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- Labour market activity among seniors
- Income in manufacturing regions
- Income replacement during the retirement years
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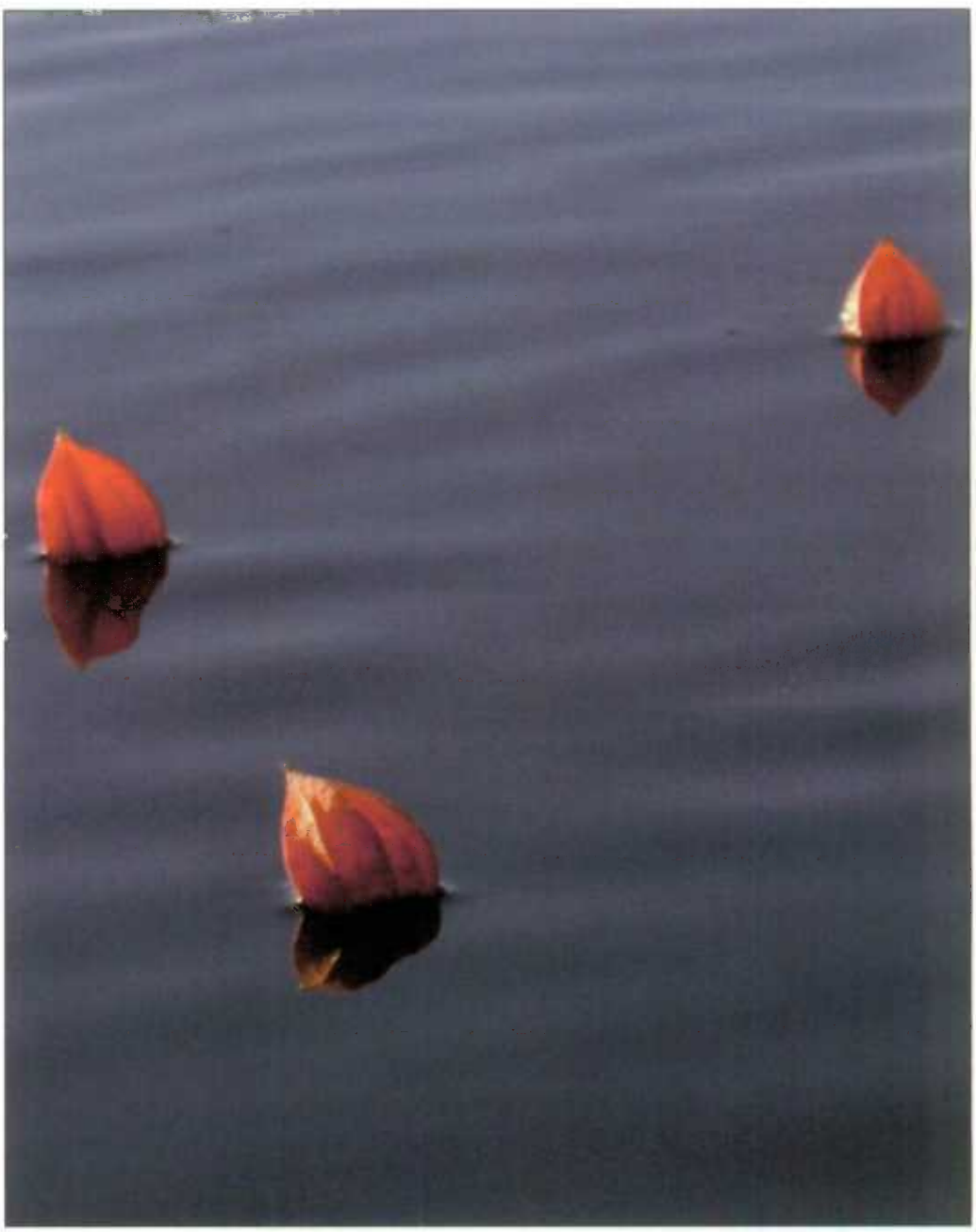

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PERSPECTIVES

ON LABOUR AND INCOME

Departments

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Articles

PERSPECTIVES
ON LABOUR AND INCOME

Symbols

The following standard symbols are used in Statistics Canada publications:

- . not available for any reference period
- .. not available for a specific reference period
- ... not applicable
- 0 true zero or a value rounded to zero
- 0^s value rounded to 0 (zero) where a meaningful distinction exists between true zero and the value rounded
- p preliminary
- r revised
- x suppressed to meet the confidentiality requirements of the *Statistics Act*
- E use with caution
- F too unreliable to be published

