Disability Insurance Programs in Canada

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Introduction

Disability insurance is now an important labor and health program in many countries. This development stems from a number of factors: changing attitudes about the nature of disability (such as the treatment of mental health); broad trends in the labor market; deliberate acts of policy. This latter factor includes not only direct changes to the eligibility or benefit rules of disability insurance programs, but also by changes to other programs (such as early retirement provisions in public pensions, unemployment insurance, or welfare) that might be substitute sources of income for those whose health is fading. As countries grapple with increasing stress on their retirement systems, the need for coordination between reforms of these programs and disability insurance programs is clear.

In this paper, we begin an examination of the impact of disability insurance on elderly Canadians. To do so, we pursue an analysis of the long-run trends in Canada Pension Plan disability insurance participation. We relate these trends to observed changes in different measures of health and an institutional analysis of policy changes, in order to understand what is driving the changes in disability insurance receipt through time.

The results provide clear evidence that changes in program rules have a large impact on receipt of disability insurance. By lining up the observed long-run trends with the timing of institutional changes, these relationships are uncovered. In contrast, the long-run trends in the measures of health that we are able to observe do not appear to have a strong relationship with the trends in disability insurance participation.
We begin our investigation by describing the development of the Canada Pension Plan Disability Insurance program (and its sister program in the province of Quebec). We then review existing evidence on disability insurance in Canada. Next, we describe the data sources available to us for the analysis, and then proceed to graph the time series and some cross-section patterns of health and program participation. We close with some thoughts on interpretation of the evidence.

**Development of Disability Insurance in Canada**

Until 1970, public long-term disability insurance was provided by provinces through Workers’ Compensation programs which covered employment-related accidents and disability claims. Private insurance supplemented these programs. As a backstop, the disabled might resort to provincial social assistance (welfare) programs. There was also some short-term sickness insurance available through the federal Unemployment Insurance program.¹

The disability insurance landscape changed dramatically with the introduction of the Disability Insurance component of the Canada Pension Plan. The Canada Pension Plan passed into law in 1966 and comprised both a retirement benefits and disability benefits components. The Canada Pension Plan covered Canadians in nine provinces and the northern territories. The province of Quebec opted out of this initiative, instead setting up a sister program—the Quebec Pension Plan. The Canada Pension Plan is administered by the federal government, but it operates with

¹ See Camplieti and Lavis (2000) for some details on the roles of each of these programs, and Canada Pension Plan Disability Insurance, from 1970 to 1996. A history of the Disability Insurance component of the Canada Pension Plan is provided by Torjman (2002) and Prince (2002). Our discussion here draws on these sources.
the approval of the provinces. Changes must be supported by two thirds of the ‘included’ provinces with two thirds of the total ‘included’ population.

The disability insurance component of the Canada Pension Plan began paying benefits in 1970. Entitlement depends on the finding of a disability that is “severe” and “prolonged”. Note that, unlike Workers’ Compensation, the source of the disability does not matter. In addition to the disability test, there is a requirement for attachment to the workforce. To be eligible an individual must have contributed to the program either in 4 of the previous 6 years, or 3 out of the previous 6 years if s/he has made contributions to the CPP for 25 years or more. Workers’ Compensation programs continued to insure workplace accidents after the introduction of the Canada Pension Plan, but were residual insurers—that is, Canada Pension Plan payments were subtracted from any Workers’ Compensation entitlements.

Benefits under the Canada Pension Plan Disability Insurance program are comprised of three parts. First is a fixed amount—currently $426.13 per month. To this is added an earnings-related component. Earnings only up to a cap (set at approximately the economy-wide average earnings level) in each year of the earnings history are considered, with provisions for discarding low-earning months in the calculation. The base replacement rate amounts to 18.75 percent of average capped earnings. This reaches a current maximum of $700.63. Finally, the third component affects those with children under the age of 18, with a fixed monthly payment of

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2 According to the Canada Pension Plan Act section 42(2), “severe” is defined as being “incapable regularly of pursuing any substantial gainful occupation” and “prolonged” means “likely to be long continued and of indefinite duration or is likely to result in death.”

3 This amount is for the October to December quarter of 2010. It is in 2010 Canadian dollars. One Canadian dollar is worth 98 US cents in October 2010.

4 The cap is called the “Year’s Maximum Pensionable Earnings.” For 2010, it is set at $47,200.
$214.85. The average total payment made in July 2010 was $809.54 per month. At age 65, benefits are transformed into retirement benefits.

The parallel Quebec Pension Plan Disability Insurance program is administered separately, but the program parameters are very similar. There have been important differences between the Canada and Quebec Pension Plans through time in the definition of disability and how it is implemented.

