View metadata, citation and similar papers at core.ac.uk
brought to you by CORE
provided by Research Papers in Economics

S E D A P

A PROGRAM FOR RESEARCH ON

SOCIAL AND ECONOMIC DIMENSIONS OF AN AGING POPULATION

What is Retirement? A Review and Assessment of Alternative Concepts and Measures

Frank T. Denton
Byron G. Spencer

SEDAP Research Paper No. 231

For further information about SEDAP and other papers in this series, see our web site:
http://socserv.mcmaster.ca/sedap

Requests for further information may be addressed to:
Secretary, SEDAP Research Program
Kenneth Taylor Hall, Room 426
McMaster University
Hamilton, Ontario, Canada
L8S 4M4
FAX: 905 521 8232
e-mail: sedap@mcmaster.ca

What is Retirement? A Review and Assessment of Alternative Concepts and Measures

Frank T. Denton
Byron G. Spencer

SEDAP Research Paper No. 231

March 2008

The Program for Research on Social and Economic Dimensions of an Aging Population (SEDAP) is an interdisciplinary research program centred at McMaster University with co-investigators at seventeen other universities in Canada and abroad. The SEDAP Research Paper series provides a vehicle for distributing the results of studies undertaken by those associated with the program. Authors take full responsibility for all expressions of opinion. SEDAP has been supported by the Social Sciences and Humanities Research Council since 1999, under the terms of its Major Collaborative Research Initiatives Program. Additional financial or other support is provided by the Canadian Institute for Health Information, the Canadian Institute of Actuaries, Citizenship and Immigration Canada, Indian and Northern Affairs Canada, ICES: Institute for Clinical Evaluative Sciences, IZA: Forschungsinstitut zur Zukunft der Arbeit GmbH (Institute for the Study of Labour), SFI: The Danish National Institute of Social Research, Social Development Canada, Statistics Canada, and participating universities in Canada (McMaster, Calgary, Carleton, Memorial, Montréal, New Brunswick, Queen's, Regina, Toronto, UBC, Victoria, Waterloo, Western, and York) and abroad (Copenhagen, New South Wales, University College London).

This paper is cross-classified as No. 427 in the McMaster University QSEP Research Report Series.

Abstract:

Since the concept of *retirement* is prominent in both popular thinking and academic studies it would be helpful if the notion were analytically sound, could be measured with precision, and would make possible comparisons of patterns of retirement over time and among different populations. This paper reviews and assesses the many concepts and measures that have been proposed, summarizing them in groupings that reflect non-participation or reduced participation in the labour force, receipt of pension income, end-of-career employment, self-assessed retirement, or combinations of those characteristics. It concludes that there is no agreed measure and that no one measure dominates. Instead, new measures continue to be proposed to take account of additional refinements as new data sets become available, thereby further restricting possible comparisons. The confusing array of definitions reflects the practical problem that underlies the concept of retirement: it is an essentially negative notion, a notion of what people are *not* doing – namely, that they are *not working*. A more positive approach would be to focus instead on what people *are* doing, including especially their involvement in non-market activities that are socially productive, even if those activities do not contribute to national income as conventionally measured.

Key Words: concepts of retirement, measures of retirement

JEL Classification: J26

Résumé:

Puisque que la notion de retraite est à la mode dans la pensée populaire et dans les études académiques, il serait utile de définir un concept analytiquement pertinent que l'on puisse mesurer avec précision afin de comparer les tendances à travers le temps et les différents groupes de population. Cet essaie revoit et évalue les différents concepts et mesures qui ont été proposés, en considérant les regroupements reflétant l'absence ou une participation réduite à la population active, les bénéficiaires de prestation de retraite, les emplois de fin de carrière, le statut de retraite auto-évalué, ou d'une combinaison de ces caractéristiques. La conclusion est qu'il n'existe aucun consensus pour aucune de ces mesures. Au contraire, de nouvelles mesures continuent d'être proposées afin de mieux prendre en compte les raffinements du concept mesurables dans les séries de données nouvellement parues, compliquant davantage les comparaisons possibles. Ce large éventail de définitions reflète les problèmes pratiques derrière la notion de retraite: c'est essentiellement un concept qui se définit par la négative, une notion qui regroupe ce que les gens ne *font pas* – à savoir, qui ne *travaille pas*. Une approche plus positive viserait à se concentrer sur que les gens *font*, en particulier sur les activités non marchandes qui sont socialement productives, même si ces dernières ne contribuent pas au revenu national tel qu'il est conventionnellement mesuré.

What Is Retirement?

A Review and Assessment of Alternative Concepts and Measures*

1. Introduction

With population aging the labour force will grow more slowly and the proportion of the population deemed "dependent" will increase (Denton and Spencer, 2000). That gives rise to many concerns about what will happen to national income in the future, and whether the society will be able to support existing social programs. In this context the issue of "retirement" becomes important. Later retirement might help: it would increase the size of the labour force and reduce the size of the 'dependent' population. That gives rise to questions about how to encourage later retirement or, at least, how to avoid encouraging early retirement. But the notion of retirement is inevitably fuzzy, with some kinship to difficulties encountered in defining 'old age' (Denton and Spencer, 1999, 2002). The purpose of this paper is not to assess the potential benefits to society of having people retire later, or of reducing the extent to which they retire earlier. Rather, its purpose is to review and assess the many concepts and measures of "retirement" that have been proposed.

Retirement usually refers to withdrawal from paid working life. That is generally consistent with the definition provided by the Oxford English Dictionary – "To withdraw from office or an official position; to give up one's business or occupation in order to enjoy more leisure or freedom (especially after having made a competence or earned a pension)". But even if we take this approach, the notion is not only fuzzy, it is also complex. The stylized case of an individual who quit the paid labour force after a

* The work reported here was carried out as part of the SEDAP (Social and Economic Dimensions of an Aging Population) Research Program. SEDAP is supported by a Major Collaborative Research Initiatives grant from the Social Sciences and Humanities Research Council of Canada. We are grateful for that support and for the additional support received from Human Resources and Social Development Canada for work on this report. However, the views expressed here do not necessarily reflect those of either HRSDC or the federal government. The authors thank Peter Hicks for comments on an earlier draft and Ryan Mak for outstanding assistance in identifying and reviewing the relevant literature.

working life with one employer and never again sought paid work would seem to represent a straightforward instance of retirement, but that is not the norm. Most people change jobs several times in the course of a working life, sometimes with intervening spells of unemployment. McDaniel (1995) argues that in the later part of the working life "the transition from employment to retirement ... is far from the smooth transition that ... has long been presumed. [Instead] multiple transitions occur into and out of employment and into and out of the labour force" (p 86). That creates difficulties for the measurement of retirement. One might retire – e.g., from teaching or the Canadian Public Service, at age 55 – and then start a new career, full-time or part-time, perhaps doing work related to an earlier career, or perhaps doing something entirely unrelated. And such a return could occur even after several years of being out of the labour force. Retirement can be voluntary or involuntary; it can be gradual or sudden; and it can be temporary or permanent. It is clear that the notion of retirement is complex and that no one definition will satisfactorily represent all situations.

A variety of concepts and measures have been suggested. Lazear, writing in 1986, commented that "no consensus exists on the most fruitful way to define retirement" (p 310). Of course, what is "most fruitful" depends on the purpose at hand; a definition that serves well in one context might not suit in another. Nonetheless, it seems fair to say that more than two decades later there is no general agreement on precisely how retirement should be defined, although most agree that it relates to withdrawal from the paid labour force. We are not, in this review, concerned directly with models that attempt to explain the age of retirement but a practical consideration is how much difference it makes when alternative definitions are used. That is a topic that we are exploring separately, drawing on both cross sectional household survey data and longitudinal cohort series of income tax records. As that and other investigations make clear, it is inevitable that measures of retirement, and comparisons across measures, are limited by the available data.

2. A Framework for Analysis

In his review paper on “Transitions to Retirement” Borland (2005) provided a useful organizing concept to help us think about retirement. He distinguished between the period in which “career employment” is one’s main activity and a later period in which it is “retirement”. In between is the “transition phase”, which can start at various ages and vary in length. It is characterized by a reduction in labour force attachment – some combination of fewer hours of work, a new location (possibly working from home), a less demanding job, and the receipt of pension benefits. That, of course, leaves open the matter of specifying precisely how to define a state of retirement – and what indicator to use if a measure is needed.

