



# **Understanding the effects of having a pension on health and well-being**

---

A literature scan prepared for HOOPP by the  
Behavioural Insights Team (BIT)

## **About the Healthcare of Ontario Pension Plan (HOOPP)**

The Healthcare of Ontario Pension Plan (HOOPP) is one of the strongest and most stable Canada-model defined benefit (DB) pension plans in Canada. Since 1960, HOOPP has been helping Ontario's healthcare workers build the foundation for a financially secure retirement.

## **About the Behavioural Insights Team**

The Behavioural Insights Team (BIT) is a global social purpose company that generates and applies insights from behavioural science to inform policy, improve public services and deliver results for citizens and society.

## Contents

<b>Executive Summary</b>	4
<b>Introduction</b>	7
<b>Research Strategy</b>	8
<b>01/ What are the effects of having a pension on health and well-being?</b>	9
1.1 Pensions have a positive effect on mental health and well-being	9
1.2 Pensions can increase life expectancy and improve self-rated health	12
1.3 Pensions may positively affect the health and well-being of pension recipients' families	12
<b>02/ How do pensions affect physical and mental health and well-being?</b>	13
2.1 Health effects of pensions in retirement	13
Alleviating financial stress and increasing positive emotions	13
Alleviating the need to work after reaching benefits age	14
Leisure activities and health-promoting behaviours during retirement	15
Helping low-income retirees meet their basic needs	15
2.2 Health effects of pensions pre-retirement	17
Anticipating receiving a pension	17
Increased job satisfaction	17
Financial planning	18
<b>03/ Gaps in the literature</b>	19
3.1 Canadian evidence	19
3.2 Studies that use objective measures of physical health and expanded measurements of well-being	19
3.3 Differential effects of pension types (within workplace pensions and across workplace pensions and public pensions)	20
3.4 Pre-retirement evidence on the health effects of pensions	21
3.5 Pre- and post-retirement evidence on health-promoting behaviours	21
3.6 Evidence on how to maximize the potential benefits of pensions on health and well-being	22
<b>04/ Future directions</b>	23
<b>Appendix – Search terms</b>	24
<b>Appendix – End notes</b>	25

## Executive summary

Pensions are critical to financial security during retirement for many Canadians. Financial security isn't the only benefit of having a defined benefit (DB) pension plan, however. As Canadians face compounding financial pressures following the COVID-19 pandemic, such as housing shortages, rising interest rates, inflation and a strained healthcare system, the Healthcare of Ontario Pension Plan (HOOPP) recognizes the need to understand how pensions positively contribute to members' health and well-being, alongside the well-known economic benefits.

This literature review is focused on **how pensions may affect health and well-being** for pension recipients and their families. The purpose is to summarize key findings, identify gaps in the literature and ultimately inform future research.

Research shows that pensions have a positive effect on mental health and well-being, can increase life expectancy and can improve self-rated health. In addition, pensions may positively affect the health and well-being of pension recipients' families by improving living conditions, nutrition and ability to manage stress.

*During retirement*, pensions can support health and well-being by helping low-income retirees meet their basic needs such as food and housing. We also found that pensions can alleviate financial stress and increase positive emotions, which can, in turn, have positive impacts on health and well-being. Alleviating the need to work after reaching benefits age may also lead to better health, though this finding is highly context-dependent. Similarly, having more free time and financial resources in retirement can increase engagement in leisure activities and other health-promoting behaviours, which can lead to better health.

*Before retirement*, research suggests that anticipating having a steady retirement income can reduce financial stress. Having a pension may even improve health and well-being through increased job satisfaction, though the evidence is mixed. Further, having a pension may prompt people to engage in financial planning for retirement, which may have positive impacts on health and well-being later on.

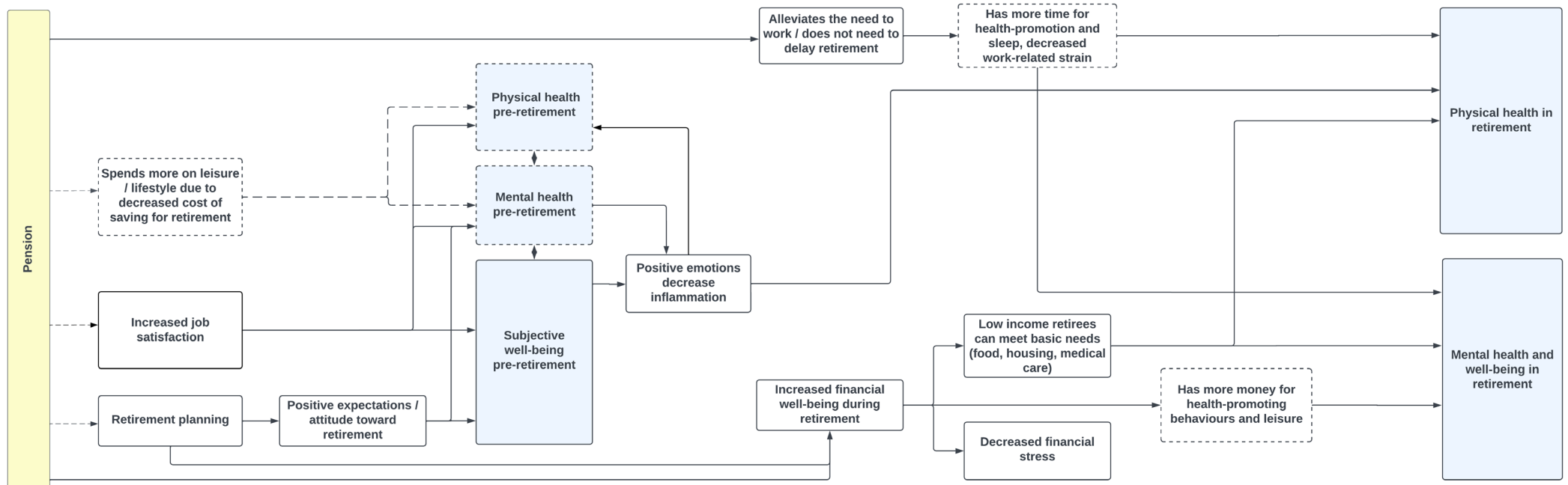
As we continue to gain a deeper understanding of the ways in which pensions impact the health and well-being of retirees and their families, we are also excited about the potential for new research to explore previously uncharted areas. Several gaps identified in the literature can inform future research endeavours, such as: research conducted in Canada; objective measures of physical health; differential effects of pension types; life stages (e.g., pre-retirement); health-promoting behaviours; and evidence on how to maximize or “unlock” the potential benefits of pensions on health and well-being.

In the near term, there are opportunities to research pre-retirement members of Canadian workplace pensions and build on existing research that establishes “reduced financial stress” as a pathway for pensions to improve health and well-being. For example: Does increased understanding and contemplation of one’s pension benefits reduce financial stress?

In the long term, establishing evidence on the effect of pensions across the lifespan will be important to understand the full benefits of having a pension. For example: How does the effect of any behaviour changes in response to pensions affect health over time (e.g., via associated healthy lifestyle changes or health-promoting behaviours)? HOOPP will play an important part in the continued research and innovation in this field. Uncovering new insights will enhance the health and well-being of their own members and other Canadian pension members.

We have conceptualized the above evidence and research gaps across the life journey of a member who is part of a high quality, employer-provided pension in Canada. This is not intended to be a comprehensive view, but it summarizes key potential pathways for pensions to impact health and well-being.

**Figure 1. Select pathways connecting pensions with health and well-being**



**Legend**

- Sufficient evidence to support a relationship
- - - More evidence is needed
- Health and well-being outcome
- Proposed mechanism

## Introduction

HOOPP's pension research has traditionally focused on demonstrating the macro and micro economic benefits of pensions for workers, employers and governments. This paper explores the effects of pensions on physical health, mental health and well-being<sup>i</sup> more broadly (for brevity, we refer to this broad range of outcomes as “health and well-being” below).

Economic benefits and health benefits are not entirely separate; good health has economic benefits (e.g., individual productivity in the labour force and reduced healthcare spending, particularly as the population ages). Post-COVID-19, Canadians are facing a variety of compounding financial stressors—housing shortages, rising interest rates, inflation—with assumed negative health impacts. HOOPP is interested in understanding how pensions can play a positive role in supporting recipients' health, in addition to the established economic benefits.

The primary goal of this paper is to synthesize evidence on the health impacts of having a pension. We begin with an overview of the research strategy we used to review the literature and present the findings in four sections:

- **Section 01** summarizes the effects of having a pension on health and well-being.
- **Section 02** describes the potential mechanisms through which pensions exert these effects on health and well-being.
- **Section 03** focuses on gaps identified in the literature.
- **Section 04** outlines directions for future research in this area.

### Overview of pensions in Canada

#### What are workplace (or “group”) pension plans? Who is receiving them?

Workplace pension plans are provided by employers<sup>ii</sup>. The two most common plans include:

- **Defined benefit pension plan (DBPP):** Provides members with a predictable stream of monthly income for the rest of their life when they retire. DBPP payouts received in retirement are based on a formula that accounts for an employee's salary and years of service, paying a fixed income that is not tied to investment performance.
- **Defined contribution pension plan (DCPP):** The amount of pension income the member receives upon retirement is not guaranteed, but determined by, among other things, the amount of contributions accumulated and the investment income earned by the member in their individual retirement account.

Typically, employee and employer contribute to these plans. Defined benefit pension plans

---

<sup>i</sup>There are a variety of terms used to describe well-being, such as life satisfaction and subjective well-being. For the purposes of this paper, we will use “well-being” to encapsulate these terms.

<sup>ii</sup>There are also pooled registration pension plans (PRPPs) for self-employed workers and those who are not part of an employer-provided pension plan; this is not an area of focus for this paper.



are the most common workplace pension plan in Canada, though they are on the decline (along with workplace pension plan coverage overall).<sup>1</sup> DBPP members are mostly working in the public sector and have a higher representation of women. Defined contribution pension plan members mostly work in the private sector and skew toward men.<sup>2</sup> As pension plan coverage decreases over time, uncovered workers are disproportionately likely to be financially vulnerable Canadians, including lower-income people, women outside the public sector, young people and new Canadians.<sup>3</sup>

### **What government programs are available? Who is receiving them?**

Public pensions are provided by the government to those who meet the eligibility criteria. In Canada, this includes universal benefits like the [Canada Pension Plan](#) (for those aged 60 years and older who have made at least one contribution to the CPP), [Old Age Security pension](#) (for those aged 65 years and older who have lived in Canada for at least 10 years) and a [Guaranteed Income Supplement](#) for low-income individuals. Public pensions vary by country with different benefit levels, eligibility criteria, etc.

