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Retirement Decisions of People with Disabilities: Voluntary or Involuntary

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SEDAP Research Paper No. 271

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Retirement Decisions of People with Disabilities: Voluntary or Involuntary

Margaret Denton, Jennifer Plenderleith and James Chowhan*

Abstract:
While some retirement is welcomed and on-time, other retirements are involuntary or forced due to the loss of a job, an early retirement incentive, a health problem, mandatory retirement, lack of control with too many job strains, or to provide care to a family member. An analysis of the 2002 Canadian General Social Survey reveals that 27% of retirees retired involuntarily. This research focuses on the disabled population in Canada and considers factors that influence voluntary and involuntary retirement. Further, consideration is given to the economic consequences of retiring involuntarily. This research will examine issues surrounding retirement and disability through statistical analysis of the Canadian Participation and Activity Limitations Survey (PALS) 2006 data. Methods include the use of descriptive statistics and logistic regression analysis to determine the characteristics associated with involuntary retirement. This study found that those who retired involuntarily were more likely to have the following socio-demographic and socio-economic characteristics: age 55 or less, less than high-school education, live in Quebec, rent their home, and have relatively low income. They were also more likely to be worse off financially after retirement and to be receiving social assistance or a disability benefit. In terms of disability, the likelihood of retiring involuntarily was greater for those with poor health at retirement, the age of onset was over 55, higher level of severity, and multiple types of disability. For the discussion, a social inequalities framework is used, where health selection into involuntary retirement depends on social location defined by age and education. Policy initiatives that reduce the effects of disability, and allow individuals to remain in or return to the labour force such as workplace accommodations are discussed.

Résumé:
Alors que certains départs à la retraite sont bienvenus et planifiés, d'autres sont involontaires ou forcés suite à une perte d'un emploi, une prime de retraite anticipée, un problème de santé, la retraite obligatoire, l'absence de contrôle de trop nombreuses contraintes liés au travail, ou la nécessité de fournir des soins à un membre de la famille. Une analyse de l'Enquête sociale générale canadienne de 2002 révèle que 27% des retraités sont partis à la retraite contre leur gré. Cette recherche se concentre sur la population des personnes handicapées au Canada et examine les facteurs qui influencent les départs volontaires et involontaires à la retraite. Une attention particulière est portée sur les conséquences économiques des départs involontaires à la retraite. Cette recherche permet d'examiner les questions entourant le départ à la retraite et l'invalidité par l'analyse statistique des données de l'Enquête sur la participation et les limitations d'activités (EPLA) de 2006. Les méthodes comprennent l'utilisation de statistiques descriptives et une analyse de régression logistique pour déterminer les caractéristiques associées à la retraite involontaire. Cette étude révèle que les personnes ayant pris leur retraite involontairement démontraient davantage les caractéristiques socio-démographiques et socio-économiques suivantes: être âgé de 55 ans ou moins, avoir un niveau d'éducation inférieur au secondaire, vivre au Québec, être locataire de son logement, et avoir des revenus relativement faibles. Ils étaient également plus susceptibles d'être moins bien lotis financièrement après le départ à la retraite et de recevoir de l'aide sociale ou une pension d'invalidité. En termes des effets de l'invalidité, notre étude démontre que la probabilité d'un départ involontaire à la retraite est plus importante pour les personnes en mauvais état de santé lors du départ à la retraite, dont les signes apparurent à plus de 55 ans, avec le niveau de sévérité du handicap, et souffrant d'handicaps multiples. Notre discussion repose sur un cadre social des inégalités dans lequel le choix du départ à la retraite involontaire pour des raisons de santé dépend de la situation sociale définie par l'âge et le niveau d'éducation. Les initiatives politiques visant à réduire les effets du handicap, afin de permettre de demeurer ou de retourner sur le marché du travail facilité par des projets comme l'aménagement du milieu de travail sont aussi discutées.

Keywords: Retirement, Disabled, Health, Labour Force

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Table of Contents

TABLES

APPENDICIES

Summary

Literature Review

The three main reasons workers retire are health, wealth and labour market redundancy. While some retirement is welcomed and on-time, other retirements are involuntary or forced due to a health problem, mandatory retirement, the loss of a job, an early retirement incentive lack of control, job strains, or to provide care to a family member. Recent data from Statistics Canada reveals that about one-quarter of retirees retired involuntarily and illness or disability is the number one reason for involuntary retirement in Canada.

The labour force activity of Canadians with disabilities has become an important policy topic in recent years. However the estimates of the number of people with disabilities depend on the definition. Both subjective and objective measures of disability have been used but researchers point to the problem of endogeneity or justification bias with the self-reported measures and measurement errors with both the subjective and objective measures. They recommend using both subjective and objective measures of disability to estimate the influence of disability on labour market activity.

A review of the international literature on the effects of health/disability on labour market outcomes show a consistent negative employment effect of health/disability on labour force participation. The type of disability, the severity of the disability and the age of onset are all important determinants of labour force participation. Research shows that there may be socio-demographic and productivity differences between disabled and non-disabled workers that may magnify the health effects, however when these differences are controlled, only about half of the difference in labour force participation is explained.

This paper focuses on the retirement experiences of persons with disabilities and two theoretical perspectives are considered to explain retirement transitions. The economic model considers both push and pulls factors to explain the retirement decision. However, it is argued that the economic model does not offer a satisfactory explanation because explanations of voluntariness have to include conditions of choice in retirement decisions and that retirement decisions, whether voluntary or involuntary, operate with a context of the individuals' socio-demographic characteristics, their work and retirement context. The life course perspective provides a lens for studying involuntary retirement decisions of people with disabilities. Time, process and context are all key components of a life course perspective. Retirement is seen as a life course transition and involuntary retirement, which is an unsynchronised event, is the function of the intersection of a number of trajectories including health, past education, skills and training, and work history and current historical trends such as globalization of economic activity, rapid technological development and a transformation of the industrial structure of the economy.

The literature on retirement for health reasons is much more limited; there is a smaller body of international literature that demonstrates that poor health or a change in health is a risk or pathway to early retirement. A number of studies have investigated the dynamic effects of health on the labour force participation and transitions of workers and found that it is not just poor health but "health shocks" or declines in health that help explain early retirement behaviour.

There is very little international or Canadian research on involuntary retirement per se. Voluntary or involuntary retirements are differentially associated with socio-demographic, health and disability and socio-economic factors. For example, those who retire involuntarily are more likely to do so for a health reason, a job disruption, or for care obligations whereas, those who retire voluntarily may have pensions and savings that make their retirement financially viable and they may be more likely to retire to pursue leisure or to spend more time with their families. A few studies suggest the impact of retiring involuntarily may have a negative impact on health and financial well-being.

There is virtually no research on the retirement of persons with disabilities and the objectives of this research is to address this gap by answering the following questions:

1. What are the key socio-economic characteristics of people with disabilities who voluntarily choose to retire versus those who involuntarily retire?
2. What are the key factors that influence the retirement decisions of people with disabilities? (For example, is there a link between severity of disability and involuntary retirement? Type of disability? Onset of disability? Type of employment?)
3. How does retirement affect the income security of people with disabilities who involuntarily retire from the workforce?

The sample selected for analysis is from the 2006 Participation and Activity Limitations Survey (PALS) and the 2006 Census Data. The 2006 PAL data allows an investigation of how disability and the experience of barriers affect the decision to retire and if involuntary retirement has an impact on income. This sample used for analysis includes persons with disabilities, aged 15-74, who had retired either voluntarily or involuntarily from the labour force during the period 2001 to 2006. The retirement questions were only asked to people aged 15-74 who had retired within this time frame.

Findings

The analysis of the 2006 PALS has shown that Canadians with a disability have a much higher rate of involuntary retirement than the general population. Of those who retired during the period 2001 to 2006, 39% retired involuntarily from the labour force.

The profile of Canadians with disabilities who had retired from the labour force is very heterogeneous in socio-demographic, geographic and socio-economic characteristics. The study found that some groups of people with a disability are clearly at higher risk of involuntary retirement than others and they include those under the age of 54, those who have lower levels of education, those who were classified as having economic family or unattached individual household incomes below the low income cut off point after taxes and those who are immigrants or non permanent residents.

This analysis points to the importance of considering age of onset as a precursor to involuntary retirement. Employed Canadians who were born with or acquired a disability before the age of 35 were least likely to report involuntary retirement. Persons who acquired their disability after age 55 were the most likely to report involuntary retirement, followed by those aged 35-44.

Fair or poor health at the time of retirement, severe or very severe disabilities and multiple disabilities increase the likelihood of involuntary retirement. Those who retired due to their condition, either completely or partially, were much more likely to report involuntary retirement. These findings suggest that involuntary retirement is often due to a "health shock"—the sudden onset of a disability or a dramatic change in a disabling condition that prevents people from continuing in the workforce.

Some types of disability put Canadians at greater risk of involuntary retirement than others. In particular, persons with an agility disability were most at risk of involuntary retirement.

The literature suggested that a disability benefit may be an incentive to early retirement or "pull" factor to retirement. An examination of the association between type of retirement and the receipt of various types of disability benefits show that persons with a disability who retired involuntarily are more likely to receive a disability benefit than those who retired voluntarily.

PALS data is cross-sectional in nature—that is collected at one point in time, it does not allow us to look at the causal effect of the type of retirement on income security. However, the association between type of retirement and income security shows that persons with disabilities who retired involuntarily are much more likely than those who retired voluntarily to be below the low income cut off after taxes.

Future Knowledge and Research Requirements

The review of the literature and the analysis of the 2006 PALS have suggested a number of areas for research. They include:

- Given the interest of some older Canadians to continue to participate in the labour force and the benefits of their continued employment to the economy, research should address issues that would remove impediments and provide incentives for persons with disabilities to extend their working lives. This could include: the use of technology, the acceptance by employers and unions of more flexibility in the workplace, changes in attitudes towards persons with disabilities and their capabilities and the need to provide work-place accommodation.

- Knowledge on work, retirement and disability would be greatly enhanced by the availability of longitudinal data. Future areas of research could include: the dynamic nature of disability, as well as the impact of the retirement decision on the health and well being and economic security of Canadians with a disability.

- Future research on the impact of disability pensions as a "pull" factor for retirement is needed. The PALS data suggest an effect; persons with disabilities who retire involuntarily are more likely to receive a disability benefit. Further investigation is warranted. In particular, qualitative studies that provide persons with disabilities perspectives on the retirement decision may be beneficial to understanding the role that disability benefits play in the decision to retire.

- Research suggests that women's retirement experiences are very different from men's because of the gendering of work and family life. Therefore, more research should be directed towards the impact of the interactions between family roles and work on the retirement decision, gender differences in factors leading to retirement and the consequences of involuntary retirement for women with disabilities.

- The life course perspective was found to be a useful model for studying the retirement decision. However, a better test of this framework would require both the collection of longitudinal data, as well as additional information on the multiple reasons given for why people retire (beyond their health condition) as well as more information on the work and family context.

- Further research is warranted on the role of chronic diseases in causing work limitations leading to involuntary retirement. Given that the main causes of work limitations are musculoskeletal, circulatory, or due to a work-place injury, the role that chronic disease, plays in involuntary retirement would be of interest, especially given new treatments that prevent disabling conditions and pain and return to work programs.

Introduction

Research has shown that the three main reasons workers retire from the labour market are health, wealth and labour market redundancy (Myles, 2002). While some retirement is welcomed and on-time, other retirements are involuntary or forced due to the loss of a job (Osberg, 1988), an early retirement incentive (Frenken, 1991), a health problem, mandatory retirement (Schellenberg, 1994), lack of control with too many job strains (Trucotte & Schellenberg, 2005), or to provide care to a family member (McDonald et al., 2000a). Poor health is one of the most frequently reported reasons for early retirement (Morissette, Schellenberg and Silver 2004; Pyper, 2006). An analysis of the 2002 General Social Survey (GSS) reveals that 27% of retirees retired involuntarily (Schellenberg & Silver, 2004). Illness or disability is the number one reason for involuntary retirement in Canada (Statistics Canada, 1997).

Voluntary or involuntary retirements are differentially associated with socio-demographic, health and disability and socio-economic factors. For example, those who retire involuntarily are more likely to do so for a health reason or a job disruption, whereas, those who retire voluntarily may have pensions and savings that make their retirement financially viable. This review will consider the impact of these characteristics for adults with disabilities on voluntary and involuntary retirement.

This research will examine issues surrounding retirement and disability through statistical analysis of the Participation and Activity Limitations Survey (PALS) 2006 data. In particular, it will examine the influence of disability on people's retirement decisions, the factors that influence whether someone retires voluntarily or involuntarily, the barriers that affect the decision to retire and if involuntary retirement has an impact on income security.

Literature Review on the Retirement of Adults with Disabilities

Methodology

The literature review examines the existing literature and research on the retirement of adults with disabilities. It focuses on the Canadian case, but also includes international literature and research where appropriate. It begins with a review of the literature on the measurement of disability and a brief overview of the incidence of disability in the Canadian population including a description of the types of disabilities, and the dynamic nature of disability. This is followed by an examination of the labour force participation of persons with disabilities. Briefly we discuss retirement in Canada, then turn to theoretical perspectives useful for understanding the predictors of voluntary and involuntary retirement. Health and disability as a risk for retirement is discussed and finally the limited research on involuntary retirement is presented.

The methodology for selecting the literature reviewed included selecting a set of key words a) related to the dependent variables b) related to the independent variables c) relating to both the dependent and independent variables. The following scholarly formats were searched for articles dating back to 1990: a) peer-reviewed articles, b) books, c) Statistics Canada publications, and d) conference papers/proceeding. To locate related peer-reviewed articles researchers used the keywords to search multiple databases such as: AgeLine, JSTOR, Social science abstracts, sociology abstracts, Sociology: A SAGE Full-Text Collection, Scholars Portal Search. Again, using key words relevant books and book chapters were identified through search engines such as: ebrary. Publications such as Health Reports, Perspectives etc., produced by Statistics Canada were also searched. Internationally there have been a number of studies done, such as the Health and Retirement Study and these websites were searched for pertinent information.

See Appendix A for a list of both the databases and the search criteria which are used.

Measurement of Disability

The low employment rate of people with disabilities has become an important policy topic in recent years. However the number of people with disabilities and the number of people with work-limiting disabilities depend on the definition one employs and the definition of disability is one of the major issues in the field.

Disability is a measure of limitations in activities such as working or keeping house, it is not an attribute such as gender. There are two main ways in which the existence of disability can be determined from survey data: individuals' assessment of their own condition (i.e., subjective measures), and self reported information on specific health conditions (i.e., objective measures). The method of measurement is an important issue because the estimates of labour market outcomes such as employment participation rates, wage rates or pathways to retirement depend on the definition of disability that is used. Researchers have noted the possible selection biases and measurement errors associated with each type of measure.