Reforms through the 1980s, 1990s and 2000s

Several changes occurred to the program starting in the middle of the 1980s. These changes are important for understanding the times series trends we uncover in the data. We describe these developments below.

In 1987, the Canada Pension Plan Disability Insurance was reformed to increase the flat benefit to match the rate in the Quebec Pension Plan. Along with this change, eligibility was made easier, now requiring only work in two of three last years rather than five of the last 10. Finally, the ability to make claims retroactively was enhanced at this time. In general, this 1987 reform made the program more generous.

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5 The QPP requires that the disability be “permanent” and “severe”, which means that an individual is unable to work enough to earn more than an earnings threshold that was $13,521 in 2009. Applicants between the ages of 60 and 64 may be eligible if they have had to leave their usual employment as a result of their health and are no longer able to perform their usual work. QPP eligibility requires contributions in 2 of the previous 3 years, or 5 of the previous 10 years, or in at least half of the individual’s contributory period (2 year minimum), which starts at age 18 and ends either a) the month preceding a retirement benefit claim, b) the month of the 70th birthday or c) the month of death.
A further reform in 1989 came in the form of an administrative policy guideline that instituted consideration of factors such as the local unemployment rate, job skills, and socio-economic factors in determining eligibility for those aged 55 to 64 in the Canada Pension Plan. There was also an increase to the flexibility of medical guidelines. Finally, there was a concern that Canadians were not well-aware of the benefits available to them, so an information campaign was pursued to make people more aware of the program.

A strong reversal occurred in 1995. The administrative guidelines on socio-economic considerations were repealed. There was a reassessment of many existing claimants. Also, there was a facilitation of ‘self-sufficiency’, making it easier to return to work.

In 1998, a major reform of the Canada and Quebec Pension Plan was implemented. On the financing side, the payroll tax to fund the plans was set on a sharply increasing schedule allowing future benefits to be partially pre-funded. The benefit formulas were changed slightly, as well. Most relevant to disability insurance, the eligibility requirement was changed to having worked in four of the last six years.

In 2008, a slight change to eligibility led to the current rules. The change only affected those with more than 25 years of contributions over their lifetimes. Previous to 2008, one needed to have worked 4 of the last 6 years. As of March 3, 2008, however, those with 25 years or more of contributions were able to be eligible with work in 3 of the last 6 years.

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6 Rather than using the past three years’ average value of the Year’s Maximum Pensionable Earnings in order to update lifetime earnings to current levels, the new formula used the past five years’ average value.
These developments can be seen in Figure 1. We take the number of Disability Insurance beneficiaries between the ages 25 and 64 and divide it by the total population in that age range. The source of the data is administrative reports on the Canada Pension Plan, as described in the next section. The participation rate grows steadily and sharply from 1971 to 1987, where a vertical line indicates the timing of the reforms that made Disability Insurance more generous. The growth continues to 1995, indicated by the second vertical line. In 1995, the eligibility criteria were tightened, resulting in a topping out of the growth of program participation at a rate just below 2.5 percent. Since then, the participation rate has settled at a level just over two percent and has been quite steady.

*Research on Canada and Quebec Pension Plan Disability Insurance*

Research on the Canada Pension Plan Disability Insurance program has touched on two topics of relevance for our focus. First, there is a literature examining the impact of disability insurance on the labor supply of older workers. Gruber (2000) exploits differences in the fixed component of the benefit formula between the Quebec and Canada Pension Plans in the 1980s, finding sizeable elasticities of work with respect to benefits. Campolieti (2004) performs a similar exercise for an earlier Quebec-Canada differential in the 1970s, but finds small effects. He hypothesizes that the very tight screening on disability in place in the 1970s may have decreased the responsiveness to program parameters. Campolieti (2001) also looks at replacement rates, finding large effects both for men and women.
The second strand of the literature of interest here is the impact of administrative rules and medical screening on program participation. Campolieti (2002) again compares Canada and Quebec Pension Plans, finding that the increase in the Canada Pension Plan flat benefit in 1987 led to an increase in hard-to-diagnose soft-tissue and musculo-skeletal claims. He also finds that administrative tightening of the screening criteria in the Canada Pension Plan in 1995 decreases claims for disability from soft-tissue and musculo-skeletal problems. Campolieti (2006) goes into greater depth on the 1995 reform, finding no evidence that easier-to-diagnose disabilities were affected by the tighter screening.

As a summary of this evidence, it appears that there is substantial scope for substitution between the labor market and disability receipt for older workers. Moreover, eligibility and screening rules can have a large influence on participation as well.