Borland notes that “generally it seems that retirement has been interpreted as ... not being engaged in any paid work” (p. 2), but people with relatively low levels of engagement might also reasonably be deemed retired. Consider Figure 1, which shows

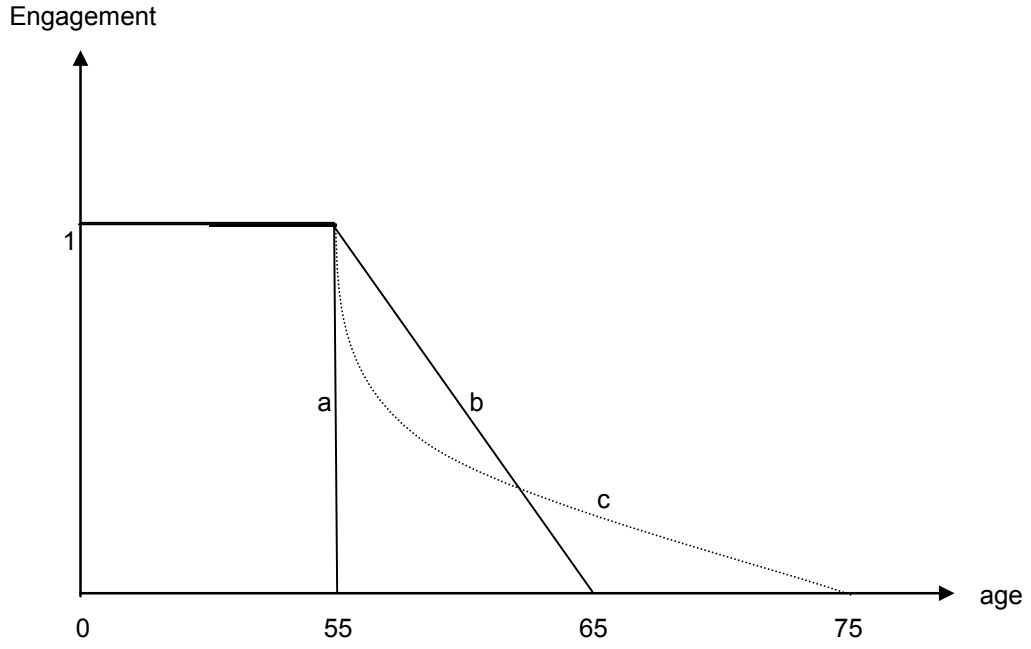

Figure 1: Transitions to Retirement

the extent of engagement in paid work on the vertical axis (1 indicates ‘fully engaged’; 0 indicates no paid work; intermediate values indicate partial engagement on the way to full retirement. Note that ‘fully engaged’ need not mean full-time full-year employment; it could represent a sustained period of working for half of each year (perhaps in the forestry industry, or fishing), or any other pattern that was sustained for a number of years and represented long-term ‘career’ or typical working life experience for an individual. Note also that engagement could be measured in dollars of employment income or in time (e.g., hours or weeks per year). At age 55 an individual a moves directly from a sustained career employment pattern (“full engagement”) to a phase of no paid work, and remains in that state; it is clear that such an individual would have ‘retired’ at age 55. But what about individuals b or c, both of whom experience gradual disengagement from work activity? For individual b the disengagement from work activity takes place over 10 years; the work-to-retirement process starts at 55 and only by 65 is the level of engagement zero. Perhaps we would want to think of that individual as retired at age 60 when engagement in employment fell to half its level before the transition began, or at age 64 when it was only 10 percent; that is a matter of definition. Similar comments apply to individual c, who is not ‘fully retired’ until age 75. Many other paths are possible, including returns to ‘full engagement’.

What these comments emphasise is that in all but the simplest cases, such as that of individual a, there is a perhaps lengthy period in which a person might be classified as both “retired” and “working”, a situation that complicates the notion of retirement and can even bring into question whether the concept itself is analytically useful. Even so, the idea of retirement remains strongly entrenched in both popular thinking and academic research. In the next section we consider the concepts and measures.

3. What Concepts and Measures Have Been Proposed?

In what follows we focus on retirement as the withdrawal of older workers from paid working life. That is the notion that is most commonly used, and it is generally

consistent with popular as well as more technical usage of the term. At the same time, it is (perhaps surprisingly) difficult to observe and measure. In passing, we note that this usage excludes those (mainly women) who have spent little or no time in the labour force but may have made significant contributions in terms of home production. McDonald (2006, p 129) argues, for example, that "Historically, women were essentially invisible workers and therefore invisible retirees because they did not work for very long in the paid labour force".

Table 1 provides a summary of the ways in which retirement has been defined in practice in selected studies that were published in the last two and one-half decades. A check mark () indicates either that the measure of retirement specified in the column was used in the empirical work in the study in that row or, in the case of conceptual or review studies, that the measure was proposed as one that might be used. For some of the studies referenced here, the central focus is not on retirement as such, but a definition of retirement is required for the analysis. We have attempted to locate Canadian studies that have defined retirement, either conceptually or for estimation purposes; 18 are reported in the table. But we have also looked to the literature more broadly[1], and have included 15 studies that work with data from the US, three with UK data, one for each of Norway and Israel, and two that work with data from several OECD countries combined. A few other studies do not work with data (as indicated by "NA").

In practice retirement is something that happens mainly to older workers, and 'older' is typically taken to mean over the age of 50 or 55, or even 60. Whatever else they do, those who are younger seldom 'retire'. The meaning of 'withdrawal' is also elastic, as the previous section suggests. At one extreme is full withdrawal – i.e., no labour force activity and hence no hours of work and no earnings. At the other would be a reduction in work effort deemed sufficiently large to qualify – e.g., by some arbitrary amount, at least one-quarter, or one-half, say – but not necessarily all the way to zero.

The first three columns of the table are based on labour market measures. One definition of retirement is the complete absence of labour force participation; studies

Table 1: Alternative Measures of 'Retirement'

Year	Author	1 non-participation in LF	2 reduction in hours worked and/or earnings	3 hours worked or earnings < min	4 receipt of retirement income	5 left main employer	6 change of career or employment later in life	7 self-assessed retirement	8 combination	Country	Data Source
1982	Hardy		√							US	NLS
	Tracy	√								Canada	LFS
1983	Sharon & Argov	√								Israel	Small sample
1984	Fields & Mitchell				√	√				US	RHLS, BAS
	Gustman & Steinmeier		√							US	RHLS
	Hooker and Ventis								3&4	US	Small sample
1985	Honig & Hanoch		√						2&7	US	RHLS
	Palmore et al.			√				√	3&4	US	7 longitudinal surveys
1986	Lazear	√	√		√			√		NA	NA
	Wanner & McDonald								1&4	Canada	Census
1995	OECD	√								10 OECD (excl Canada)	LFS
	Talaga & Beehr			√				√	3&4	US	Individual firm
1996	Saint-Pierre	√								Canada	SCF
1997	Gower								1&7	Canada	LFS
	Quinn & Smeeding			√	√				3&4	7 OECD	LIS
1998	Blondal & Scarpetta	√								15 OECD	LFS
	Tanner	√						√	1&7	UK	RS
1999	Baker & Benjamin	√	√		√			√		Canada	LFS, SCF, SAD
	Lumsdaine & Mitchell	√	√		√		√	√		NA	NA
	Szinovacz & DeViney		√		√			√		US	NSFH
	Tompa				√					Canada	LAD
2000	Gustman & Steinmeier		√	√	√		√	√		US	HRS
2001	Compton	√								Canada	SLID
	Gustman & Steinmeier								2&3&5&7	US	HRS
	Johnson & Favreault	√								US	HRS
	Kieran								1&7	Canada	LFS
2002	Habtu	√								Canada	LFS
	Pyper and Giles								1&5	Canada	SLID
	Rowe & Nguyen							√		Canada	LFS
2003	Baker, Gruber, & Milligan		√							Canada	LWF
	Maloney, Mirza & Paris		√							Canada	Income tax returns
2004	Schellenberg & Silver							√		Canada	GSS 2002
	Shannon & Grierson	√								Canada	Census, LFS
2005	Asch, Haider & Zissimopoulos					√				US	Dept of Defense
	Blekesaune & Solem		√							Norway	Combined admin & survey
	Borland		√							NA	
	Drolet								2&4	Canada	Quebec income tax returns
2006	Banks & Smith				√	√		√		UK	BPHS
	Cahill, Giandrea & Quinn	√								US	HRS
	Deschênes & Stone								1&4	Canada	SLID
	Haas et al.								3&4	US	Census
2007	Arkani & Gough	√								UK	LFS & ELSA
	Bowlby							√	1&4,2&4	NA	NA
	Coile & Gruber		√					√		US	HRS
	Wannell				√					Canada	LAD