In many labour force and health surveys such as the Canadian Community Health Survey and the Labour Force Survey, survey respondents are asked if they have a health conditions that limits the kind or amount of work that they can perform. The main advantage of such a question is that respondents give direct information on work ability. As Melanie Jones points out in her review of the existing evidence on the impact of disability on labour market outcomes, "determining whether an individual has a long-term health problem, that limits the kind or amount of work, are both subjective and there may be social and economic incentives to misreport disability status" and thus overestimate the impact of disability on employment status (2008:4). It is argued that an individual's declaration may depend on their preference for work and the possibility of claiming disability benefits. In particular, answers to survey questions about work-limiting disability in the context of labour force withdrawal are

hopelessly entangled with the need to justify it (McDonough and Amick, 2001). This has been labelled the "justification bias" (disability as a justification for choosing non-employment) or "health selection" out of the labour force and it is a methodological issue because self-reported disability status is likely to be endogenous, meaning that disability status is not independent of labour force participation, and this can lead to biased estimates of the effect of disability on employment. (Bound, 1991; Disney, Emmerson & Wakefield, 2004; McDonough et al., 2001). Further, there is an additional endogeneity problem if nonparticipation actually affected health (Stern, 1989).

The second method uses self reported information on specific health conditions or more objective measures of health and may include information on self-reported or physician diagnosed chronic health conditions, functional limitations, impairment specific information and health indices (Campolieti, 2009). Although these measures are less likely to suffer from justification bias, the information on disability is less likely to be closely related to limitations on work and thus suffers from measurement error (Bound, 1991; Jones, 2008).

Whereas, the endogeneity of self-reported measures will overestimate the effect of disability on labour market outcomes, and the measurement error associated with the more objective measures will underestimate the true effect, research studies typically use both objective and subjective measures to estimate the influence of disability on labour market activity (Stern 1989; Kruse & Hale, 2003) and to eliminate the endogeneity of disability (Disney et al., 2004; Campolieti, 2002). According to Jones "This procedure enables aspects of ill health that have the most influence on self-reported health to be identified, and measures the extent to which self-reported disability represents true work limiting disability" (2008:6).

Self-reported disability is also subject to measurement error for a number of reasons including: fear of stigmatization, individual differences in the perception of work limiting disability, occupational differences, accessibility of the workplace, technological advances, employment opportunities and policy changes (Campolieti, 2002; Kruse & Schur, 2003; Jones, 2008). Some individuals may have disability that they do not perceive as work limiting and therefore this measure would underestimate the number of people with disabilities (Burkauser et al., 1995). This measurement error is also compounded across countries where cultures, institutions and policies differ. Banks et al., (2004) found that the difference in self-reported disability across countries was partly due to international differences in disability thresholds.

While, work-limiting definitions are not ideal, nationally representative data sets still use them to monitor trends in labour market outcomes and to understand differences in labour force participation or income differences. However, they may differ from the method used to assess the validity of a disability benefit claim or disability as defined by legislation. The appropriate definition of disability will depend on the issue being studied. For the purposes of PALS, persons with disabilities are those who reported difficulties with daily living activities, or

who indicated that a physical or mental condition or a health problem reduced the kind or amount of activities that they can do (Statistics Canada, 2007a).

Persons with Disabilities are Disadvantaged in Terms of their Labour Force Participation

Data from the Participation and Activity Limitation Survey (PALS) indicates that in 2006 an estimated 4.4 million Canadians – one out of every seven in the population or 14%—reported having a disability (Statistics Canada, 2007a). A review of the international literature on the effects of health/disability on labour market outcomes shows that the focus of the literature has been on wage discrimination (for a review of studies see Baldwin & Johnson, 2001; Jones, 2008), however studies show that the impact of health/disability on labour force participation is more dramatic. Study after study has demonstrated a consistent negative employment effect of health/disability on labour force participation (Baldwin & Johnson, 1994, 1995; Kidd et al., 2000; Mein et al., 2000; Jones, 2008; Yelin & Trupin, 2003; McGarry, 2004; Pelkowski et al., 2004). This effect is found both for the subjective measures of self-perceived health and activity limitation as well as the more objective measures of functional health and chronic disease. As well, each measure of disability is shown to have strong and independent effects on participation (Stern, 1989).

There are a few studies that examine the impact of disability/health status on labour force participation in Canada and their findings are limited due to the fact that the Canadian studies primarily use cross-sectional surveys, many of which are no longer collected, they use a wide variety of measures of health/disability and they lack a core set of findings (Campolieti, 2002). In contrast, the disability literature from the US and the UK has benefited from the use of a consistent longitudinal data set—the Health and Retirement Survey—which covers all aspects of disability and disability insurance systems including the effects of disability/health on labour force participation, earnings and the disincentive effects of disability benefits, and an examination of the wage effect (Baldwin & Johnson, 2001; Jones, 2008).

Hum and Simpson (1996) used the Canadian Labour Market Activity Survey to show that compared to persons without disabilities, persons with disabilities have lower participation rates, average hours of work and average earnings. Campolieti (2002) used the 1994/1995 wave of the National Population Health Survey to estimate the effect of disability status (using the activity limitation question) on Canadian males age 45 to 64, controlling for differences in chronic diseases, types of disability, body mass index, age, household size, marital status, education and the provincial unemployment rate and found that disability status has a large effect on the labour force participation of older men. In an analysis of the longitudinal SLID data, Galarneau and Radulescu (2009) show that for many persons with disabilities, the effects of disability extend beyond the period of disability in terms of lower participation rates, annual work hours, and lower incomes.

Statistics Canada recently published an analytical paper that provides data on the participation rates of Canadians with disabilities using the PALS 2006 (Statistics Canada, 2008). This study shows that persons with disabilities are much less likely to participate in the labour force than persons without disabilities. In 2006 the labour force participation rate for Canadians aged 15 to 64 was 80%, while those with a disability had a rate of 56%. The labour force participation rates decrease with age beginning at about age 55 for Canadians without a disability and at age 45 for those who are disabled. Whereas 65% of Canadians without a disability age 55 to 64 are in the labour force, the participation rate for those who are disabled is 42%. More men than women with a disability are in the labour force (59% vs. 53% respectively) and the gender difference increases with age, so that by age 55-64, 37% of women with a disability are employed as compared to 46% of men. There are also provincial differences in labour force participation rate for those with a disability. The western provinces have higher participation rates than average whereas Quebec, Ontario and the eastern provinces all have lower participation rates. Other studies suggest that persons with disabilities are concentrated in non-standard forms of employment, including part-time, temporary and self-employment that have lower wages and fewer benefits (Schur & Kruse, 2002; Schur, 2003; Yelin & Trupin, 2003; Hotchkiss, 2004). Further, research on the labour force participation of persons with disabilities suggest that they may be concentrated in low skilled jobs (Jones, 2008) in physical occupations (Loprest et al., 1995) and in health care and social assistance occupations (Williams, 2006).

The type of disability, the severity of the disability and the age of onset are all important determinants of labour force participation. Several international studies show that those suffering from a mental health condition are less likely to be employed (Blackaby et al., 1999; Jones et al., 2003). Zwerling et al., (2002) finds considerable variety in the propensity to work depending on the type of mental health problem. Persons with disabilities related to cardiovascular disease, musculoskeletal disease and respiratory disease are also less likely to work (Zwerling et al., 2002). Persons who have multiple health problems are also less likely to be employed (Jones et al., 2003; McDonnall et al., 2008; Galarneau & Radulescu, 2009). Jenkins and Rigg (2003), in an analysis of the British Household Panel Survey (BHPS), found that individuals who experienced disability onset were typically more disadvantaged before onset than those without a disability. They were more likely to have lower pre-disability incomes, were less likely to be in paid work and to have lower levels of education. Using the Canadian Labour Market Survey, Hum and Simpson (1996) show that severity has an important influence on all labour market outcomes and that sensory disabilities are not associated with labour market disadvantage. Statistics Canada (2008) has also demonstrated that labour force participation decreases with the severity of the disability. 70% of those who rate their disability as mild are in the labour force as compared to 60% of those with a moderate disability and 42% with a severe disability. Labour force participation also varies by the type of disability as follows: hearing (58%), pain (56%), agility (50%), mobility (49%), seeing (48%), learning (46%),

emotional/psychological (43%) memory (38%), communication (35%), and developmental (31%).

The most frequent type of disability is not caused by birth defects or traumatic accidents, but rather by musculoskeletal conditions such as arthritis or cardiovascular conditions, typically caused by chronic degenerative processes that increase with age. Baldwin and Johnson (2001) suggest that the disabled population should be split into two main groups for analysis of labour market outcomes: those who are disabled during childhood and those who are disabled later in life (after entering work). This distinction is important because the first group face discrimination in education and upon entry to work, whereas the second group are affected by discrimination when returning to work after an illness. However, they note that very few studies have information on the date of onset and furthermore, disability may not be sudden but a gradual deterioration in health. Pelkowski and Berger (2004) confirm the importance of considering age of onset as they find the effect of disability depend on the age of disability onset, with the most pronounced effect for men and women in their thirties and forties. Jenkins and Rigg (2003) investigate the effects of selection, onset and duration on the economic disadvantage experienced by persons with disabilities of working age using the BHPS. They argue that there are three sources of economic disadvantage among those who become disabled: a selection into disability, (i.e., individuals who became disabled were typically more disadvantaged before onset), the impact of disability onset, and the impact of remaining disabled post-onset. They show that labour force participation rates fall with disability onset, and continue to fall the longer a disability spell lasts, whereas average income falls sharply with onset then recovers subsequently, though not to pre-onset levels.

Researchers recognize that there may be socio-demographic and productivity differences between disabled and non-disabled workers that may magnify the "health effects" on employment outcomes (Smith & Twomey, 2002; Baldwin & Johnson, 2001). Differences in demographic characteristics (i.e., gender, age, marital status), human capital characteristics (i.e., education, work experience) economic incentives (i.e., wages), and regional effects (Jenkins & Rigg, 2003; Jones et al., 2003) also impact the employment outcomes of the disabled. When these differences are controlled, about half of the difference in labour market outcomes is explained (Blackaby et al., 1999; Madden, 2004). Other factors have been shown to be significant determinants of employment among workers with disabilities such as the economic climate (Mashaw & Reno, 1996), the disincentive effect of disability benefit payments (DeLeire, 2000; Bound & Waidman, 2002; Campolieti, 2002; Harkness, 1993), the attitude of employers and job accommodations (Baldwin & Johnson, 2001).

Studies show that it is important to differentiate between subgroups of people with disabilities to identify those with the greatest labour market disadvantage. Zwerling et al., (2002) examined factors associated with employment among Americans with disabilities using data from the National Health Interview Survey and found that married men as compared to

unmarried men and those with more education were more likely to work. McDonough & Amick (2001) look more closely at those who leave the labour force because of poor health using longitudinal data from the US-based Panel Study of Income Dynamics. They find that social position matters in the context of health and labour force activity and groups that are disadvantaged may be less likely to exit from the labour force. The patterns are complex and suggest the importance of considering the intersection of gender, age, and socioeconomic position as multiple sites of experience.

There are a few studies that focus on the impact of a specific chronic disease on labour market experience. Mitchell (1991) uses longitudinal data to examine how it is not the onset of arthritis but rather the deterioration of health over time that is the most significant determinant of why men with arthritis leave the labour force. Vijan and colleagues (2004) examined the impact of diabetes over time using the Health and Retirement Survey (HRS) and found an impact of the disease on the probability of retirement and the duration of not working due to health impairment.

Theoretical Perspectives on Retirement of Persons with Disabilities

Economic models of retirement tend to consider two sets of factors to explain the retirement decision: choice--the extent of leeway individuals have in making the retirement decision and motivation--the various push and pull factors (the cost-benefit ratio) of retiring at any given point (Szinovacz, 2003*;* Szinovacz & Davey, 2005*)*. Push factors have been described as negative considerations, like poor health, or dislike of one's job that induce workers to retire. Pull factors are typically positive such as the desire to pursue leisure interest or volunteer opportunities or financial security through retirement savings and pension benefits (Schultz et al., 1998). However, it is argued that some factors such as early retirement schemes or mandatory retirement can be viewed as either push or pull factors depending on how the individual perceives them. Motivation will be high if benefits (e.g., expected pensions, time for leisure or family activities, decreased job stress) outweigh the costs of retirement (e.g. loss of time with co-workers, loss of benefits, and loss of sense of work-related accomplishment). However, involuntary retirement cannot be explained by the economic model. It is only when choice exists that cost-benefit considerations enter retirement decision.

The life course perspective provides a lens for studying involuntary retirement decisions of people with disabilities. Time, process and context are all key components of a life course perspective (Moen, 1996). From the life course perspective, an individual's life course is composed of multiple, interdependent trajectories or pathways (for example: work, retirement, family, education, health, financial, etc.). What happens along one trajectory impacts what happens along other trajectories and the roles held in one trajectory are often coordinated with roles along other trajectories, for example, health and work roles (Szinovacz, 2003). This perspective emphasises the timing by which individuals and families make their transitions into and out of various roles, such as retirement, in relation to the timing of society. It emphasizes

the synchronisation of individual time and historical time, and the cumulative impact of earlier life events as shaped by historical forces on subsequent events. Retirement is seen as a life course transition and involuntary retirement, which is an unsynchronised event, is the function of the intersection of a number of trajectories including health, past education, skills and training, and work history and current historical trends such as globalization of economic activity, rapid technological development and a transformation of the industrial structure of the economy (McDonald et al., 2000b).

Context can be seen at two levels: structural and individual (Moen, 1996). A life course perceptive draws attention to the role of federal and provincial legislation and corporate policies in shaping not only the timing of retirement but also the availability of subsequent pensions and health coverage (Moen, 1996). Policies such as mandatory retirement, which has only recently been abolished in most of Canada, the availability of social security and the Canada/Quebec pension plans have normatively defined retirement in terms of timing and legitimacy. Corporate policies such as the availability of early retirement incentive packages, downsizing, the growth in non-standard work and contingent work force, the accommodations made for persons with disabilities all contribute to contextual factors that influence the timing of retirement. For persons with a disability their retirement is also impacted by the availability of disability pensions, federal and provincial legislation that address issues of equality and access to the workplace. The personal circumstances of individual's lives, their health, their education, marital status, and family composition all have important implications for their retirement decision.

