	\$0.31M
Retirement "bang for buck"	\$1.70	\$2.39	\$5.32

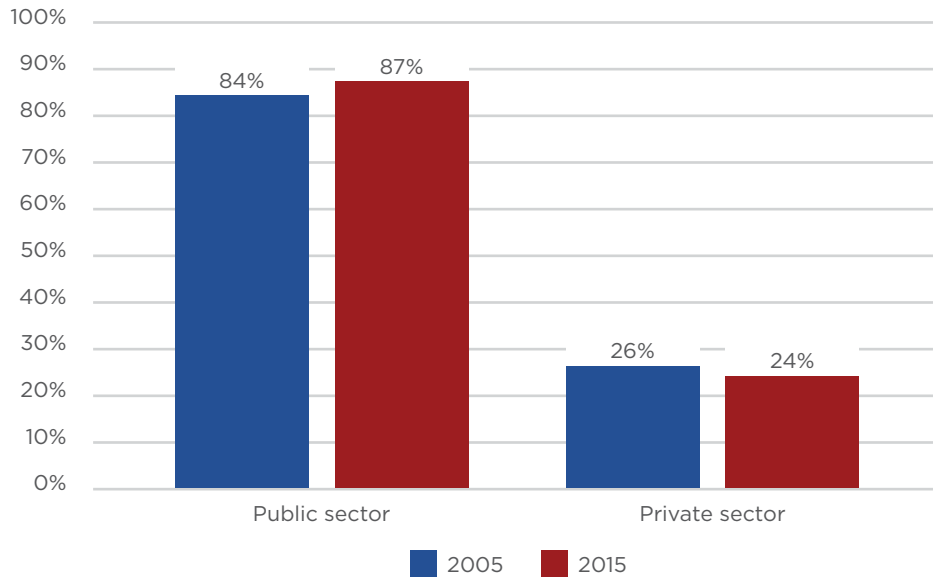


APPENDIX:
PENSION
COVERAGE
FACTS AND
TRENDS

Exhibit 1

Canada's public sector pension coverage far exceeds private sector coverage and has risen slightly, 2005 - 2015

Registered pension plan coverage - public vs. private sector

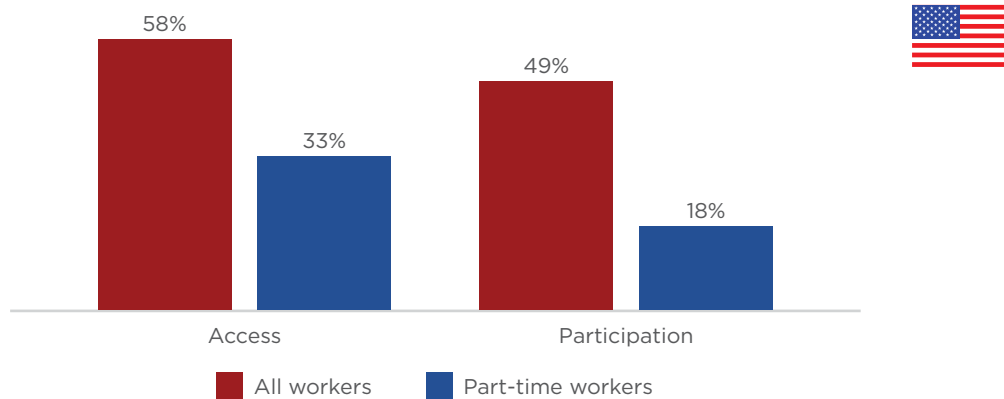


Source: OSFI "Registered Pension Plans (RPP) and Other Types of Savings Plans - Coverage in Canada" (2017)

Exhibit 2

US data suggests that access to and participation in workplace plans for part-time workers significantly lags full-time employees

Retirement plan access and participation of US workers by employment status, 2016



Source: Pew Charitable Trusts, "Who's In, Who's Out" (2016)

Exhibit 3

Pension coverage has fallen significantly for men while remaining flat for women

Proportion of labour force that has membership in a registered pension plan by gender, 1999-2015