Pension type has implications for both pension and household wealth. As people accumulate higher levels of pension wealth, it is increasingly likely to come from workplace pensions.<sup>4</sup>

As we discuss the findings below, we will note whether the research is based on public (government-provided) or workplace (“group”) pensions. The majority of the literature focuses on public pensions. When we refer to “high-quality” pension plans, we are generally referring to workplace pension plans that provide significant income security in retirement and place less burden on individual savings and investments.<sup>iii</sup>

## **Research strategy**

We conducted a non-systematic literature review of the evidence on how pensions affect health and well-being. The primary research question guiding the review was:

*What is the impact of having a high-quality pension on validated measures of health and well-being?*

We also reviewed the literature for evidence on how the quality of pensions influences those outcomes and whether there are differential impacts on well-being for various groups of people (i.e., equity considerations)<sup>iv</sup>.

Academic databases were searched for relevant peer-reviewed literature publications using a set of search terms (see Appendix), which were iterated over time. Additional references were identified through manual searches of reference lists. Publications were then screened for applicability to the current project and entered into a database. Articles were prioritized for in-depth review if they directly answered the research question(s) in a Canadian (or similar cultural context), offered high-quality evidence relevant to the research questions but from a different cultural context, and/or presented a unique contribution that would help answer outstanding theoretical questions or help to better understand the evidence. Over 200

---

<sup>iii</sup> Other sources of retirement income (e.g., Group RRSPs, RRSPs and other personal savings and investments) are not examined in this paper.

<sup>iv</sup> Differential effects due to pension quality have been highlighted as a research gap in Section 03; equity considerations are flagged throughout this paper.





articles, chapters and reports were considered in our initial search; more than 100 of these sources are referenced in this document.

## 01/ What are the effects of having a pension on health and well-being?

This section discusses key findings from the literature, including the direct effects of pensions on mental health and well-being; the direct effects on physical health; and the indirect effects on people associated with pension recipients.

### Measuring health and well-being

Most research on health and well-being in the pension domain have used self-reported data, typically from large national or multi-country surveys. The advantage of this approach is that it provides large, nationally representative datasets that allow researchers to estimate the effects of pension policy changes.

Research finds low agreement between self-reported hypertension and physiological measures<sup>5,v</sup>, and the conceptualization (and measurement) of mental health and well-being may be limited. For example, measuring well-being with a single question about perceived life satisfaction presents an incomplete picture of well-being<sup>vi</sup> and global estimates (i.e., overall assessments of well-being of the type commonly used in pension research) may be unduly influenced by a person's emotional state at that moment, although support for this is mixed.<sup>6</sup>

In the articles we reviewed, mental health and well-being have been measured in a variety of ways, from validated diagnostic tools to single-question outcomes, which may limit the comparability of the findings. Additionally, much of this research is international and reliant on self-report data; people may conceptualize "good health" in different ways.

### 1.1 Pensions have a positive effect on mental health and well-being

**Depression:** Retirement benefits and pension income are generally associated with decreases in depression.<sup>vii</sup> While there is no Canadian evidence, this finding is generally consistent with the literature from the U.S. studying public pensions<sup>7</sup>, as well as from other

---

<sup>v</sup> There is evidence that self-report health data may be more accurate for some diseases than others (Simpson et al., 2003). For example, in a single group of people, self-reported health data ranged from highly accurate (e.g., for diabetes, cancer and stroke) to very low agreement (e.g., for arthritis, lung disease and osteoporosis) when compared to objective measures.

<sup>vi</sup> It should be noted that single question measures of well-being have been validated and are commonly used in the literature (Sandvick, Diener & Seidlitz, 1993).

<sup>vii</sup> A minority of studies have failed to find a relationship between pension access and depression. However, in some cases these studies may not suggest that the relationship between pension income and mental health is absent, but instead may be moderated by other factors. For example, a recent study from South Korea found that a public pension for low-income adults did not affect depression, but research also suggests that this income does not meaningfully alleviate financial stress for recipients (Kim, Lee & Kim 2020).



countries and populations, such as China<sup>8</sup>, rural Mexico<sup>9</sup>, men in the Netherlands<sup>10</sup>, women in the U.K.<sup>11</sup> and Ukraine.<sup>12</sup>

**Self-reported mental health:** Research from Canada<sup>13</sup> and the U.S.<sup>14</sup> has found that public pensions are associated with improvements in individuals' ratings of their mental health, as does research from other countries.<sup>15</sup> The international research generally reports<sup>viii</sup> positive effects on happiness<sup>16</sup> and ratings of experiences of distress.<sup>17</sup>

**Suicide:** There are few studies that link pensions to population-level health outcomes; however, one study does suggest that access to pensions could decrease suicide—at least among a portion of the population. DeSimone (2018) found that lowering the pension eligibility age in the U.S. was associated with a 7–8 per cent decline in suicide, but only among men.<sup>18</sup>

**Well-being:** Pensions appear to have a positive effect on well-being. In Europe, researchers have used data from the large, multi-country Survey of Health, Aging and Retirement in Europe (SHARE) to show that pensions have a positive effect on well-being<sup>19</sup>, while pension insecurity (i.e., perceived likelihood of the government reducing benefits or raising eligibility age) has the opposite effect.<sup>20</sup>

There is some evidence that the well-being effects vary over time, with two South African studies showing that pension eligibility is associated with increases in well-being, but this decreases over time.<sup>21</sup> Both studies reported similar patterns in well-being, though the more recent data collection found a much less pronounced pattern than the first study.

Beyond the effect of pensions themselves, there is evidence that the magnitude of pension benefits affects well-being. For example, studies from Japan and Ukraine report that higher pension incomes are associated with improvements in well-being, even after controlling for SES, physical health and lifestyle factors.<sup>22</sup> At a minimum, having a sufficient income is important for retirees to maintain (or improve on) well-being in retirement, as compared to their pre-retirement years.<sup>23</sup>

There are also several studies that imply a more complex relationship between pensions and well-being (e.g., to have a positive impact on well-being, pension benefits must be sufficiently generous and non-stigmatizing).<sup>ix</sup>

---

<sup>viii</sup> One exception is Shin's (2018) analysis of 61 countries which found no relationship between pensions and happiness, although there may be potential confounds that are unaccounted for in these comparisons.

<sup>ix</sup> For instance, research from South Korea found that a public pension for low-income seniors had a negative relationship with self-reported happiness. The author posited that these findings could be explained by the insufficient benefit amount and stigma related to the means-testing required to receive the benefit. Subsequent research on an expanded public pension benefit (which doubled the benefit amount and replaced means-testing) found positive effects on well-being as measured by financial satisfaction and quality of life.



## Pensions, mental health and well-being: differential effects and caveats

### Gender

Some research suggests that the benefits to mental health and well-being differ by gender and do not always follow the same pattern.<sup>x</sup> (Although some Canadian studies<sup>24</sup>, as well as others, found no significant gender differences<sup>25</sup>, suggesting context matters.) Across countries, women generally report worse mental health and lower well-being than men across the lifespan<sup>26</sup> and higher levels of poverty in old age<sup>27</sup>, which may create differences in the health and well-being effects of pensions. There is some evidence that increases in pension income are more beneficial for women (e.g., lower probability of a mental health diagnosis) because the relative boost in income is larger.<sup>28</sup>

The factors that mediate the benefits of pensions on health also appear to differ for men and women. Canadian research has found that family support plays a larger role in mediating financial stress for women than men.<sup>29</sup> Research in other countries also finds differences in the variables that predict well-being. For example, South African research finds marital status and household composition are important for women but not men<sup>30</sup>, while American research finds pension characteristics, income and wealth are significant for men but not women.<sup>31</sup> Although the specifics vary, the persistence of gender differences across countries suggests that social factors related to gender (e.g., differences in employment, education and caretaking roles) play a role in determining the benefits of pensions.

### Occupation and income

Mental health and well-being health effects also appear to differ by pre-retirement occupation and income. For example, a U.K. study found that the health effects of increasing the pension eligibility age for women differed by profession, with women in lower-income occupations disproportionately experiencing negative health effects.<sup>32</sup>

Pre-retirement occupation and work history is affected by social and cultural factors such as immigration status, systemic barriers (e.g., access to funding for education) and labour market discrimination. In Canada, this means that some people are less likely to have pensions (e.g., new Canadians) or to benefit from high-quality pensions (e.g., women outside of the public sector)<sup>33</sup>, contributing to health inequities. A Canadian study found differences in poverty and access to pensions between people who had immigrated compared to those who were born in Canada. These differences disappeared or became less pronounced once demographic and socio-economic factors were considered.<sup>34</sup> The authors suggested, at least in part, that racial inequalities in the labour market could account for differences in employment and subsequent access to pensions.

---

<sup>x</sup> The pension literature has generally considered gender as binary. This is a significant gap, as other research points to disparities in health outcomes for non-binary individuals as well as employment discrimination, all of which could impact both access to pensions and their potential benefits for beneficiaries.



## 1.2 Pensions can increase life expectancy and improve self-rated health

**Life expectancy:** An analysis of 18 high-income countries concluded that more generous public pension policies are associated with increased life expectancy both at birth and at age 65.<sup>35</sup> For example, research from South Africa found that earlier access to pension decreased deaths among 60-year-old men by 5 per cent over a six-year period.<sup>36</sup>

**Physical health:** There is considerable evidence that pensions improve self-reported health.<sup>37</sup> Evidence that uses objective measures of health (e.g., physiological, clinical or administrative data) is somewhat weaker, with some studies failing to find any effects and many reporting mixed findings.<sup>38</sup>

Differences in how health is assessed may partially explain the mixed findings regarding physical health, as measures may not be comparable between studies and within studies. Additionally, the specific drivers of health may not be clear depending on what has been used.<sup>39</sup> For instance, a longitudinal study from South Africa found that pension eligibility was associated with better health when using a composite measure that included self-report and objective measures.<sup>40</sup> Once the researchers looked at the measures individually, they found that the effects were driven by improvements in self-rated disability (i.e., reduction in the number of limitations in daily activities); other factors, such as self-rated health, mental health, walking speed and grip strength had no relationship to pension.