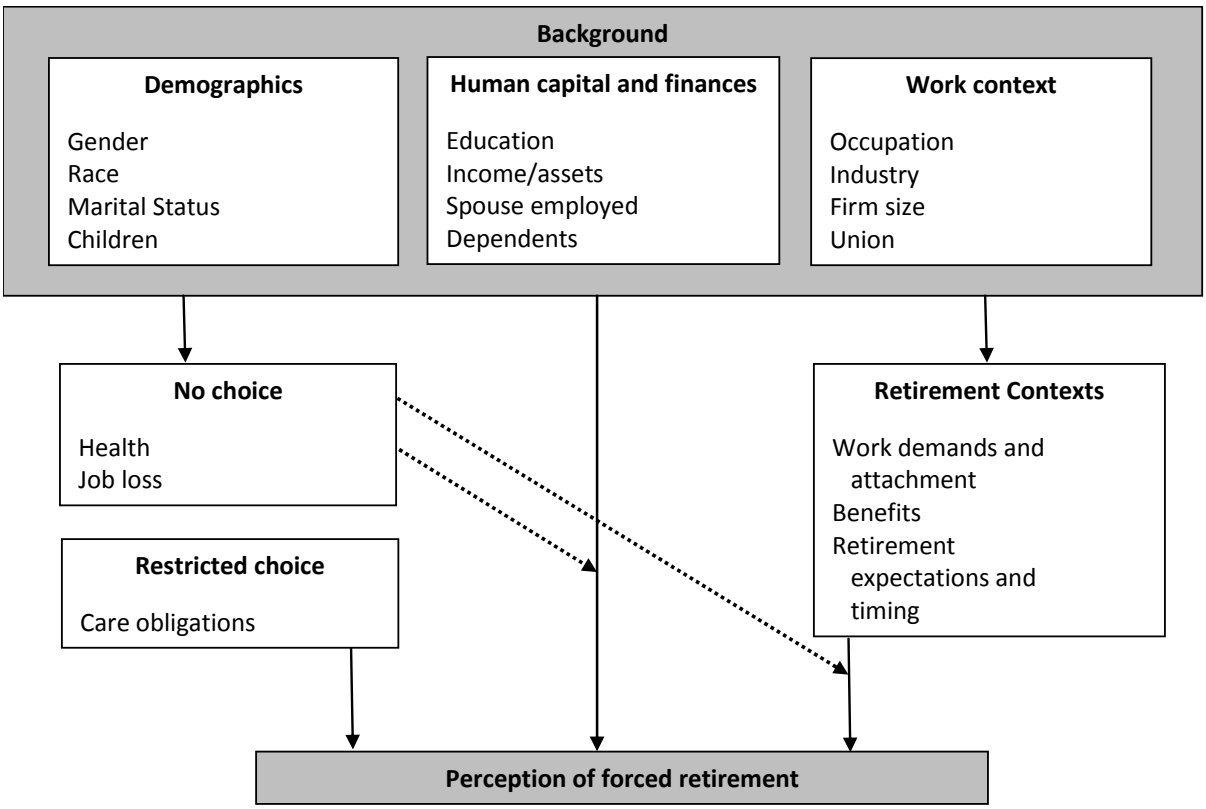
Sociologists have long argued that individuals hold various statuses in society, for example, disabled, women, wife, mother, recent immigrants, and Aboriginals. These statuses intersect to influence a person's life. For example, disabled women may have a very different life trajectory compared to their male counterparts. The challenge for research is to study older sub-groups of the population in order to understand how their experiences may differ.

An important proposition of the life course perspective for understanding retirement timing is the concept of pathway, in other words past experiences matter. Although family and educational experiences are important, employment history is very important. Occupational position and pathways shape individual experiences in the broader context, which in turn shape the options for retirement. Those who are well-educated, in professional or managerial jobs are more likely to continue working whereas those with less education or those in blue-collar jobs that require physical labour are more likely to retire earlier. For those who are disabled the disability or health pathway is important for understanding involuntary retirement.

Szinovacz and Davey (2005) have used a life course perspective to propose a theoretical model of the predictors of forced retirement that provides an insightful lens for studying the retirement decisions of people with disabilities. They argue that the voluntariness of retirement refers to retirees' perception of whether the retirement was voluntary or not. It

derives from choice, motivation and worker's perceived control over the retirement decision (Moen, 1996; Szinovacz & Davey, 2005). The timing of retirement cannot be separated from choice and control over the decision of whether and when to retire. Most research on retirement assumes that individuals are active, purposeful agents in planning their retirement, but when retirement is involuntary, in the face of a change of health, downsizing or mandatory retirement then individuals have very little control over the timing of their retirement. Retirement is voluntary when individuals perceive they have control over the decision. For example, some disabled workers may perceive their retirement was voluntary because it was initiated by them rather than their employers whereas, disabled workers who had to leave because of a change in health or because of job loss may feel the retirement was involuntary. Thus the costs of remaining in the labour force, especially when they arise from situations beyond the individual's control, can lead to perceptions of involuntary retirement even when the individual had the choice to remain employed. Figure 1 graphically displays their model of forced retirement and shows that retirement decisions, whether voluntary or involuntary, operate with a context of the individuals' socio-demographic characteristics, their work and retirement context.

Figure 1: Theoretical model of predictors of forced retirement perspectives (Szinovacz & Davey, 2005:37)



The Research Policy Initiative has used life course theory to propose *A Life-Course Approach to Social Policy Analysis* (Social Development Canada, 2004). This framework builds on sociological literature on the life-course and shows how this theory may be used to understand the roles of people in relation to different social institutions and to analyze policy. Importantly, it views the resources between an individual and the main institutions of society as a two-way flow, viewing an individual as having a stock of assets including wealth, housing, and human and social capital. An individual's stock of resources is a way of managing risk so that a setback in one resource (i.e., forced retirement) may be buffered by other resources (i.e., social networks). If compensation is not possible, or if multiple resources break down at the same time, the results may be catastrophic. This framework is useful for policy because it allows "policy to focus more clearly on those transitions and the resources that support successful transitions". While most policy addresses problems that occur in one single trajectory, such as education or social security, needs are greatest when problems have multiple sources. As described in this document, "at the highest level of generality, the goal of social policy can be stated in terms of supporting individual well-being". The concept of "social inclusion" is useful here - "a situation that exists when everyone can participate as valued, respected, and contributing members of society." Exclusion occurs when individuals do not have adequate resources to manage the key transitions in life. Fundamental for social inclusion are the resources that allow disabled individuals to participate in society and the life-course framework, it is argued, is tailor-made to describe the central policy goal of inclusion.

Health and Disability as a Risk for Early Retirement

The literature on retirement for health reasons is much more limited; the focus of study has been on the impact of health on labour force participation. However, there is a smaller body of international literature that demonstrates that poor health or a change in health is a risk or pathway to early retirement. A number of studies have investigated the dynamic effects of health on the labour force participation and transitions of older workers using the US longitudinal Health and Retirement Survey (HRS). Bound, Schoenbaum, Stinebrickner and Waidmann (1999) found that it is not just poor health but "health shocks" or declines in health that help explain early retirement behaviour. Dwyer and Mitchell (1999) use both self-rated health and objective measures of health from the HRS to show that the likelihood of retirement is greatest for chronic health conditions such as functional limitations and circulatory disorders. Using longitudinal data from the US-based Panel Study of Income Dynamics, McDonough and Amick (2001) found evidence that the hazard of labour market exit in the context of perceived ill health depended on gender and education.

Studies from the UK and Europe also collaborate the impact of health on early retirement. Using longitudinal data from the Whitehall II study, Mein et al., (2000) demonstrated that self-perceived health is a predictor of early retirement. Disney et al., (2004) using the BHPS confirm that it is the deterioration in self-reported health that is associated with the transition into non

employment. Schuring et al., (2009) use five waves of the European Community Household Panel to show that among participants aged 55 years and over, those with poor health (as measured by perceived poor health and a chronic health problem) had a higher chance of retiring the next year than those in good health. Being married reduced the likelihood of retirement and those with poor health who had higher levels of education were less likely to retire. In a Norwegian study, Blekesaune and Solem (2005) found that disability retirement is related to physical jobs strains.

A recent Canadian study shows that one-third of recent retirees left for health reasons (Morissette, Schellenberg & Silver 2004). In an analysis of the 2003 Canadian Community Health Survey, Pyper (2006) reveals that while retirement was the reason given most often by Canadians, aged 50-69 as their reason for not working, nearly half a million Canadians were not working for health-related reasons. Interestingly, the proportion not working for health related reasons decreased with age from 41% for those 50-54 to 6% for age 65-69. Among those not working because of their health, around half had mobility limitations and they were much more likely to have severe activity limitations (Williams 2006). Pyper (2006) also shows that, compared to those who are working or who left the workforce for other than health related reasons, those not working for health related reasons were much more likely to rate their health as fair or poor, to rate their mental health status as fair or poor, to have higher levels of self-perceived stress, suffer from pain, and have multiple chronic conditions; the most common being arthritis/rheumatism, back problems, high blood pressure and heart disease. Further, she reports that smoking and unhealthy weight are strongly associated with not working for health reasons.

Involuntary Retirement

There is very little research on involuntary retirement per se. The literature review revealed two studies that focused on involuntary retirement in the U.S. Szinovacz & Davey (2005), using a life course perspective, investigate the predictors of perceptions of involuntary retirement among older workers using waves 1-4 of the HRS. Using a life course perspective, their analysis considers predictors such as no-choice factors (i.e., health and job disruption), work context, retirement context, and timing of retirement, care obligations, human capital factors and demographic background factors. They find that nearly one-third of older workers perceived their retirement as forced or involuntary. Their analysis shows that the two most important reasons for involuntary retirement are job displacement and health/disability. Care obligations also predicted forced retirement, but to a lesser extent. They did not find that work context plays a significant role in the perceptions of forced retirement. In terms of retirement timing, older workers retiring earlier than expected were more than twice as likely as on-time retirees to perceive their retirement as forced, demonstrating that lack of control over the retirement transition leads to a perception of involuntary retirement. In terms of benefits, having a pension (for men) and being covered by health insurance led to perceptions that retirement

was voluntary. In terms of demographic background, human capital and financial characteristics, non-married Americans, those with children and those with financial assets were less likely to perceive their retirement as forced. Szinovacz and Davey also found gender differences in the factors that predict perceived involuntary retirement. For men, having a new partner and having financial dependents were less likely to perceive their retirement as forced. For women, they found that married women whose partner is employed are more likely to view their retirement a forced, confirming research that shows that couples prefer joint retirement and that separate retirement of spouses can often be attributed to adverse circumstances (Szinovacz, 2003). Further, women whose marriages had ended were much more likely to view their retirement as forced. Their analysis clearly demonstrates the usefulness of a life course perspective in identifying factors related to the perception of involuntary retirement.

One other study looks directly at the influence of push and pull factors on voluntary and involuntary retirement using one wave of the HRS study. Shultz and colleagues (1998) report that different push and pull factors distinguish voluntary and involuntary early retirees. In particular, for those who retired involuntarily the negative push factor of poor health was most influential to their decision to retire, while the voluntary group were more attracted by the positive pull factors of the desire to "do other things" or no need to work based on adequate finances. After retiring for those who retired voluntarily, the desire to relax or spend time with their spouse was important whereas for those whose retirement was involuntary, spending time with their spouse and financial concerns were not as important. They also report that the voluntary retirees were more educated, had higher incomes, and were more likely to be retired from managerial and professional occupations.

There is a very limited literature on retirement and disability in Canada. As noted earlier, illness or disability is the number one reason for involuntary retirement in Canada (Statistics Canada, 1997). Schellenberg and Silver (2004) found that that 27% of retirees in Canada retired involuntarily and those who retired involuntarily were more likely to have retired before the age of 60 due to health reasons or a job disruption. Further, McDonald et al., (2000b) identified that those forced to retire were more likely to be unmarried, immigrants, have lower levels of education, work in the private sector of the economy or the goods producing industries and to have experienced a longer period of unemployment.

There is a growing international literature on the possible role of disability benefits as a disincentive to labour force participation, prompted by dramatic falls in participation rates. In theory disability insurance provides benefits for workers who are physically incapable of finding suitable work. A literature review has revealed that while there is extensive research in the United States (Bound & Burkhauser, 1999) and Britain (Bell & Smith, 2004), on the disincentive effects of disability benefits, very little work has been done in Canada on this topic (see Harkness, 1993; Campolieti, 2002; Gruber 2000). This research suggest that the implementation of disabilities benefits act as a disincentive to labour force participation, especially for those

with low levels of education, however, other factors may be at play including high rates of unemployment during periods of economic downturns, and early retirement packages as bridges into retirement (For a review of this literature see Jones, 2008).

Impact of Involuntary Retirement

The emerging perspective in the retirement literature is that it is the nature and timing of retirement that affects health (physical and mental), and economic outcomes, not the event in and of itself (Marshall & Clarke 1998). As argued here, part of the difficulty in assessing the impacts of retirement is that retirement can be either voluntary or involuntary. Thus the circumstances surrounding retirement and how individuals perceive their retirement can be extremely consequential (Moen, 1996).

There is mounting evidence that conventional scheduled retirement has no adverse effects on health, while early forced or involuntary retirement has a negative effect on health (Marshall & Clarke 1998; McDonald et al., 2000b). Until recently, we have lacked the longitudinal data in Canada to study the causal direction of this relationship. Analysis of the HRS in the US suggests that the effect of late-life involuntary job loss has a negative effect on both physical functioning and mental health, even after baseline health status and socio-demographic factors was controlled (Gallo et al., 2000).

McDonald and colleagues (2000b) argue that relatively little attention has been paid to the economic consequences of retiring because of poor health, although access to disability benefits may help to bridge income into retirement, there may be additional costs related to health conditions. They found that those forced to retire have lower self ratings of physical and emotional health and lower retirement and life satisfaction. Schellenberg and Silver (2004) found that those who retired involuntarily were more likely to have retired before the age of 60 due to health reasons or a job disruption. They were also more likely to have poorer health, to be worse off financially after retirement, less likely to have a pension and to be dissatisfied with their lives.

These few studies suggest that the impact of retiring involuntarily for persons with disabilities may have a negative impact on their financial situation.

Summative Data Analysis

The Objectives of Our Research Project

The review of the literature did not reveal any literature that specifically addresses the retirement decisions of the disabled population in Canada. The objectives of this research are to address this gap through answering the following research questions.

1. What are the key socio-economic characteristics of people with disabilities who voluntarily choose to retire versus those who involuntarily retire?
2. What are the key factors that influence the retirement decisions of people with disabilities? (For example, is there a link between severity of disability and involuntary retirement? Type of disability? Onset of disability? Type of employment?
3. How does retirement affect the income security of people with disabilities who involuntarily retire from the workforce?

Analysis of PALS Data

Data used for the analysis is taken from the 2006 Participation and Activity Limitations Survey (PALS) and Census data, as appropriate. PALS is a post-census, national survey that collects information on adults and children who have a disability. The 2006 PALS data allows an investigation of how disability and the experience of barriers affect the decision to retire and if involuntary retirement has an impact on income. Access to the PALS data is available through the Statistics Canada Research Data Centres (RDCs). We signed the Statistics Canada contract granting us permission to use the PALS at the McMaster University Research Data Centre and the PALS data files were prepared for our use.

In the PALS, the definition of disability uses the bio-psychosocial framework from the World Health Organization in which disability is "the result of complex interactions between a health problem or functional limitation and the social, political, cultural, economic and physical environment. These, in combination with personal factors such as age, gender, and level of education, can result in a disadvantage—that is, a disability. Disability is (therefore) not defined merely as being the direct result of a health problem or any physical or mental limitation" (Human Resources and Social Development Canada, 2006), rather, the filter question used on the 2006 Census to identify people with a disability who were subsequently included in the PALs survey asks about difficulties with daily living activities, or a physical or mental conditions or a health problem that reduced the kind or amount of activities that they can do (Statistics Canada, 2007b).