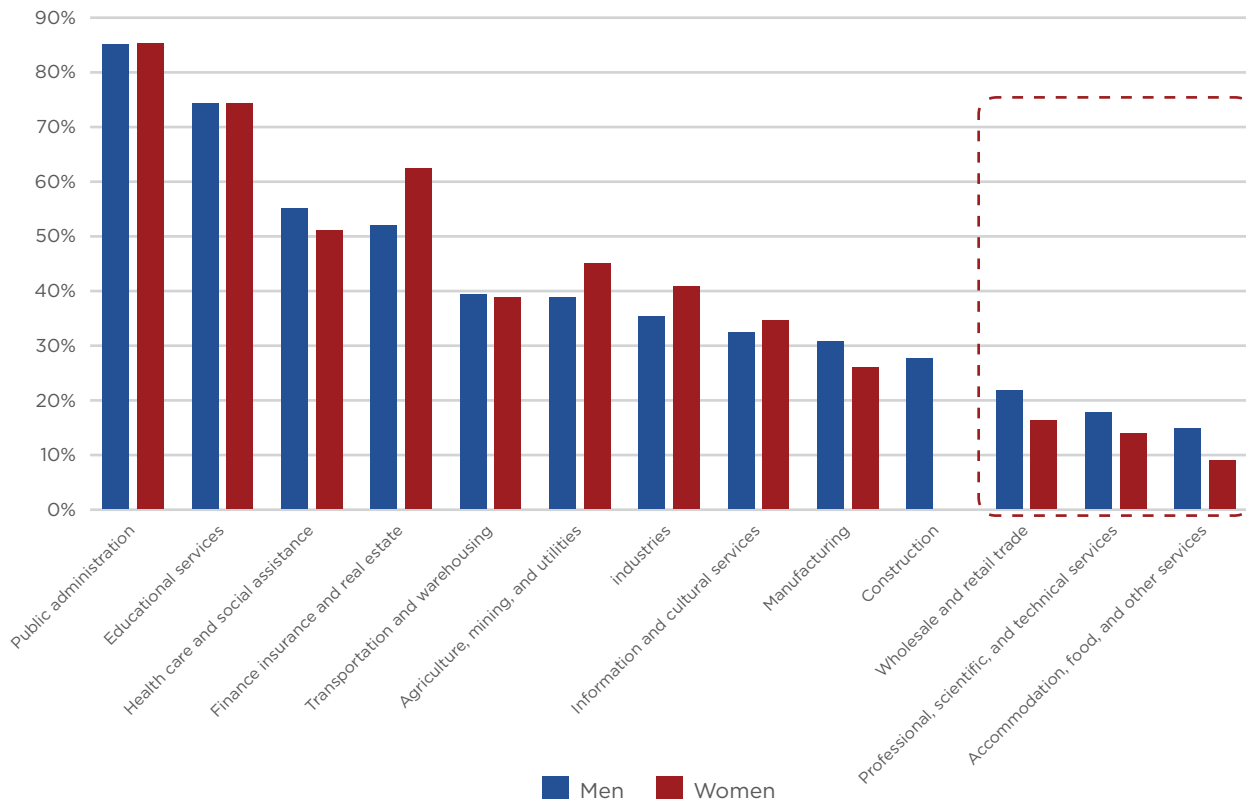


Source: Statistics Canada CANSIM data: Pension Plans in Canada Survey (Table 280-0008), Labour Force Survey (Table 282-0002).

Exhibit 4

Pension coverage is particularly low in service industries

Registered pension plan coverage by sector and gender, 2012

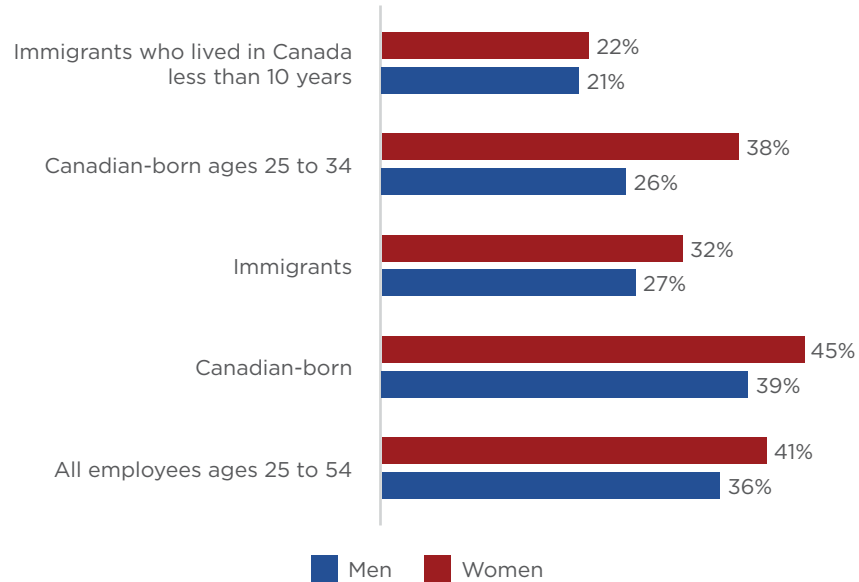


Source: Statistics Canada CANSIM data: Pension Plans in Canada Survey (Table 280-0008), Labour Force Survey (Table 282-0002).

Exhibit 5

New Canadians and younger people are significantly less likely to participate in a pension plan

Registered pension plan coverage by sector and gender, 2012

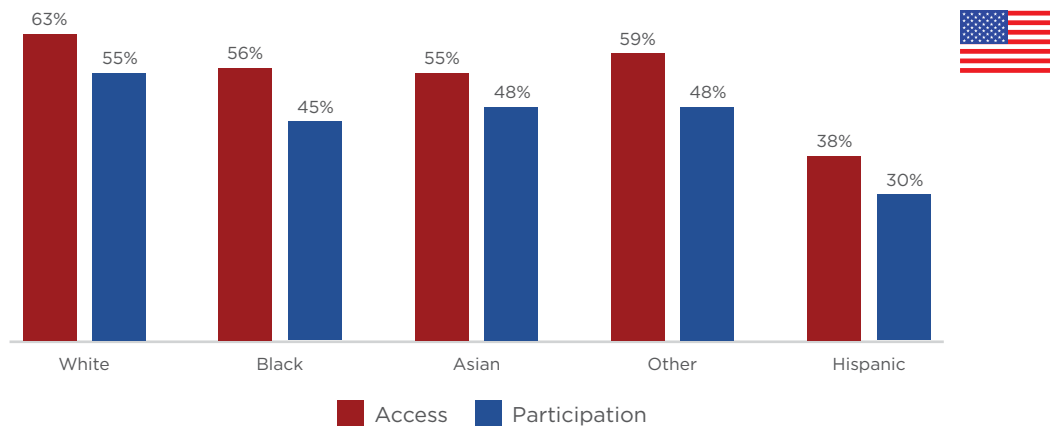


Source: Statistics Canada, Longitudinal and International Study of Adults 2012

Exhibit 6

US data shows that visible minorities are significantly less likely to have access to and participate in a workplace retirement plan