Data

We pursue our analysis using several survey and some administrative data sources. In total, there are five sources of data that we bring together. Compared to the data available for other countries, Canada lacks panel data on elderly households (such as the NHS-ELSA-SHARE data available elsewhere). This limits somewhat the panel dimension to the analysis we can perform. We begin with administrative data on usage of the Canada Pension Plan Disability Insurance benefits. We draw these data from a monthly publication called the Canada Pension Plan Statistical Bulletin. This publication contains comparable tables from 1971 to 2010 that allow us
to construct time series of Canada Pension Plan Disability Insurance benefit receipt by sex and
five-year age group.

The second administrative data source is for mortality. Mortality data is collected as part of vital
statistics separately by each province. Statistics Canada aggregates these into national numbers.
We gather deaths and population counts by age, sex, and year using the data available for Canada
in the Human Mortality Database.\(^7\) We combine the death and population data to form age-sex-
year mortality rates.

Our survey data start with the Labour Force Survey. Similar to the Current Population Study in
the United States, the Labour Force Survey is a monthly survey used for high-frequency
information about the state of the labor market. Around 50 thousand individuals are in the
monthly data. The Labour Force Survey lacks information on program participation and does not
have complete information on why respondents are absent from the labor market. It does have
excellent information on current labor market status and we use it for that purpose here.

We also use the Survey of Consumer Finances and the Survey of Labour and Income Dynamics
for income information. These surveys span most years from 1971 to 1997 (Survey of Consumer
Finances) and 1998 to 2007 (Survey of Labour and Income Dynamics). From this income
information, we can derive some measures of program participation. As well, there is a detailed
question for the reason someone is not working. These surveys are annual.

\(^7\) This was collected from http://www.mortality.org.
The final source of survey data is the General Social Survey. In Canada, the General Social Survey asks a common core of questions each year, along with questions on one from a set of themes. Information on self-assessed health and the types of activity limitation is available sporadically across the time period 1985 to 2006.

For all three of these surveys, we construct age-sex-year samples, using five-year aggregated age groups. We also employ the provided sample weights to ensure representativeness.

**Results**

The results below proceed through four steps. The first step is to examine the broad time trends on measures of measures of health and mortality. The second set of results documents the participation in the different government programs that are used by older workers for income. Next, we uncover the relationships between disability and labor market participation. Finally, there are some graphs relating disability and other measures of health.

*Mortality and health*

The analysis of mortality and health has two goals. Not only are the time trends interesting here, but we are also interested in how well health and mortality trends correspond. This correspondence is important because mortality is the best measured and most internationally comparable measure of health that we have available. To the extent that mortality and other
measures of health are aligned, we can have greater confidence in using mortality trends as general indicators of health.

The first mortality graph presented in Figure 2 attempts to measure the progress in mortality since 1961. We begin with the mortality rates at age 60 and 65 in 1961, separately for males and females. The initial mortality rate in 1961 for males is 2.1 percent at age 60 and 3.2 percent for age 65; for females 1.1 percent at age 60 and 1.8 percent at age 65. The lines in Figure 2 show the age at which mortality in years after 1961 reaches the age 60 and age 65 levels seen in 1961. For example, in 1971 for 65 year old males, it took until age 66.2 to hit the 3.2 percent mortality rate seen for 65 year olds in 1961. That is, it took an extra 1.2 years of age to reach the same mortality rate, so that 66.2 year old males in 1971 are like 65 year olds in 1961 in terms of mortality.

Mortality improvements were typically very strong starting in the 1970s. The line for women is above the line for men at both ages 60 and 65 until the mid-1990s, when improvements for men became sharper. By the end of our data period, there is a remarkable improvement in mortality. The mortality rate seen for 60 year old males in 1961 was not reached until age 69.5 in 2007—an increase of almost a decade of life. For women, the increase was slightly less at 67.8. Given the mortality advantage of females, this served to close slightly the gap between male and female mortality. Age 65 mortality rates for men and women improved to ages 73.9 for men and 72.9

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8 We only have mortality by single year of age, so the exact age at which the mortality target is reached is determined by linear interpolation. For example, the age 65 male target of 3.2 percent mortality sits about 20 percent of the way between the mortality rates seen for ages 66 and 67 in 1971, yielding a mortality equivalent age of 66.2. (We perform these operations with several decimal points, but round them to one decimal point here for ease of exposition.)
for women. These developments show a very tangible improvement in mortality over this 46 year period.

These same trends can be presented in a different way in Figure 3. In this graph we show the cross-sectional mortality rates for the two end-point years in our data, being 1961 and 2007. The drops in the curves for each sex between the two years indicate substantial mortality improvements. For men, the improvement at age 60 is 58 percent; at age 70 is 54 percent; and at age 80 is 42 percent. For females at age 60 the improvement is 54 percent; at age 70 is 50 percent; at age 80 is 54 percent. This suggests a fairly similar improvement at different points in the mortality curve and across sexes.