## 1.3 Pensions may positively affect the health and well-being of pension recipients' families

Pensions don't just benefit the health and well-being of individuals; they can also have a far-reaching impact on the health and well-being of those who depend on them (e.g., spouses, caregivers, adult children and grandchildren).

There is international evidence that pensions convey health benefits for entire households via improved living conditions (e.g., sanitation<sup>41</sup>), increased access to food and better nutrition<sup>42</sup> and ability to manage stressors.<sup>43</sup> For example, in a South African study, children who lived in pension-eligible households were taller than their counterparts, reflecting improvements in nutrition.<sup>44</sup>



## 02/ How do pensions affect physical and mental health and well-being?

This section discusses the potential pathways through which pensions may affect health and well-being. This includes proposed mechanisms during retirement, such as helping individuals **meet their basic needs** (e.g., food and housing security, access to medical care), reducing **financial stress**, reducing the **need to work**, and **facilitating social and health promoting activities** (e.g., exercise and leisure). This section also discusses proposed mechanisms through which pensions may benefit health and well-being prior to retirement, including benefits related to anticipating a pension, increased job satisfaction, increased leisure consumption and retirement planning.

### 2.1 Health effects of pensions in retirement

#### Alleviating financial stress and increasing positive emotions

**Pensions and financial stress:** Pensions provide financial security and appear to alleviate financial stress.<sup>45</sup> Research has found that the positive effects that pensions have on clinical measures of mental health and well-being are moderated by income and improved satisfaction with finances.<sup>46</sup> In addition, higher pension income is associated with improvements in well-being, even after controlling for factors such as leisure, consumption and physical health.<sup>47</sup> This is supported by research from Singapore on early access to public pensions, which found increases in self-reported health and well-being (measured by economic satisfaction); however, no increase in consumption was found, suggesting that these effects may be due to decreased financial stress.<sup>48</sup>

The relationship between pension income, financial stress, well-being and health is complex and reciprocal. For instance, pensions can improve health and well-being for recipients, and in turn, better health may enhance the positive effects of pensions on well-being by facilitating participation in social and health-activities. There is also evidence that improved mental health and well-being (e.g., resulting from decreased financial stress) can improve physical health.<sup>49</sup>

Levels of financial stress are not felt equally between groups (e.g., people in specific occupations or who live in single households). In fact, research generally finds that the health benefits of pensions are greater for disadvantaged groups. In an Australian study, women reported less stress and better mental health when they were eligible for public pensions. These effects were larger for women in strenuous jobs and with less formal education.<sup>50</sup>

**Financial stress and health:** There is substantial evidence that stress is bad for health.<sup>51</sup> Financial stressors (e.g., debt stress) in particular are associated with a range of negative health and well-being outcomes. Relief of financial stress is a central way that scholars suggest pensions exert positive effects on health and well-being.<sup>52</sup> As financial stress disproportionately affects some groups (e.g., women, people who are separated or divorced, and low-income households<sup>53</sup>), pensions may be one way to reduce health inequity.

**Self-reported health:** Financial stress has a negative effect on self-reported health, and the negative effects are larger the more debt stress is reported.<sup>54</sup>



**Inflammation:** Chronic inflammation has been implicated as an important cause of diseases like cancer, heart disease, diabetes and neurodegenerative disorders.<sup>55</sup> Financial stress is associated with increased inflammation, although individual and situational factors, such as interpersonal stressors and social status, affect this relationship.<sup>56</sup> Generally, positive emotions seem to facilitate better health, and researchers suggest that positive emotions may be the best predictors of inflammation and serve a protective function. They suggest that the association between inflammation and negative states, such as depression, is explained by a reduction in positive feelings rather than an increase in negative ones.<sup>57</sup>

**Mental health and well-being:** Financial stress is associated with poor mental health and well-being. An Ontario study reported that debt stress was associated with greater self-reported psychological distress and poor mental health.<sup>58</sup> Other research supports this relationship, finding that life satisfaction is mediated by financial stress.<sup>59</sup>

**Social and interpersonal domains:** There is evidence that financial stress increases interpersonal stress.<sup>60</sup> Interpersonal stressors both contribute to the negative health effects of financial stress, as well as create additional difficulties, such as removing protective support systems.<sup>61</sup>

### Alleviating the need to work after reaching benefits age

Multiple studies report that a delay or decrease in pension benefits is associated with people continuing to work longer or returning to the workforce after retiring.<sup>62</sup> Pensions can alleviate the need to work, which could convey health benefits such as decrease in work-related stress, increased sleep and time to engage in health-promoting behaviours like exercise.<sup>63</sup>

The literature on the health effects of retirement is mixed and difficult to compare<sup>xi</sup>, but many studies that are able to assess causality find that retirement either has positive or no effects on health<sup>64</sup>, including research from Canada.<sup>65</sup> Conversely, continuing to work has been associated with decreased mortality compared to those who retire “on time”<sup>66</sup>; although other scholars find no differences in mortality between these groups.<sup>67</sup>

Some research finds that retirement is associated with negative changes in health outcomes, such as depression<sup>xii</sup> and self-rated physical and mental health<sup>68</sup>. These effects appear larger for some groups, such as people who work in blue-collar and manual-labour positions.<sup>69</sup> Individuals in these positions may have less control over when they retire (e.g., workers with less education have higher rates of involuntary job separations) and may be less able to plan and/or save for retirement.<sup>70</sup>

Notably, Sahlgren’s (2012) study of retirement in 11 European countries suggests that the health and well-being effects of retirement may change over time. This analysis found some evidence for health benefits in the short-term, as well as strong evidence for negative health effects of retirement over time. Findings suggest that contextual and individual factors are

---

<sup>xi</sup> For instance, Nishimura et al. (2018) show that using different estimation models produces different results.

<sup>xii</sup> Kolodziej, 2011; A Canadian study found no statistically significant effects of retirement on depression but noted that these non-significant effects were large and suggestive of negative effects on mental health (i.e., increases in depression; Latif, 2013).





important.<sup>xiii</sup> The health effects of retirement may depend on the type of work an individual does, whether they have chosen to continue working or whether they were compelled to stop working due to financial need or health status. For example, a study of 16 European countries found that people who continued to work past benefits age were healthier than their fully retired counterparts; however, they were also more likely to be self-employed, work in advantaged occupational positions and report better conditions (i.e., less stress) than their pre-retirement work.<sup>71</sup> These health benefits are unlikely to be shared by people who continue in physically demanding roles.

Similarly, longitudinal research from Europe finds that retirement appears to increase the risk of poverty and depression. After controlling for factors like country and gender-specific eligibility ages, however, the results suggest that retirement, at least among those who have pensions, provides protection against poverty and depression.<sup>72</sup>

### **Leisure activities and health-promoting behaviours during retirement**

Leisure consumption during retirement has been linked to both financial well-being<sup>73</sup> and health-promoting behaviours. Factors like exercise and healthy diet appear to be key factors in determining the effects of retirement on health.<sup>74</sup> Subjective financial stability (which pensions may contribute to) is associated with a richer social life in retirement, which in turn benefits health and well-being.<sup>75</sup>

Some evidence suggests that pensions may improve mental and physical health via social factors and health behaviours<sup>76</sup>, but the causal direction and mechanism are unclear. In support of pensions, an Australian study found that pension eligibility was associated with increases in health-promoting behaviours, social and community activities (e.g., sports clubs) and leisure pursuits (e.g., hobbies).<sup>77</sup> Other studies looking at retirement in general have not found any changes in these same measures (see Bounty & Waidman, 2007). Overall, the literature hints at the positive role of pension income on health-promoting behaviours, but more research is needed before conclusions can be drawn.

### **Helping low-income retirees meet their basic needs**

Pension income can help low-income retirees meet their basic needs, which is a necessary foundation for good physical health, mental health and well-being. A sufficient income can alleviate food insecurity, support housing and enable purchase of medications or medical devices and services.

In general, a higher income in retirement, including higher pension income, is associated with better health and well-being.<sup>78</sup> Pension income is particularly important for low-income retirees who may not have sufficient income from other sources (e.g., private savings and investments), and for whom this represents an increase in income relative to pre-retirement. For instance, there is evidence that for some low-income Canadians, receiving a public pension is associated with an increased exit from poverty<sup>79</sup>, a finding that appears to be true across countries (e.g., literature from Australia<sup>80</sup>, Brazil<sup>81</sup>, Columbia and Peru<sup>82</sup>, and South Africa<sup>83</sup>).

---

<sup>xiii</sup> The authors also noted that the studies were not directly comparable due to differences in how health, mental health and well-being were measured.



**Food and housing insecurity:** An estimated 2.4 per cent of older adults in Canada experience food insecurity, and national survey data suggests that income is the strongest predictor of food insecurity.<sup>84</sup> Food insecurity is associated with poor physical health, including an increased risk of chronic conditions such as cardiovascular disease, and a higher likelihood of mortality from these conditions.<sup>85</sup> Food insecurity has also been linked to worse mental health.<sup>86</sup> In a study of pre-retirement Canadian adults, food insecurity was associated with poor mental health measured by self-reported depressive thoughts, a diagnosis of anxiety or mood disorder, mental health status and suicidal thoughts in the past year.<sup>87</sup>

Housing insecurity is related to poor health and well-being outcomes, such as lower self-rated health, increased distress and poor sleep.<sup>88</sup> It is also associated with behaviours that can be detrimental to health, such as delaying visits to medical professionals<sup>89</sup>. This suggests that insufficient income negatively affects health through multiple channels.