US retirement plan access and participation by race and ethnicity, 2016

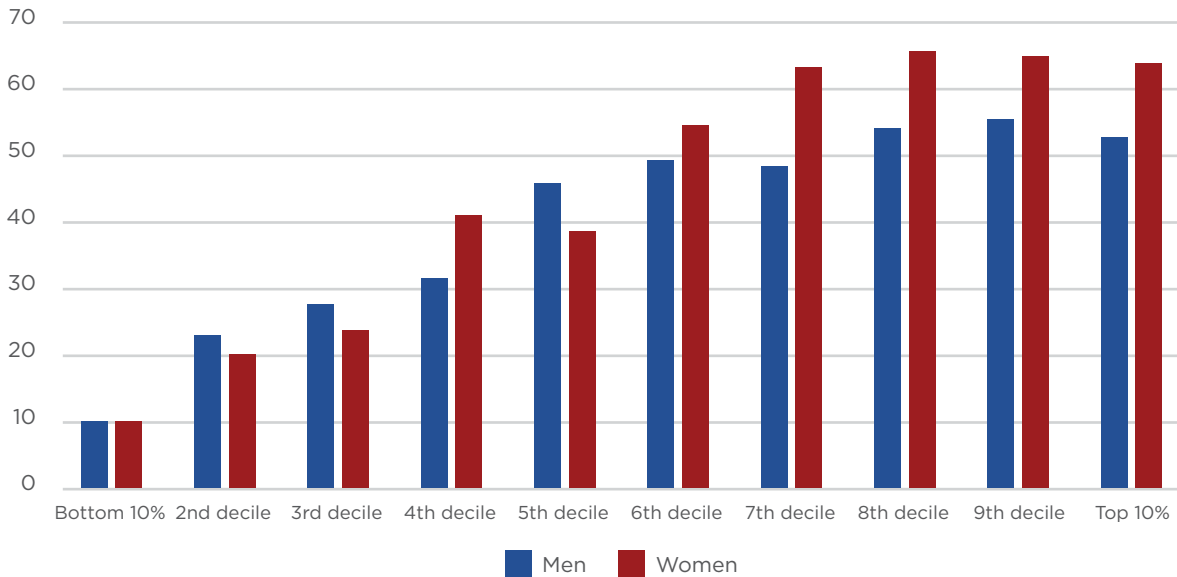


Source: Pew Charitable Trusts, "Who's In, Who's Out" (2016)

Exhibit 7

Higher-income workers are much more likely to have access to a pension plan

Pension coverage by wage decile and gender, controlling for experience and education, 2012

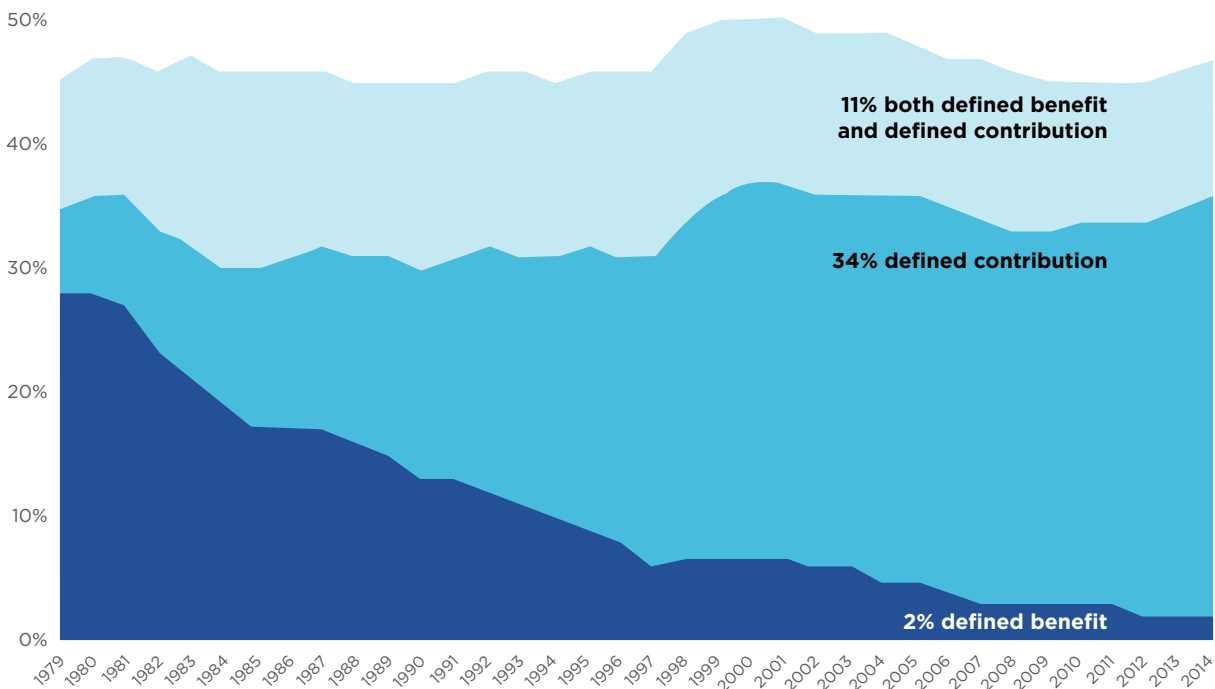


Source: Statistics Canada, Longitudinal and International Study of Adults 2012

Exhibit 8

Share of US private sector workers participating in a defined benefit pension plan has declined to 2%

Proportion of US private sector workers participating in a workplace retirement plan, 1979-2014



Source: Employee Benefit Research Institute website, "FAQs about benefits: what are the trends in defined benefit pension plans?" Accessed August 2018.