Key:

BAS	Benefit Amounts Survey
ELSA	English Longitudinal Survey of Ageing
GSS	General Social Survey
HRS	Health and Retirement Study
LAD	Longitudinal Administrative Database
LFS	Labour Force Survey
LIS	Luxembourg Income Study
LWF	Longitudinal Worker File
NA	Not Applicable
NLS	National Longitudinal Surveys of Labor Market Experience
NSFH	National Survey of Families and Households
RHLS	Retirement History Longitudinal Survey
RS	Retirement Survey
SAD	Survey of Assets and Debts
SCF	Survey of Consumer Finances
SLID	Survey of Labour and Income Dynamics

using this quite restrictive measure are listed in the first column. Those listed in the second and third columns are less demanding in terms of what an individual might do and still be regarded as retired. That is, they are consistent with partial retirement – one could be considered retired when time worked (and hence, income earned) is reduced. However, the data requirements are greater since retirement is defined by a reduction in either hours worked or earnings (or both), not necessarily to zero (column 2), or by the requirement that hours worked and/or income earned be low (column 3), below a specified (and inevitably arbitrary) threshold.

The next three columns are not based on direct indicators of current labour market activity. Being in receipt of retirement income is all that is required to define retirement in the studies listed in column 4; newly in receipt would then characterize newly retired, whether or not the person is still working. The next two definitions relate to previous employment – leaving one's main or career employer (column 5) or changing employer or career (column 6). The idea here is that such a change in the later working years would be expected to indicate a marked reduction in labour force commitment, for example, the move from a full-time career as a school teacher to a part-time retirement activity as a real estate agent. The next column (column 7) relates to self-assessed retirement. Here individuals describe themselves as retired or not; all other information is ignored.

Still other studies define retirement based on a combination of characteristics – e.g., full withdrawal from the labour force (column 1) and also in receipt of pension income (column 4). That case is indicated in column 8 by the entry '1&4'. Among the 45 studies represented in the table, 30 propose one or more measures of retirement based only on a single defining characteristic and 15 propose measures based on two or more characteristics. The most frequently proposed measures based on a single defining characteristic are non-participation in the labour force (15 studies), a reduction in hours and/or wages (13) and self-assessment (13). Of the 15 studies that propose that a combination of characteristics be taken into account, ten include receipt of pension income in combination with earnings or hours worked below a specified threshold (6

studies) or a reduction in participation, including non-participation (4 studies). One of these studies, Bowlby (2007, p 17), reports that Statistics Canada has a 'standard definition' of retirement: "retired refers to a person who is aged 55 and older, is not in the labour force, and received 50 percent or more of his or her total income from retirement-like sources". He goes on to note the practical difficulties in applying this definition empirically: few Statistics Canada surveys provide the necessary information about both labour force participation and income. The two exceptions are the Survey of Labour and Income Dynamics and the Census.

If retirement is to be defined by a significant reduction in labour force attachment it is natural to look to longitudinal surveys as the basis for measurement. Surveys in which the same individuals are observed for a number of years, starting in their later working years, are especially helpful. Until recently few Canadian data files have collected longitudinal data; thus there has been very little with which to work. The first such Canadian study, Tompa (1999), made use of administrative data, namely the Longitudinal Administrative Database, better known as the LAD, which links individual income tax returns year-by-year for a large sample of income tax filers for the period since 1982. He defined retirement by the receipt of CPP benefits and investigated the impact of various characteristics (including level of income, marital status and markers of health) on the age of retirement. Subsequently Maloney, Mirza and Paris (2003) worked with data from income tax returns, but not with LAD. Instead, they had access to the Finance Canada CCRA Individual Tax Mini-Universe database for the period 1995-2001. Their concern was to estimate the effect of the Canadian income security system on retirement. They worked with a sample of those who were aged 60 to 70 in 1995 (60 is the youngest age at which one can opt to receive C/QPP pension benefits, and 70 the oldest). The sample is further restricted to those who had positive employment income in 1995. Retirement was then defined on the basis of a year of positive employment income followed by a year of zero employment income.

Drolet (2005) also worked with longitudinal income tax returns, in his case those that were filed with Revenu Québec in the period 1991-2001. His particular goal was to infer

the age of retirement. By making use of the longitudinal nature of the file he measured retirement by a substantial drop in employment income combined with the receipt of pension income.

A recent study by Wannell (2007) is concerned with young pensioners, those who retire before the age of 60. He uses LAD and defines as retired a person who was in receipt of registered pension plan (RPP) benefits between the ages of 50 and 60 and had positive employment or self-employment income in the year preceding initial receipt. He excludes from his analysis those who claimed the disability deduction or received C/QPP benefits in the first two years of receipt of RPP (since that would indicate disability, and hence possible difficulties in pursuing employment) and also those whose pension and superannuation income dropped to zero in the year following initial receipt (to eliminate those whose receipt of such income occurred when they changed employers and had to declare as income RPP assets that they were unable to transfer to a new plan).

Baker, Gruber and Milligan (2003) also work with longitudinal administrative data files, in their case the Longitudinal Worker File (LWF), which was developed by the Business and Labour Market Analysis (BLMA) Division of Statistics Canada. It is a 10 percent random sample of Canadian workers for the period 1978-1996. It combines information from three administrative data files, namely the T4 file of Revenue Canada, the Record of Employment (ROE) file of Human Resources Development Canada, and the Longitudinal Employment Analysis Program (LEAP) file of BLMA. They define work based on the report of positive T4 earnings in two consecutive years. Retirement is defined by the last year of positive earnings before a year in which earnings were zero.

Turning now to longitudinal survey data, Compton (2001), Pyper and Giles (2002), and Deschêne and Stone (2006) work with longitudinal data from the Survey of Labour and Income Dynamics (SLID). Compton (2001) works with SLID for the years 1993-96, and defines retirement for those over the age of 50 as being out of the work force for the entire year. Unlike Statistics Canada's use of the term, 'out of the work force' is defined to include those who were unemployed. She notes (pp 14-15) that "The distinction

between months spent in unemployment or outside the labour force may be blurred, especially for older persons. Individuals who lose their job may decide to retire, but find it more lucrative to remain officially in the labour force and collect their entitled EI benefits prior to officially dropping ouf of the labour force and receiving CPP benefits." Hence she defines all long-term withdrawals from employment as retirement.

Pyper and Giles (2002) also use SLID to focus on transitions to retirement. They analyse the labour force behaviour of those aged 50-67 whose full-time career jobs (jobs with minimum duration of 8 years) came to an end at least 24 months before the end of the five-year 1993-97 data period. They find that "Almost half of older workers who ended a full-time career job between 1993 and 1997 began a new job within two years. The majority of these found a new full-time job, and a smaller but significant portion (10%) switched to part-time employment, suggesting that easing into retirement is a real phenomenon" (p 15).

Deschêne and Stone (2006) work with SLID for the six-year period 1996-2001. They define a respondent as retired if s/he had left the labour market for good (which, in practice, means that the survey respondent was neither employed nor seeking work for at least one full year and had not returned to work by the end of the survey period) and was also in receipt of retirement income.