The sample selected for analysis from PALS includes persons with disabilities who were aged 15-74 who had retired either voluntarily or involuntarily from the labour force during the period 2001 to 2006. The retirement questions were only asked to people aged 15-74 who had retired within this time frame. Further, the sample was selected so onset of the disability

occurred before the age of 65. The sample (which consisted of 990 respondents) was weighted using the weights derived by Statistics Canada so that it represents the Canadian population, although respondents from the far north were excluded due to sample size considerations. See Appendix A for a description of the selection criteria for the sample.

Statistics Canada has collected both subjective (i.e., individual's assessment of their own condition) and objective measures of disability status (i.e., information on specific health conditions) in PALS. As noted in the literature review, each method has its issues with bias and measurement error. Therefore, we have used both subjective and objective disability measures in our analysis of the PALS data set to overcome the measurement and bias issues.

The PALS sampling plan can be considered as a two stage stratified design which used the 2006 Census long form sample. This long form contains two general filter questions on activity limitations and long-term disabilities. The 2006 PALS selected a sample of individuals from respondents on the Census long form who reported a positive response to at least one of these two filter questions. These respondents are said to be "individuals with disabilities" according to the Census. PALS repeats the filter questions on the Census long form and if respondents answer no when interviewed by PALS, they go through a sizable module in the PALS survey investigating why the answers were different to filter out the false positive answers. PALs may be interpreted as a conservative estimate of the population with disabilities, but a significantly better estimate than that provided by the census (Correspondence from HRDDC, March 17, 2010).

Based on the literature review, the theoretical perspectives on retirement and the information available in PALS we selected the following variables for analysis. To measure voluntary/involuntary retirement, PALS asked respondents who were permanently retired, whether their retirement was voluntary (coded as 1=voluntary, 2=involuntary). Socio-demographic characteristics included: gender, marital status, and education. For a full description of the variables selected, details of the variables used, their construction and the variable names used for the analysis refer to Appendix A. Residency was measured by province, urban/rural residence and home ownership. Retirement characteristics include employment status prior to retirement (full versus part-time) and whether employment was self-employment. Unfortunately, Statistics Canada did not code the occupation or industry of respondent's last job, although the question was asked. Socio-economic characteristics include total personal income and total household income. Income from other sources was also measured including C/QPP, OAS/GIS, and retirement income. Retirement income refers to income from an employer pension plan, payments from a matured Registered Retirement Savings Plan (RRSP) in the form of a life annuity, a Registered Retirement Income Fund (RRIF) and income from other annuities.

There are several variables that relate to disability or health status including: self-perceived current health and health at retirement, the age of onset, type of limitation (hearing, seeing,

communication, mobility, agility, pain, learning, memory, psychological/emotional). In addition, there are measures of the degree of severity, and whether the respondent permanently retired due to their condition and whether their condition prevents them from working. We also constructed a variable to sum the number of disabilities. Information on income sources as well as the amount of income from various sources is also used (workers compensation, Canada or Quebec Pension disability benefit, private disability insurance benefit, provincial or municipal social assistance, motor vehicle accident insurance disability benefit & Veterans Affairs Disability pension benefit).

The first step in the analysis is to describe the characteristics of this sample of retired persons with disabilities and Table 1 presents the frequencies and per cent for each of the variables included in the analysis.

To answer the research questions, the second step is a bi-variate analysis that examines the association between voluntary and involuntary retirement by socio-demographic, economic and geographical characteristics, health and disability characteristics and retirement characteristics. Results are shown in tabular form. Variance estimation using the bootstrap weights is applied.

The third step is multivariate logistic regression analyses of the determinants of involuntary retirement as compared to voluntary retirement. Bootstrap weights are used. Results are shown both as odds ratios and regression coefficients are included in an Appendix B. Only the odds ratios will be discussed. The multivariate logistic analyses shows the relationship of each of the possible determinants of involuntary retirement when other determinants are controlled or held constant.

Socio-Demographic, Health and Disability, Retirement and Socio-Economic Characteristics of the Sample

The sample is composed of persons with a disability who retired from the labour force between the years 2001 to 2006, as shown in Table 1. There are an equal proportion of men and women in our sample (50%) and they range in age from 15 to 74 years. In terms of the proportions by age, 4% are 15-44, 18% are 45-54, 55% are 55-64 and 23% are 65-74. Most respondents are married (65%), followed by divorced (18%), widowed (7%), single (7%) and separated (3%). 19% were landed immigrants or a non-permanent resident. In terms of education, 27% had less than high school, and another 27% had graduated from high school. 35% had some postsecondary education and 11% had a university degree. Nearly forty per cent (38%) were living in Ontario, followed by 20% in Quebec, 17% in the Prairies, 16% in BC and 9% in the Atlantic Provinces. Most lived in an urban area (81%) and owned their own residence (79%). In terms of their median incomes personal income was $18,500 and $48,320 for total household income.[i] 17% were classified as having economic family or unattached individual household

incomes below the low income cut off point after taxes, according to Statistics Canada's definition.

Table 2 reports the income sources for persons with disabilities who have retired using data attached to PALS from the 2006 Census. This indicates that the following proportion of persons with disabilities received income from: C/QPP (57%), retirement income (38%), OAS/GIS (23%) and investment income (45%). The median income received by respondents with these income sources was $6700 from C/QPP, $16,830 from retirement income, $5710 from OAS/GIS and $1060 from investment income.

The respondents reported receiving various types of disability benefits including CPP-D (25%), private disability benefit (11%), provincial or municipal social assistance (9%), and workers compensation (8%). Less than 5% of respondents also received motor vehicle accident insurance disability or a Veterans Affairs Disability Pension Benefit. The amount of disability benefit each respondent received from these sources is not available on PALS. See Table 3.

Most respondents reported their current health as fair (29%) or poor (22%) and that their health at retirement was also fair (19%) or poor (33%). See Table 4. In fact 45% said they permanently retired due to their condition and 18% said their condition partly factored into the retirement decision. In terms of their disability, the age of onset varied from 21% before the age of 34; 16% at age 35-44, 30% at age 45-54 and 34% at age 55-54. When asked to classify the severity of their disability, 33% said mild, 27% said moderate, 26% said severe and 14% said very severe. And, the number of disabilities ranged from 1 (16%) to 6 or more (9%). The types of health limitations varied: 80% reported a pain, 75% reported a mobility limitation, 72% reported an agility limitation, 28% reported a hearing limitation, 16% reported a psychological/emotional limitation, 15% reported a seeing limitation, 11% reported a learning limitation, 8% reported a communication limitation, 9% reported a memory limitation.

Table 1. Socio-demographic, and Socio-Economic Characteristics of Persons with Disabilities who have Recently Retired from the Labour Force, Age 15-74

Variable	N	%
Total Sample	221410	100
Sex		
Female	109640	49.5
Male	111760	50.5
Age		
15-44	9570	4.3
45-54	39720	17.9
55-64	121690	55.0
65-74	50430	22.8
Marital Status		
Married	144340	65.2
Separated	7350	3.3
Divorced	39950	18.0
Widowed	14330	6.5
Single	15440	7.0
Immigration Status		
Non-immigrant	178920	80.8
Immigrant/Non-permanent resident	42480	19.2
Education		
Less than High School	60310	27.2
Graduated High School	59610	26.9
Postsecondary Certificate	76540	34.6
University Degree	24940	11.3
Region		
Atlantic	19340	8.8
Quebec	43480	19.7
Ontario	85360	38.6
Prairies	38100	17.2
BC	34710	15.7
Size of Urban Residence		
Rural	43140	19.5
Urban	178270	80.5
Home Ownership		
Own	174620	79.4
Rented/Band housing	45280	20.6
Employment Status prior to Retirement		
Working <35hrs (Part-Time)	57650	26.8
Working ≥35hrs (Full-Time)	157130	73.2
Employment Compensation		
Work for wages, salary, commission	190230	86.7
Self-employed	29150	13.3
Low Income After Tax Status		
Non-Low Income	183100	83.4
Low-Income	36400	16.6
Total Personal Income □		
Mean	25660	SD= 25130
Median	18500	
Total Household Income □		
Mean	59370	SD =50810
Median	48320	

Note: Due to missing data some cells do not add up to the total sample size listed.

□ Mean reported due to low cell count.

Table 2. Income Sources, Persons with Disabilities who have Retired from the Labour Force, Age 15-74

Variable	N	%	Comparative Analysis between the mean of income sources received		
Total Sample	221400	100			
C/QPP					
Receive	125470	56.7	**Mean**	6770	SD=3480
Don't Receive	95930	43.3	**Median**	6700	
Retirement Income					
Receive	83150	37.6	**Mean**	19600	SD=15900
Don't Receive	138250	62.4	**Median**	16830	
OAS/GIS					
Receive	50400	22.8	**Mean**	6330	SD=2730
Don't Receive	171000	77.2	**Median**	5710	
Investment Income					
Receive	99110	44.8	**Mean**	4280	SD=12560
Don't Receive	122290	55.2	**Median**	1060	

Table 3. Benefits Received by Persons with Disabilities who have Retired from the Labour Force, Age 15-74

Variable	N	%
Total Sample	221410	100
Canada or Quebec Pension Plan Disability Benefit		
No	161460	74.7
Yes	54720	25.3
Workers Compensation		
No	197560	91.1
Yes	19340	8.9
Private Disability Insurance Benefit		
No	192580	89.0
Yes	23740	11.0
Provincial or Municipal Social Assistance		
No	198690	91.5
Yes	18400	8.5
Motor Vehicle Accident Insurance Disability		
No	--	
Yes		
Benefit Veterans Affairs Disability Pension Benefit		
No	--	
Yes		

Note: Due to missing data some cells do not add up to the total sample size listed.
-- Data not available due to low cell count.

Table 4. Health and Disability Characteristics of Persons with Disabilities who have Retired from the Labour Force, Age 15-74

Variable	N	%
Total Sample	221410	100
Current Health		
Excellent/Very Good	48510	22.3
Good	57690	26.5
Fair	63150	29.0
Poor	48640	22.3
Health at Retirement		
Excellent/Very Good	52220	25.7
Good	44610	22.0
Fair	38550	19.0
Poor	67650	33.3
Permanently retired due to condition		
No	82680	37.4
Yes, partially	38770	17.6
Yes, completely	99370	45.0
Does condition prevent you from working		
Yes	130460	59.5
No	88800	40.5
Condition Onset (Age of Onset)		
0-34	46040	20.8
35-44	34570	15.6
45-54	65340	29.5
55-64	75460	34.1
Degree of Severity		
Mild	72830	32.9
Moderate	58680	26.5
Severe	58490	26.4
Very Severe	31400	14.2
Number of Disabilities		
1	35120	15.9
2	35590	16.1
3	77690	35.1
4	35660	16.1
5	18200	8.2
6 or more	19140	8.6
Hearing Limitation		
No	160410	72.4
Yes	61000	27.6
Seeing Limitation		
No	187310	84.6
Yes	34090	15.4
Communication Limitation		
No	203060	91.7
Yes	18350	8.3
Mobility Limitation		
No	54590	24.7
Yes	166820	75.3
Agility Limitation		
No	63130	28.5
Yes	158270	71.5

Variable	N	%
Total Sample	221410	100
Pain Limitation		
No	44720	20.2
Yes	176690	79.8
Learning Limitation		
No	197600	89.2
Yes	23800	10.7
Memory Limitation		
No	201960	91.2
Yes	19440	8.8
Developmental Limitation	--	
No		
Yes		
Psychological Limitation		
No	186530	84.2
Yes	34870	15.7
Other Limitation	--	
No		
Yes		

-- Data not available due to low cell count.

Findings from the Comparative Data Analysis

Our analysis of the 2006 Participation and Activity Limitation Survey (PALS) indicates that of persons with disabilities, aged, 15-74 who were retired, 61% retired voluntarily and 39% retired involuntarily. This section of the analysis addresses the first two objectives of this study: 1) What are the key socio-economic characteristics of persons with disabilities who choose to retire versus those who involuntarily retire? and 2) What are the key factors that influence the retirement decisions of people with disabilities?. Table 5 shows the percentage of respondents who perceived their retirement as voluntary or involuntary by socio-demographic, economic, and geographical characteristics. Table 6 shows the type of retirement by income sources while Table 7 shows type of retirement by health and disability characteristics.

Voluntary Retirement

61% of the sample perceived that their retirement was voluntary. Men and women are about equally likely to have retired voluntarily (58% vs. 63%). There are differences by age with those in the older age groups being the most likely to perceive their retirement as voluntary. For example 39% of respondents aged 45-54 compared to 76% of respondents 65-74 said they retired voluntarily in the past five years. There are not differences by marital or immigration status. The likelihood of voluntary retirement increases with the level of education. For example, 48% of those with less than high school compared to 71% of those with a university degree had voluntary retirement. There are also differences by region of residence with respondents from the Prairies (70%), Ontario (63%) and BC (64%) being more likely than those

from the other provinces to experience voluntary retirement. While there were no differences by the size of urban/rural residence, those who owned their own home were more likely to retire voluntarily (66%). Working full or part-time or being self-employed prior to retirement was not related to retirement status. The type of employment compensation was not associated with the type of retirement. In terms of income, those who voluntarily retired had higher total personal and household incomes and they were less likely to be in the low income after tax status than those who were force to retire. They were more likely to be receiving income for C/QPP, retirement income and investment income and their median retirement income was much higher than those whose retirement was involuntary.

Next we turn to a consideration of variations in health by voluntary retirement. In terms of their current health, 76% said their health was excellent or very good as compared to 24% of those who retired involuntarily. The type of retirement varied by age of onset of disability, the type of disability, the number of disabilities, and the severity of disability. Respondents who acquired their disability before the age of 35 were more likely than the other age groups to retire voluntarily. Those least likely to retire voluntarily acquired their disability between the ages of 35-44. With respect to the various types of limitations, those with hearing (64%), pain (57%), mobility (55%), agility (52%), and seeing (52%), were more likely to have retired voluntarily than those with other limitations. As expected, the percentage of respondents who perceived their retirement to be voluntary decreased with the number of disabilities (from 89% for those with one disability to 21% for those with 6 or more disabilities) and with the severity of the disability (from 83% with a mild disability to 26% with a very severe disability.

Health at the time of retirement was strongly associated with the type of retirement. Persons who retired voluntarily were much more likely to say that they did not retire because of their condition (87%) or only partly because of their condition (72%) than those who retired involuntarily.

Involuntary Retirement

39% of respondents perceived their retirement to be involuntary and this percentage varied by their socio-demographic characteristics. Involuntary retirement was much more likely under the age of 54 (61% for age 45-54 and 69% for age 15-44). Men and women were equally likely to perceive their retirement as involuntary. In terms of marital status, there were not significant differences however; those who were separated (60%) and single (51%) appear to be somewhat more likely to retire involuntarily. Respondents with less than high school education (53%) were much more likely to see their retirement as forced as compared to those with higher levels of education. Forced retirement is higher in Quebec (54%) and lower in the Prairies (31%) than in the other provinces. Those who rent their homes were more likely to have experienced involuntary retirement than those who own (58% vs. 34%). Employment status or the type of employment prior to retirement was not related to type of retirement.