US data suggests that access to a retirement plan is a major driver of savings

Total savings and investment reported by workers*

In total, about how much money would you say you (and your spouse) currently have in savings and investments, not including the value of your primary residence? (2014 workers n=783)

	2004	2009	2010	2011	2012	2013	2014	2014 Has ret. plan**	2014 No ret. plan
< \$1,000		20%	27%	29%	30%	28%	36%	11%	73%
\$1,000-\$9,999		19%	16%	17%	18%	18%	16%	17%	16%
\$10,000-\$24,999	54%	13%	11%	10%	12%	11%	8%	10%	5%
\$25,000-\$49,999	14%	11%	12%	11%	10%	9%	9%	14%	2%
\$50,000-\$99,999	11%	12%	11%	9%	10%	10%	9%	14%	< 0.5%
\$100,000-\$249,999	13%	12%	11%	14%	11%	12%	11%	16%	2%
\$250,000+	9%	12%	11%	10%	10%	12%	11%	17%	1%

*Not including value of primary residence or defined benefit plans

**“Has retirement plan” is defined as respondent or spouse having at least one of the following: individual retirement account (IRA), defined contribution plan, or defined benefit plan






Key Takeaways

- Over time, **greater proportions of people have less savings** (20% in 2009 have less than \$1,000 in savings; this figure increased to 36% in 2014)
- Without a retirement plan, **close to three-quarters of workers have less than \$1,000** in savings and investments; this suggests that a retirement plan is a major driver of savings behaviour for retirement

Source: Employee Benefit Research Institute, “Health and Workplace Benefits Survey” (2014)

Exhibit 10

Five key value drivers of good pensions

	Description	Example estimate of value	Source(s)
 Saving	In a purely voluntary system (a do-it-yourself approach), people tend to save less, save later, and save less consistently than under a collective plan with mandatory contributions or automatic enrolment	58% more likely to participate in a savings plan if auto-enrolled vs. voluntary	Vanguard University of Oxford
 Fees and costs	The costs of investment management and administration for good collective retirement plans tend to be significantly lower than the costs of retail investing and advice	~1.5%	The Investment Funds Institute of Canada CEM Benchmarking Inc.
 Investment discipline	When investment decisions (e.g., asset allocation, security selection, market timing) are made by professionals with a fiduciary duty to members, this tends to result in better results than when these decisions are made by individuals	~1.5% per year	Morningstar Vanguard
 Fiduciary governance	The combination of fiduciary governance, a structure that aligns incentives, and professional investment management at scale	+0.6% per year value add over passive reference portfolio	International Centre for Pension Management, University of Toronto Australian Prudential Regulatory Authority CEM Benchmarking Inc.
 Risk pooling	Most individual investors must manage their longevity risk on their own, adopting costly strategies (e.g., larger nest egg, smaller drawdown, highly conservative post-retirement asset allocation) to avoid outliving their money. By contrast, a good collective retirement plan can create efficiencies by pooling longevity & investment risk.	~60% of value creation / destruction is post-retirement	Society of Actuaries National Institute on Retirement Security Russell Investments

ENDNOTES

Page 4

- 1 Note that all calculations are denominated in 2018 Canadian dollars, unless otherwise indicated.
- 2 Refer to Exhibit 10, page 24, for more detail.
- 3 Note that retirement “bank for buck” calculations include bequest assets left over at death in retirement income figures. Refer to Technical appendix (page 48) for more detail.
- 4 Wilson Sy, “Measured Investment Inefficiency of the Australian Superannuation System” Report to Australian Productivity Commission (2018) (calculating a nearly AUD 1 million (CAD 940,000) difference in value for a member between a retail superannuation fund and a collective industry superannuation fund, and attributing the difference to “excessive choices, high indirect costs, and conflicted governance”).

Page 10

- 5 See Exhibit 15, page 36.
- 6 Investment Funds Institute of Canada, “Monitoring Trends in Mutual Fund Cost of Ownership and Expense Ratios” (2017) (finding that advice channels account for more than 80% of Canadian mutual fund asset holdings).

Page 11

- 7 Investment Funds Institute of Canada, “Monitoring Trends in Mutual Fund Cost of Ownership and Expense Ratios” (2017).
- 8 See, for example, PwC & Advocis, “Sound Advice: Insights into Canada’s Financial Advice Industry” (Financial Advisors Association of Canada, 2014) (highlighting a financial advice gap for individuals without significant investable assets); Ontario Securities Commission, Investment Industry Regulatory Organization of Canada & Mutual Fund Dealers Association of Canada, “Mystery Shopping for Investment Advice” (2015) (finding that, in a mystery shopping exercise, advisors discussed fees with the client only 50% of the time and discussed their own compensation only 25% of the time).
- 9 See, for example, Sun Life Financial, “Benchmark Report on Capital Accumulations Plans in Canada” (2016) (finding that 84% of group RRSP plans have fewer than 100 members).
- 10 See Investor Economics, “Group Retirement Savings and Pensions Report” (2016) (finding that 46% of capital accumulation plan participants are in a group RRSP).
- 11 Ibid.
- 12 Great-West Life, “The strength of CAPs in Canada’s retirement market” (2012).
- 13 Sun Life Financial, “Benchmark Report on Capital Accumulations Plans in Canada” (2016).
- 14 Investor Economics, “Group Retirement Savings and Pensions Report” (2016).
- 15 See Association of Canadian Pension Management, “Decumulation: The Next Critical Frontier: Improvements for Defined Contribution and Capital Accumulation Plans” (2017).