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Highlights

In this issue

Health factors and early retirement among older workers ... p. 5

- Among full-time workers age 40 to 52 in 1994/1995, 35% of those who negatively perceived their health had left the labour force by 2006/2007 compared with 16% of those with positive self-assessed health.
- For each additional chronic condition, there was a 25% increase in the risk of early retirement for men.
- Compared with other workers, men who consumed five or more alcoholic drinks on one occasion at least once per month or smoked daily were almost twice as likely to exit the labour force.
- Obese female workers were 1.6 times more likely than the non-obese to retire early.
- Women with high-strain jobs were almost twice as likely as their colleagues with low-strain jobs to exit the labour force early.
- Men who felt that they had low support from their supervisors had almost twice the risk of retiring early compared with those who had support.

Labour market activity among seniors ... p. 15

- Employment rates among seniors have been on the rise in recent years after registering declines in the 1980s and 1990s. Between 1996 and 2006, the rate increased from 11.8% to 14.8% for men and from 4.0% to 5.8% for women.
- Among those who also worked the previous year, many worked on a full-time, full-year basis: 41.6% of men and 30.6% of women in 2005.
- Almost one-half of working seniors were employed in the business and consumer services industries. Farmer was the most common occupation among senior men, while senior women were more likely to be employed as retail salespersons and sales clerks.
- Senior men and women at the top and bottom of the family income scale (from sources other than individual employment earnings) were more likely to be employed compared with those in the middle.
- Higher levels of education, not having activity limitations and having a mortgage were also associated with being employed.
- Among those who were employed, men and women at the bottom of the family income group were more likely to be working full year, full time (50.4% of men and 40.2% of women).
- A detailed analysis of other income sources showed that both being employed and working full year, full time were negatively associated with public pensions and private income (excluding employment income), but positively related to the earnings of other family members (usually the spouse).

Income in manufacturing regions ... p. 29

- From 2000 to 2007, median employment income decreased by just over 2% in regions with a high concentration of manufacturing employment, compared with increases of more than 10% in low-concentration regions.
- Over the same period, the number of low-income people rose nearly 6% in high-concentration regions, while it dropped 16% in low-concentration regions.

- In regions with high manufacturing concentration, job losses resulted in an increase of more than 12% in the number of people receiving EI. In contrast, low-concentration regions saw an 11% decline in EI beneficiaries over the same period.
- Persons living in regions with a high concentration of manufacturing employment were from 18% to 30% more likely to experience substantial income loss (20% or more) between 2000 and 2007 than those in low-concentration regions. Residents of small cities were more likely to experience income loss than people living in large urban centres.
- Although the decline in manufacturing had a greater impact on the incomes of manufacturing workers, it also affected the incomes of workers in other sectors. The latter also had a significantly higher risk of experiencing income loss if they were employed in a region with a high concentration of manufacturing employment.

Income replacement during the retirement years

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- In 2006, the family income of a typical individual in his late seventies was about 80% of the same person's family income in his mid-fifties, 23 years earlier.
- Individuals who were in the bottom quintile of family income typically achieved higher replacement rates as most had replacement rates above 1.0 (or 100%) in their mid-seventies.
- Most individuals in the top income quintile had lower replacement rates, in the 0.7 range. Still, one-third of them had replacement rates above 0.8 in their mid-seventies.
- Individuals in the middle quintile typically had replacement rates closer to 0.8, but a sizeable minority—about 22%—had replacement rates no higher than 0.6
- The sources of pension income differed across income groups as well. For those who were in the bottom quintile, public pensions (Canada Pension Plan, Quebec Pension Plan, Old Age Security and Guaranteed Income Supplement) accounted for two-thirds of total family income on average in their mid-seventies. Individuals in the top quintile relied a lot more on private sources of income.
- Among middle-income Canadians, private and public sources of pension income contributed 34% and 46% of total family income before taxes, respectively.

What's new?

... p. 50

- **From Statistics Canada**

  Home equity and incomes of retirement-age households

  Employment Insurance Coverage Survey

  Labour productivity

  Foreign nationals working temporarily in Canada

  Income of Canadians

  Employer pension plans

- **From other organizations**

  Multiple jobholding in the U.S. during the 2000s

  Compensation costs in manufacturing

Health factors and early retirement among older workers

Jungwee Park

In the late 1990s, the proportion of recent retirees younger than age 60 was 14 percentage points higher than in the late 1980s (Kieran 2001) and retirement patterns have changed little in the past decade (Table 1).[1] A high rate of early retirement presents a range of challenges to public policy makers and individuals. With an aging population, early retirement may be associated with labour shortages in particular industries, occupations or geographic areas. Early retirement can also exacerbate issues related to the effective dependency ratio—the number of non-workers for every worker in a society. Early retirement may put additional pressure on publicly financed programs including health care and pay-as-you-go transfers like Old Age Security and the Guaranteed Income Supplement.