A third way to visualize these mortality changes is to graph age-specific mortality rates through time. Figures 4 and 5 do so for men and for women, at ages 55, 60, and 65. While the magnitude of the drop through time for age 65 is larger than for age 60 or age 55, the percentage drop for all three is around 50 percent. Women in Figure 5 display a similar pattern.

Taken together, this evidence suggests a strong and fairly consistent improvement in mortality rates over the period 1961 to 2007. The gains were of comparable percentage changes across ages and sexes. We next turn to an examination of how well these mortality improvements correspond to subtler measures of health.
For the health analysis, we combine three measures of self-assessed health with our previously-graphed mortality rates. All three are taken from the General Social Survey. The first year of data available is 1985, with more frequent responses then available after 1990.

The first measure we use is from a question on self-assessed health.⁹ We code those responding that their health is ‘fair’ or ‘poor’ as a 1, and those feeling ‘excellent’, ‘good’, or ‘very good’ as a 0. In this way, the measure is an indicator of worse health and should go in the same direction through time as mortality, if general health improvements are behind the mortality trends. The second measure is based on a question of long-term activity limitation.¹⁰ Those who are limited are coded with a 1; those not limited are coded with a 0. Note that this definition is broader than the employment-based definition used for eligibility for the Canada Pension Plan. The third measure looks at satisfaction with health. It is only available for three years in the sample, but we include it to capture—albeit weakly—any trend in this variable. We code it to 1 if someone expresses that they are ‘not satisfied’ with their health, comprising the categories ‘very’ and ‘somewhat’ unsatisfied.¹¹ Together, these three variables capture more subjective and more subtle elements of health than does mortality.

Figures 6 and 7 show the evolution of our three subjective health measures compared against mortality, defined as the number of deaths over the population in the given age range. We use only the time period between 1985 and 2007, which spans the available years of the General

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⁹ The specific question is “In general, would you say your health is: ”. The five possible responses are excellent, very good, good, fair, and poor.

¹⁰ The specific question is “Are you limited in the amount or kind of activity you can do at home, at work, or at school because of a long-term physical or mental condition or health problem?”

¹¹ The specific question is “How do you feel about your health?”. The allowed answers are very satisfied, somewhat satisfied, somewhat dissatisfied, and very dissatisfied.
Social Survey. We take the age group 60-64 in all cases. The mortality rates are graphed against the right-hand side vertical axis while the subjective health measures are graphed against the left-hand side vertical axis.

Figure 6 for men shows a clear downward trend for self-assessed fair or poor health. From over 33 percent in 1985, the level drops to 11 percent in 2007, with steady improvements through the 1990s. Dissatisfaction with health goes down for the three years observable. Activity limitations, however, are quite steady at around 20 percent over the years available in the General Social Survey.

For women in Figure 7, the patterns are similar, but weaker than for men. There is a decline in self-assessed fair or poor health, but it is less of a decline than for men. Health dissatisfaction increases over the three years shown. Activity limitations, like for men, are quite steady.

This analysis of subjective health measures has uncovered some evidence that more subtle measures of health—specifically self-assessed fair or poor health—show an improvement over the 1985 to 2007 period. However, activity limitations do not show this same change. Overall, these results do not contradict the strong improvements seen in the more objective mortality measures.
We now turn our attention to trends in program participation through time. The goal here is to look for any impact of the reforms we have outlined above as well as for any possible substitution among different government programs. In this analysis, we draw mostly on the annual income source data in the Survey of Consumer Finances / Survey of Labour and Income Dynamics. We also use the administrative data from the Canada Pension Plan and some questions on why there was a departure from a job from the Labour Force Survey.

We begin with cross-sectional participation rates by age in 1981 for men and women. We show indicators of receipt of social assistance, Canada/Quebec Pension Plan benefits, and Unemployment Insurance benefits from the survey data, as well as the rate of Canada Pension Plan Disability Insurance recipiency from the administrative data. For social assistance, the variable in the Survey of Consumer Finances includes both social assistance (welfare) and also provincial supplements that are paid to low-income seniors age 65 plus. For the Canada/Quebec Pension Plan payments, the data cannot distinguish between retirement, survivor, and disability payments.