Page 12

- 16 Exceptions include the Cooperatives Superannuation Society, a multi-employer defined contribution plan focused on the credit union movement, and the Saskatchewan Pension Plan, a portable defined contribution plan sponsored by the Saskatchewan government.
- 17 See *The Economist*, “Maple Revolutionaries: Canada’s Public Pension Funds Are Changing the Deal Making Landscape” (March 3, 2012); Chris Taylor, “These Canadians Own Your Town” *Fortune*, (December 2, 2015); Mary Childs and John Authers, “Canada Quietly Treads Radical Path on Pensions” *Financial Times* (August 24, 2016).
- 18 World Bank Group, “The Evolution of the Canadian Pension Model: Practical Lessons for Building World-Class Pension Organizations” (2017).

- 19 See Keith Ambachtsheer, Ronald Capelle, and Hubert Lum, “Pension Fund Governance Today: Strength, Weaknesses, and Opportunities for Improvement” ICPM working paper, International Centre for Pension Management (2006).
- 21 Bank of Canada, “Large Canadian Public Pension Funds: A Financial System Perspective” (2016).
- 22 CPP Investment Board. Who We Are. 2018.
<http://www.cppib.com/en/who-we-are/> (accessed September 2018).

Page 13

- 23 Nicholas Barr and Peter Diamond, “The Economics of Pensions” (2006).

Page 14

- 24 See, for example, Department of Work and Pensions, “Enabling and encouraging saving: the evidence around pension reform and saving” (2013).
- 25 See, for example, Brigitte Madrian, “The Determinants of Individual Saving and Investment Outcomes” National Bureau of Economic Research (2010).
- 26 TD Ameritrade, “2018 Millennials and Money Survey” (June 2018).

Page 15

- 27 Richard Shillington, “An Economic Analysis of the Circumstances of Canadian Seniors” (2015).
- 28 Employee Benefit Research Institute, “The 2016 Retirement Confidence Survey: Worker Confidence Stable, Retiree Confidence Continues to Increase” (2016).
- 29 Vanguard Research, “How America Saves” (2017).
- 30 Ibid.
- 31 Brigitte Madrian, “The Importance of Default Options for Retirement Savings Outcomes: Evidence from the United States” National Bureau of Economic Research (2010).
- 32 See Investment Funds Institute of Canada, “Monitoring Trends in Mutual Fund Cost of Ownership and Expense Ratios” (2017).
- 33 We note that debate exists as to whether international comparisons fairly account for the “total cost of ownership” of mutual funds. For example, in the US, the majority of mutual fund sales made through a financial advisor are associated with unbundled fee-based accounts, whereas approximately 80% of all fund assets in Canada use an embedded fee structure (referred to as trailing commissions). See Investment Funds Institute of Canada, “Monitoring Trends in Mutual Fund Cost of Ownership and Expense Ratios” (2017).
- 34 Morningstar, “Global Fund Investor Experience Study” (2017).
- 35 Investment Funds Institute of Canada, “Monitoring Trends in Mutual Fund Cost of Ownership and Expense Ratios” (2017).
- 36 See, for example, Investment Funds Institute of Canada website: <https://www.ific.ca/en/info/stats-and-facts/> (accessed August 2018) reporting CAD 1.53 trillion in Canadian mutual fund assets in July 2018 compared with CAD 160 billion in ETFs reported on the Canadian ETF Association website: <http://www.cetfa.ca/infocentre/stats.html> (accessed August 2018).
- 37 Great-West Life, “The strength of CAPs in Canada’s retirement market” (2012).
- 38 See Mike Heale and Paul Martiniello, “Managing Costs & Optimizing Outcomes” in *Saving the Next Billion from Old Age Poverty* (2018) (using CEM Benchmarking data to estimate average global pension administration costs per member at USD 134 for defined benefit plans and USD 101 for defined contribution plans).
- 39 See Keith Ambachtsheer, “The ‘Canada Model’ for Pension Fund Management: Past, Present, and Future,” *The Ambachtsheer Letter* (August 1, 2017) (using CEM Benchmarking data to compare the 10-year average investment costs for eight Canada-model plans within a broader universe of 132 pension funds).

Page 17

- 40 For a detailed review of the literature of behavioural finance, see Library of Congress, "Behavioral Patterns and Pitfalls of US Investors" (2010).
- 41 Andrea Frazzini and Owen Lamont, "Dumb Money: Mutual Fund Flows and the Cross-Section of Stock Returns" (2008).
- 42 This three-part framework (security selection, asset allocation, and market timing) comes from Yale University's chief investment officer, David Swensen. See, for example, David Swensen, *Unconventional Success: A Fundamental Approach to Personal Investment* (2005).
- 43 Vanguard Research, "Quantifying Advisors' Alpha in Canada" (2015).
- 44 Morningstar, "Mind the Gap: Global Investor Returns Show the Costs of Bad Timing Around the World" (2017).
- 45 Morningstar measures the money-weighted investor returns within funds (accounting for monthly flows and their compounding effect over time) and compares them with the stated time-weighted returns for funds and determines an average for each across the Canadian market.

Page 18

- 46 See National Institute on Retirement Security, "Case Studies of State Pension Plans that Switched to Defined Contribution Plans" (2015) for an example of the difference in investment outcomes for individuals in an arrangement with increased choice (a defined contribution plan) compared with professional investment with no choice (in this case a defined benefit plan).