The total personal and household incomes of those who involuntarily retired were lower than those who retired voluntarily. Further, nearly two-thirds of persons with disabilities who were in the low income after tax status bracket (69%) retired involuntarily. They were less likely to receive income from CPP, retirement income and investment income and their retirement income was lower than those who retired voluntarily.

In terms of health/disability characteristics, respondents whose condition first occurred between the ages of 35-44 (53%) were much more likely to have experienced involuntary retirement whereas; those whose onset was less than 35 were about half as likely to view their retirement as involuntary (29%). As expected, those with a greater number of disabilities (79% with six or more as compared to 11% with one) and those with a higher level of severity (74% very severe as compared to 17% with a mild disability) were much more likely to perceive their retirement as involuntary. Respondents with communications (77%), learning (74%), memory (72%), and psychological/emotional limitations (68%) were much more likely than those without those limitations to experience forced retirement. To a lesser extent, those with mobility (45%), agility (48%) and pain (43%) limitations were also more likely to have experienced involuntary retirement. Health at the time of retirement was an important predictor of involuntary retirement. Of those who permanently retired because of their condition, 66% retired involuntarily. Further, 56% of those who said their condition prevented them from working were forced to retire. In terms of their current health, nearly two-thirds who rated their health as poor had involuntarily retired.

Is a Disability Benefit an "Incentive" for Retirement?

The literature suggests that having the option of a disability benefit may be an incentive for retirement. Table 8a shows an association between the type of retirement and the receipt of some types of disability benefits. Compared to those who retired voluntarily, persons with disabilities who retired involuntarily were more than twice as likely to be receiving the Canada or Quebec Pension Plan Disability Benefit (CPP-D) (17% vs. 38%). Other disability benefits are available through private disability insurance, motor vehicle accident insurance, veterans affairs or workers compensation for those who are unable to work. The analysis confirms that compared to persons with disabilities who retired voluntarily, those who retired involuntarily were much more likely to be receiving a private disability insurance benefit (3% vs. 23%) and a motor vehicle accident insurance disability benefit. For those under 65, with no other sources of support, financial assistance is available through the provincial or municipal social assistance program and 15% of persons who retired involuntarily as compared to 4% of those who retired voluntarily are receiving this benefit.

The next section of the analysis considers the independent relationship of type of retirement to the receipt of any disability benefit controlling for age, marital status, education and the severity of the disability. A variable was created to measure whether the respondent

received any type of disability benefit. Using multivariate logistic regression, we regressed type of retirement on the receipt of a disability benefit. Involuntary retirement was coded as 1 and voluntary retirement as 0. Bootstrap weights were used in the analysis. Table 8b shows that when the other factors are controlled, those who involuntarily retire are three times more likely to receive a disability benefit (OR 3.28/1.0). Table 8b also shows that persons with a disability who had a university degree were less likely to receive a disability benefit than those with less than high school education and that the level of severity was also associated with the receipt of a disability benefit.

Table 5. Voluntary and Involuntary Retirement by Socio-demographic and Socio-Economic Characteristics of Persons with Disabilities, Age 15-74

	Voluntary Retirement		Involuntary Retirement		F-Statistic
	N	%	N	%	
Total	134260	60.6	87150	39.4	
Sex					F(1, 999)=0.77,p=0.38
Female	69120	63.0	40520	37.0	
Male	65140	58.3	46630	41.7	
Age*					F(2.55, 2548.44)=10.00,p=0.00
15-44	2980	31.1	6590	68.9	
45-54	15450	38.9	24270	61.1	
55-64	77770	63.9	43920	36.1	
65-74	38060	75.5	12370	24.5	
Marital Status					F(3.85, 3848.58)=1.72,p=0.15
Married	94380	65.4	49950	34.6	
Separated	2970	40.4	4380	59.6	
Divorced	21140	52.9	18810	47.1	
Widowed	8190	57.2	6140	42.8	
Single	7580	49.1	7860	50.9	
Immigration Status					F(1, 999)=0.10,p=0.75
Non-immigrant	109210	61.0	69710	39.0	
Immigrant/Non-permanent resident	25040	58.9	17440	41.1	
Education*					F(2.96, 2961.40)=3.17,p=0.02
Less than High School	28640	47.5	31670	52.5	
Graduated High School	38460	64.5	21160	35.5	
Postsecondary Certificate	49510	64.7	27040	35.3	
University Degree	17660	70.8	7290	29.2	
Region*					F(2.85, 2851.41)=2.97,p=0.03
Atlantic	11430	59.1	7920	41.0	
Quebec	20130	46.3	23350	53.7	
Ontario	53650	62.9	31710	37.1	
Prairies	26480	69.5	11610	30.5	
BC	22320	64.3	12400	35.7	
Size of Urban Residence					F(1, 999)=0.59,p=0.45
Rural	24600	57.0	18540	43.0	
Urban	109660	61.5	68610	38.5	
Home Ownership*					F(1, 999)=12.19,p=0.00
Own	115190	66.0	9430	34.0	
Rented/Band housing	19000	42.0	26280	58.0	
Employment Status prior to Retirement					F(1, 999)=0.42,p=0.52
Working <35hrs (Part-Time)	36180	62.8	21470	37.2	
Working ≥35hrs (Full-Time)	91970	58.5	65160	41.5	
Employment Compensation					F(1, 999)=0.82,p=0.37
Work for wages, salary, commission	113010	59.4	77230	40.6	
Self-employed	19480	66.8	9670	33.2	
Low Income After Tax Status*					F(1, 999)=20.54,p=0.00
Non-Low Income	122590	67.0	60510	33.0	
Low-Income	11360	31.2	25040	68.8	

Total Personal Income*					
Mean	29170	SD=	20450	SD=	$t(999) = 3.39$, $p = 0.00$
Median	23980	27540	15390	19830	
Total Household Income					
Mean	64060	SD=	52620	SD=	$t(999) = 1.22$, $p = 0.22$
Median	57890	45020	36610	58060	

Note: Due to missing data some cells do not add up to the total sample size listed.

* Significant difference found between voluntary and involuntary groups.

 Mean reported due to low cell count.

See Endnote[ii]

Table 6. Voluntary and Involuntary Retirement By Income Sources, Persons with Disabilities, Age 15-74

	Voluntary Retirement		Involuntary Retirement		Comparative Analysis*	Comparative Analysis between the mean of income sources received				
	N	%	N	%			Voluntary Retirement		Involuntary Retirement	Comparative Analysis □
	134260	**60.6**	**87150**	**39.4**						
C/QPP										
Receive	82640	61.6	42840	49.2	*t*(999) =2.21, *p* = .03	**Mean**	6070	SD=2890	8130 SD=4080	*t*(999) = -3.82, *p* = .00
Don't Receive	51620	38.4	44310	50.8		**Median**	6300		7840	
Retirement Income										
Receive	62900	46.8	20250	23.2	*t*(999) = 4.75, *p* = 0.00	**Mean**	21030	SD=1672	15150 SD=11980	*t*(999) = 2.54, *p* = .011
Don't Receive	71360	53.2	66890	76.8		**Median**	19060		12380	
OAS/GIS										
Receive	34860	26.0	15550	17.8	*t*(999) = 1.83, *p* = .07	**Mean**	6130	SD=2810	6780 SD=2480	*t*(999) =- 1.03, *p* = .303
Don't Receive	99400	74.0	71600	82.2		**Median**	5710		6320	
Investment Income										
Receive	67820	50.5	31290	35.9	*t*(999) = 2.7, *p* = .01	**Mean**	3510	SD=1249	5950 SD=12550	*t*(999) =-1.22, *p* = .225
Don't Receive	66440	49.5	55850	64.1		**Median**	1060		1250	

*****Comparative analysis between percentages of those receiving income sources.

□ Comparative analysis between mean of income sources received

Table 7. Voluntary and Involuntary Retirement by Health and Disability Characteristics of Persons with Disabilities, Age 15-74

	Voluntary Retirement		Involuntary Retirement		F-Statistic
	N	%	N	%	
Total	134260	60.6	87150	39.4	
Current Health*					
Excellent/Very Good	36680	75.6	11830	24.4	
Good	43570	75.5	14130	24.5	F(2.80, 2798.52)=10.34,
Fair	35400	56.1	27750	43.9	*p*=0.00
Poor	17780	36.6	30860	63.4	
Health at Retirement*					
Excellent/Very Good	38650	74.0	13570	26.0	F(2.95, 2950.40)=10.34,
Good	32480	72.8	12130	27.2	*p*=0.00
Fair	27430	71.2	11120	28.8	
Poor	26500	39.2	41150	60.8	
Permanently retired due to condition*					
No	72010	87.1	10670	12.9	F(1.99, 1990.61)=37.76,
Yes, partially	27810	71.7	10960	28.3	*p*=0.00
Yes, completely	33850	34.1	65520	65.9	
Does condition prevent you from working*					
Yes	56950	43.7	73510	56.3	F(1, 999)=55.95,
No	76020	85.6	12780	14.4	*p*=0.00
Condition Onset (Age of Onset)					
0-34	32690	71.0	13350	29.0	F(2.98, 2973.21)=2.51,
35-44	16120	46.6	18450	53.4	*p*=0.057
45-54	39790	60.9	25550	39.1	
55-64	45660	60.5	29800	39.5	
Degree of Severity*					
Mild	60320	82.8	12510	17.2	F(2.91, 2904.88)=19.18,
Moderate	38040	64.8	20640	35.2	*p*=0.00
Severe	27790	47.5	30700	52.5	
Very Severe	8110	25.8	23300	74.2	
Number of Disabilities*					
1	31340	89.2	3780	10.8	
2	24360	68.4	11240	31.6	
3	47400	61.0	30290	39.0	F(4.87, 4862.70)=9.68,
4	19760	55.4	15910	44.6	*p*=0.00
5	7370	40.5	10830	59.5	
6 or more	4030	21.1	15100	78.9	
Hearing Limitation					
No	95460	59.5	64940	40.5	F(1, 999)=0.46,
Yes	38800	63.6	22210	36.4	*p*=0.50
Seeing Limitation					
No	116400	62.1	70910	37.9	F(1, 999)=2.01,
Yes	17850	52.4	16240	47.6	*p*=0.16
Communication Limitation*					
No	130060	64.1	73000	35.9	F(1, 999)=32.07,
Yes	4200	22.9	14150	77.1	*p*=0.00

Mobility Limitation*					
No	42020	77.0	12570	23.0	F(1, 999)=13.35, *p*=0.00
Yes	92240	55.3	74580	44.7	
Agility Limitation*					
No	51760	82.0	11380	18.0	F(1, 999)=31.30, *p*=0.00
Yes	82500	52.1	75770	47.9	
Pain Limitation*					
No	33880	75.8	10840	24.2	F(1, 999)=8.55, *p*=0.00
Yes	100370	56.8	76310	43.2	
Learning Limitation*					
No	128020	64.8	69580	35.2	F(1, 999)=25.41, *p*=0.00
Yes	6240	26.2	17570	73.8	
Memory Limitation*					
No	128840	63.8	73120	36.2	F(1, 999)=19.18, *p*=0.00
Yes	5420	27.9	14030	72.2	
Developmental Limitation					
No	--				F(1, 999)=0.39, *p*=0.53
Yes					
Psychological Limitation*					
No	122990	65.9	63540	34.1	F(1, 999)=21.97, *p*=0.00
Yes	11270	32.3	23610	67.7	
Other Limitation					
No	--				F(1, 999)=2.99, *p*=0.08
Yes					

Note: Due to missing data some cells do not add up to the total sample size listed.

* Significant difference found between voluntary and involuntary groups.

 Mean reported due to low cell count.

-- Data not available due to low cell count.

See Endnote [ii]

Table 8a. Voluntary and Involuntary Retirement by Benefits Received for Persons with Disabilities, Aged 15-74

	Voluntary Retirement		Involuntary Retirement		F-Statistic
	N	%	N	%	
Total	134260	60.6	87150	39.4	
Canada or Quebec Pension Plan Disability Benefit*					F(1, 999)=18.40,p=0.00
No	108460	82.6	53000	62.4	
Yes	22840	17.4	31870	37.5	
Workers Compensation					F(1, 999)=1.93,p=0.17
No	122530	92.8	75030	88.4	
Yes	9520	7.2	9820	11.6	
Provincial or Municipal Social Assistance*					F(1, 999)=8.85,p=0.00
No	126330	95.6	72360	85.2	
Yes	5810	4.4	12590	14.8	
Private Disability Insurance Benefit*					F(1, 999)=49.29,p=0.00
No	127320	96.9	65260	76.9	
Yes	4100	3.1	19650	23.1	
Motor Vehicle Accident Insurance Disability Benefit *	--				F(1, 999)=5.80,p=0.02
No					
Yes					
Veterans Affairs Disability Pension Benefit	--				F(1, 999)=2.61,p=0.11
No					
Yes					

Note: Due to missing data some cells do not add up to the total sample size listed.

* Significant difference found between voluntary and involuntary groups.

 Mean reported due to low cell count.

-- Data not available due to low cell count.

See Endnote [ii]

Table 8b. Multivariate Logistic Regression: Receipt of Benefit by Socio-Demographic and Retirement Type for Persons with Disabilities, Aged 15-74

Variables	Odds Ratio	BRR Std. Err.	t	P>|t|	95% Confidence Interval	95% Confidence Interval
Age						
15-44 (reference)						
45-54	2.61	1.50	1.66	0.10	0.84	8.09
55-64	1.04	0.57	0.07	0.95	0.36	3.02
65-74	0.53	0.31	-1.08	0.28	0.17	1.67
Marital Status						
Other (reference)						
Married	6.86	0.20	-1.29	0.20	0.39	1.22
Education						
Less HS (reference)						
Graduated High School	0.86	0.33	-0.38	0.70	0.41	1.82
Postsecondary Certificate	1.17	0.39	0.48	0.63	0.61	2.27
University Degree	0.37	0.19	-1.96	0.05	0.14	1.00
Degree of Severity						
Mild (reference)						
Moderate	2.26	0.73	2.52	0.01	1.20	4.26
Severe	4.00	1.44	3.84	0.00	1.97	8.14
Very Severe	3.71	1.83	2.65	0.01	1.40	9.78
Retirement						
Voluntary (reference)						
Involuntary	3.28	0.92	4.21	0.00	1.89	5.69
Model Summary	N=990 Design *df* = 999 F(11, 989)=7.75,*p*=0.00					

Disentangling the Differences: Logistic Regression Analyses of Involuntary Retirement

The literature suggests that there may be socio-demographic and productivity differences between disabled workers that are associated with retirement decisions. The tabular analysis has shown that voluntary and involuntary retirement for people with disabilities are differentially associated with socio- demographic, socio-economic characteristics and geographic characteristics (such as age, education, home ownership, income, region of residence). The bi-variate comparative analysis, however, does not allow us disentangle these differences, for example to examine the relationship of type of retirement to region of residence controlling for, or taking into account differences in factors such as age, education, income etc

The next section of the analysis considers the independent relationships of the socio-demographic, socio-economic and geographical characteristics on the involuntary retirement decision holding constant or controlling for the other differences. Using multivariate logistic regression, we regressed involuntary retirement on the set of socio-demographic, economic, geographical characteristics available in PALS data set. Involuntary retirement was coded as 1 and voluntary retirement as 0. Bootstrap weights were used in the analysis.