Rowe and Nguyen (2002) work with data from the Labour Force Survey (LFS), but in a novel way related to the development of the LifePaths simulation model. More specifically, they work with 20 years of monthly data from the LFS master files to follow the month-to-month changes in the labour force status of respondents. Those month-to-month transitions are used to construct cohort patterns of job separation and acquisition for those who turned 50 between 1976 and 1979. Such an approach is possible because households remain in the LFS for six consecutive months; hence there are five one-month transitions for each respondent. "By tracking the cumulative incidence of job separation and job acquisition of selected cohorts between the ages of 50 and 65, it is possible to identify self-described retirement as well as other patterns of labour market activity" (p 24). They conclude that "Retirement as a self-reported event appears to be

relatively infrequent. Only about 51 percent of men and 30 percent of women in the selected cohorts had retired from a job by age 65" (p 24).

Others who have worked with the LFS typically have not taken advantage of the (very short) longitudinal files that are available for each respondent, but instead have worked with the more standard cross-sectional versions of those files. These include Tracy (1982), Gower (1997), Blondal and Scarpetta (1998), Baker and Benjamin (1999), Kieran (2001), Habtu (2002), and Shannon and Grierson (2004). In most of these cases the definition of retirement is simply 'not in the labour force'. That is the measure used by Blondal and Scarpetta (1998) who work with survey data generally similar to the Statistics Canada Labour Force Survey, but from 15 OECD countries, including Canada. Exceptions are Gower (1997) and Kieran (2001), who define retirement by being both out of the labour force and self-reported as retired. Habtu (2002) uses measures based on 'not in labour force' (i.e., neither employed nor unemployed), and calculates labour market inactivity rates (the ratios of those not in the labour force to the population). She refines the inactivity rates to reflect different durations since last employment.

Shannon and Grierson (2004) use both the LFS and Census files to focus attention on the employment rate (the ratio of employed to population). That is consistent with their concern relating to the effects of mandatory retirement legislation on employment. Census files were also used by Wanner and McDonald (1986) who define as retired those not in the labour force who are also in receipt of retirement pension income.

Baker and Benjamin (1999) make use of the LFS in much of their descriptive analysis, but their econometric work is based on successive cross sections of the Survey of Consumer Finances. Their concern is to analyse the effects of the introduction of early retirement provisions in the CPP and QPP. The fact that the provisions were introduced at different times in Quebec (1984) and the rest of Canada (1987) allows them to apply a difference-in-differences approach to investigate their impact on labour supply behaviour. They assess the responses of males aged 60-64 and also aged 55-59, using several measures of labour market attachment and

participation. Their most direct measure of retirement is determined by self-reported activity while out of the labour force – by this measure only those who are neither employed nor searching for work and who indicated that they were either "retired or voluntarily idle" are classified as 'retired'; alternative measures of labour market attachment are considered as well – employed, weeks worked if employed, unemployed, and in receipt of unemployment insurance.

Saint-Pierre (1996) also works with data from the Survey of Consumer Finances. His concern is with whether earnings continued to increase until retirement, and he focusses on newly retired men, defined as those who were not in the labour force as of the survey date but were full-time full-year workers for at least one week during the previous calendar year.

Among the studies using Canadian data only Schellenberg and Silver (2004) make use of data from the General Social Survey. The GSS uses a subjective definition for retirement. It includes those who stated that their main "activity" during the previous 12 months was 'retired' as well as others whose responses to other questions indicated that the designation was appropriate.

Almost all US studies have worked with longitudinal data. Even in the early 1980s Hardy (1982) was able to define the onset of retirement based on a reduction of annual hours worked, as reported in four waves of the US National Longitudinal Surveys of Labor Market Experience (NLS). The Retirement History Longitudinal Survey (RHLS) was the basis for other studies in the mid-1980s. By way of examples, using that survey, retired was defined by Gustman and Steinmeier (1984) based on a reduction in hours, by Fields and Mitchell (1984) based on both leaving one's main employer and receiving retirement income[2] and by Honig and Hanoch (1985) in two ways – a reduction in hours, alone or in combination with self-assessed as retired. Palmore et al. (1985) also worked with the RHLS as well as (remarkably) six other longitudinal surveys, and defined retired in three ways – based on self-assessment, on working few hours, and on working less than full time and receiving pension income.

Starting in about 2000, research on retirement in the US using longitudinal data files has concentrated on the analysis of the Health and Retirement Study (HRS). As its name suggests, one of the purposes of HRS was specifically to study retirement, and the range of questions that were asked of respondents, in combination with the linkage to Social Security administrative files, made possible the empirical application of many definitions. Five such studies are listed in Table 1 and, as the summary indicates, they have worked with a variety of definitions.

Almost all measures are based on a single criterion, although some studies provide several such measures. Non-participation in the labour force is the only criterion used by Johnson and Favreault (2001) and Cahill et al. (2006). Gustman and Steinmeier (2000) and Coile and Gruber (2007) provide measures based either on reduction in hours and/or earnings or on self-assessed retired status. Gustman and Steinmeier (2000), also provide three other measures based on a single criterion – minimum hours or earnings, receipt of pension income, or change of career in later life. Only one study identified here is based on a combination of characteristics – that of Gustave and Steinmeier (2001), who suggested combining five criteria.

Another recent US study, that of Asch, Haider and Zissimopoulos (2005), uses longitudinal data from the administrative files of the Department of Defense; its measure of retirement is departure from the Department. Other studies have worked exclusively with cross-sectional data. We note here the one by Haas et al. (2006), based on data from the 2000 Census. That study is concerned specifically to compare alternative definitions of retirement for older migrants. The 'traditional' measure is strictly age-based – retired migrants are those aged 60 or older who resided in another state five years before the census. The alternative definitions for which estimates are provided relate to similar individuals age 50 or older, but with retirement status indicated not solely by the change in location but also by a reduction in work time and being in receipt of relevant Social Security benefits (definition 1) or by not being in the labour force and being in receipt of relevant Social Security benefits (definition 2).

UK studies have also been able to benefit from access to longitudinal survey data. Tanner (1998) works with two waves of the Retirement Survey and Banks and Smith (2006) with 13 waves of the British Panel Household Survey (2006). Arkani and Gough (2007) work with the first (hence cross-sectional) wave of the English Longitudinal Survey of Ageing (ELSA) as well as with the (cross sectional) Labour Force Survey. Arkani and Gough (2007) define retirement in only one way: not in the labour force. Tanner (1998) provides three measures – not in labour force, self-assessed as retired, and both together. Banks and Smith (2006) provide three single-criterion measures – one based on receipt of retirement income, one based on leaving main employer, and one based on self-assessment.

We have found only one study that works with data for Israel. Sharon and Argov (1983) work exclusively with cross-sectional data, a sample of 300 men who had been classified as retired in that they were not in the labour force, but who nonetheless applied for work at an employment agency. Their concern was to identify the factors associated with successful paid work after retirement.

Finally, we note the work of Biekesaune and Solem (2005), which combines survey and longitudinal administrative data for Norway. In that regard it resembles the HRS in the US, which was able to combine survey data with administrative data from the Social Security Administration, but it appears that the Norwegian study had access to a wider range of administrative data. It defines retirement by a sufficient drop in work-related income. We note that combining survey and administrative data can be very helpful when addressing research questions, including those relating to retirement. A particular advantage of some administrative files is the long time series of information that they can provide right away, without having to wait until many years of survey data have been collected. Longitudinal administrative records can be of particular value in cases where accuracy is important and the information can change substantially over time (e.g., the level and sources of income). The advantages are especially great when administrative records can be linked to survey data that provide additional information

about other characteristics often missed in administrative records (e.g., level of education).

4. Helpful Constructs Related to Measures of Employment and Retirement

The summary in the previous section indicates the range of measures that have been proposed and applied. We turn now to consider some measures that could be derived based on information that is available in the Statistics Canada Labour Force Survey and its Longitudinal Administrative Database (LAD). From the LFS, and specifically from the labour force participation rates (LFPRs) based on that survey, one can calculate transitions for pseudo-cohorts – e.g., the probabilities of leaving the LF (hazard rates) or, alternatively, of remaining in the LF. As an extension, one could calculate also the expected years of working life remaining at ages before retirement, and the expected years of retirement. Such concepts will be applied in a companion piece.