Page 19

- 47 Keith Ambachtsheer, Ronald Capelle, and Hubert Lum, "Pension Fund Governance Today: Strengths, Weaknesses, and Opportunities for Improvement" International Centre for Pension Management (2006).
- 48 Australian Prudential Regulatory Authority, "Superannuation fund governance: an interpretation" (2008).
- 49 See Keith Ambachtsheer, "The 'Canada Model' for Pension Fund Management: Past, Present, and Future," The Ambachtsheer Letter (August 1, 2017) (Ambachtsheer benchmarks the performance of eight large Canadian public pension funds against that of 132 other pension funds and other long-horizon investment funds.).

Page 20

- 50 See National Institute on Retirement Security, "Still a Better Bang for the Buck: An Update on the Economic Efficiencies of Defined Benefit Pensions" (2014); Society of Actuaries, Moshe Milevsky, "Longevity Risk Pooling: Opportunities to Increase Retirement Security" (2017).
- 51 Norma Nielsen, "Annuities and Your Nest Egg: Reforms to Promote Optimal Annuitization of Retirement Capital" C.D. Howe Institute (2012). For a comprehensive review of the literature exploring lack of annuitization, see Bonnie-Jeanne MacDonald, Bruce Jones, Richard Morrison, Robert Brown, and Mary Hardy, "Research and Reality: A Literature Review on Drawing Down Retirement Financial Savings" North American Actuarial Journal (2013).
- 52 Retail quotes computed on August 20, 2018.
- 53 Refer to the Technical appendix, Risk pooling: longevity risk section, page 54, for a detailed methodology.
- 54 See Russell Investments, "The 10/30/60 Rule" (January 2015) (citing Don Ezra, "A Model of Pension Fund Growth," Russell Research Commentary (June 1989)).
- 55 AARP Public Policy Institute, "Risk Preferences and the Investment Decisions of Older Americans" (2001).

Page 21

- 56 National Institute on Retirement Security, "Still a Better Bang for the Buck: An Update on the Economic Efficiencies of Defined Benefit Pensions" (2014).

Page 22

- 57 Our calculations consider the lifespan of one hypothetical saver; however, it is important to note that the relative efficiency difference between retirement arrangements is quite consistent across a range of hypothetical individuals (for example, with different salary profiles). Although the total amount of cost savings differs between individuals, the ratio of difference is mostly unchanged.
- 58 See, for example, Bonnie-Jeanne MacDonald, Lars Osberg, and Kevin Moore, "How Accurately does 70% Final Earnings Replacement Measure Retirement Income (In)Adequacy? Introducing the Living Standards Replacement Rate (LSRR)." ASTIN Bulletin - The Journal of the International Actuarial Association (2016).
- 59 Morningstar, "Mind the Gap: Global Investor Returns Show the Costs of Bad Timing Around the World" (2017).
- 60 In all scenarios, we calculate contributions as a percentage of the individual's wages, but are agnostic as to whether these contributions are made by the individual themselves, by their employer, or by another party. Our calculation (the efficiency of a dollar contributed) is not affected by factors such as whether the individual contributes the full amount themselves or if contributions are split between them and their employer.

Page 23

- 61 Note that relative cost differential and "bang for buck" calculations are not materially dependent on the chosen replacement rate or worker salary. For example, choosing 60% as Sophia's target replacement rate results in nearly exactly the same 4x cost differential and "bang for buck" figures.

Page 24

- 62 Note that "bang for buck" calculations include bequest assets left over at death in retirement income figures. Refer to Technical appendix (page 48) for more detail.

Page 25

- 63 See Keith Ambachtsheer, "The 'Canada Model' for Pension Fund Management: Past, Present, and Future," The Ambachtsheer Letter (August 1, 2017).

Page 27

- 64 For example, see Bob Baldwin, "Assessing the Retirement Income Prospects of Canada's Future Elderly: A Review of Five Studies" C.D. Howe Institute (2016).
- 65 See Statistics Canada 2016 Census finding that 65.2% of Canadian households made a contribution to either a registered pension plan, an RRSP, or a tax-free savings account (TFSA) in 2015.
- 66 See Department of Work and Pensions, "Automatic Enrolment Review 2017."
- 67 See New Zealand Institute of Economic Research, "KiwiSaver and the wealth of New Zealanders" (2015).
- 68 Wilson Sy, "Measured Investment Inefficiency of the Australian Superannuation System" report to Australian Productivity Commission (2018).
- 69 For an example of an analysis demonstrating the link between retirement savings and economic growth, see Conference Board of Canada, "A Cost-Benefit Analysis of the Ontario Retirement Pension Plan" (2015).
- 70 Boston Consulting Group, "Defined Benefit Impact Assessment" (2013). (In Ontario, defined benefit pension payments translated into approximately \$25 billion to \$26 billion in consumer spending).

Page 28

- 71 Canada Department of Finance, Budget 2018.

Page 29

- 72 Boston Consulting Group, “Defined Benefit Impact Assessment” (2013).
- 73 Ibid.
- 74 A review of five recent studies by pension expert Bob Baldwin for the C.D. Howe Institute found that between 17% and 50% of future elderly Canadians are likely to experience a decline in their standard of living post-retirement. See Bob Baldwin, “Assessing the Retirement Income Prospects of Canada’s Future Elderly: A Review of Five Studies” (September 2016).
- 75 See Michael Wolfson, “Projecting the Adequacy of Canadians’ Retirement Incomes,” Institute for Research on Public Policy (2011); Alexandre Laurin, Kevin Moore, and William Robson, “Canada’s Looming Retirement Challenge: Will Future Retirees Be Able to Maintain Their Living Standards upon Retirement?” C.D. Howe Institute (2010); Bonnie-Jeanne MacDonald, Kevin Moore, He Chen, and Robert Brown, “Canadian National Retirement Risk Index: Employing Statistics Canada’s LifePaths to Measure the Financial Security of Future Canadian Seniors” Canadian Public Policy (2011).