There is evidence that pension income can alleviate food insecurity.<sup>90</sup> A study of Canadian low-income seniors living alone found that pensions were the most common source of income and represented an increase in income that was associated with a 50 per cent decline in food insecurity.<sup>91</sup> One study of older women in Australia also found that pension eligibility was associated with improvements in ratings of financial hardships, including the inability to pay rent.<sup>92</sup>

**Access to medical care and medicine:** Pension income could potentially impact health by improved healthcare use; people with better financial security in retirement may have more time and money to visit medical professionals and follow their advice (e.g., ability to purchase medications, attend physiotherapy, etc.). There are a few studies examining healthcare use and pensions that report both no effects (e.g., in Sweden<sup>93</sup>) and positive effects (e.g., in South Africa<sup>94</sup>, and to a lesser extent, South Korea<sup>95</sup>) when looking at public pensions.

A potential reason for this weakness in the literature is that pension income must be sufficient to afford services or “make enough of a difference” to income that it impacts behaviour. Research from China supports this; for example, when pension income was too low, healthcare visits decreased, but above a certain amount, visits increased.<sup>96</sup> There is also evidence that the regularity of pension income can make a difference in healthcare spending. A Mexican study comparing communities who received pension payments monthly or every other month found that spending on health care (and subsequently health) increased for women who received the monthly payments, but no such increases were seen in the other community.<sup>97</sup>

Further, *improved* healthcare use is difficult to define. Increased healthcare use, for example, may facilitate better health, but it also may be a sign of worse health. For instance, in a South Korean study, households that did *not* have public pensions spent more on medical services and medicines compared to those that did. In addition, at least one study found that increased healthcare use and treatment for hypertension was not associated with better management of the disease<sup>98</sup>, pointing to the importance of considering the effect of multiple factors on health.<sup>99</sup>



## 2.2 Health effects of pensions pre-retirement

### Anticipating receiving a pension

Anticipating receiving pension benefits, or an increase in those benefits, could have positive effects on health and well-being, although there is limited research and mixed findings on this topic. For example, anticipating that one will have a steady retirement income could reduce financial stress and improve well-being prior to retirement. Consistent with this proposed mechanism, a study on pension reform in Chile found that for low-income individuals, an increase in expected pension wealth significantly reduced the likelihood of feeling stressed and depressed.<sup>100</sup> Other research from South Africa, however, reports no evidence of an anticipatory effect on well-being. These studies may not be directly comparable as the relative levels of anticipated benefits may be substantially different. In the Chilean study, benefits may be partially due to the unanticipated positive change.

Pensions may also contribute to positive attitudes toward retirement, such as decreased worry about the future. A U.S. study of older pre-retirement workers found that people who expected a pension felt more favourably toward retirement.<sup>101</sup> As discussed above, increasing positive feelings and attitudes may be important avenues through which pensions indirectly affect health and well-being, as positive emotions are thought to play an important role in determining health outcomes.<sup>102</sup>

### Increased job satisfaction

Job satisfaction is an important contributor to health and well-being, with health effects that may long outlast the job itself.<sup>103</sup> A meta-analysis found that job satisfaction was positively and strongly related to mental health outcomes (e.g., depression and anxiety) and modestly related to self-reported physical health.<sup>104</sup> Workplace pensions may be seen as a “fringe benefit” and increase job satisfaction and retention for employees for whom this is salient.<sup>105</sup>

There is evidence that the employment environment influences whether pensions contribute to job satisfaction. For instance, a Canadian study of employees in a public utility company found a negative relationship between pension benefits accrual and job satisfaction.<sup>106</sup> However, the employer had a history of conflict with the union that included issues related to the pension benefit and worker security. Some workers that felt unable to leave their positions had lower job satisfaction despite having higher pension accruals, suggesting that other factors (e.g., perception of “golden handcuffs”) may play a larger role in determining job satisfaction. Furthermore, how employers communicate about pension plans and how employees perceive this is another important factor that mediates this relationship. When employees perceive pension plans (i.e., the marginal quit costs) as a way for the employer to control them, this perception is negatively related to effort and job performance, and vice versa.<sup>107</sup>

Other research has examined the relationship between employer pension plans, job satisfaction and mobility. Some scholars put forth that pension members experience decreased mobility due to a loss of benefits associated with switching jobs.<sup>108</sup> More recent evidence suggests that decreased mobility may actually be explained by the fact that employers who provide pensions also provide higher compensation<sup>109</sup>, more training and additional incentives.<sup>110</sup>



## Financial planning

Planning for retirement conveys material benefits, such as increases to accumulated wealth that can improve quality of life during retirement.<sup>111</sup> Retirement planning is also associated with increased satisfaction and well-being during retirement.<sup>112</sup> The potential benefits of engaging in retirement planning during working life are uncertain, but one study evaluating the impact of participation in retirement planning sessions reported increases in anticipated financial satisfaction during retirement, and (for leisure planning) confidence regarding transitioning to employment successfully.<sup>113,xiv</sup>

Other evidence suggests many individual and social factors affect retirement planning and preparation<sup>114</sup>, including evidence that anticipating a pension can influence savings behaviours.<sup>115</sup> For example, research shows that when pension age is increased, people compensate with private savings (if they are in a position to do so<sup>116</sup>) even in workers as young as 35 to 45 years old.<sup>117</sup> There is little research on the role of pensions specifically, but one Australian study found that defined benefits pensions were associated with less retirement planning<sup>118</sup>, and others have reported results consistent with this finding. For example, a study comparing the Netherlands to the U.S. found that retirement planning was less common in the Netherlands, a country in which defined benefits pensions are more common.<sup>119</sup>

---

<sup>xiv</sup> More research is needed in this area; many scholars reference this one study (112) to support the benefits of planning, but it used a very small sample of university employees, and the sampling methods were unclear.

## 03/ Gaps in the literature

This section provides an overview of key gaps in the literature, covering factors like **geography** (e.g., Canadian evidence); **measurement** (e.g., studies that use objective measures of physical health and expanded measurement of well-being); **differential effects of pension types** (e.g., looking within workplace pensions, and across workplace and public pensions); **life stage** (e.g., pre-retirement evidence on the health and well-being effects of pensions); **healthy behaviours** (i.e., better understanding and establishing the relationship between income security in retirement and health promoting behaviours); and evidence on **how to maximize the potential benefits of pensions** on health and well-being.

### 3.1 Canadian evidence

Much of the research on pensions has been conducted in different countries, necessitating researchers to compare between vastly different social and cultural contexts. More Canadian research on the relationship between pensions, health and well-being is needed because:

- Attitudes and behaviours differ by country. For example, an experiment with soon-to-be retired people in Australia and the Netherlands found country-specific differences in motivations for savings.<sup>120</sup>
- Canada's universal healthcare system differs from other countries, as does its public pension programs. Access to healthcare and pension income benefits can impact baseline levels of health and well-being across the whole population.
- Canada is home to a diverse population, including sub-populations that are unique to Canada (e.g., Indigenous peoples). Factors such as gender, socioeconomic status and to a lesser extent, education and occupation, have been considered in the pension literature. However, the findings are sometimes inconsistent, likely because factors related to pension receipt and retirement are affected by individuals' identities (e.g., considering gender *and* race, or immigration status *and* occupation), as well as the broader social context.
- Many of the studies found on the effects of pensions on family or household members were conducted in countries with different cultural and social contexts than Canada (e.g., where it may be more common for multiple generations to live in one household or for households to pool their income), which limits the applicability of these findings to Canadian pension members.

### 3.2 Studies that use objective measures of physical health and expanded measurements of well-being

The pension literature has typically focused on a limited number of health outcomes, such as depression and self-rated health, and limited conceptualizations of well-being, such as self-rated happiness or satisfaction. This is largely due to the research designs that have been



used (e.g., examining policy changes at the population level) and the nature of the available datasets (e.g., large scale self-report surveys and panel data). There are some issues with inconsistencies in self-reported physical and mental health compared to objective measures<sup>121</sup>, but in many cases they can still be accurate and useful. Similarly, the scholarship on well-being highlights several key measurement concerns, including difficulty knowing how to interpret subjective ratings and inconsistencies in ratings due to temporary emotional states and desirability bias.<sup>122</sup> The literature recommends using a combination of different measures and assessing multiple types of well-being (well-being, life experiences and meaning) to generate a reliable assessment.

Research that explores the effects of pensions using objective health measures and complementary measures of well-being would strengthen the evidence in this area. Examples include physiological health measures and expanded indices of well-being.

### 3.3 Differential effects of pension types (within workplace pensions and across workplace pensions and public pensions)

There is a relatively small amount of research differentiating the effects of different types of pensions on retirement outcomes beyond income, and factors that may impact this relationship (e.g., how pensions are administered) are relatively unexplored. In general, anticipating a higher pension income and stability of retirement income are related to increases in well-being during retirement.<sup>123</sup>

Most of the literature that does compare between pensions focuses on defined benefit versus defined contribution pensions. There is some evidence from the U.S. that defined benefit pensions, which guarantee an annual pension amount in advance of retirement, are associated with higher retirement satisfaction (a measure of well-being), as compared to people with defined contribution pensions.<sup>124</sup> This is consistent with research from China that found people whose pensions were guaranteed by the government (i.e., were more stable) were happier.<sup>125</sup> This points to certainty—or the degree to which a person is confident they will receive a specific, steady income in retirement—as a mechanism of interest in future research.

The role of employer-provided pensions on health and well-being (in general and compared with public pensions) is not well understood. Most research in this area has exploited government policy changes to observe natural experiments, meaning the focus has typically been on public pensions. Research that considers markers of pension quality in addition to pension “type” (e.g., associated fees and costs, how investment decisions are made<sup>126</sup>) is needed to develop a fuller understanding of the health effects for members. For example, what are the trade-offs for health and well-being if employees opt to spend money on leisure in their working years (instead of saving), but later experience financial stress during retirement because of a poorer quality pension?