Table 9 shows the odds ratios for each of the determinants of involuntary retirement (as compared to voluntary retirement). This analysis indicates that age, immigration status, education level and low income status are associated with type of retirement. Compared to persons with disabilities under the age of 44, those over the age of 55 are less likely to have retired voluntarily. Immigrants and non-permanent residents are more likely to have retired involuntarily (OR: 2.18/1.) Compared to those with less than high school education, those who had graduated with a high school education, a postsecondary certificate or a university degree were much less likely to retire involuntarily. Persons with disabilities whose household incomes were below the low income cut off point after taxes were 3.53 times more likely to have retired involuntarily than those whose income was above this cut off point.

The literature has suggested that the relationship of key disability characteristics (such as the type, severity of disability, the age of onset and health at the time of retirement) to the type of retirement may be due to differences in socio-demographic, socio-economic or geographical characteristics. For example, differences by the severity or type of disability may reflect differences in education and age. Therefore, using multivariate logistic regression, we regressed type of retirement on health and disability characteristics controlling for differences in the socio-demographic, economic, and geographical characteristics. Involuntary retirement was coded as 1 and voluntary retirement as 0. Bootstrap weights were used. Due to issues with co-linearity we did not include the number of disabilities in the analysis since we included the

range of disability types. Further we did not include current health (as we are looking at the determinants of the retirement decision); however health at the time of retirement is included in the analysis.

Table 10 reveals that the disability characteristics have a strong association with the type of retirement, when the socio-demographic, socio-economic and geographical determinants are controlled. Persons with disabilities who had to permanently retire because of their condition were 7 times more likely to retire involuntarily than those who did not have to retire because of their condition (OR: 7.50/1.0). Those who partially retired due to their condition were almost 3 times more likely to have faced involuntary retirement than those who were not made to do so (OR: 3.14/1.0). The age of onset mattered. Respondents who acquired their disability after age 35 were much more likely to retired involuntarily. The bi-variate relationship indicated that those who acquired their disability between the ages of 35-44 were the most likely to retire involuntarily, however when socio-demographic, socio-economic and geographic factors are controlled, it appears that acquiring a disability between the ages of 55-64 may be a key factor contributing to involuntary retirement for this age group. This group was over 5 times more likely to experience involuntary retirement than those whose age of onset was 0-34 (OD: 5.36/1.0).

The bi-variate comparative analysis showed that persons with specific types of disabilities were disproportionately more likely to retire involuntarily. However, the multivariate logistic regressions revealed that these differences, with one exception, are largely explained by differences in socio-demographic, socio-economic, geographic, and health and disability characteristics. The exception is that persons with an agility disability were three times more likely to have retired involuntarily (OR: 2.90/1.0).

Table 9. Multivariate Logistic Regression: Involuntary Retirement by Socio-Demographic and Socio-Economic Characteristics of Persons with Disabilities, Age 15-74

Variables	Odds Ratio	BRR Std. Err.	t	P>|t|	95% Confidence Interval	95% Confidence Interval
Sex						
Male (reference)						
Female	0.74	0.23	-0.99	0.32	0.41	1.35
Age						
15-44 (reference)						
45-54	0.69	0.40	-0.65	0.51	0.22	2.12
55-64	0.21	0.10	-3.15	0.00	0.08	0.56
65-74	0.11	0.07	-3.77	0.00	0.04	0.35
Marital Status						
Married (reference)						
Separated	1.92	1.39	0.90	0.37	0.46	7.97
Divorced	0.91	0.38	-0.22	0.83	0.40	2.09
Widowed	1.91	0.98	1.27	0.21	0.70	5.21
Single	1.18	0.87	0.23	0.82	0.28	5.01
Immigration Status						
Non-immigrant (reference)						
Immigrant/Non-permanent	2.18	0.84	2.03	0.04	1.03	4.65
Education						
Less HS (reference)						
Graduated High School	0.47	0.19	-1.92	0.06	0.21	1.02
Postsecondary Certificate	0.52	0.17	-1.98	0.05	0.27	0.99
University Degree	0.38	0.19	-1.90	0.06	0.14	1.03
Region						
Atlantic (reference)						
Quebec	1.69	0.56	1.58	0.11	0.88	3.22
Ontario	0.85	0.29	-0.50	0.62	0.44	1.64
Prairies	0.88	0.24	-0.45	0.65	0.52	1.51
BC	1.13	0.46	0.31	0.76	0.51	2.49
Size of Urban Residence						
Urban (reference)						
Rural	1.62	0.46	1.68	0.09	0.92	2.83
Home Ownership						
Rented/Band housing(reference)						
Own	0.72	0.30	-0.79	0.43	0.31	1.64

Table 9. Continued.

Variables	Odds Ratio	BRR Std. Err.	t	P>|t|	95% Confidence Interval	95% Confidence Interval
Employment Status Prior to Retirement						
Full-Time (reference)						
Part-Time	0.72	0.27	-0.86	0.39	0.34	1.52
Employment Compensation						
Wages, salary Commission (reference)						
Self-employed	0.82	0.39	-0.42	0.68	0.32	2.11
Low Income Status						
Non-Low Income Status(reference)						
Low Income Status	3.53	1.59	2.81	0.01	1.46	8.54
Model Summary	N=880 Design *df* = 999 F(21, 979)=2.85,p=0.00					

See Endnote [iii]

Table 10. Multivariate Logistic Regression: Involuntary Retirement by Health and Disability Characteristics of Persons with Disabilities, Age 15-74

Variables	Odds Ratio	BRR Std. Err.	t	P>|t|	95% Confidence Interval	95% Confidence Interval
Does the condition prevent you from working?						
No (reference)						
Yes	1.24	0.66	0.40	0.69	0.44	3.52
Permanently Retired Due to Condition						
No (reference)						
Yes, Partially	3.14	1.77	2.03	0.04	1.04	9.48
Yes, Completely	7.50	4.56	3.31	0.00	2.27	24.77
Age of Onset						
0-34 (reference)						
35-44	4.16	2.72	2.18	0.03	1.15	14.98
45-54	3.78	2.13	2.36	0.02	1.25	11.42
55-64	5.36	3.24	2.78	0.01	1.64	17.55
Degree of Severity						
Mild (reference)						
Moderate	1.40	0.75	0.62	0.53	0.49	4.00
Severe	1.30	0.82	0.42	0.67	0.38	4.46
Very Severe	2.55	2.28	1.05	0.29	0.44	14.77
Health at Retirement						
Excellent/Very Good (reference)						
Good	0.89	0.58	-0.17	0.86	0.25	3.21
Fair	0.80	0.49	-0.37	0.71	0.24	2.65
Poor	1.39	0.80	0.58	0.56	0.45	4.28
Hearing Limitation						
No (reference)						
Yes	1.01	0.46	0.02	0.98	0.41	2.49
Seeing Limitation						
No (reference)						
Yes	0.44	0.22	-1.63	0.10	0.17	1.18
Communication Limitation						
No (reference)						
Yes	2.51	1.70	1.36	0.18	0.66	9.51
Mobility Limitation						
No (reference)						
Yes	0.42	0.26	-1.39	0.17	0.12	1.44

Table 10. Continued.

Variables	Odds Ratio	BRR Std. Err.	t	P>|t|	95% Confidence Interval	95% Confidence Interval
Agility Limitation						
No (reference)						
Yes	2.90	1.56	1.97	0.05	1.00	8.35
Pain Limitation						
No (reference)						
Yes	0.87	0.44	-0.27	0.79	0.32	2.37
Learning Limitation						
No (reference)						
Yes	3.38	2.31	1.78	0.08	0.89	12.92
Memory Limitation						
No (reference)						
Yes	0.80	0.65	-0.27	0.78	0.16	3.89
Developmental Limitation						
No (reference)						
Yes	1.39	2.08	0.22	0.83	0.07	26.18
Psychological Limitation						
No (reference)						
Yes	1.22	0.72	0.34	0.73	0.38	3.89
Unknown Limitation						
No (reference)						
Yes	4.53	6.67	1.03	0.31	0.25	81.43
Model Summary	N=810 Design *df* = 937 F(44, 894)=1.86,*p*=0.00				Likelihood-ratio test: LR chi^2 (23) = 75134.26, *p*=0.00	

Controls: for socio demographic and social economic characteristics
See Endnote [iii]

The Association between Retirement Type and Retirement Income

The third objective of this paper is to answer the question, how does retirement affect the income security of people with disabilities who involuntarily retire from the workforce? For this analysis three measures of income security are used: total personal income, total household income and low income after tax status. This is a measure of low income constructed by statistics Canada that applies to economic families and unattached individuals age 15 years of age and older. Table 11 shows that persons with disabilities who had retired involuntarily had significantly lower personal median incomes than those who retired voluntarily ($19,830 vs. $27,980). Similarly, the median household income was lower for those who were forced to retire than those who were not ($36,610 vs. $57,890). Using low income after tax status as a measure of income security, the analysis reveals that 29% of persons with disabilities who retired involuntarily fell under the low income mark as compared to 9% of those who voluntarily retired.

Income security after retirement is also determined by the socio-demographic, socio-economic and geographical characteristics of individuals, therefore to accurately assess the effect of retirement type on income security it is necessary to control or take into account the effects of these other determinants of income. Using multiple least squared regression we regressed personal and household income on involuntary retirement controlling for the socio-demographic, socio-economic and geographical determinants of income. Type of retirement is coded as 1=involuntary retirement and 0=voluntary retirement so the effect may be interpreted as the effect of involuntary retirement on income security. Personal and household income were logged to normalized their distributions, an assumption required of least squared regression analysis. Table 12 presents the results. When other determinants are controlled, the type of retirement is not related to total personal income. However, there does appear to be an effect of type of retirement on total household income, although the effect just misses being statistically significant. Persons with disabilities who retire voluntarily are more likely to have higher household incomes than those who retire involuntarily.

Since low income after tax status is a dichotomous variable, multivariate logistic regression is used to measure the association between the type of retirement and being under the low income cut-off point. This analysis revealed an association between involuntary retirement and low income such that persons with disabilities who involuntarily retired were over three times more likely to have a low income (OR: 3.31/1).

Table 11. Income by Voluntary and Involuntary Retirement, Persons with Disabilities, Age 15-74

	Voluntary Retirement		Involuntary Retirement		Comparative Analysis □
	N	%	N	%	
Total	134260	60.6	87150	39.4	
Total Personal Income Mean Median	29170 23980	SD= 27540	20450 15390	SD= 19830	$t(999) = 3.39$, $p = 0.00$
Total Household Income Mean Median	64060 57890	SD= 45020	52620 36610	SD= 58060	$t(999) = 1.22$, $p = 0.22$
Low Income After Tax Status Non-Low Income Low-Income	122590 11360	91.5 8.5	60510 25040	70.7 29.3	F(1, 999)=20.54,p=0.00

□ Comparative analysis between mean of income for t-tests.

Table 12. Multiple Least Squared and Logistic Regression: Income by Voluntary and Involuntary Retirement, Persons with Disabilities, Age 15-74

Dependent Variables	Coefficient	BRR Std. Err.	t	P>|t|	95% Confidence Interval	95% Confidence Interval
Personal Income (log)	-0.03	0.13	-0.21	0.84	-0.28	0.23
Model Summary	N=859 Design *df* = *999* F(21, 979)=5.06,*p*=0.00 R^2 =0.22			Likelihood-ratio test: LR chi^2 (1) = .13, *p*=0.72		
Dependent Variables	**Coefficient**	**BRR Std. Err.**	**t**	**P>|t|**	**95% Confidence Interval**	**95% Confidence Interval**
Household Income (log)	-0.20	0.10	-1.88	0.06	-0.40	0.01
Model Summary	N=879 Design *df* = *999* F(21, 979)=5.60,p=0.00 R^2 =0.26			Likelihood-ratio test: LR chi^2 (1) =10.49, *p*=0.00		
Dependent Variable	**Odds Ratio**	**BRR Std. Err.**	**t**	**P>|t|**	**95% Confidence Interval**	**95% Confidence Interval**
Low Income After Tax Status	3.31	1.52	2.60	0.01	1.34	8.15
Model Summary	N=879 Design *df* = *999* F(21, 979)=2.19,p=0.00 R^2 =0.26			Likelihood-ratio test: LR chi^2 (1) =6198.70, *p*=0.00		

Controls for socio demographic and social economic characteristics (income variables removed)

Discussion

Twenty-seven percent of Canadians retire involuntarily (Schellenberg & Silver, 2004) and illness or disability is the number one reason for involuntary retirement in Canada (Statistics Canada, 1997). The analysis of the 2006 PALS has shown that persons with a disability have a much higher rate of involuntary retirement than the general population. Of those who retired during the period 2001 to 2006, 39% of persons with a disability retired involuntarily from the labour force. Their higher rate of involuntary retirement means that many persons with disabilities are excluded from the labour market.

The analysis is limited to persons with disabilities, aged 15-74 who retired between the 5 year period 2001-2006. The selection of variables for analysis was guided by the economic model of retirement (Shultz et al., 1998) and the life course perspective (Moen, 1996; Szinovacz & Davey, 2005). These perspectives provide a set of lens to aid in the understanding of involuntary retirement.

The analysis of 2006 PALS revealed that the profile of persons with disabilities who had retired from the labour force is very heterogeneous in their socio-demographic, socio-economic and geographic characteristics. In line with Szinovacz & Davey's (2005) life course model of forced retirement, this study found that some groups of people with a disability are clearly at higher risk of involuntary retirement than others. Respondents less than 55 years of age were much more likely to perceive their retirement as forced whereas; those who retired at age 55-74 were more likely to view their retirement as voluntary. Education does make a difference in that those with less education were at a higher risk of involuntary retirement whereas those with higher levels of education were much more likely to experience voluntary retirement. The logistic regression analysis revealed that when other determinants are controlled, immigrants and non permanent residents are over twice as likely to face involuntary retirement. This analysis has revealed that some groups are more at risk of involuntary retirement and they include persons with disabilities who are middle aged, who have lower levels of education, who have low incomes and non native born Canadians.

International research has consistently verified that poor health or a decline in health—a health "shock", is a pathway to early retirement. Only two U.S. studies considered the impact of health on involuntary retirement and similarly they found that health and disability are important determinants of involuntary retirement (Schultz et al., 1998; Szinovacz & Davey, 2005). This study has made a contribution by considering the impact of health and disability on involuntary retirement for persons with a disability in Canada. The analysis of the 2006 PALS data revealed that fair or poor health at the time of retirement, severe or very severe disabilities and multiple disabilities increase the likelihood of involuntary retirement. Further, two- thirds of the respondents who permanently retired due to their condition reported that their retirement was forced. This finding, coupled with the bi-variate relationship between the

severity of the disability, and poor health at the time of retirement and involuntary retirement, leads to the conclusion that involuntary retirement is a consequence of a change, either dramatic or slow, to the disabling condition that prevents people from continuing in the workforce.