Page 30

- 76 For an overview of jurisdictions that have examined or implemented a shift from defined benefit to defined contribution regimes, see Robert Brown and Craig McInnes, “Shifting Public Sector DB Plans to DC: The experience so far and implications for Canada” (2014).
- 77 Although this paper does not examine the issue of funding sustainability, it is clearly an important public policy objective, particularly with respect to plans that make an explicit pension promise. In short, a combination of contributions and expected investment returns needs to be adequate to meet the pension promise.
- 78 The first principle enumerated in the Ontario Expert Commission on Pension’s 2008 report, “A Fine Balance: Safe Pensions, Affordable Plans, Fair Rules,” is to “maintain and encourage defined benefit pension plans.”
- 79 World Bank Group, “The Evolution of the Canadian Pension Model: Practical Lessons for Building World-Class Pension Organizations” (2017).

Page 31

- 80 See Government of Ontario, “Red Tape Challenge: Financial services report” (2017).
- 81 See Ontario Hospital Association, *80 Years of Progress: 1924–2004* (2004)

Page 32

- 82 For example, in 2009 Ontario increased the limits on access to locked-in retirement accounts from 25% to 50%. Saskatchewan allows 100% unlocking.
- 83 See, for example, Donald Keim and Olivia Mitchell, “Simplifying Choices in Defined Contribution Retirement Plan Design.” Pension Research Council, Wharton School, University of Pennsylvania (2015).
- 84 For some ideas on how to expand the availability of longevity insurance in Canada, see Bonnie-Jeanne MacDonald, “Headed for the Poorhouse: How to Ensure Seniors Don’t Run Out of Cash before they Run Out of Time,” C.D. Howe Institute (2018).
- 85 For more detail on the UBC approach, see Association of Canadian Pension Management, “Decumulation: The Next Critical Frontier: Improvements for Defined Contribution and Capital Accumulation Plans” (2017).

Page 35

- 86 World Bank Group, “The Evolution of the Canadian Pension Model: Practical Lessons for Building World-class Pension Organizations” (2017).
- 87 See the 2016 Memorandum of Understanding signed between the Canada Pension Plan Investment Board and the China’s National Development and Reform Commission to offer expertise on pension reform and drive international investment into the country’s senior care industry.
- 88 Australian *Financial Review*, “Canadians show the way for future of the super” (2018).
- 89 For example, in 2017 Canada ranked 11th in the annual Melbourne Mercer Global Pension Index, above major developed countries such as Germany, the UK, and the US.

Page 36

- 90 Statistics Canada Pensions Plans in Canada Survey; Office of the Superintendent of Financial Institutions, “Registered Pension Plans (RPP) and Other Types of Savings Plans – Coverage in Canada” (2012).
- 91 Sun Life Financial, “Benchmark Report on Capital Accumulations Plans in Canada” (2016).
- 92 Office of the Superintendent of Financial Institutions, “Registered Pension Plan (RPP) and Retirement Savings Coverage (Canada)” (2012).
- 93 Statistics Canada Census 2016.

Page 37

- 94 Alicia Munnell, Gordon Clark, and Peter Orszag, “Employer-Sponsored Plans: The Shift from Defined Benefit to Defined Contribution” (2006).
- 95 Statistics Canada Pension Plans in Canada Survey (2015).

Page 39

- 96 Andrea Noack and Leah Vosko, “Precarious Jobs in Ontario: Mapping Dimensions of Labour Market Insecurity by Workers’ Social Location and Context,” Law Commission of Ontario (2011).
- 97 See C. Michael Mitchell and John Murray, “Changing Workplaces Review” (2015) (finding that nonstandard employment grew at an annual rate of 2.3% from 1997 to 2015).
- 98 Pew Charitable Trusts, “Who’s in, Who’s Out: A look at access to employer-based retirement plans and participation in the states” (2016).
- 99 Statistics Canada, “New Facts in Pension Coverage” (2012).

Page 40

- 100 Statistics Canada Longitudinal and International Study of Adults (2012).
- 101 Ibid.
- 102 See World Bank Group, “Outcome Based Assessments for Private Pensions: A Handbook” (2016).

Page 42

- 103 For instance, the US state-sponsored auto-individual retirement account (IRA) programs do not include an employer match but have been justified on the basis of helping workers—particularly those with lower and moderate incomes—prepare for retirement in a more efficient and effective way than they would otherwise pursue.
- 104 See Healthcare of Ontario Pension Plan and The Gandalf Group, “Ontario Employers’ Survey on Pensions” (2017).
- 105 For a brief history of the founding of HOOPP and the evolution of its governance structure, see World Bank Group, “The Evolution of the Canadian Pension Model: Practical Lessons for Building World-Class Pension Organizations” (2017).

Page 46

- 106 Statistics Canada, “Education in Canada at a Glance” (2017) and “Delayed Transitions of Young Adults” (2007).
- 107 Statistics Canada, “Employment Rates and Wages of Core-aged Workers in Canada and the United States, 2000 to 2017” (2017).
- 108 See Financial Planning Standards Council, “Projection Guidelines” (2016) (for a summary and weighted average of these sources).