### 3.4 Pre-retirement evidence on the health effects of pensions

Our review found an overwhelming majority of research focused on health and well-being during retirement; much less was found on the impacts during working years or at earlier life stages. This is important as many health outcomes in later life are influenced by behaviours earlier in life. This means that researchers may not be able to fully understand the health effects of having a pension by looking only at health and well-being following (or close to) retirement. For example, it may be beneficial to investigate:

- **Lifestyle and leisure consumption prior to retirement:** In general, leisure consumption, and particularly active leisure, is associated with better health and greater well-being across the lifespan.<sup>127</sup> Research that considers the role of pensions and anticipated retirement security on lifestyle and consumption during one's working years is needed. For example, does knowing that you will receive pension income in retirement change how you spend money earlier in life? If so, do you spend it on health-promoting activities? Or conversely, does increased disposable income during working years enable unhealthy behaviours, like smoking and alcohol consumption?
- **Employment decisions and job satisfaction:** There is limited research on employer-provided pensions, but there is some evidence to suggest that pensions can affect how people feel about their work, which can have health implications. Research looking at the role of pensions in job satisfaction and employment decisions is needed. For example, does offering a pension influence a person's decision to stay in a particular job? How does that relate to well-being during working life?
- **Certainty toward retirement:** Certainty regarding one's retirement income and confidence about making the transition to retirement is good for well-being. Research that considers factors influencing certainty—such as having a high-quality pension plan (like a DB plan), and understanding how it works—in relation to well-being and financial stress during working years is needed. For example, what is the effect of knowing the “end date” of work, as enabled by pensions on health? What is the effect of having a high-quality pension on stress and well-being, and is that effect mediated by understanding?

### 3.5 Pre- and post-retirement evidence on health-promoting behaviours

Behaviour is an important component of cultivating and maintaining good health and well-being in retirement. For example, behaviours like exercise, socializing, eating healthy food, visiting the doctor and adhering to medical advice are all related to health. As discussed in Section 02, pensions are linked to some behaviours, but the evidence is thin and the relationship is not well understood (e.g., mixed findings on healthcare use).

Most studies that have looked at healthy behaviours have used research designs that exploit policy changes to pension programs and compare similarly aged older adults who are close to retirement but subject to different pension benefits. For example, an Italian study found that a pension reform that increased retirement age (i.e., delayed pension) increased health promoting behaviours (i.e., more exercise, better diet, less smoking, less alcohol consumption) among middle-aged men, resulting in improved physical health and health

satisfaction prior to retirement.<sup>128</sup> This is a promising place to start, but there are gaps. For example, findings from these studies may not apply to younger workers—a subpopulation of interest, as they have more time to adjust their lifestyle and health-promoting behaviours.

### 3.6 Evidence on how to maximize the potential benefits of pensions on health and well-being

Pension research has typically been limited to the effects of benefit access, timing and generosity. Factors related to how pension plans are administered may affect the relationship between pensions, health and well-being. For pensions to increase well-being prior to retirement, people first have to understand their pension, and then contemplate what it means for their lifestyle pre- and post-retirement. However, there is evidence that many people lack awareness and knowledge about their pensions.<sup>129</sup>

Future research could explore questions such as: When do people think about their pensions? How can we encourage them to think about their pensions more regularly (assuming that doing so conveys benefits)? How can pension plans use messaging to raise awareness among their members? What are the health effects of doing so? Are there specific ways of increasing the salience of a member's pension that have the strongest positive impact on health and well-being outcomes (e.g., prompts to reflect on how people will spend time in retirement, or with whom, rather than traditional communications)?

Further research is also needed on the relationship between pensions, *retirement planning*, and health and well-being. As mentioned in Section 02, people who plan for their retirement tend to experience material and health benefits.<sup>130</sup> When a pension plan member initially becomes eligible for a plan or experiences a change in their plan, there is a natural opportunity for plan providers to prompt a broader retirement planning exercise. However, we have not identified any research on how providers can most effectively and helpfully prompt and enable broader retirement planning exercises.

A better understanding of these factors could provide a unique opportunity to maximize the non-financial benefits of pensions.

## 04/ Future directions

In the near-term, research on members of high-quality pensions in Canada at a pre-retirement stage can prove to be valuable. Future studies opportunities can also build on existing research that establishes “reduced financial stress” as a key pathway for pensions to affect health and well-being. With this population and mechanism in mind, there may be interest in examining questions like the following:

- To what extent does having a pension decrease financial stress and wellness during the working years? Does this change over time?
- Does increased understanding and contemplation of one’s pension benefits reduce financial stress?
- When are pension plans most salient to people? Can this be leveraged to increase the benefits to health and well-being?

In the long term, establishing evidence on the effect of pensions across the lifespan will be important to fully understand the benefits of having a pension:

- When do people make behavioural changes or start to experience the well-being effects in response to having a pension? Are there specific events (e.g., increases to benefits, life events) that act as catalysts for these effects?
- How does the effect of any behaviour changes in response to pensions affect health over time (e.g., via lifestyle or health-promoting behaviours)?
- How do relevant social changes (e.g., recessions, changes in pension/other social policies, pandemic, other financial shocks) interact with the health benefits of pensions?

Longitudinal research designs are likely best suited to examine these questions.

## Appendix – Search terms

For the primary research questions, we used the following combinations of terms:

- “pension” AND “physical health” OR “health”
- “pension” AND “mental health”
- “pension” AND “wellbeing” OR “well being” OR “well-being” OR “happiness”
- “pension” AND “subjective wellbeing” OR “subjective well being” OR “subjective well-being”
- “financial security” OR “financial insecurity” AND “physical health” OR “health”
- “financial security” OR “financial insecurity” AND “mental health”
- “financial security” OR “financial insecurity” AND wellbeing OR “well being” OR “well-being”
- “financial security” AND “subjective wellbeing” OR “subjective well being” OR “subjective well-being”
- “financial shocks” AND “physical health” OR “health”
- “financial shocks” AND “mental health”
- “financial shocks” AND “wellbeing” OR “well being” OR “well-being” OR “happiness”
- “financial shocks” AND “subjective wellbeing” OR “subjective well being” OR “subjective well-being”
- “pension” AND “health equity”

The search terms were refined as needed based on search results and identification of relevant key terms.





## Appendix – End notes

- 
- <sup>1</sup> Healthcare of Ontario Pension Plan (HOOPP), National Institute on Ageing, and Common Wealth. (2018). *The value of a good pension: How to improve the efficiency of retirement savings in Canada*. HOOPP.
- <sup>2</sup> Statistics Canada. Table 11-10-0106-01 (formerly CANSIM 280-0016).
- <sup>3</sup> Healthcare of Ontario Pension Plan (HOOPP), National Institute on Ageing, and Common Wealth. (2018). *The value of a good pension: How to improve the efficiency of retirement savings in Canada*. HOOPP.
- <sup>4</sup> Schirle, T. (2010). Health, pensions, and the retirement decision: Evidence from Canada. *Canadian Journal on Aging*, 29(4), 519–527.
- <sup>5</sup> Tenkorang, E. Y., Sedziafa, P., Sano, Y., Kuuire, V. and Banchani, E. (2015). Validity of self-report data in hypertension research: Findings from the study on global ageing and adult health. *Journal of Clinical Hypertension*, 17(12), 977–984.
- Wellman, J. L., Holmes, B., and Hill, S. Y. (2020). Accuracy of self-reported hypertension: Effect of age, gender, and history of alcohol dependence. *Journal of Clinical Hypertension*, 22(5), 842–849.
- <sup>6</sup> Hudson, J., Anusic, I., Lucas, R. E. and Donnellan, M. B. (2020).
- Schwarz, N. and Strack, F. (1999). Reports of subjective well-being: Judgmental processes and their methodological implications. In D. Kahneman, E. Diener, & N. Schwarz (Eds.), *Well-being: The foundations of hedonic psychology* (pp.61–64). Russell Sage Foundation.
- <sup>7</sup> Golberstein, E. (2015). The effects of income on mental health: Evidence from the social security notch. *Journal of Mental Health Policy and Economics*, 18(1), 27–37.
- <sup>8</sup> Zhou, M., Sun, X. and Huang, L. (2022). Does social pension expansion relieve depression and decrease medical costs? Evidence from the rural elderly in China. *International Journal of Public Health*, 67, 1604296.
- <sup>9</sup> Salinas-Rodríguez, A., Torres-Pereda, M. D. P., Manrique-Espinoza, B., Moreno-Tamayo, K., Téllez-Rojo Solís, M. M. (2014). Impact of the non-contributory social pension program 70 y más on older adults' mental well-being. *PLoS ONE*, 9(11), e113085.
- <sup>10</sup> De Grip, A., Lindeboom, M. and Montizaan, R. (2012). Shattered dreams: The effects of changing the pension system late in the game. *The Economic Journal*, 122(559), 1–25.
- <sup>11</sup> Carrino, L., Glaser, K. and Avendano, M. (2018). Later pension, poorer health? Evidence from the new State Pension age in the UK. *Harvard Center for Population and Development Studies, Working Paper Series, Vol 17*.
- <sup>12</sup> Danzer, A. M. and Danzer, N. (2016). Pension generosity and mental wellbeing: The effect of eradicating poverty at old-age. *Beiträge zur Jahrestagung des Vereins für Socialpolitik 2016: Demographischer Wandel - Session: Pensions and Labor Market Outcomes*, No. G05-V1. German Economic Association.
- <sup>13</sup> McIntyre, L., Kwok, C., Emery, J. C. H. and Dutton, D. J. (2016). Impact of a guaranteed annual income program on Canadian seniors' physical, mental and functional health. *Canadian Journal of Public Health*, 107(2), e176–e182.
- <sup>14</sup> Golberstein, E. (2015). The effects of income on mental health: evidence from the social security notch. *Journal of Mental Health Policy and Economics*, 18(1), 27–37.
- <sup>15</sup> e.g., Atalay, K. and Staneva, A. (2022). Waiting to get a pension: The impact of pension eligibility on psychological distress. *Health Economics*, 31(6), 940–955.
- Mostert, C. M., Mackay, D., Awiti, A., Kumar, M. and Merali, Z. (2022). Does social pension buy improved mental health and mortality outcomes for senior citizens? Evidence from South Africa's 2008 pension reform. *Preventive Medicine Reports*, 30, 102026.
- <sup>16</sup> Sasaki, I., Kondo, K., Aida, J., Ichikawa, H., Kusumi, T., Sueishi, N. and Imanaka, Y. (2018). Are pension types associated with happiness in Japanese older people?: JAGES cross-sectional study. *PLoS ONE*, 13(5), e0197423.
- <sup>17</sup> Atalay, K. and Staneva, A. (2022). Waiting to get a pension: The impact of pension eligibility on psychological distress. *Health Economics*, 31(6), 940–955.
- <sup>18</sup> DeSimone, J. (2018). Suicide and the social security early retirement age. *Contemporary Economic Policy*, 36(3), 435–450.
- <sup>19</sup> Okulicz-Kozaryn, A. and Morawski, L. (2021). A similar effect of volunteering and pensions on subjective wellbeing of elderly. *Economics & Sociology*, 14(2).