We turn now to LAD. Since it includes only information that is available from individual income tax returns, one is restricted to income-based measures of retirement. However, a major advantage follows from its longitudinal nature: detailed information is available for the income of each taxfiler since 1982, or whenever s/he first filed an income tax return. At this time the latest information relates to the 2005 tax year. That means that we have records of annual income for a period of up to 24 years, including the amount of income in each of various categories (such as income from employment, from retirement pension, from investment) in each of those years. Thus measures of retirement can be derived that relate to the receipt of income from employment (including self-employment) over a number of years. For those with a history of employment income, retirement could be defined as one or two years with no earnings or a specified decline in earnings (e.g., by half, by 75 percent), and the sensitivity of the measure of retirement to changes in the definition could be assessed. That means that measures that are generally consistent with those identified in the first three columns of

Table1 could be derived. In addition, of course, we know from LAD whether a person has retirement income (the fourth column), and hence that could be taken into account also.

A question remains about what should be included in the measure of 'employment income'. In particular, should it include unemployment (EI) benefits. Such benefits were included in one of the retirement definitions used by Baker, Gruber and Milligan (2003). Using a different database, they defined a person as retired in the year preceding the year in which combined earnings and unemployment benefits were zero.

In a companion report we explore the implications of alternative definitions of retirement based on a drop in employment income, defined to include receipt of employment insurance benefits. Successive cohorts are followed from age 50, in whatever year that occurred. Thus the cohort that was age 50 in 1982 can be followed for 24 years, or until age 74, while the cohort age 50 ten year later, in 1992, can be followed for only 14 years, until age 64. We measure reductions in real (inflation-adjusted) employment income relative to average earnings when the cohort was aged 50-52. Thus, with this approach, retirement could be observed as young as age 53, if the reduction in employment income was sufficiently large. Four variants of "sufficiently large" are considered – reductions of 25 percent, 50 percent, 90 percent, and 100 percent in employment income. Employment income earned at ages 50-52 is a plausible indicator of potential lifetime earnings, and provides a base or reference level that can be used consistently across cohorts and against which reductions in employment income can be compared.

5. Discussion

We have found in the social science literature a range of definitions that have been proposed and/or used as indicators of retirement; and have classified them under eight headings in Table 1. Which measure is used in a particular study depends primarily on

its purpose – the question to be answered – but the choice of measure is likely to be conditioned also by the data available.

The appropriateness of a measure can be assessed too from a more theoretical perspective. In this context it is helpful to distinguish whether the focus is at the level of an individual person or employer, on the one hand, or at the level of the society as a whole, on the other. We draw on that distinction in what follows.

A relatively clean measure of retirement is possible if work is associated with market activity, and specifically with the provision of labour services in exchange for employment income. Retirement is then indicated by the withdrawal of those services. That is what most measures of retirement emphasise, and hence most researchers have defined retirement based on labour force status. Such a measure is appropriate if the concern is at the level of the society as a whole – the social level – and perhaps with the productive capacity of the economy as indicated by such standard measures as potential gross domestic product (GDP).[3] That is evident since being in the labour force adds to the economy's productive capacity while withdrawing from the labour force reduces it. Thus understanding retirement in the sense of withdrawal from the labour force, and the historical trends in market-based measures of retirement, will inform projections of their future paths. In particular, those concerned with the future rate of growth of GDP will want to assess the impacts that are likely to be associated with the extraordinary and much anticipated levels of retirement of the baby boom generation. For that purpose they will want to use a measure based on labour force status.

Measures in the first column of Table 1 define retirement by non-participation in the labour force. Using this measure each individual is counted as either in the labour force (and hence not retired) or out of the labour force (and hence presumed to be retired). More subtle changes in the intensity of participation are ignored. Of course, taking into account the extent of withdrawal is of practical importance, since not everyone makes "an abrupt transition from full-time work to full-time retirement" – although Blondal and Scarpetta (1998, p. 6) found an abrupt transition to be the usual, though not universal, pattern in a study of 15 OECD countries.

In practice, participation can be full or partial, with changes in intensity measured either by a reduction in work activity (such as in the number of hours worked per week) or in income earned from employment, our columns 2 and 3 in Table 1. It is obvious that the more common it is for retirement to be a gradual rather than an abrupt transition, the less satisfactory are measures that fail to account of the transition itself in suggesting the associated impact on the economy's productive capacity. It is obvious also that trends towards more abrupt or more gradual retirement practices would bias measures that fail to allow for such trends. In addition we note the potential importance of taking into account systematic differences in rates of retirement that are related to individual productive characteristics. Thus, for example, those with higher levels of education and higher levels of productivity tend to retire at somewhat older ages than do others.

While these measures are useful as social indicators of retirement status, they are also useful as reasonable indicators of retirement from an individual perspective – an older person who is no longer working, or who has a much reduced labour force attachment, might reasonably be classified as 'retired'.

The fourth indicator, in column 4, is based entirely on the receipt of retirement income. Inasmuch as the initial receipt of pension income is often associated with departure from the labour force, or at least with a substantial reduction in labour force activity, it too could provide a reasonable indicator of retirement – and from both the individual and social perspectives. By way of example, those who are eligible by virtue of employment history to receive C/QPP retirement pension benefits can elect to have those benefits start at any age between 60 and 70. The benefit level adjusts to reflect the age chosen. Since the receipt of benefits is associated with the end of contributions, the age at which individuals opt to retire in this sense will have an impact on the assets and financial viability of the plans. When the plans have universal coverage, as in the case of the C/QPP, this definition has relevance from a social perspective.

Choice regarding the age of benefit take-up is a feature of many private pension plans as well. For them the perspective is much more at the individual employer level. At the same time it must be recognized that the receipt of pension benefits, whether

from a public plan, or from a private plan associated with a particular employer, does not necessarily mean that the person has withdrawn from active participation in productive activity. That suggests a deficiency, from a social point of view, in measures of retirement that depend exclusively on the receipt of pension benefits. Indeed, there are many examples of people receiving pensions while remaining in the labour force and continuing to work. Until recently the compulsory retirement age from the Canadian military was 55 (it was raised to 60 in 2004). Many retire when younger. Those leaving the service typically accept the retirement pension but often take up other employment. Beyond that, many people who have pension benefits as a result of taking "early retirement" have retired from one employer but subsequently started to work for another. Others continue to work for the original employer, perhaps with a reduced work schedule, while receiving pension benefits. In such cases individuals might properly be 'retired' from the perspective of an individual employer, but not from the perspective of the society as a whole – or of the individual.

The next two indicators of 'retired', namely 'left main employer', column 5, and 'change of career or employment later in life', column 6, are closely related. They capture the idea that 'retirement' is marked by the end of a long period of employment with the same employer, even if further employment – possibly of quite a different nature – is pursued subsequently. Thus, for example, teachers are often thought of as 'retired' when they quit teaching at age 55 or 60, and may describe themselves in that way, even if they are actively engaged in another form of employment or, for that matter, even if they continue to teach on a part-time basis.

This is relevant for an understanding of the determinants of 'retirement' from the perspective of an individual employer – something about which employers would like to have better knowledge as one aspect of overall personnel management. When the concern is with a single company the measure is appropriately based on whether or not an individual continues to be employed by that company: an individual who takes up "post-retirement" employment elsewhere would still be deemed retired by the original employer. That would be the case if one's concern is with understanding the age at

which employees in a company elect to take pension benefits to which they are entitled. The interest may be motivated, for example, by the need to project the overall cost of the stream of benefits to which retirees are entitled, and the asset position of the pension fund. Similar questions arise on a larger scale when the concern is with the future stream of benefit payments and contribution flows under the C/QPP. However, the measure is deficient from a broader societal perspective since it fails to take into account whether an individual pension recipient is still engaged in productive activity.

That brings us to our final single-factor indicator, namely self-assessed retirement, in column 7. The idea here is that people declare themselves as 'retired' or 'not retired' and all other information is ignored. Thus, for example, and as noted above, the person who quit teaching may describe herself as retired even though she is now working two or three days a week as a substitute teacher. In such a case being self-assessed as retired may be a good indicator of her state of mind, but hardly a good indicator of her economic contribution.[4]

Finally, retirement could be defined by a combination of indicators, our column 8. As one example, a person might be classified as retired only if s/he was both a non-participant in the labour force and in receipt of pension income, or only if s/he worked less than a specified number of hours or earned less than a specified amount and also received pension income. As another example, Gustman and Steinmeier (2001) proposed a measure of retirement based on satisfying four criteria – to be retired a person must have left his or her main employer, be working fewer hours than before, those hours must fall below some minimal level, and the person must regard himself or herself as retired. Thus both objective and subjective indicators can be combined to suggest retirement status, and perhaps get closer to a measure that reflects both an individual's perception and the extent of attachment to the market economy.