Page 47

- 109 See, for example, Bonnie-Jeanne MacDonald, Lars Osberg, and Kevin Moore, "How Accurately does 70% Final Earnings Replacement Measure Retirement Income (In)Adequacy? Introducing the Living Standards Replacement Rate (LSRR)." *ASTIN Bulletin – The Journal of the International Actuarial Association* (2016).
- 110 See Statistics Canada, "Census in Brief, Working Seniors in Canada" (2016).
- 111 Government of Canada website, "Canada Pension Plan – How much could you receive": <https://www.canada.ca/en/services/benefits/publicpensions/cpp/cpp-benefit/amount.html> (accessed July 2018).
- 112 Government of Canada website, "Old Age Security Payment Amounts" (accessed July 2018).
- 113 Financial Planning Standards Council, "Projection Assumption Guidelines" (2016).
- 114 Ibid.
- 115 Ibid.

Page 48

- 116 John Bogle and Michael Nolan, Jr., "Occam's Razor Redux: Establishing Reasonable Expectations for Financial Market Returns" *Journal of Portfolio Management* (Fall 2015) (projecting 6% annual returns for equities and 3% annual returns for bonds over the 2015–2024 period).
- 117 Financial Planning Standards Council, "Projection Guidelines" (2016).

Page 50

- 118 TD Ameritrade, "2018 Millennials and Money Survey" (2018).
- 119 Ontario Securities Commission, "Missing Out: Millennials and the Markets" (2017).
- 120 See, for example, Steven Venti, *The Oxford Handbook of Pensions and Retirement* (2006), Chapter 30, "Choice, Behavior, and Retirement Savings".
- 121 James Choi, Brigitte Madrian, Andrew Metrick, and David Laibson, "Defined contribution pensions: plan rules, participant decisions, and the path of least resistance," *Tax Policy and the Economy* (2002).
- 122 See Statistics Canada, "Trends in RRSP Contributions and Pre-retirement Withdrawals, 2000 to 2013" (2013).
- 123 Richard Shillington, "An Analysis of the Economic Circumstances of Canadian Seniors" (2016).

Page 52

- 124 Strategic Insight & Investment Funds Institute of Canada, "Monitoring Trends in Mutual Fund Cost of Ownership and Expense Ratios" (2017).
- 125 Investment Funds Institute of Canada, "Mutual Fund MERs and Cost to Customer in Canada" (2012).
- 126 Strategic Insight & Investment Funds Institute of Canada, "Monitoring Trends in Mutual Fund Cost of Ownership and Expense Ratios" (2017).
- 127 Canadian Securities Administrators, "Consultation on the option of discontinuing embedded commissions" (2017).
- 128 Strategic Insight & Investment Funds Institute of Canada, "Monitoring Trends in Mutual Fund Cost of Ownership and Expense Ratios" (2017).
- 129 Great-West Life, "The strength of CAPs in Canada's retirement market" (2012).
- 130 Ibid.
- 131 See Keith Ambachtsheer, "The 'Canada Model' for Pension Fund Management: Past, Present, and Future," *The Ambachtsheer Letter* (August 1, 2017) (using CEM Benchmarking data to calculate the 10-year average investment costs for a broad universe of pension funds at 48 bps); see Mike Heale and Paul Martiniello, "Managing Costs & Optimizing Outcomes" in *Saving the Next Billion from Old Age Poverty* (2018) (using CEM Benchmarking data to estimate average global pension administration costs per member at USD 134 for defined benefit plans and USD 101 for defined contribution plans).
- 132 Morningstar, "Mind the Gap" (2017).

Page 53

- 133 Vanguard Research, "Quantifying Advisors' Alpha in Canada" (2017).
- 134 See Keith Ambachtsheer, Ronald Capelle, and Hubert Lum, "Pension Fund Governance Today: Strength, Weaknesses, and Opportunities for Improvement," ICPM working paper, International Centre for Pension Management (2006); Australian Prudential Regulatory Authority, "Superannuation fund governance: an interpretation" (2008); World Bank, "Outcome Based Assessments for Private Pensions" (2016).
- 135 See Keith Ambachtsheer, "The 'Canada Model' for Pension Fund Management: Past, Present, and Future," *The Ambachtsheer Letter* (August 1, 2017) (Ambachtsheer benchmarks the performance of eight large Canadian public pension funds against that of 132 other pension funds and other long-horizon investment funds).

Page 54

- 136 Financial Planning Standards Council, "Projection Guidelines" (2016).
- 137 See Bonnie-Jeanne MacDonald, "Headed for the Poorhouse: How to Ensure Seniors Don't Run Out of Cash before they Run Out of Time," C.D. Howe Institute (2018).
- 138 Society of Actuaries, "2015 Risks and Process of Retirement Survey" (2016).
- 139 The cost assumptions and annuity factors for a group annuity purchase and actuarial valuation for an "ongoing" pension plan used in this section are based on market quotes provided by Eckler Ltd, and were obtained through correspondence with Ian Edelist and Richard Brown.

Page 55

- 140 AARP Public Policy Institute, "Risk Preferences and the Investment Decisions of Older Americans" (2001).
- 141 Financial Planning Standards Council, "Projection Guidelines" (2016).
- 142 HOOPP, OMERS, OPTrust, and Ontario Teachers' Pension Plan annual reports.

Page 56

- 143 See, for example, Vanguard Research, "Quantifying Vanguard Advisor's Alpha in Canada" (2015).

Page 57

- 144 Strategic Insight & Investment Funds Institute of Canada, "Monitoring Trends in Mutual Fund Cost of Ownership and Expense Ratios" (2017).
- 145 *The Globe and Mail*, "The popularity of ETFs in Canada is growing at an amazing speed" (January 10, 2018).