What influences people to retire early? Retirement decisions are based on many factors. The literature indicates that financial considerations are the most important determinant of retirement; that is, people retire because they are financially able to do so (Novak and Campbell 2006). As confirmed by the 2007 General Social Survey, employer-provided pension plans and individual retirement savings are the financial keystones of retirement planning.[2]

Table 1 Average age of retirement

	Both sexes	Men	Women
		age	
1976	65	65	64
1981	65	65	64
1986	64	64	63
1991	63	63	62
1996	62	62	61
2001	62	62	60
2006	62	62	61
2009	62	62	62

Source: Statistics Canada, Labour Force Survey.

Besides financial capability, one's own health or the need to provide care to a family member can also be important reasons for retirement (Statistics Canada 2002). In terms of unplanned or involuntary retirement, individual workers' own health is the most important reason. In 2002, almost 30% of those who retired between age 50 and 59 indicated their health as the reason. A recent European study also found that early retirement was associated with health factors such as poor working conditions, self-perceived health, major depression, quality of life, and the number of physical symptoms (Siegrist et al. 2006). Due to health problems, many have to retire even if they are not financially ready.

Given that the health and well-being status of older workers has a major influence on the probability of remaining employed, the identification of specific health-related factors that lead to their early retirement may help frame preventive measures. A better understanding of the factors that lead to early, health-related retirement may help shape employer practices, public health policies and treatment protocols that enable workers to exercise greater control over the timing of their retirement.

Most studies on health-related retirement have focused on a limited number of health indicators like self-perceived general health obtained from cross-sectional surveys. Little is known about longitudinal effects of both subjective and objective health factors on retirement behaviour. Moreover, very few studies, especially in the Canadian context, have addressed the impact of risk factors such as health behaviours and quality of working conditions on retirement, although the effects of such factors on physical and psychological health are widely recognized.

Using 12 years of data from the National Population Health Survey (NPHS), this study examines longitudinal effects of health conditions,

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health behaviours, and workplace stress on early exits from the labour market. Two types of exit from the labour market are included in the analysis: exits due to retirement and exits due to disability or health issues. The analysis is designed to measure departures from the labour market due to both regular retirement and involuntary health-related retirement. In reality, the two types of exits are interconnected. For some older workers, becoming inactive in the labour market due to disability may lead to a permanent exit. In other words, illness and disability are important precursors of retirement (Kinsella and Gist 1995). Even when some respondents report retirement as their reason for exiting, health factors may play an important part in the decision. By combining exits due to retirement and disability together, both regular and health-related aspects of the exits from the labour force can be analyzed.

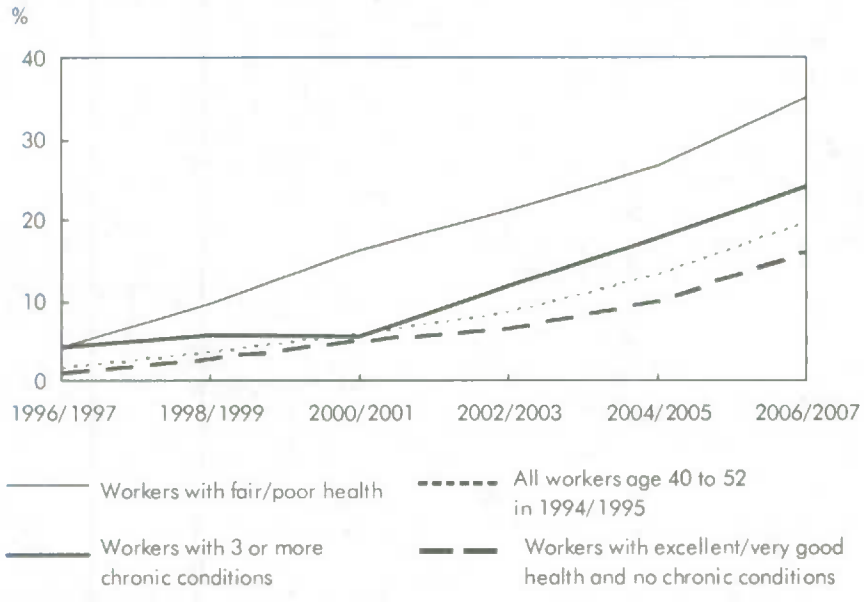
The study population includes full-time workers who were age 40 to 52 in 1994/1995 and had valid re-interviews every two years until 2006/2007. The NPHS provides detailed health-related information for a large number of respondents, which includes both subjective and objective measures of disability and health status (see *Data source and definitions*). Although the NPHS does not contain detailed questions on income- and labour force-related subject matters,[3] the survey provides basic information on labour force status. Since the NPHS is a monitoring tool for the general population, the sample of individuals passing through the early retirement window is also relatively small. Given the limitations of health-related information in most labour and income surveys, however, the NPHS may be the best data source for studies delving into the relationship between health and retirement in the Canadian context (cf. Campolieti 2002).