6. Concluding Remarks

We have reviewed many indicators of retirement and, as we have seen, each has its merits as well as its deficiencies; no one measure dominates those that have been proposed. Indeed, the field appears to be wide open, with each researcher free to introduce new measures that take advantage of newly available data. That often means that the measures are based on only one data set, thereby restricting the scope for comparisons. Ideally one would like to have a concept of retirement that is analytically sound, that can be measured with precision, and that makes possible comparisons of retirement patterns over time and how they differ among jurisdictions.

In Canada there are only a few data sets on which one could base measures that approach that ideal, and all of them are available through Statistics Canada. The two leading contenders are the Labour Force Survey and the Longitudinal Administrative Database. Given the nature of the LFS, any measure of retirement would necessarily be based (almost) exclusively on current labour force status; information about sources of income is not available. By contrast, measures based on the LAD would, of necessity, rely (almost) exclusively on information about income and its sources; direct information about labour force status is not available. Offsetting the limitations of measures based on either survey would be the advantages they bring in terms of relatively long time periods and samples that are both large and representative. In addition, the LAD makes it possible to base analyses on the income experience of the same individuals over time. That cannot be done with the LFS, but the retirement patterns of pseudo-cohorts could be derived and analysed. A natural question is how different measures of retirement based on these two data sources would be. That is something that we address in related further work. It may turn out that the two data sources yield similar rates of retirement.

However, as we have seen, in deciding whether to classify individuals as retired, researchers often want information about both labour force status and sources of income (specifically, the receipt of retirement pension income). That means either

merging individual records from the LFS and LAD or, more likely, considering alternative data sources of which there are two, both with severe practical problems.

Measures could be based on the Survey of Labour and Income Dynamics (SLID), which makes available high quality longitudinal data on both labour force status and annual income by source, starting in 1992. A practical problem, however, is that the sample size is relatively small when it comes to examining the retirement process. There are simply too few observations of individuals who, by whatever definition one might prefer, retire in any one year, too few on which to base reliable estimates. The second source is the Census of Population. The problem is that a census is taken only every fifth year, and moreover there may not be strict comparability between consecutive censuses.

We conclude by noting that while the concept of retirement is prominent in both popular thinking and academic studies, there is no unique measure that we can attach to it. The problem is that what underlies the concept of retirement is the essentially negative notion of attempting to define what people are not doing – namely, that they are not working. In almost all cases the underlying notion is that working time has been withdrawn from the market economy. But measures that reflect the absence of market-oriented activities ignore what people are actually doing. The fact is that much non-market activity is socially productive even though it is not included in standard measures of national income. One could be not in the labour force (using standard indicators), hence not engaged in market activities and not contributing to the measured national income, but still be contributing to the well-being of the society.

This might happen through provision of unpaid contributions of time, or volunteer services, a topic that has been explored in Robb et al. (1999) and Lian et al. (2000), who in both cases were concerned to assign values to such services. There are many examples of ways in which individuals spend time providing contributions that are recognized as socially valuable but whose worth is not included in conventional measures. One is through the provision of volunteer services in hospitals or to other members of the household, or to family members resident elsewhere. Another is by

working with new immigrants or others to improve their language or workplace skills, thereby adding to their future productivity. Yet another is by working with children, including those from underprivileged backgrounds, to help them develop their social or work skills. It is clear in that similar services could be provided through the market, in which case they would be included in the conventional measures of output.

These examples (and there are many more) emphasise the essentially negative nature of the standard notion of retirement in that it emphasises what people are not doing. That limitation is a natural consequence of restricting measures to those that reflect market activities, and ignoring other activities that have social value. An alternative would be to place more emphasis on what people are doing, whether or not they might be classified as 'retired'. A natural complement to market-based measures of retirement would be measures based on time use surveys, including not only the number of hours spent working for pay, but also hours engaged in household activities, in caring for others, and so on. There is a considerable literature on this topic; for a recent review see Boarini et al. (2006).

REFERENCES

Arkani S., and S. Gough (2007) “The Impact of Occupational Pensions on Retirement Age,” Journal of Social Policy, Vol. 36, Part 2, pp. 297-318, April.

Asch, B., Haider, S.J., and J. Zissimopoulos (2005) “Financial Incentives and Retirement: Evidence from Federal Civil Service Workers,” Journal of Public Economics, Vol. 89, No. 2-3, pp. 427-440.

Baker, M. and D. Benjamin (1999) "Early Retirement Provisions and the Labor Force Behavior of Older Men: Evidence from Canada," Journal of Labor Economics, Vol. 17, No. 4 Part 1, pp. 724-756.

Baker, M., Gruber, J. and K. Milligan (2003) “The Retirement Incentive Effects of Canada’s Income Security Programs,” Canadian Journal of Economics, Vol. 36, pp. 261-290.

Banks J. and S. Smith (2006) “Retirement in the UK,” Oxford Review of Economic Policy, Vol. 22 No. 1, pp. 40-56, Spring.

Blekesaune, M. and P. E. Solem (2005) “Working Conditions and Early Retirement: A Prospective Study of Retirement Behaviour,” Research on Aging, Vol. 27, No. 1, pp. 3-30.

Blondal, S. and S. Scarpetta (1998) “The Retirement Decision in OECD Countries,” OECD Economics Department, Working Paper No. 202.

Boarini, Romina, Asa Johansson and Marco Mira d'Ercole (2006) Alternative Measures of Well-being, OECD Social, Employment and Migration Working Papers No. 33.

Borland, Jeff (2005) “Transitions to Retirement: A Review,” Melbourne Institute Working Paper No. 3/05, April.

Bowlby, Geoff (2007) "Defining Retirement," Perspectives on Labour and Income, Statistics Canada. Vol. 8, No. 2. February. Ottawa: Statistics Canada.

Cahill, Kevin E., Michael D. Giandrea, and Joseph F. Quinn (2006) “Retirement Patterns from Career Employment,” The Gerontologist, Vol. 46, No. 4, pp. 514–523.

Coile C. and J. Gruber (2007) “Future Social Security Entitlements and the Retirement Decision,” Review of Economics and Statistics, Vol. 89, No. 2, pp. 234-246, May.

Compton, Janice (2001) "Determinants of Retirement: Does Money Really Matter?" Ottawa, Department of Finance, Working Paper No. 2001-02.

Denton, Frank T. and Byron G. Spencer (1999) “How Old is Old? Revising the Definition Based on Life Table Criteria,” Mathematical Population Studies, Vol. 7, No. 2, pp. 147-159, 1999. Reprinted in Frank T. Denton, Deborah A. Fretz, and Byron G. Spencer (eds.), Independence and Economic Security in Old Age, University of British Columbia Press, 2000.

Denton, Frank T. and Byron G. Spencer (2000) "Population Aging and Its Economic Costs: A Survey of the Issues and Evidence," Canadian Journal on Aging, Vol. 19, Supplement 1, pp. 1-32, Summer.

Denton, Frank T. and Byron G. Spencer (2002) "Some Demographic Consequences of Revising the Definition of Old Age to Reflect Future Changes in Life Table Probabilities," Canadian Journal on Aging, Vol. 21, No. 3, pp. 349-356.

Deschênes, Natalie and Leroy Stone (2006) “The Probability of Reaching the State of Retirement: a Longitudinal Analysis of Variations Between Men and Women”, in Leroy O. Stone, Editor, New Frontiers of Research on Retirement, Statistics Canada Catalogue No. 75-511-XIE, Ottawa.

Drolet, Pierre (2005) Transition Travail-retraite, http://www.rrq.gouv.qc.ca/NR/rdonlyres/FE9ECB8C-D5D9-4919-97D1-33BE644D56AE/0/travail_retraite.pdf

Fields, Gary S., and Olivia S. Mitchell (1984) Retirement, Pensions, and Social Security, Cambridge, MA: MIT Press.