Figure 8 shows the cross-section by five year age groups in 1981. In 1981, retirement benefits through the Canada and Quebec Pension Plans could not be taken until age 65. Furthermore, few men receive survivor benefits since few men have lost their spouse before age 65. So, we expect most of those receiving Canada/Quebec Pension Plan income are receiving Disability Insurance benefits. In Figure 8, the Canada Pension Plan Disability Insurance line from the administrative
data is very close to the Canada/Quebec Pension Plan benefit receipt line, until age 65 is reached. The level of benefit receipt for the Canada/Quebec Pension Plan at ages after 65 is 79 percent in the 65-69 age range. This is less than 100 percent because some men may still be working and have not yet started their benefits. For the 70-99 age range, the rate is even lower at 67 percent. This reflects the fact that those retiring before 1967 received no Canada Pension Plan benefits since the program only began in that year. In 1981, that would include everyone age 79 and older. Unemployment Insurance benefits are fairly steady between ages 40 and 64, giving little indication that Unemployment Insurance benefits are being used as a substitute for early retirement benefits. Finally, social assistance rates are fairly low until age 65, when they leap upward corresponding to the availability of provincial income supplements for low-income seniors.

Figure 9 repeats the exercise for women. Women are less likely to be on Unemployment Insurance benefits since they are less likely to be eligible because of lower labor-force attachment. There is a substantial gap between the Canada Pension Plan Disability Insurance indicator from administrative data and the indicator for receipt of Canada/Quebec Pension Plan income for women. This makes sense, however, since it is much more common for women in this age range to be receiving survivor benefits following the death of a spouse than it was for men. Participation rates at ages 65-69 and 70-74 are lower than for men, again because the labor-market attachment of women is lower, meaning less eligibility. The social assistance and Unemployment Insurance benefits appear similar in trend to the men.
We next move forward to 2007. The largest difference in 2007 is the availability of early retirement benefits through the Canada/Quebec Pension Plan at ages 60 to 64, instituted in 1984 in the Quebec Pension Plan and 1987 in the Canada Pension Plan.\(^\text{12}\) In Figure 10 we graph the cross-sectional program participation rates for men by five-year age group. Figure 11 does the same for women. The largest difference in the graph is the jump in Canada/Quebec Pension Plan participation at ages 60-64. With the availability of an early retirement option through the Canada/Quebec Pension Plan, will there be a decrease in uptake of Disability Insurance benefits? The graph doesn’t show any—the disability rate taken from Canada Pension Plan administrative data comes in at approximately the same level as was the case for 1981. There is no sign that the new early retirements were drawing people out of disability insurance claims.

The previous graphs showed the programs from which Canadians were drawing income. These showed the ‘stocks’ at each age and year. To get a more complete picture, we now attempt to put together some information on the ‘flows’ out of work. To do so, we turn to the Labour Force Survey. The Labour Force Survey asks respondents who are not employed the reason for leaving their last job. Unfortunately, this question is only asked of those who worked in the previous year, so those not working for a year or more are not asked the question. Still, this question can give us an indication if the flow out of jobs into retirement or into disability has shown any large changes through time.

Figure 12 shows the flows out of the labor market for men, and Figure 13 for women. Both graphs show age groups 55-59 and 60-64. In all cases, the denominator for the calculation of this rate is all survey respondents of that sex and age. For men, there is an increase in the rate of

\(^{12}\) See Baker and Benjamin (1999) for details and evidence on the introduction of early retirement in Canada.
departures to retirement at ages 55-59 during the 1980s. For both ages 55-59 and 60-64, there are declines starting around 1995 in the flow out of work and into retirement. If retirement and disability were substitutes, we might expect a mirrored response for departures to disability. However, this is not evident here, with departure rates to disability dropping slightly from more than 1 percent to under one percent. No clear correspondence with retirement flows is evident. Women in Figure 13 show an increase departure rate to retirement thought time. This may reflect the fact that more women in these later years are in the labor force, meaning that more of them have a job from which they can retire. Again, there is no clear correspondence to the departure rates to disability.

The final graphs for this analysis of program participation compares different measures of disability to get a better view of how they may be related. In Figure 14 for men and Figure 15 for women, we compare show the disability rate from the Canada Pension Plan administrative data, the flow of people leaving their work because of disability from the Labour Force Survey, and the proportion who are not currently working because of disability from the Survey of Consumer Finances. We do this analysis for those aged 60 to 64.

For neither men nor women does there appear to be any interesting trends in the flow into disability through time. For women, the uptrend in those not working because of disability in the administrative data matches very closely the trend in the survey data. For men, there is a similar uptrend, but the correspondence isn’t as close. Unfortunately, the Survey of Labour and Income Dynamics that replaced the Survey of Consumer Finances after 1997 did not contain a
comparable question on disability, so we cannot observe if the downward trend in the disability rate in the administrative data is mirrored in the survey data after 1997.

Our analysis of program participation reveals two important findings. First, there is very little indication of disability program participation being a substitute for early retirement or unemployment benefits. Second, there is a strong correspondence between survey and administrative data sources for the measurement of disability insurance participation.