- <sup>20</sup> Olivera, J. and Ponomarenko, V. (2017). Pension insecurity and wellbeing in Europe. *Journal of Social Policy*, 46(3), 517–542.
- <sup>21</sup> Schatz, E., Gomez-Olive, X., Ralston, M., Menken, J. and Tollman, S. (2012). The impact of pensions on health and wellbeing in rural South Africa: Does gender matter? *Social Science & Medicine*, 75(10), 1864–1873.
- Schatz, E., Gomez-Olive, X., Ralston, M., Menken, J. and Tollman, S. (2012). *Men, pensions and wellbeing in rural South Africa: Tracking effects through policy shifts*. Institute of Behavioral Science, University of Colorado Boulder, Working Paper.
- <sup>22</sup> Danzer, A. M., and Danzer, N. (2016). Pension generosity and mental wellbeing: The effect of eradicating poverty at old-age. *Beiträge zur Jahrestagung des Vereins für Socialpolitik 2016: Demographischer Wandel - Session: Pensions and Labor Market Outcomes*, No. G05-V1. German Economic Association.
- Sasaki, I., Kondo, K., Aida, J., Ichikawa, H., Kusumi, T., Sueishi, N. and Imanaka, Y. (2018). Are pension types associated with happiness in Japanese older people?: JAGES cross-sectional study. *PLoS ONE*, 13(5), e0197423.
- <sup>23</sup> Barrett, G. F. and Kecmanovic, M. (2013). Changes in subjective well-being with retirement: Assessing savings adequacy. *Applied Economics*, 45(35), 4883–4893.
- <sup>24</sup> Latif, E. (2012). The impact of retirement on health in Canada. *Canadian Public Policy*, 38, 15–29.
- Latif, E. (2013). The impact of retirement on mental health in Canada. *Journal of Mental Health Policy and Economics*, 16, 35–46.
- <sup>25</sup> Aguila, E., Lopez-Ortega, M. and Robledo, J. (2018). Bender, K. A. (2012). An analysis of well-being in retirement: The role of pensions, health, and 'voluntariness' of retirement. *Journal of Socio-Economics*, 41(4), 424–433.
- <sup>26</sup> Ylli, A., Miszkurka, M., Phillips, S. P., Guralnik, J., Deshpande, N. and Zunzunegui, M. V. (2016). Clinically relevant depression in old age: An international study with populations from Canada, Latin America and Eastern Europe. *Psychiatry Research*, 241, 236–241.
- <sup>27</sup> Ylli, A., Miszkurka, M., Phillips, S. P., Guralnik, J., Deshpande, N. and Zunzunegui, M. V. (2016). Clinically relevant depression in old age: An international study with populations from Canada, Latin America and Eastern Europe. *Psychiatry Research*, 241, 236–241.
- <sup>28</sup> Golberstein, E. (2015). The effects of income on mental health: evidence from the social security notch. *Journal of Mental Health Policy and Economics*, 18(1), 27–37.
- <sup>29</sup> Kaida, L. and Boyd, M. (2011). Poverty variations among the elderly: The roles of income security policies and family co-residence. *Canadian Journal on Aging*, 30(1), 83–100.
- <sup>30</sup> Schatz, E., Gomez-Olive, X., Ralston, M., Menken, J. and Tollman, S. (2012). The impact of pensions on health and wellbeing in rural South Africa: Does gender matter? *Social Science & Medicine*, 75(10), 1864–1873.
- <sup>31</sup> Bender, K. A. (2012). An analysis of well-being in retirement: The role of pensions, health, and 'voluntariness' of retirement. *Journal of Socio-Economics*, 41(4), 424–433.
- <sup>32</sup> Carrino, L., Glaser, K. and Avendano, M. (2018). Later pension, poorer health? Evidence from the new state pension age in the UK. *Harvard Center for Population and Development Studies Working Paper Series*.
- <sup>33</sup> Healthcare of Ontario Pension Plan (HOOPP), National Institute on Ageing, and Common Wealth. (2018). The value of a good pension: How to improve the efficiency of retirement savings in Canada. HOOPP.
- Kaida, L. and Boyd, M. (2011). Poverty variations among the elderly: The roles of income security policies and family co-residence. *Canadian Journal on Aging*, 30(1), 83–100.
- <sup>34</sup> Kaida, L. and Boyd, M. (2011). Poverty variations among the elderly: The roles of income security policies and family co-residence. *Canadian Journal on Aging*, 30(1), 83–100.
- <sup>35</sup> Beckfield, J. and Bambra, C. (2016). Shorter lives in stingier states: Social policy shortcomings help explain the US mortality disadvantage. *Social Science & Medicine*, 171, 30–38.
- <sup>36</sup> Mostert, C. M., Mackay, D., Awiti, A., Kumar, M. and Merali, Z. (2022). Does social pension buy improved mental health and mortality outcomes for senior citizens? Evidence from South Africa's 2008 pension reform. *Preventive Medicine Reports*, 30, 102026.
- <sup>37</sup> Courtin, K., Song, Y. and Muennig, P. (2020). Can social policies improve health? A systematic review and meta-analysis. *The Milbank Quarterly*, 98(2), 297–371.
- Noone, J. H., Stephens, C. and Alpass, F. M. (2009). Preretirement planning and well-being in later life: A prospective study. *Research on Aging*, 31(3), 295–317.



- <sup>38</sup> Aguila, E., Lopez-Ortega, M. and Robledo, M. G. (2018). Non-contributory pension programs and frailty of older adults: Evidence from Mexico. *PLoS ONE*, 13(11), e0206792.
- <sup>39</sup> Pilipiec, P., Groot, W. and Pavlova, M. (2021). The effect of an increase of the retirement age on the health, well-being, and labor force participation of older workers: A systematic literature review. *Journal of Population Ageing*, 14, 271–315.
- <sup>40</sup> Lloyd-Sherlock, P. and Agrawal, S. (2014). Pensions and the health of older people in South Africa: Is there an effect? *Journal of Development Studies*, 50(11), 1570–1586.
- <sup>41</sup> Case, A. (2004). Does money protect health status? Evidence from South African pensions. In D. A. Wise (Ed.), *Perspectives on the Economics of Aging* (pp. 287–312). University of Chicago Press.
- <sup>42</sup> Case, A. (2004). Does money protect health status? Evidence from South African pensions. In D. A. Wise (Ed.), *Perspectives on the Economics of Aging* (pp. 287–312). University of Chicago Press.
- Duflo, E. (2000). Child health and household resources in South Africa: Evidence from the Old Age Pension Program. *American Economic Association Conference*.
- Gómez-Olivé, F. X., Thorogood M., Clark, B. D., Kahn, K. and Tollman, S. M. (2010). Assessing health and well-being among older people in rural South Africa. *Global Health Action*, 3.
- <sup>43</sup> Ardington, C. and Case, A. (2010). Interactions between mental health and socioeconomic status in the South African National Income Dynamics study. *Econometrics*, 34(3), 69–85.
- <sup>44</sup> Duflo, E. (2000). *Child Health and Household Resources in South Africa: Evidence from the Old Age Pension Program*. American Economic Association Conference. Oxford University Press.
- <sup>45</sup> Duflo, E. (2000). *Child Health and Household Resources in South Africa: Evidence from the Old Age Pension Program*. American Economic Association Conference.
- <sup>46</sup> De Grip, A., Lindeboom, M. and Montizan, R. (2012). Shattered dreams: The effects of changing the pension system late in the game. *The Economic Journal*, 122(559), 1–25.
- Pak, T. -Y. (2020). Social protection for happiness? The impact of social pension reform on subjective well-being of the Korean elderly. *Journal of Policy Modeling*, 42(2), 349–366.
- <sup>47</sup> Danzer, A. M. and Danzer, N. (2016). Pension generosity and mental wellbeing: The effect of eradicating poverty at old-age. *Beiträge zur Jahrestagung des Vereins für Socialpolitik 2016: Demographischer Wandel - Session: Pensions and Labor Market Outcomes*, No. G05-V1. German Economic Association.
- <sup>48</sup> Kim, S. and Koh, K. (2020). Does early access to pension wealth improve health? *Economic Inquiry*, 58(4), 1783–1794.
- <sup>49</sup> Sturgeon, J. A., Arewaikpron, A., Okun, M. A., Davis, M. C., Ong, A. D. and Zautra, A. J. (2016). The psychosocial context of financial stress: Implications for inflammation and psychological health. *Psychosomatic Medicine*, 78, 134–143.
- <sup>50</sup> Atalay, K. and Staneva, A. (2022). Waiting to get a pension: The impact of pension eligibility on psychological distress. *Health Economics*, 31(6), 940–955.
- <sup>51</sup> Dhabar, F. S. (2014). Effects of stress on immune function: The good, the bad, and the beautiful. *Immunologic Research*, 58, 193–210.
- <sup>52</sup> McIntyre, L., Kwok, C., Emery, J. C. H. and Dutton, D. J. (2016). Impact of a guaranteed annual income program on Canadian seniors' physical, mental and functional health. *Canadian Journal of Public Health*, 107(2), e176–e182.
- <sup>53</sup> Hamilton, H. A., Wickens, C. M., Ialomiteanu, A. R. and Mann, R. E. (2019). Debt stress, psychological distress and overall health among adults in Ontario. *Journal of Psychiatric Research*, 111, 89–95.
- <sup>54</sup> Hamilton, H. A., Wickens, C. M., Ialomiteanu, A. R. and Mann, R. E. (2019). Debt stress, psychological distress and overall health among adults in Ontario. *Journal of Psychiatric Research*, 111, 89–95.
- <sup>55</sup> Furman, D., Campisi, J., Verdin, E., Carrera-Bastos, P., Targ, S. and Slavich, G. M. (2019). Chronic inflammation in the etiology of disease across the life span. *Nature: Medicine*, 25, 1822–1832.
- <sup>56</sup> Sturgeon, J. A., Arewaikpron, A., Okun, M. A., Davis, M. C., Ong, A. D. and Zautra, A. J. (2016). The psychosocial context of financial stress: Implications for inflammation and psychological health. *Psychosomatic Medicine*, 78, 134–143.
- <sup>57</sup> Sturgeon, J. A., Arewaikpron, A., Okun, M. A., Davis, M. C., Ong, A. D. and Zautra, A. J. (2016). The psychosocial context of financial stress: Implications for inflammation and psychological health. *Psychosomatic Medicine*, 78, 134–143.