Gower, Dave (1997) “Measuring the Age of Retirement,” Perspectives on Labour and Income, Statistics Canada. Vol. 9, No. 2, pp. 11-17. Ottawa: Statistics Canada.

Gustman, Alan L., and Thomas L. Steinmeier (1984) “Partial Retirement and the Analysis of Retirement Behaviour,” Industrial and Labour Relations, Vol. 37, pp. 403-15.

Gustman, Alan L., and Thomas L. Steinmeier (2000) “Retirement Outcomes in the Health and Retirement Study,” Social Security Bulletin, Vol. 63, pp. 57-71.

Habtu, R. (2002) “Men 55 and Older: Work or Retire?” Perspectives on Labour and Income, Statistics Canada. Vol. 3, No. 12, pp. 27–34. Ottawa: Statistics Canada.

Hardy, Melissa A. (1982) “Social Policy and Determinants of Retirement: A Longitudinal Analysis Of Older White Males, 1968-75,” Social Forces, Vol. 60, pp. 1103-1122.

Haas, W.H., Don E. Bradley, Charles F. Longino, Eleanor P. Stoller, and William J. Serow (2006) “In Retirement Migration, Who Counts? A Methodological Question with Economic Policy Implications”, Gerontologist, Vol. 46, No. 6, pp. 815-820, December.

Honig, M. and G. Hanoch (1985) “Partial Retirement as a Separate Mode of Retirement Behavior,” Journal of Human Resources, Vol. 20, pp. 21-46.

Hooker, K. and D.G. Ventis (1984) “Work Ethic, Daily Activities, and Retirement Satisfaction,” Journals of Gerontology: Psychological Sciences, Vol. 39, pp. 478–484.

Johnson, Richard W. and Melissa Favreault (2001) “Retiring Together or Working Alone: The Impact of Spousal Employment and Disability on Retirement Decisions,” Research Paper. Washington DC: Urban Institute.

Kieran, Patrick (2001) “Early Retirement Trends,” Perspectives on Labour and Income, Statistics Canada. Vol. 13, No. 4, pp. 7-13. Winter. Ottawa: Statistics Canada.

Lazear, E. (1986) “Retirement from the Labor Force,” in Orley Ashenfelter and Richard Layard, editors, Handbook of Labor Economics, Vol. 1, North Holland, Amsterdam.

Lian, Jason, Anju Joshi, Roberta Robb, Margaret Denton, Amiram Gafni, Carolyn J. Rosenthal and Donald J. Willison (2000), “Unpaid Time Contributions by Seniors in Canada”, in Frank T. Denton, Deborah Fretz, and Byron G. Spencer, editors, Independence and Economic Security in Old Age, UBC Press.

Lumsdaine, Robin L. and Olivia S. Mitchell (1999) “New Developments in the Economic Analysis of Retirement,” in Orley Ashenfelter and David Card, editors, Handbook of Labor Economics, Vol. 3, North Holland, Amsterdam.

Maloney, Greg, Mashood Mirza and Francois Paris (2003) “Canadian Retirement Behaviour: A Microeconomic Examination,” Paper presented at the CEA 37th Annual Meetings, Carleton University, June.

McDaniel, Susan A. (1995) “Work, Retirement and Women in Later Life,” in Ellen Gee, editor, Rethinking Retirement, Gerontology Research Centre, Simon Fraser University.

McDonald, Lynn (2006) “Gender and family – Major dimensions of retirement research”, in Leroy O. Stone, editor, Frontiers of Research on Retirement in Canada, Statistics Canada 75-511-XPE.

McDonald, Lynn and R.A. Wanner (1990) Retirement in Canada, Toronto and Vancouver: Butterworths.

Palmore, Erdman B., Gerda Burchett, Linda Fillenbaum, and George Wallman (1985) Retirement: Causes and Consequences, New York: Springer.

Pyper, W., and P. Giles (2002) “Approaching Retirement,” Perspectives on Labour and Income, Statistics Canada. Vol. 3, No. 9. Winter. Ottawa: Statistics Canada.

Quinn, J.F. and T.M. Smeeding (1998) “Cross-National Patterns of Labor Force Withdrawal’ in: P. Flora, P. DeJong, J. LeGrand, and J. Kim, editors, The State of Social Welfare 1997. International Studies in the Social Security Series #4, London, UK: Ashgate Publishers: pp. 83-115.

Robb, Roberta., Margaret Denton, Amiram Gafni, Anju Joshi, Jason Lian, J., Carolyn J. Rosenthal and Donald J. Willison (1999), “Valuation of Unpaid Help by Seniors in Canada: an Empirical Analysis”. Canadian Journal on Aging, Vol. 18, pp. 430–446.

Rowe, Geoff and Huan Nugyen (2002) “Older Workers and the Labour Market,” Perspectives on Labour and Income, Statistics Canada. Vol. 3, No. 12. Ottawa: Statistics Canada.

Saint-Pierre, Yves (1996) “Do Earnings Rise Until Retirement?” Canadian Economic Observer, Vol. 9, No. 6, June 3.1-3.7.

Schellenberg, G. and C. Silver (2004) “You Can’t Always Get What You Want: Retirement Preferences and Experience,” Canadian Social Trends, Vol. 11, No. 008, pp. 2–7.

Shannon, M. and D. Grierson (2004) “Mandatory Retirement and Older Worker Employment”, Canadian Journal of Economics, Vol. 37, No. 3, pp. 528-551.

Sharon, N., and E. Argov (1983) “Post-retirement Orientation to Work and Successful Placement,” Aging and Work, Vol. 6, pp. 261-76.

Szinovacz M. and S. DeViney (1999) “The Retiree Identity: Gender and Race Differences,” Journal of Gerontology: Social Sciences, Vol. 54B, pp. S207-S218.

Talaga J. T. and T. A. Beehr (1995) “Are There Gender Differences in Predicting Retirement Decisions?” Journal of Applied Psychology, Vol. 80, pp. 16-28.

Tanner (1998) “The Dynamics of Male Retirement Behaviour,” Fiscal Studies, Vol. 19, No. 2, pp. 175-196.

Tompa, E. (1999) "Transitions to Retirement: Determinants of Age of Social Security Take up," in SEDAP research paper No. 6. McMaster University: http://socserv.socsci.mcmaster.ca/sedap.

Tracy, M. B. (1982) “Removing the Earnings Test of Old Age Benefits in Canada: The Impact on Labour Supply of Men Ages 65-69,” Aging and Work, Vol. 5, pp. 181-190.

Wannell, Ted (2007) “Young Pensioners,” Perspectives on Labour and Income, Statistics Canada. Vol. 8, No. 1. January. Ottawa: Statistics Canada.

Wanner, Richard A. and Peter L. Mc Donald (1986) “The Vertical Mosaic in Later Life: Ethnicity and Retirement in Canada,” Journal of Gerontology, Vol. 41, pp. 662–671.

Endnotes

1. We undertook a quite extensive literature search centred on the use of *EconLit*, *Google Scholar*, and *Ageline*. The keywords on which searches were conducted include
    - retirement definition
    - definition of retirement
    - retirement in Canada
    - retirement decision
    - “measurement of retirement”
    - early retirement

    Beyond that, we have tracked down references cited in relevant articles and books.

2. Fields and Mitchell worked also with the Benefit Amounts Survey.

3. However, we note that such conventional measures take no account of work in the home or voluntary work; we return to that matter below.

4. Surveys typically restrict the choices to retired or not; respondents might instead be given a wider range of possible states from which to choose - ‘partially retired’, or ‘retired and working part-time’, for example.