*Labor Markets and Disability*

We next address the question of how overall labor market decisions are affected by changes in receipt of disability insurance. This relates directly to the literature on disability insurance generosity and employment discussed earlier. We graph employment, unemployment, and non-attachment to the labor force for men and women through time. We then look at trends in the reasons not working—including disability—before looking again at the trends in disability uptake.

Figures 16 and 17 display the employment rate for men and women, respectively, across three different age groups using Labour Force Survey data. For men aged 40-44 and 50-54 in Figure 16, most work. There are some slight business cycle fluctuations across time, but the magnitude of these fluctuations is not large. For men age 60-64, there is a downward trend in employment from 63.6 percent in 1976 down to 39.9 percent by 1995. This largely reflects the introduction of early retirement options under the Canada and Quebec Pension Plans in the 1980s. The
downward trend and the changing point in 1995, though, line up quite neatly with the patterns of participation in Canada Pension Plan Disability Insurance seen earlier. Since 1995, around half of this drop in employment has been recovered, leaving employment at 52.6 percent in 2009. One explanation for this upswing is provided in Schirle (2008), who argues that the increase in older male labor market participation was driven largely by a preference for joint retirement with their wives—and women of the cohorts in this age range since 1995 were much more likely to work than earlier cohorts.

For females in Figure 17, any business cycle effects are dominated by an upward trend in employment driven by cohort differences in lifetime employment attachment. The pickup in female employment in the 1970s and 1980s at ages 40-44 and 50-54 is echoed by these same cohorts in the age range 60-64 after 2000. This increase in employment by older women is consistent with the story in Schirle (2008) mentioned above.

Unemployment is graphed in Figures 18 and 19 for men and women. Unemployment for both sexes at older ages is low. There are obvious business cycle effects, but no clear correspondence to developments in disability insurance. This suggests that there is no large-scale substitution between disability insurance and unemployment.

The proportion of men and women out of the labor force in Figures 20 and 21 across ages look quite similar to what was seen for employment, but in reverse. This suggests that the broad trends in employment discussed above reflected moves from being out of the labor force into employment, more so than between being unemployed and employed.
The reasons for being out of the labor market can be decomposed using data from the Survey of Consumer Finances and the Survey of Labour and Income Dynamics. In Figure 22, we graph the proportion of men aged 60-64 who reported that their primary activity over the previous year was not working or looking for work. The top line shows all those not working or looking for work. This measure does not show the sharp turnaround in 1995 that was evident with the Labour Force Survey data in Figure 20. This difference may be driven by the fact that the Labour Force Survey asks about employment activity in a reference week while the Survey of Consumer Finances focuses on activity over the whole year.

The second and third lines in Figure 22 show the proportion that is not working or looking for work because of retirement or because of disability.\(^{13}\) The disability variable is not available after 1998 because of changes in the way disability was measured in the Survey of Labour and Income Dynamics in that year. A large majority of those not working are not working because of retirement. There is a fairly large percentage increase in those not working because of disability from 1971 through 1995 (as seen earlier in Figure 14), but this does not explain a lot of the overall trend in not working because the proportion out of work for disability remains fairly small as a proportion of all of those out of work.

Figure 23 repeats the decomposition of not working for women. Here, the gap between the total proportion not working or looking for work and those who are retired is very large—especially at the earlier years of the time series. This reflects the fact that a large proportion of women in these cohorts during these years were at home rather than in the paid workforce. Retirement increases

\(^{13}\) By ‘disability’ here, we mean that respondents reported that they were “permanently unable to work.”
through time because more women had work from which to retire. The increase in disability
evident in the bottom line is again large as a percentage, but small in terms of how much it can
explain overall labor force trends.

This section has found several interesting relationships between labor market behavior and the
receipt of disability benefits. First, there is no evidence of using unemployment insurance as a
substitute for disability insurance benefits. Second, for women, the large increase across birth
cohorts in labor market attachment is the dominant force in the labor market over this time
period and disability insurance plays a relatively minor role. Finally, for men there is an
interesting correspondence of the trends in employment and disability insurance receipt at ages
60-64, before and after 1995. This suggests that there might have been some substitution
between disability insurance and employment for men aged 60-64 over this time period.

*Employment and mortality*

Another way to look at the relationship between employment and health is to ask how much
work is done for a given level of health. To do so, we graph in Figure 24 the employment rate
and mortality rate of men in 1976 and 2007. The mortality rate is on the horizontal axis and the
employment rate is on the vertical axis. Each point represents the average value for a five-year
age group, as labeled. At a mortality rate of 0.01, around 85 percent of males were employed in
1976. However, by 2007 at the same level of mortality, only half of males were employed.
Looking the other way, it took a mortality rate of 0.025 to reach a point of 50 percent
employment in 1976, but only 0.01 to reach that same employment rate in 2007. This suggests
that, given similar health levels (as measured by mortality), there was lower employment in 2007 than 1976.