As discussed in the literature review differences in socio-demographic characteristics (i.e., gender, age, marital status) human capital characteristics (i.e., education, work experience) economic incentives (i.e., wages), and regional effects may magnify the "health effects" on employment outcomes of the disabled. The multivariate analysis of the PALS data clearly revealed that the disability effects are very real. Involuntary retirement occurs when people with disabilities are no longer able to work rather than due to differences in socio-economic characteristics.

It is important to distinguish the age of onset when investigating the labour market outcomes of the persons with disabilities because those who are disabled during childhood and those who are disabled later in life (after entering work) have different labour market experiences. This study contributes to the literature in the consideration of the age of onset as a determinant of the retirement decision. The bivariate analysis of the 2006 PALS data revealed those who were born with a disability or acquired it before the age of 35 were less likely to report forced retirement as compared to persons who acquired a disability in mid life. The logistic regression showed that when other determinants are controlled, the age of onset effect is greatest for those who are age 55-64, followed by those 35-44. The onset of disability in later life is most likely the trigger to an involuntary retirement. Employed persons born with a disability or who acquire it early in life are more likely to have a long career and retire voluntarily form the labour force. They may be more likely to have benefitted from workplace accommodations and the use of technology.

As discussed in the literature review, the type of the disability differentially impacts labour market participation and outcomes; however there is no research that considers the impact of the type of disability on involuntary retirement. The comparative analysis of the 2006 PALS data shows that some types of disability put individuals at greater risk of involuntary retirement than others. Persons with communication, memory, learning and psychological limitations were most at risk of involuntary retirement. When other factors were controlled, however, persons with an agility disability were most at risk of involuntary retirement. Further, the likelihood of involuntary retirement also increases with the number of disabilities and with the severity of disability or disabilities.

Is a Disability Pension a "Pull" Factor for Involuntary Retirement?

The literature suggested that disability benefits may be an incentive to "early retirement" or a "pull" factor to retirement (DeLeire, 2000; Bound & Waidman, 2002; Campolieti, 2002; Harkness, 1993). Eligibility for disability benefits may encourage people to retire earlier from

the workforce. The analysis of the 2006 PALS data revealed that nearly one-quarter of persons with disabilities who had retired from the labour force in 2001-2006 received the CPP-D. A smaller percentage were receiving other disability benefit such as a private disability insurance benefit, a motor vehicle or an accident insurance disability benefit, workers compensation or provincial or municipal social assistance.

If disability pensions were a pull factor to involuntary retirement than one might expect that persons who involuntarily retired from the labour force would be more likely to be recipients of them. The analyses of the 2006 PALS data confirm that persons who retired involuntarily were more likely to be recipients of disability benefits than those who retired voluntarily. Disability benefits provide a source of income to persons with a disability who find it very difficult to continue with their employment because of their condition. The data do not allow us to conclude that a disability benefit is an incentive to involuntary retirement, but it does suggest a relationship. Clearly more research is needed in this area before any conclusive statements can be made.

Impact of Type of Retirement on the Income Security of People with Disabilities

PALS data is cross-sectional in nature—that is collected at one point in time, it does not allow us to look at the causal effect of the type of retirement on income security. However, we can examine the associations between these variables and this may suggest an effect. The comparative bivariate analysis shows that respondents who retired involuntarily have lower total personal and median household incomes and are more likely to be below the low income cut off point after taxes The regression analysis reveals that while some of the income differences between those who retired voluntarily and those who did not are a result of their productivity differences, the fact remains that those who retired involuntarily are much more likely to be in the low income group after taxes. Income sources vary, but those who retired voluntarily were more likely to be receiving income from C/QPP, retirement income and investment income, whereas persons who retired involuntarily were more likely to receive income from social assistance. Involuntary retirement has a real impact of the financial security of persons with disabilities and every effort should be made to develop policies and programs to assist persons with disabilities to continue in the labour force as long as possible. In particular, more attention should be given to accommodating older workers who acquire a disability later in life given their greater likelihood to involuntary retirement.

Future Knowledge and Research Requirements

Preventing Involuntary Retirement and Maintaining Persons with Disabilities in the Labour Market

Policy analysts are concerned that with the retiring of the baby boom generation and the tendency for early retirement, there will be labour shortages in the very near future (Scherer,

2002; Statistics Canada, 2003; Human Resources and Social Development Canada, 2005). A recent analysis of the 2006 PALS has shown that the labour force participation rates are much lower for the disabled population (56%) as compared to those for all Canadians aged 15 to 64 (80%) (Statistics Canada, 2008) The analysis of the PALS data presented here show that three-quarters of the sub population of persons with disabilities who retired recently did so before the age of 65. In particular, persons who acquire a disability between the ages of 55 to 64 have the highest risk of involuntary retirement. Given that the gap between their expected retirement date and the onset of their disability is shorter than that for younger age groups, onset of a disability may be the trigger to forced retirement. The employer may be less willing to provide incentives or accommodation to their continued employment or the worker themselves may be less willing to continue working with a disability. Future research could focus more specifically on the retirement decision when the onset of disability occurs after the age of 55.

Studies have shown that about half of Canadian retirees would prefer to work full- or part-time jobs if they were available (Morissette et al., 2004). Given the interests in some older Canadians to continue to participate in the labour force and the benefit of their continued employment to the economy, future research could address issues that would remove impediments and provide incentives for persons with disabilities to extend their working lives including: the use of technology; the acceptance by employers and unions of greater flexibility of work days, work weeks and work years; changes in attitudes towards disabled people and their productive capabilities and the need to provide work-place accommodation to persons with disabilities.

In Canada, there is no national and comprehensive legislation such as in the US to mandate accommodation. Instead, there is legislation to improve the employment prospects of persons with disabilities such as the Employment Assistance for People with Disabilities (EAPD) program, the “In Unison” agreements and, more recently, the Multilateral Framework for Labour Market Agreements for Persons with Disabilities (Campolieti, 2009). These programs provide assistance to persons with disabilities to help them prepare for the workforce as well as find secure work. Provincial workers compensation boards in Canada also have requirements that oblige some employers to provide reasonable accommodations to workers with work-related or occupational disabilities. Burkhauser, Butler, & Kim (1995) found that in the US the receipt of accommodations could prolong employment. Most recently, Campolieti (2009) uses the 2001 PALS to consider labour market variations in accommodations provided and desired (such as modified duties, modified hours, human support, technical aids, specialized computer, communication aids and other accommodations). Desires for accommodations were much higher for persons who had to change jobs or leave the workforce than those who did not have to change jobs, suggesting that accommodation to the workplace would decrease the likelihood of involuntary retirement. Further, women had a greater desire for accommodations that involve reduced hours than men. There is a need for research on strategies for improving the

ability of persons with disabilities to remain in the workforce or to return to the workforce through work-place accommodation.

Knowledge on Work, Retirement and Disability would be Greatly Enhanced by the Availability of Longitudinal Data

Cross sectional studies on health have allowed us to measure the extent of disabilities in the population, but there is some evidence coming from the analysis of longitudinal data to show the dynamic nature of disability. Using data from the Canadian National Population Health Survey, researchers have shown that about one-third of seniors who had been dependent in 1994/95 had recovered their independence two years later (Hum & Simpson, 2002). Further, an analysis of panel data from the Survey of Labour and Income Dynamics (SLID) has shown that people are not necessarily affected by disability continuously. From 1999 to 2004 only 13% of people who indicated a disability reported being affected by it during all six years (Galarnearu & Radulescu, 2009). Further, Hum & Simpson (2002) show that while the onset of disability increases with age, the recovery from a disability is not related to age. The dynamic nature of disability is also confirmed by Burchardt (2000) in the UK, using the longitudinal British Household Panel Survey (BHPS), to examine the duration of disability for those who become disabled during working life. Her results show that only a small proportion of working age people who experience disability are long-term disabled, despite the fact that at any one time, long-term disabled people make up a high proportion of all disabled people. Burchardt demonstrates that over half of those who are limited in their activities of daily living as adults have spells lasting less than two years, but few who remain disabled after four years recover. Given the dynamic nature of disability the question arises, to what extent are persons with disabilities retiring from the labour force prematurely?

Consequences of Involuntary Retirement

Policy research is needed to investigate the consequences of involuntarily retirement for persons with a disability. There is little research on the economic, health and psycho-social impacts of being forced to retire and, moreover, how the impacts differ by the type of involuntary retirement (i.e. labour market redundancy, health, caregiving, etc.). The emerging perspective in the retirement literature is that it is the nature and timing of retirement that affects health outcomes (physical and mental), not the event in and of itself. There is mounting evidence that conventional scheduled retirement has no adverse effects on health, while early forced or involuntary retirement has a negative effect on health (Marshall & Clark, 1998, McDonald et al., 2000b). Until recently, we have lacked the longitudinal data in Canada to study this relationship. More research is needed to investigate the impact of involuntary retirement on physical and psycho-social health.

Relatively little attention has been paid to the economic consequences of involuntary retirement because of poor health. The analysis of the 2006 PALS data has revealed an

association between involuntary retirement and low income status. Although access to disability benefits may help to bridge income into retirement, there may be additional costs related to their health conditions that persons with disabilities are unable to absorb given their low income status (McDonald et al., 2000a). Therefore, more research should address the economic consequences of involuntary retirement.

Is a Disability Pension a "Pull" Factor for Retirement?

The literature suggested that disability benefits may be an incentive to "early retirement" or "pull" factor to retirement (DeLeire, 2000; Bound & Waidman, 2002; Campolieti, 2002; Harkness, 1993). While, PALS did not specifically ask this question, we were able to examine the association between the type of disability benefit and type of retirement. We did find evidence that disability pensions may be a pull factor for involuntary retirement; however, this area requires further quantitative and qualitative research. In particular, qualitative research on the perspectives of persons with disabilities on the role played by access to a disability benefits in the decision to retire would help to answer this question.

Gender Differences

Research suggests that women's retirement experiences differ from men's in a number of important ways because of the gendering of work and family life (Townson, 2005). The economic definition of retirement does not consider the non-remunerated work carried out by women such as the effect of family roles on the workplace (Simmons & Betchild, 2001), and their greater likelihood to be single or to have headed lone-parent families. Nor does it consider women's greater likelihood of retiring involuntarily, of retiring earlier than expected, and of retiring without employer or Canada pensions or with lesser pensions. Understanding retirement as a social process provides a useful framework for understanding the ways in which women's experiences are shaped. Future policy research should be directed towards the impact of the interaction between family roles and work on the retirement process, gender differences in factors leading to retirement, and consequences of forced or involuntary retirement for women with disabilities.

Data is Needed to Test the Theoretical Model of Forced Retirement

Szinovacz & Davey (2005) provide a theoretical model of forced retirement that is useful for understanding involuntary retirement for the disabled population. Using a life course perspective, they argue that the retirement decision operates within the context of the individuals' social-demographic characteristics, their work and retirement context. As suggested by the literature, people retire for a number of reasons such as mandatory retirement, to pursue a leisure activity, as a result of job disruption, mandatory retirement for care giving or to retire with their spouse. This study found that one-quarter of those who retired involuntarily did so only partially because of their health or for a non-health related

reason and most of those who retired voluntarily did so for a non health reason. Therefore more research is needed to investigate other reasons for the retirement decision and also how these reasons might interact to determine the retirement decision. Further, the Szinovacz and Davey model (2005) includes the work context. While the information on last occupation and industry was collected in PALS for those who retired between the years 2001-2006, it was not coded. Research on the labour force participation of persons with disabilities suggest that they may be concentrated in low skilled jobs (Jones, 2008) in physical occupations (Loprest, 1995) and in health care and social assistance occupations (Williams, 2006). The retirement literature finds differences in the timing of retirement by occupation (Statistics Canada, 2003). Given the differences in the timing of retirement by occupation it would be of interest to examine the relationships between the retirement decision for persons with a disability and occupation and industry.

Role of Chronic Diseases in the Retirement Decision

There is some evidence to suggest that some types of chronic diseases are more likely to cause work limitations among persons who report a disability. Baldwin & Johnson (2001) report that the main cause of work limitation among those persons who report a disability are musculoskeletal conditions such as arthritis or back problems followed by cardiovascular and circulatory conditions. Both chronic conditions develop in middle age or later. The single most common disabling condition they argue is back pain, which accounts for the largest injury category of workers' compensation cases. Another source of work limitation is disabling injuries that occur at the work place. The analysis of the 2006 PALs data reported here that persons with agility disabilities were disproportionately likely to experience involuntary retirement and we expect that agility limitations may be the result of some types of chronic diseases or a work place accident. The information on chronic disease in the PALS has not been coded into a meaningful classification. Consequently this analysis could not consider whether some types of chronic diseases were more likely to be associated with the type of retirement and this might be an area of future research.

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Appendix A. Description of the Selection Criteria and Variables Used from the PALS.