- <sup>58</sup> Hamilton, H. A., Wickens, C. M., Ialomiteanu, A. R. and Mann, R. E. (2019). Debt stress, psychological distress and overall health among adults in Ontario. *Journal of Psychiatric Research*, 111, 89–95.
- <sup>59</sup> Choi, N. G. (2001). Relationship between life satisfaction and postretirement employment among older women. *International Journal of Aging and Human Development*, 51, 45–70.
- <sup>60</sup> Sturgeon, J. A., Arewaikpron, A., Okun, M. A., Davis, M. C., Ong, A. D. and Zautra, A. J. (2016). The psychosocial context of financial stress: Implications for inflammation and psychological health. *Psychosomatic Medicine*, 78, 134–143.
- <sup>61</sup> Sturgeon, J. A., Arewaikpron, A., Okun, M. A., Davis, M. C., Ong, A. D. and Zautra, A. J. (2016). The psychosocial context of financial stress: Implications for inflammation and psychological health. *Psychosomatic Medicine*, 78, 134–143.
- <sup>62</sup> e.g., Ardito, C., Leombruni, R., Blane, D. and D'Errico, A. A. (2020). To work or not to work? The effect of higher pension age on cardiovascular health. *Industrial Relations: A Journal of Economy and Society*, 59(3), 399–434.
- <sup>63</sup> Elbich, P. (2015). Understanding the effect of retirement on health: Mechanisms and heterogeneity. *Journal of Health Economics*, 43, 1–12.
- <sup>64</sup> e.g., Blake, H. and Garrouste, C. (2009). *Collateral effects of a pension reform in France*. Paris School of Economics, Working Paper No 2012–25.; Bound, J. and Waidmann, T. (2007). *Estimating the health effects of retirement*. Michigan Retirement Research Center, Working Paper 2007–168. Lindeboom, M. and Lindegaard, H.L. (2010). The impact of early retirement on health. *Political Methods: Quantitative Methods eJournal*, 1–36.
- <sup>65</sup> Latif, E. (2012). The impact of retirement on health in Canada. *Canadian Public Policy*, 38, 15–29.
- <sup>66</sup> Sewdas, R., de Wind, A., Stenholm, S., Coenen, P., Louwse, I., Boot, C. and van der Beek, A. (2020). Association between retirement and mortality: Working longer, living longer? A systematic review and meta-analysis. *Journal of Epidemiology and Community Health*, 74, 473–480.
- <sup>67</sup> Calvo, E., Sarkisian, N. and Tamborini, C. R., (2013). Causal effects of retirement timing on subjective physical and emotional health. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 68(1), 73–84.
- <sup>68</sup> Sahlgren, G. H. (2012). Work 'til you drop: Short-and longer-term health effects of retirement in Europe. *IFN Working Paper*, No. 928, Research Institute of Industrial Economics (IFN), Stockholm.
- <sup>69</sup> Shai, O. (2018). Is retirement good for men's health? Evidence using a change in the retirement age in Israel. *Journal of Health Economics*, 57, 15–30.
- <sup>70</sup> Etgeton, S. (2019). The impact of pension reforms on income inequality, savings, and health. Dissertation. University of Berlin; Chetty, R., Friedman, J. N., Leth-Petersen, S., Nielsen, T. H. and Olsen, T. (2014). Active vs. passive decisions and crowd-out in retirement savings accounts: Evidence from Denmark. *The Quarterly Journal of Economics*, 129(3), 1141–1219.
- <sup>71</sup> Wahrendorf, M., Akinwale, B., Landy, R., Matthews, K. and Blane, D. (2017). Who in Europe works beyond the state pension age and under which conditions? Results from SHARE. *Journal of Population Ageing*, 10(3), 269–285.
- <sup>72</sup> Fonseca, R., Kapteyn, A., Lee, J., Zamarro, G. and Feeney, K. (2014). Longitudinal study of well-being of older Europeans: Does retirement matter? *Journal of Population Ageing*, 7(1), 21–41.
- <sup>73</sup> DeLeire, T. and Kalil, A. (2010). Does consumption buy happiness? Evidence from the United States. *International Review of Economics*, 57, 163–176. Kekäläinen, T., Wilska, T. -A. and Kokko, K. (2017). Leisure consumption and well-being among older adults: Does age or life situation matter? *Applied Research in Quality of Life*, 12(3), 671–691.
- <sup>74</sup> Elbich, P. (2015). Understanding the effect of retirement on health: Mechanisms and heterogeneity. *Journal of Health Economics*, 43, 1–12.
- <sup>75</sup> Cruwys, T., Haslam, C., Steffens, N. K., Haslam, S. A., Fong, P. and Lam, B. C. P. (2019). Friendships that money can buy: Financial security protects health in retirement by enabling social connectedness. *BMC Geriatrics*, 19, Article 319.
- <sup>76</sup> Atalay, K. and Staneva, A. (2022). Waiting to get a pension: The impact of pension eligibility on psychological distress. *Health Economics*, 31(6), 940–955.
- <sup>77</sup> Atalay, K. and Staneva, A. (2022). Waiting to get a pension: The impact of pension eligibility on psychological distress. *Health Economics*, 31(6), 940–955.
- <sup>78</sup> Bender, K. A. (2012). An analysis of well-being in retirement: The role of pensions, health, and 'voluntariness' of retirement. *Journal of Socio-Economics*, 41(4), 424–433. Panis, C. W. A. (2004). Annuities and retirement well-being. In O. S. Mitchell and S. P. Utkus (Eds.), *Pension design and structure: new lessons from behavioral finance* (pp. 259–274).





- <sup>79</sup> El-Attar, M. and Fonseca, R. (2022). Public pensions and low-income dynamics in Canada. *Journal of Pension Economics and Finance*, online first, 1–26.
- <sup>80</sup> Atalay, K. and Staneva, A. (2022). Waiting to get a pension: The impact of pension eligibility on psychological distress. *Health Economics*, 31(6), 940–955.
- <sup>81</sup> Lloyd-Sherlock, P., Barrientos, A., Moller, V. and Saboia, J. (2012). Pensions, poverty and wellbeing in later life: Comparative research from South Africa and Brazil. *Journal of Aging Studies*, 26, 243–252.
- <sup>82</sup> Oliver, J and Zuluaga, B. (2014). The ex-ante effects of non-contributory pensions in Colombia and Peru. *Journal of International Development*, 26(7), 949–973.
- <sup>83</sup> Lloyd-Sherlock, P., Barrientos, A., Moller, V. and Saboia, J. (2012). Pensions, poverty and wellbeing in later life: Comparative research from South Africa and Brazil. *Journal of Aging Studies*, 26, 243–252.
- <sup>84</sup> Leroux, J., Morrison, K. and Rosenberg, M. (2018). Prevalence and predictors of food insecurity among older people in Canada. *International Journal of Environmental Research and Public Health*, 15, 2511.
- <sup>85</sup> Thomas, M. K., Lammert, L. J. and Beverly, E. (2021). Food insecurity and its impact on body weight, type 2 diabetes, cardiovascular disease, and mental health. *Current Cardiovascular Risk Reports*, 15(9), 15.
- <sup>86</sup> Myers, C. A. (2020). Food insecurity and psychological distress: A review of the recent literature. *Current Nutrition Reports*, 9(2), 107–118.
- <sup>87</sup> Jessiman-Perreault, G. and McIntyre, L. (2019). Household food insecurity narrows the sex gap in five adverse mental health outcomes among Canadian adults. *International Journal of Environmental Research and Public Health*, 16, 319.
- <sup>88</sup> Liu, Y., Njai, R. S., Greenlund, K. J., Chapman, D. P. and Croft, J. B. (2014). Relationships between housing and food insecurity, frequent mental distress, and insufficient sleep among adults in 12 US States, 2009. *Preventing Chronic Disease*, 11, E37.
- Stahre, M., VanEenwyk, J., Siegel, P. and Njai, R. (2015). Housing insecurity and the association with health outcomes and unhealthy behaviors, Washington State, 2011. *Preventing Chronic Disease*, 12, E109.
- <sup>89</sup> Stahre, M., VanEenwyk, J., Siegel, P. and Njai, R. (2015). Housing insecurity and the association with health outcomes and unhealthy behaviors, Washington State, 2011. *Preventing Chronic Disease*, 12, E109.
- <sup>90</sup> Men, F. and Tarasuk, V. (2020). Severe food insecurity associated with mortality among lower-income Canadian adults approaching eligibility for public pensions: A population cohort study. *BMC Public Health*, 20, 1484.
- <sup>91</sup> Emery, J. C. H., Fleisch, V. C. and McIntyre, L. (2013). Legislated changes to federal pension income in Canada will adversely affect low-income seniors' health. *Preventive Medicine*, 57(6), 963–966.3
- <sup>92</sup> Atalay, K. and Staneva, A. (2022). Waiting to get a pension: The impact of pension eligibility on psychological distress. *Health Economics*, 31(6), 940–955.
- <sup>93</sup> Hagen, J. (2018). The effects of increasing the normal retirement age on health care utilization and mortality. *Journal of Population Economics*, 31, 193–234.
- <sup>94</sup> Lloyd-Sherlock, P. and Agrawal, S. (2014). Pensions and the health of older people in South Africa: Is there an effect? *Journal of Development Studies*, 50(11), 1570–1586.
- Mostert, C. M., Mackay, D., Awiti, A., Kumar, M. and Merali, Z. (2022). Does social pension buy improved mental health and mortality outcomes for senior citizens? Evidence from South Africa's 2008 pension reform. *Preventive Medicine Reports*, 30, 102026.
- <sup>95</sup> Pak, T., -Y. (2020). Social protection for happiness? The impact of social pension reform on subjective well-being of the Korean elderly. *Journal of Policy Modeling*, 42(2), 349–366.
- <sup>96</sup> Chen, S., Chen, X., Law, S., Lucas, H., Tang, S., Long, Q., Xue, L., and Wang, Z. (2020). How and to what extent can pensions facilitate increased use of health services by older people: evidence from social pension expansion in rural China. *BMC Health Services Research*, 20, 1008.
- <sup>97</sup> Aguila, E., Lopez-Ortega, M. and Angst, S. (2019). Do income supplemental programs for older adults' help reduce primary caregiver burden? Evidence from Mexico. *Journal of Cross-Cultural Gerontology*, 34(4), 385–402.
- <sup>98</sup> Lloyd-Sherlock, P. and Agrawal, S. (2014). Pensions and the health of older people in South Africa: Is there an effect? *Journal of Development Studies*, 50(11), 1570–1586.