Figure 25 repeats the same analysis for females. Here, the most important trend is the great increase in employment by females with younger cohorts of women. In this graph, this manifests as a higher employment rate at lower levels of mortality, although the lines cross at older ages. This suggest that, for the same level of mortality, we see more employment by females in 2007 than 1976.

*Disability and Health*

In our last set of results we look for patterns across age, sex, and time in the relationship between health and disability. We begin by looking at receipt of disability pensions in the Canada Pension Plan, and then compare these findings to our measures of mortality and self-assessed health.

The first two graphs of this analysis of labor markets and disability show disability rates by age group and sex using the Canada Pension Plan administrative data. For men (Figure 26), the peak in 1995 is evident both for those aged 60-64 (as in Figure 14) and those at younger ages. The peak at younger ages is comparable in terms of percentage increases, but as a share of the male population at ages 40-44 and 50-54, disability insurance plays a small role.

The data for women appear in Figure 27. Over this time period, more women are entering the workforce, as seen in Figure 17. This means that more women became eligible for Canada Pension Plan Disability Insurance from 1971 onward. This leads to a steeper upward trend—not
only is uptake among those who are working growing through this time period, but also the proportion working is growing. After 1995, the proportion receiving a Disability Insurance benefit drops a bit before becoming quite constant at all ages.

Figures 28 and 29 focus on the disability rates of men and women aged 45 to 49 and compare them to the mortality rates prevailing in those age groups. In Figure 28, mortality rates trend clearly down from 1970 to 2007, while disability rates follow first an upward trend, then down after the policy changes of 1995. For women in Figure 17, there is a clear, sharp upward jump in disability pension receipt in the early 1990s, but the rate soon stabilized around 2 percent. In neither the case of men or women is there an obvious relationship between mortality and Canada Pension Plan Disability Insurance benefit receipt.

The next two figures repeat the analysis for the age 60 to 64 age group. Again, the upward trend in disability benefit participation is contrasted by trending improvements in mortality. For men in Figure 30, there is also a fairly large downward trend after the policy reforms of 1995. There is no seeming correspondence to mortality. With women in Figure 31, the picture looks largely similar as it did for younger women in Figure 29—no clear relationship is evident.

We now turn to self-assessed health in the final four figures. At ages 45-49 for men in Figure 32, the initial data point for 1985 for being in fair or poor health is at 2 percent. However, for each of the other years, the data bounce in a tight band between 0.005 and 0.01. The same pattern is broadly true for women in Figure 33, although more of a downward trajectory is evident. In neither case, however, do these trends line up easily with what is observed for Canada Pension
Plan Disability Insurance benefit receipt. In Figures 34 and 35, we show the same results for Canadians age 60 to 64. A stronger downward trend for self-assessed fair or poor health is evident, but again this does not conform with the trends seen for disability benefit receipt.

This analysis of receipt of Canada Pension Plan Disability Insurance benefit receipt and observable measures of health exposes no clear relationship between disability benefit receipt and either of the observable health measures. This evidence makes it hard to suggest that the trends in disability benefits receipt are related to underlying actual health trends.

**Conclusion**

This paper examines disability insurance programs in Canada using a variety of data sources spanning the years 1961 to 2009—almost a half century. Over this period, we document substantial and steady improvements in mortality and some improvements in measures of subjective health. We also see large movements of women into the labor force and significant trend to early retirement for men.

Disability insurance receipt doesn’t appear to relate well to these trends in health or mortality, which suggests that something other than underlying health is driving disability benefit receipt. In the labor market, we don’t find any evidence of substitution between unemployment insurance and disability insurance receipt, but there are some time-series correspondences between early retirement at ages 60 to 64 and disability insurance trends—especially around the time of a major Canada Pension Plan reform in 1995.
References


Figure 1: Growth of Canada Pension Plan Disability Insurance Participation

Notes: Ages 25-64, both sexes. Number of DI pensions being paid divided by total population in the age range. The source is the Canada Pension Plan Statistical Bulletin.
Figure 2: Age at which 1961 age 60 and 65 mortality is reached

Notes: Source is Statistics Canada mortality data.
Figure 3: Cross-sectional mortality in 1961 and 2007

Notes: Source is Statistics Canada mortality data.
Figure 4: Mortality at specific ages for men

Notes: Source is Statistics Canada mortality data.
Figure 5: Mortality at specific ages for women

Notes: Source is Statistics Canada mortality data.
Figure 6: Subjective health and mortality at ages 60-64 for men