Variable	Details on Construction	New Variable Name
SAMPLE SELECTION	**Sample was Selection based on the following variables:** **Disability Selection:** ADDV_D_DISAB - Derived to indicate if the respondent had a limitation; Selection for Sample: 1 = yes. **Retired Selection:** ALFS_D_LFS - Employment Derived variable; Selection for Sample: 4 = Retired ANDE_Q02 - Are you (Is ....) permanently retired?; Selection for Sample: 1 = Yes (Since Retirement questions are asked of respondents who are permanently retired this selection variable was also included) **Age Selection:** AGE – continuous variable recoded to categorical, Selection of Sample: 15-74 years of age. **Age of Onset:** AAMC_Q01 - At what age did you (....) first start having any difficulty or activity limitation; this was a continuous variable, recoded to categorical – (ONSET_Age) Selection for Sample: individuals who started to have difficulty <=65. **Voluntary and Involuntary Retirement:** ARET_Q07 - Was this retirement voluntary; Selection for Sample: 1 = Yes OR 2=No.	N/A
SEX	**Gender:** 1=Female 2=Male	Gender
MARST	**Marital Status:** 1=Married 2=Separated 3=Divorced 4=Widowed	Marital_Status

	5=Single	
ARET_Q07	**Was this retirement voluntary? Sample selection selects those who picked 1 or 2 only.** -5 = Not stated -6 = Valid skip -7 = Not asked 1 = Yes 2 = No DK, RF	Voluntary_Retirement
HCDD	**Highest certificate, diploma or degree achieved: recoding into** 1=<HS 2=Graduated HS 3=Post Secondary, Certificate, Trade, College, Apprenticeship 4=University Degree or above -5= Not stated 14=Not Applicable	Education
RUINDFG	**Rural or Urban – original coding used:** 1= Rural 2= Urban -7 = Not asked -6 = Valid skip -5 = Not stated 8 = Refused 9 = DK	Urban_Rural
TENUR	**Tenure (Owned or Rented)** Categorical Variable recoded: 1= OWNED BY MEMBER OF HHLD 2= Rented/BandHousing -5 = Not stated & 2 = Not applicable – recoded to system missing	Rent_Own
LSTWK	**When Last Worked** **Categorical Variable: not recoded** -5 = Not stated 1 = BEFORE 2005 2 = IN 2005 3 = IN 2006 4 = NEVER 5 = AGE < 15, INST. RES	Last_Worked

IMMDER	**Immigrant Status** Categorical Variable: -5 = Not stated 1 = Not applicable (Institutional resident) 2 = Non-immigrants 3 = Immigrants 4 = Non-permanent residents Recoded into: -5 = Not stated 1 = Not applicable (Institutional resident) 2 = Non-immigrants 3 = Immigrants/ Non-permanent residents	Immigration
AGE	Continuous Variable recoded into: 1=15-44 2=45-54 3=55-64 4=65-74 5=75+ Needed to collapse this first category due to small cell sizes and disclosure rules.	Age_Groups
TOTINC	**Total Income – amount (Personal Income – based on Ian's email)** Continuous Variable – I put into categories however income need higher cell counts then other variables and our data did not meet this criterion. Therefore I used means, median, SD instead.	Total_Personal_Income
HHINC	**Total Household Income – amount** Continuous Variable – I put into categories however income need higher cell counts then other variables and our data did not meet this criterion. Therefore I used means, median, SD instead.	Total_Household_Income
AALR_Q01	**In general, would you say your (....'s) health is:** Categorical Variable recoded to: 1= Excellent/Very Good 2=Good 3=Fair/Poor	Current_Health
ARET_Q08	**How would you describe your health at the time you retired? Compared to others your age, would you say that your health was...?**	Retire_Health

	Categorical Variable recoded to: 1= Excellent/Very Good 2=Good 3=Fair/Poor	
ARET_Q02	**When you (....) last worked, how many hours did you (he/she) usually work per week?** Continuous Variable recoded to represent full time or part time hours. 1=Part Time (<35 hrs per week) 2=Full Time (>=35 hrs per week) All else Missing	Part_Full_Time
AAMC_Q01	**At what age did you (....) first start having any difficulty or activity limitation?** Continuous variable recoded to categorical – also used for sample selection * less than 65 (<5) . 1 = 0-34 2 = 35-44 3 = 45-54 4 = 55-64 5 = 65-74 6 = 75+	ONSET_Age
AHFT_D_A_LIM	**Hearing limitation Derived Variable:** **Based on: AHFT_Q02 & Q03 & Q04 & Q05 & Q06 & Q07 & Q08** **Refusal and Don't Know recoded to No** 0= No 1= Yes	Hearing_Lim_Der
ASFT_D_A_LIM	**Seeing limitation Derived Variable:** **Based on: ASFT_Q02 & Q04 & Q07 & Q09** **Refusal and Don't Know recoded to No** 0= No 1= Yes	Seeing_Lim_Der
ACFT_D_A_LIM	**Communication limitation Derived Variable:** **Based on: ACFT_Q01 & Q02** **Refusal and Don't Know recoded to No**	Communication_Lim_Der

	0= No 1= Yes	
AMOF_D_A_LIM	**Mobility limitation Derived Variable:** **Based on: AMOF_Q01 & Q02 & Q04 & Q06 & Q08 & Q10** **Refusal and Don't Know recoded to No** 0= No 1= Yes	Mobility_Lim_Der
AAFT_D_A_LIM	**Agility limitation Derived Variable:** **Based on: AAFT_Q01 & Q03 & Q05 & Q07 & Q09 & Q11 & Q13** **Refusal and Don't Know recoded to No** 0= No 1= Yes	Agility_Lim_Der
APFT_D_A_LIM	**Pain limitation Derived Variable:** **Based on: APFT_Q02 & Q03** **Refusal and Don't Know recoded to No** 0= No 1= Yes	Pain_Lim_Der
ALFT_D_A_LIM	**Learning limitation Derived Variable:** **Based on: ALFT_Q01 & Q02** **Refusal and Don't Know recoded to No** 0= No 1= Yes	Learning_Lim_Der
AMFT_D_A_LIM	**Memory Limitation Derived Variable:** **Based on: AMFT_Q01 & Q02** **Refusal, Don't Know and blank recoded to No** 0= No 1= Yes	Memory_Lim_Der
AEFT_D_A_LIM	**Developmental Limitation Derived Variable:** **Based on: ADFT_Q01** **Refusal and Don't Know recoded to No** 0= No 1= Yes	Develop_Lim_Der

	Unable to disclose due to cell counts	
AEFT_D_A_LIM	**Emotional Limitation Derived Variable:** **Based on: AEFT_Q02** **Refusal and Don't Know recoded to No** 0= No 1= Yes	Psych_Lim_Der
AUNK_D_A_LIM	**Type of Disability - Unknown. i.e., other conditions that are not specifically surveyed by PALS.** **Refusal and Don't Know recoded to No** 0= No 1= Yes Unable to disclose due to cell counts	Unknown_Lim_Der
----------	Created this categorical Variable based on totalling the 'yes' for the above 11 limitations. Recoded due to small cell counts to those who have 1 limitation total 2 limitation total 3 limitation total 4 limitation total 5 limitation total 6 or more of the above limitations	Sum_Number_Disabilities
DGREE	**Degree of severity** **Categorical variable – kept coding from survey** -7=Not asked -6=Valid Skip -5=Not Asked 0=No Severity 1=Mild 2=Moderate 3=Severe 4=Very Severe 5= Mild to Moderate	DGofSeverity

	6= Severe to Very Severe 8 = Refusal 9 = DK	
AHUI_Q32A	**The last question is about personal income sources. In 2005, did you (....) receive income from the following sources?** **...Workers' Compensation** Categorical Variable: those who were 'not asked, refusal, don't know' recoded to "system missing" 0 = No 1 = Yes	Workers_Comp
AHUI_Q32B	**The last question is about personal income sources. In 2005, did you (....) receive income from the following sources?** **...Canada or Quebec Pension Plan Disability Benefit** Categorical Variable: those who were 'not asked, refusal, don't know' recoded to "system missing" 0 = No 1 = Yes	Disability_Benefit
AHUI_Q32C	**The last question is about personal income sources. In 2005, did you (....) receive income from the following sources?** **...Private Disability Insurance Benefit** Categorical Variable: those who were 'not asked, refusal, don't know' recoded to "system missing" 0 = No 1 = Yes	Private_Insurance
AHUI_Q32D	**The last question is about personal income sources. In 2005, did you (....) receive income from the following sources?** **...Motor Vehicle Accident Insurance Disability Benefit** Categorical Variable: those who were 'not asked, refusal, don't know' recoded to "system missing" 0 = No	Accident_Insurance

	1 = Yes	
AHUI_Q32E	**The last question is about personal income sources. In 2005, did you (....) receive income from the following sources?** **...Veterans Affairs disability pension benefit** Categorical Variable: those who were 'not asked, refusal, don't know' recoded to "system missing" 0 = No 1 = Yes	Veterans_Pension
AHUI_Q32F	**The last question is about personal income sources. In 2005, did you (....) receive income from the following sources?** **...Provincial or municipal social assistance** Categorical Variable: those who were 'not asked, refusal, don't know' recoded to "system missing" 0 = No 1 = Yes	Social_Assistance
ARET_Q06	**In that job, were you (was ....) mainly...** 2 = Making "Working without pay for spouse or another relative in a family farm or business? " missing since low cell count. 1= Working for wages, salary, tips or commission? 3= Self-employed alone or in partnership?	Wage_vs_Selfemployed
AHUI_Q32E + AHUI_Q32D	Due to small cell sizes these two variables were combined	Accident_Veterans
AHUI_Q32A+B+C+D+E+F	All income sources combined into one variable illustrating who has at least one of these 6 sources of personal income	Income_All_Sources
weight	Created adjusted weight by selecting sample, running a mean of the master weight, and then dividing the master weight by that mean.	Standarized_Weight
PROV	**Province** Had to remove the North "Yukon, Nunavut, and NWT" due to disclosure rules. Categorical variable recoded to: 1=Atlantic	Region_Recoded

	2=Quebec 3=Ontario 4=Prairies 5=BC	
DIS_Q02_3_R	Unable to utilize in crosstab due to low cell counts	Discrimination_Work
ARET_Q09	**Does your condition completely prevent you from working at a job or business?** -5 =Not stated -6 =Valid Skip -7 =Not asked 1 =Yes, completely 2 =No 8,9 =DK, RF **Recoded into:** 0 = No 1 = Yes 8, 9 recoded to missing.	Condition_Prevent_Working
ANDE_Q03	**Is that because of your condition? (follows the question asking if they are permanently retired)** -5= Not stated -6 =Valid Skip -7 =Not asked 1 =No 2 = Yes, Partially 3 =Yes, completely 8,9= DK, RF Kept original coding except: 8, 9 recoded to missing.	Because_Condition_Retired
CQPPB	**Canada/Quebec Pension Plan Benefits – amount**	CPP
RETIR	**Retirement Income – amount**	Retire_income
OASGI	**OAS, GIS - amount**	OAS_GIS
HHINC	**Total Household Income – amount**	HHLD_income
INVST	**Investment Income – amount**	INVST_Income
LOINCA	**Low Income After Tax Status** -555555 = Not Stated	Low_Income

	1= Member of non-low income economic family or non-low income unattached individual 15 years of age and over. 2= Member of low income economic family or -low income unattached individual 15 years of age and over. 3=Not Applicable 4= Concept not applicable **Recoded into:** 0= Member of non-low income economic family or non-low income unattached individual 15 years of age and over. 1= Member of low income economic family or -low income unattached individual 15 years of age and over. -555555, 3, 4 = Missing	

Appendix B. Keywords and Databases.

Key Words:

- Disability & Retirement
- Disability & Retirement & Barriers
- Disability & Early Retirement
- Disability & Early Retirement & Barriers
- Disability & Involuntary Retirement
- Disability & Mandatory Retirement
- Disability & Forced Unemployment
- Disability & Early Exit from Work
- Disability & Voluntary Retirement
- Disability & Forced Leave From Work
- Disability & Leaving Work & Barriers
- Disability & Involuntary Job Loss
- Disability & Retirement Decision
- Disability & Withdraw from Work
- Disability & Early Withdrawal from the Labour Force
- Disability & Forced Retirement
- Disability & Abrupt Retirement
- Disability & Social Exclusion
- Health & Retirement
- Health & Retirement & Barriers
- Health & Early Retirement
- Health & Early Retirement & Barriers
- Health & Involuntary Retirement
- Health & Mandatory Retirement
- Health & Forced Unemployment
- Health & Early Exit from Work
- Health & Voluntary Retirement
- Health & Forced Leave From Work
- Health & Leaving Work & Barriers
- Health & Involuntary Job Loss
- Health & Retirement Decision
- Health & Withdraw from Work
- Health & Early Withdrawal from the Labour Force
- Health & Forced Retirement
- Health & Abrupt Retirement
- Health & Social Exclusion
- Disabled & Retirement
- Disabled & Retirement & Barriers
- Disabled & Early Retirement
- Disabled & Early Retirement & Barriers
- Disabled & Involuntary Retirement
- Disabled & Mandatory retirement
- Disabled & Forced Unemployment
- Disabled & Early Exit from Work
- Disabled & Voluntary Retirement
- Disabled & Forced Leave From Work
- Disabled & Leaving Work & Barriers
- Disabled & Involuntary Job Loss
- Disabled & Retirement Decision
- Disabled & Withdraw from Work
- Disabled & Early Withdrawal from the Labour Force
- Disabled & Forced Retirement
- Disabled & Abrupt Retirement
- Disabled & Social Exclusion
- Working with Disability & Retirement
- Working with Disability & Early Retirement
- Working with Disability & Involuntary Retirement
- Working with Disability & Mandatory Retirement
- Working with Disability & Forced Unemployment
- Working with Disability & Early Exit from Work
- Working with Disability & Voluntary Retirement
- Working with Disability & Forced Leave From Work
- Working with Disability & Leaving Work
- Working with Disability & Involuntary Job Loss
- Working with Disability & Retirement Decision
- Working with Disability & Withdraw from Work

- Working with Disability & Early Withdrawal from the Labour Force
- Working with Disability & Forced Retirement
- Working with Disability & Abrupt Retirement
- Working with Disability & Barriers
- Working with Disability & Social Exclusion
- Voluntary Retirement vs. Involuntary Retirement
- Economic consequences & Early Retirement
- Economic consequences & Involuntary Retirement
- Income Security & Early Retirement
- Income Security & Involuntary Retirement

Specific Disabilities:

- Hearing Loss
- Vision Loss
- Communication Disability/ problems
- Speech Problems
- Mobility
- Agility
- Pain
- Learning
- Memory Problems/ Dementia
- Development
- Psychological

AND

- Retirement
- Retirement & Barriers
- Early Retirement
- Early Retirement & Barriers
- Involuntary Retirement
- Mandatory Retirement
- Forced Unemployment
- Early Exit from Work
- Voluntary Retirement
- Forced Leave From Work
- Leaving Work & Barriers
- Involuntary Job Loss
- Retirement Decision
- Withdraw from Work
- Early Withdrawal from the Labour Force
- Forced Retirement
- Abrupt Retirement

Databases:

CINAHL	Social Sciences Citations Index	Scholars Portal Search (Social Sciences Index)
Google Scholar	Sociological Abstracts	Abstracts in Social Gerontology
The Cochrane Library	Social Services Abstracts	Family Studies Abstracts
Journal – "Disability & Society"	Social Work Abstracts	Ageline
EconLit	Sociological Abstracts	JSTOR
IDEAS (economics database)	Sociology: A SAGE Full-Text Collection	PsychINFO
Business Source Complete	Medline	Social Sciences Abstracts
Statistics Canada		

Endnotes

[i] There were a very few cases with zero personal incomes (slightly over 10) and household income (under 10). These are included in the descriptive analysis, but have been removed from the log transformed income variables.

ii To account for the survey design, the Pearson statistic is turned into an F statistic with noninteger degrees of freedom by using a second-order Rao and Scott (1981, 1984) correction. The p-value for the F statistic can be interpreted in the same way as a p-value for the Pearson statistic for "ordinary" data (i.e., data that are assumed independent and identically distributed).

iii The degree to which variables have a low level of significance will be effected by two main factors sample size and adjustments for sampling variability.

1) The small sample size may be effecting the power of the tests resulting in statistical tests that fail to reject the null hypothesis when the treatments do have some effect (increase Type II errors). Thus, it is important to appreciate the difference between statistical significance and substantive importance when interpreting the analysis. Significance and substantiveness are determined in large part by sample size, power, and effect size.

2) The sample weight and bootstrap weights were used at the final stage of analysis. The sample weights adjust for unequal probability of selection (i.e. exclusion and over- or under-sampling) and the bootstrap weights adjust for the sampling variability. The sampling variability is due to the fact that if different samples were drawn different estimates would be generated. The sampling variance is adjusted for by using bootstrap estimates to generate an empirical variance. The bootstrap variance can correct for the downward bias in the standard errors due to a lack of independence of observations within levels of the survey design (for example, cluster level). Thus, bootstrapping can lead to an increase in Type II errors (i.e. not reject the null hypothesis when it is false).

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