- <sup>99</sup> Elbich, P. (2015). Understanding the effect of retirement on health: Mechanisms and heterogeneity. *Journal of Health Economics*, 43, 1–12.
- <sup>100</sup> Garcia, I. L. and Otero, A. (2017). *The effects of means-tested noncontributory pensions on poverty and well-being: Evidence from the Chilean pension reforms*. Michigan Retirement Research Center. Working Paper.
- <sup>101</sup> Mutran, E. J., Reitzes, D. C. and Fernandez, M. E. (1997). Factors that influence attitudes toward retirement. *Research on Aging*, 19(3), 251–273.
- <sup>102</sup> Sturgeon, J. A., Arewasikporn, A., Okun, M. A., Davis, M. C., Ong, A. D. and Zautra, A. J. (2016). The psychosocial context of financial stress: Implications for inflammation and psychological health. *Psychosomatic Medicine*, 78(2), 134–143.
- <sup>103</sup> Faragher, E. B., Cass, M. and Cooper, C. L. (2005). The relationship between job satisfaction and health: A meta-analysis. *Occupational & Environmental Medicine*, 62(2), 105–112.
- <sup>104</sup> Faragher, E. B., Cass, M. and Cooper, C. L. (2005). The relationship between job satisfaction and health: A meta-analysis. *Occupational & Environmental Medicine*, 62(2), 105–112.
- <sup>105</sup> Artz, B. (2010). Fringe benefits and job satisfaction. *International Journal of Manpower*, 31(6), 626–644.
- Garcés-Galdeano, L., García-Olaverri, C. and Huerta, E. (2016). Occupational pension scheme: An innovative tool in HRM. *Management Research*, 14(2), 106–129.
- Healthcare of Ontario Pension Plan (HOOPP). (2021). *2021 Canadian employer pension survey: Healthcare of Ontario Pension Plan*. HOOP.
- <sup>106</sup> Luchak, A. A. and Gellatly, I. R. (2002). How pension accrual affects job satisfaction. *Journal of Labor Research*, 23(1), 145–162.
- <sup>107</sup> Healthcare of Ontario Pension Plan (HOOPP). (2021). *2021 Canadian employer pension survey: Healthcare of Ontario Pension Plan*. HOOP.
- Luchak, A. A. and Pohler, D. M. (2009). Pensions as psychological contracts: Implications for work outcomes. *Industrial Relations*, 49(1), 61–81.
- <sup>108</sup> McCormick, B. and Hughes, G. (1984). The influence of pensions on job mobility. *Journal of Public Economics*, 23(1–2), 183–206.
- <sup>109</sup> Gustman, A. L. and Steinmeier, T. L. (1993). Pension portability and labor mobility: Evidence from the survey of income and program participation. *Journal of Public Economics*, 50(3), 299–323.
- <sup>110</sup> Garcés-Galdeano, L., García-Olaverri, C. and Huerta, E. (2016). Occupational pension scheme: An innovative tool in HRM. *Management Research*, 14(2), 106–129.
- <sup>111</sup> Lusardi, A. and Mitchell, O. S. (2011). *Financial literacy and planning: Implications for retirement wellbeing*. National Bureau of Economic Research, Working Paper No. 17078.
- <sup>112</sup> Elder, H. W. and Rudolph, P. M. (1999). Does retirement planning affect the level of retirement satisfaction? *Financial Services Review*, 8, 117–27.
- Lusardi, A. and Mitchell, O. S. (2011). *Financial literacy and planning: Implications for retirement wellbeing*. National Bureau of Economic Research, Working Paper No. 17078.
- Yeung, D. Y. and Zhou, X. (2017). Planning for retirement: Longitudinal effect on retirement resources and post-retirement well-being. *Frontiers in Psychology*, 8, Article 1300.
- <sup>113</sup> Taylor-Carter, M. A., Cook, K. and Weinberg, C. (1997). Planning and expectations of the retirement experience. *Educational Gerontology*, 23(3), 273–288.
- <sup>114</sup> Petkoska, J. and Earl, J. K. (2009). Understanding the influence of demographic and psychological variables on retirement planning. *Psychology and Aging*, 24, 245–251.
- <sup>115</sup> Attanasio, O. P. and Rohwedder, S. (2003). Pension wealth and household saving: Evidence from pension reforms in the United Kingdom. *American Economic Review*, 93(5), 1499–1521.
- Fajnzyblber, G., Plaza, G. and Reyes, G. (2009). *Better-informed workers and retirement savings decisions: Impact evaluation of a personalized pension projection in Chile*. Superintendence of Pensions Working Paper No 31.
- Honekamp, I. and Schwarze. (2010). Pension reforms in Germany: Have they changed savings behaviour? *Pensions*, 15(3), 214–225.
- <sup>116</sup> Etgeton, S. (2019). The impact of pension reforms on income inequality, savings, and health. Dissertation. University of Berlin.
- Lachowska, M. and Myck, M. (2018). The effect of public pension wealth on saving and expenditure. *American Economic Journal: Economic Policy*, 10(3), 284–308.
- <sup>117</sup> Attanasio, O. P. and Brugiavini, A. (2003). Social security and households' saving. *The Quarterly Journal of Economics*, 118(3), 1075–1119.



- <sup>118</sup> Griffin, B., Loe, D. and Hesketh, B. (2014). Using proactivity, time discounting, and the Theory of Planned Behavior to identify predictors of retirement planning. *Educational Gerontology*, 38(12), 877–889.
- <sup>119</sup> Hershey, D. A., Henkens, K. and Van Dalen, H. P. (2007). Mapping the minds of retirement planners: A cross-cultural perspective. *Journal of Cross-Cultural Psychology*, 38(3).
- <sup>120</sup> Alonso-García, J., Bateman, H., Bonekamp, J., van Soest, A. and Stevens, R. (2017). Saving preferences in retirement: the impact of pension policy design and health status. *ARC Centre of Excellence in Population Ageing Research, Working Paper*.
- <sup>121</sup> e.g., Wellman, J. L., Holmes, B. and Hill, S. Y. (2020). Accuracy of self-reported hypertension: Effect of age, gender, and history of alcohol dependence. *Journal of Clinical Hypertension*, 22(5), 842–849.
- <sup>122</sup> Behavioural Insights Team internal research document.
- <sup>123</sup> Han, J., Zhang, X. and Meng, Y. (2020). The impact of old-age pensions on the happiness level of elderly people – evidence from China. *Ageing & Society*, 42(5), 1–21.
- Sasaki, I., Kondo, K., Aida, J., Ichikawa, H., Kusumi, T., Sueishi, N. and Imanaka, Y. (2018). Are pension types associated with happiness in Japanese older people?: JAGES cross-sectional study. *PLoS ONE*, 13(5), e0197423.
- <sup>124</sup> Bender, K. A. (2012). An analysis of well-being in retirement: The role of pensions, health, and ‘voluntariness’ of retirement. *Journal of Socio-Economics*, 41(4), 424–433.
- <sup>125</sup> Han, J., Zhang, X. and Meng, Y. (2020). The impact of old-age pensions on the happiness level of elderly people – evidence from China. *Ageing & Society*, 42(5), 1–21.
- <sup>126</sup> Healthcare of Ontario Pension Plan (HOOPP), National Institute on Ageing, and Common Wealth. (2018). *The value of a good pension: How to improve the efficiency of retirement savings in Canada*. HOOPP.
- <sup>127</sup> Caldwell, L. L. (2005). Leisure and health: Why is leisure therapeutic? *British Journal of Guidance and Counselling*, 33, 7–26.
- DeLeire, T. and Kalil, A. (2010). Does consumption buy happiness? Evidence from the United States. *International Review of Economics*, 57, 163–176.
- <sup>128</sup> Bertoni, M., Brunello, G. and Mazzarella, G. (2018). Does postponing minimum retirement age improve healthy behaviors before retirement? Evidence from middle-aged Italian workers. *Journal of Health Economics*, 58, 215–227.
- <sup>129</sup> Chan, S. and Stevens, A. H. (2003). What you don't know can't help you: Pension knowledge and retirement decision making. *National Bureau of Economic Research, Working Paper*
- Elinder, M., Hagen, J., Nordin, M. and Säve-Söderbergh, J. (2020). Who lacks pension knowledge, why and does it matter? Evidence from Swedish retirement savers. *Institute for Evaluation of Labour Market and Education Policy Working Paper*.
- <sup>130</sup> Elder, H. W. and Rudolph, P. M. (1999). Does retirement planning affect the level of retirement satisfaction? *Financial Services Review*, 8, 117–27.
- Lusardi, A. and Mitchell, O. S. (2011). *Financial literacy and planning: Implications for retirement wellbeing*. National Bureau of Economic Research, Working Paper No. 17078.
- Yeung, D. Y. and Zhou, X. (2017). Planning for retirement: Longitudinal effect on retirement resources and post-retirement well-being. *Frontiers in Psychology*, 8, Article 1300.