Notes: Source is Statistics Canada for the mortality data and the General Social Survey for subjective health data.
Figure 7: Subjective health and mortality at ages 60-64 for women

Notes: Source is Statistics Canada for the mortality data and the General Social Survey for subjective health data.
Figure 8: Program participation in 1981 for men

Notes: CPP/QPP benefits received, Unemployment benefits, and Social assistance come from the Survey of Consumer Finances. Disability rate, CPP comes from the Canada Pension Plan Statistical Bulletin.
Figure 9: Program participation in 1981 for women

Notes: CPP/QPP benefits received, Unemployment benefits, and Social assistance come from the Survey of Consumer Finances. Disability rate, CPP comes from the Canada Pension Plan Statistical Bulletin.
Figure 10: Program participation in 2007 for men

Notes: CPP/QPP benefits received, Unemployment benefits, and Social assistance come from the Survey of Labour and Income Dynamics. Disability rate, CPP comes from the Canada Pension Plan Statistical Bulletin.
Figure 11: Program participation in 2007 for women

Notes: CPP/QPP benefits received, Unemployment benefits, and Social assistance come from the Survey of Labour and Income Dynamics. Disability rate, CPP comes from the Canada Pension Plan Statistical Bulletin.
Figure 12: Flows out of the labor market, men

Notes: Source is the Labour Force Survey.
Figure 13: Flows out of the labor market, women

Notes: Source is the Labour Force Survey.
Figure 14: Comparing disability measures, men age 60 to 64

Notes: Source is the Labour Force Survey, the Survey of Consumer Finances, and the Canada Pension Plan Statistical Bulletin.
Figure 15: Comparing disability measures, women age 60 to 64

Notes: Source is the Labour Force Survey, the Survey of Consumer Finances, and the Canada Pension Plan Statistical Bulletin.
Figure 16: Employment across age groups, men

Notes: Source is the Labour Force Survey.
Notes: Source is the Labour Force Survey.
Figure 18: Unemployment across age groups, men

Notes: Source is the Labour Force Survey.
Figure 19: Unemployment across age groups, women

Notes: Source is the Labour Force Survey.
Figure 20: Out of the labor force across age groups, men

Notes: Source is the Labour Force Survey.
Figure 21: Out of the labor force across age groups, women

Notes: Source is the Labour Force Survey.
Figure 22: Reasons not working or looking for work, men age 60-64

Notes: Source is the Survey of Consumer Finances and the Survey of Labour and Income Dynamics.
Figure 23: Reasons not working or looking for work, women age 60-64

Notes: Source is the Survey of Consumer Finances and the Survey of Labour and Income Dynamics
Figure 24: Employment and mortality, men

Notes: Source is the Labour Force Survey for employment and Statistics Canada for the mortality data.
Figure 25: Employment and mortality, women

Notes: Source is the Labour Force Survey for employment and Statistics Canada for the mortality data.
Figure 26: Canada Pension Plan Disability Insurance benefits recipients, men

Notes: Source is Canada Pension Plan Statistical Bulletin.
Figure 27: Canada Pension Plan Disability Insurance benefits recipients, women

Notes: Source is Canada Pension Plan Statistical Bulletin.
Figure 28: Canada Pension Plan Disability Insurance benefits recipients and mortality rate, men age 45–49

Notes: Source is Canada Pension Plan Statistical Bulletin and Statistics Canada mortality data.
Figure 29: Canada Pension Plan Disability Insurance benefits recipients and mortality rate, women age 45-49

Notes: Source is Canada Pension Plan Statistical Bulletin and Statistics Canada mortality data.
Figure 30: Canada Pension Plan Disability Insurance benefits recipients and mortality rate, men age 60-64

Notes: Source is Canada Pension Plan Statistical Bulletin and Statistics Canada mortality data.
Figure 31: Canada Pension Plan Disability Insurance benefits recipients and mortality rate, women age 60-64

Notes: Source is Canada Pension Plan Statistical Bulletin and Statistics Canada mortality data.
Figure 32: Canada Pension Plan Disability Insurance benefits recipients and self-assessed health, men age 45-49

Notes: Source is Canada Pension Plan Statistical Bulletin and General Social Survey.
Figure 33: Canada Pension Plan Disability Insurance benefits recipients and self-assessed health, women age 45-49

Note: Source is Canada Pension Plan Statistical Bulletin and General Social Survey.
Figure 34: Canada Pension Plan Disability Insurance benefits recipients and self-assessed health, men age 60-64

Notes: Source is Canada Pension Plan Statistical Bulletin and General Social Survey.
Figure 35: Canada Pension Plan Disability Insurance benefits recipients and self-assessed health, women age 60-64

Notes: Source is Canada Pension Plan Statistical Bulletin and General Social Survey.