Number	Title	Author(s)
(2007)		
No. 168:	Health human resources planning and the production of health: Development of an extended analytical framework for needs-based health human resources planning	S. Birch G. Kephart G. Tomblin-Murphy L. O'Brien-Pallas R. Alder A. MacKenzie
No. 169:	Gender Inequality in the Wealth of Older Canadians	M. Denton L. Boos
No. 170:	The Evolution of Elderly Poverty in Canada	K. Milligan
No. 171:	Return and Onwards Migration among Older Canadians: Findings from the 2001 Census	K.B. Newbold
No. 172:	Le système de retraite américain: entre fragmentation et logique financière	D. Béland
No. 173:	Entrepreneurship, Liquidity Constraints and Start-up Costs	R. Fonseca P.-C. Michaud T. Sopraseuth
No. 174:	How did the Elimination of the Earnings Test above the Normal Retirement Age affect Retirement Expectations?	P.-C. Michaud A. van Soest
No. 175:	The SES Health Gradient on Both Sides of the Atlantic	J. Banks M. Marmot Z. Oldfield J.P. Smith
No. 176:	Pension Provision and Retirement Saving: Lessons from the United Kingdom	R. Disney C. Emmerson M. Wakefield
No. 177:	Retirement Saving in Australia	G. Barrett Y.-P. Tseng
No. 178:	The Health Services Use Among Older Canadians in Rural and Urban Areas	H. Conde J.T. McDonald
No. 179:	Older Workers and On-the-Job Training in Canada: Evidence from the WES data	I.U. Zeytinoglu G.B. Cooke K. Harry
No. 180:	Private Pensions and Income Security in Old Age: An Uncertain Future – Conference Report	M. Hering M. Kpessa

SEDAP RESEARCH PAPERS: Recent Releases

Number	Title	Author(s)
No. 181:	Age, SES, and Health: A Population Level Analysis of Health Inequalitites over the Life Course	S. Prus
No. 182:	Ethnic Inequality in Canada: Economic and Health Dimensions	E.M. Gee K.M. Kobayashi S.G. Prus
No. 183:	Home and Mortgage Ownership of the Dutch Elderly: Explaining Cohort, Time and Age Effects	A. van der Schors R.J.M. Alessie M. Mastrogiacomo
No. 184:	A Comparative Analysis of the Nativity Wealth Gap	T.K. Bauer D.A. Cobb-Clark V. Hildebrand M. Sinning
No. 185:	Cross-Country Variation in Obesity Patterns among Older Americans and Europeans	P.C. Michaud A. van Soest T. Andreyeva
No. 186:	Which Canadian Seniors Are Below the Low-Income Measure?	M.R. Veall
No. 187:	Policy Areas Impinging on Elderly Transportation Mobility: An Explanation with Ontario, Canada as Example	R. Mercado A. Páez K. B. Newbold
No. 188:	The Integration of Occupational Pension Regulations: Lessons for Canada	M. Hering M. Kpessa
No. 189:	Psychosocial resources and social health inequalities in France: Exploratory findings from a general population survey	F. Jusot M. Grignon P. Dourgnon
No. 190:	Health-Care Utilization in Canada: 25 Years of Evidence	L.J. Curtis W.J. MacMinn
No. 191:	Health Status of On and Off-reserve Aboriginal Peoples: Analysis of the Aboriginal Peoples Survey	L.J. Curtis
No. 192:	On the Sensitivity of Aggregate Productivity Growth Rates to Noisy Measurement	F.T. Denton
No. 193:	Initial Destination Choices of Skilled-worker Immigrants from South Asia to Canada: Assessment of the Relative Importance of Explanatory Factors	L. Xu K.L. Liaw
No. 194:	Problematic Post-Landing Interprovincial Migration of the Immigrants in Canada: From 1980-83 through 1992-95	L. Xu K.L. Liaw

SEDAP RESEARCH PAPERS: Recent Releases

Number	Title	Author(s)
No. 195:	Inter-CMA Migration of the Immigrants in Canada: 1991-1996 and 1996-2001	L. Xu
No. 196:	Characterization and Explanation of the 1996-2001 Inter-CMA Migration of the Second Generation in Canada	L. Xu
No. 197:	Transitions out of and back to employment among older men and women in the UK	D. Haardt
No. 198:	Older couples' labour market reactions to family disruptions	D. Haardt
No. 199:	The Adequacy of Retirement Savings: Subjective Survey Reports by Retired Canadians	S. Alan K. Atalay T.F. Crossley
No. 200:	Underfunding of Defined Benefit Pension Plans and Benefit Guarantee Insurance - An Overview of Theory and Empirics	M. Jametti
No. 201:	Effects of 'authorized generics' on Canadian drug prices	P. Grootendorst
No. 202:	When Bad Things Happen to Good People: The Economic Consequences of Retiring to Caregive	P.L. McDonald T. Sussman P. Donahue
No. 203:	Relatively Inaccessible Abundance: Reflections on U.S. Health Care	I.L. Bourgeault
No. 204:	Professional Work in Health Care Organizations: The Structural Influences of Patients in French, Canadian and American Hospitals	I.L. Bourgeault I. Sainsaulieu P. Khokher K. Hirschkorn
No. 205:	Who Minds the Gate? Comparing the role of non physician providers in the primary care division of labour in Canada & the U.S.	I.L. Bourgeault
No. 206:	Immigration, Ethnicity and Cancer in U.S. Women	J.T. McDonald J. Neily
No. 207:	Ordinary Least Squares Bias and Bias Corrections for *iid* Samples	L. Magee
No. 208:	The Roles of Ethnicity and Language Acculturation in Determining the Interprovincial Migration Propensities in Canada: from the Late 1970s to the Late 1990s	X. Ma K.L. Liaw
No. 209:	Aging, Gender and Neighbourhood Determinants of Distance Traveled: A Multilevel Analysis in the Hamilton CMA	R. Mercado A. Páez

SEDAP RESEARCH PAPERS: Recent Releases

Number	Title	Author(s)
No. 210:	La préparation financière à la retraite des premiers boomers : une comparaison Québec-Ontario	L. Mo J. Légaré
No. 211:	Explaining the Health Gap between Canadian- and Foreign-Born Older Adults: Findings from the 2000/2001 Canadian Community Health Survey	K.M. Kobayashi S. Prus
No. 212:	"Midlife Crises": Understanding the Changing Nature of Relationships in Middle Age Canadian Families	K.M. Kobayashi
No. 213:	A Note on Income Distribution and Growth	W. Scarth
No. 214:	Is Foreign-Owned Capital a Bad Thing to Tax?	W. Scarth
No. 215:	A review of instrumental variables estimation in the applied health sciences	P. Grootendorst
No. 216:	The Impact of Immigration on the Labour Market Outcomes of Native-born Canadians	J. Tu
No. 217:	Caregiver Employment Status and Time to Institutionalization of Persons with Dementia	M. Oremus P. Raina
No. 218:	The Use of Behaviour and Mood Medications by Care-recipients in Dementia and Caregiver Depression and Perceived Overall Health	M. Oremus H. Yazdi P. Raina
No. 219:	Looking for Private Information in Self-Assessed Health	J. Banks T. Crossley S. Goshev
No. 220:	An Evaluation of the Working Income Tax Benefit	W. Scarth L. Tang
No. 221:	The life expectancy gains from pharmaceutical drugs: a critical appraisal of the literature	P. Grootendorst E. Piérard M. Shim
No. 222:	Cognitive functioning and labour force participation among older men and women in England	D. Haardt
No. 223:	Creating the Canada/Quebec Pension Plans: An Historical and Political Analysis	K. Babich D. Béland
No. 224:	Assessing Alternative Financing Methods for the Canadian Health Care System in View of Population Aging	D. Andrews
No. 225:	The Role of Coping Humour in the Physical and Mental Health of Older Adults	E. Marziali L. McDonald P. Donahue

SEDAP RESEARCH PAPERS: Recent Releases

Number	Title	Author(s)
No. 226:	Exploring the Effects of Aggregation Error in the Estimation of Consumer Demand Elasticities	F.T. Denton D.C. Mountain
(2008)		
No. 227:	Using Statistics Canada LifePaths Microsimulation Model to Project the Health Status of Canadian Elderly	J. Légaré Y. Décarie
No. 228:	An Application of Price and Quantity Indexes in the Analysis of Changes in Expenditures on Physician Services	F.T. Denton C.H. Feaver B.G. Spencer
No. 229:	Age-specific Income Inequality and Life Expectancy: New Evidence	S. Prus R.L. Brown
No. 230:	Ethnic Differences in Health: Does Immigration Status Matter?	K.M. Kobayashi S. Prus Z. Lin
No. 231:	What is Retirement? A Review and Assessment of Alternative Concepts and Measures	F.T. Denton B.G. Spencer