Health and exits from the labour force

By 2006/2007, one in five full-time workers who were age 40 to 52 in 1994/1995 had exited the labour force (Chart A). The reasons for exit can range from retirement[4] or disability to personal or family responsibilities. The biennial exit rate was steeper during the latter part of the 12-year study period as workers aged and approached the end of their careers.[5] However, the age curve is more pronounced among workers with health problems as a higher proportion of them exited employment each survey year, compared with healthier workers. The percentage differences for being out of the labour force between healthy and less healthy workers also grew over time. Clearly, individuals with health problems were most likely to stop working early. Although everyone in the sample was working full time at the start of the study period, within 12 years 35% of workers who negatively perceived their health had stopped working, as had 24% of those diagnosed with 3 or more chronic conditions. Similarly, the labour force exit rate was consistently lower for healthy workers without chronic conditions each survey year and, after 12 years, only a total of 16% were without a job.

Health status is also a related reason for exit from the labour market. In 2006/2007, almost one-half of workers with poor health who

Chart A Workers with health problems more likely to exit labour market early



Source: Statistics Canada, National Population Health Survey.

stopped working indicated the main reason was illness or disability. Among those in good health, almost 80% reported retirement as the main reason for leaving the labour market and less than 10% cited illness or disability (Chart B). Compared with healthy individuals, a smaller portion of those with health problems withdrew from the labour force due to other reasons such as caring for family members, personal responsibilities, education leave, paid leave, layoff, looking for work, and pregnancy.

Modeling early exits from the labour market

On the surface, health problems seem clearly linked with early exits from the labour force. But both health status and labour market exits may correlate with other sociodemographic variables. For example, those who were older at the start of the study may be more prone to chronic conditions compared with those who were younger. Multivariate modeling can be used to assess the relationship between health status and retirement while controlling for such factors. Control variables in the model are age, place of residence, province, family characteristics, immigration status, household income adequacy, class of employment, highest level of schooling, and occupation.

A survival model is employed to examine longitudinal associations between health factors and retirement (see *Data source and definitions*). The model estimates adjusted proportional hazard ratios for retirement between 1996/1997 and 2006/2007 while controlling for sociodemographic factors. Hazard ratios are used to estimate relative risks of the probability of the event occurring in a specific group versus those not in that group. The survival model in this analysis estimates risk ratios for early retirement. This model is constructed to include both regular and health-related exits from the labour market. Older workers who leave the labour market because of illness or disability are treated as retirees based on the assumption that they have departed permanently (Hayward et al. 1998). Serious illnesses or disabilities, particularly among those nearing the end of their careers, are likely to lead to a permanent exit from the labour market. Cases of not working due to other reasons were censored (see *Data source and definitions* for more details).

Health status and early retirement

To measure the effects of health status, indicators of both subjective and objective health were examined. The analysis includes information based on a five-category scale of self-perceived health and the number of chronic conditions. The number of chronic conditions[6] was included to capture the effect of objective health status and minimize potential biases of self-assessment of health. Subjective health measures may be affected by a social desirability bias[7]—retirees may be claiming poor health in order to justify reduced labour force involvement (Bazzoli 1985). People who enjoy their work are likely to downplay their health problems and work longer, while those who dislike their work may exaggerate health problems and retire sooner (Dwyer and Mitchell 1999).

The effects of individual health status on early retirement were found to be statistically significant. The self-perceived health of men was related to their likelihood of departing from the workforce early. Compared with individuals who perceived their health as excellent,

Chart B Higher proportion of workers with health problems exit labour market due to disability

Source: Statistics Canada, National Population Health Survey, 2006/2007.

Data source and definitions

The **National Population Health Survey** (NPHS) collects health information from private households and institutional residents in the 10 provinces, except from residents living on Indian reserves and Armed Forces bases, and in some remote areas.

For each of the first three cycles (1994/1995, 1996/1997 and 1998/1999), two cross-sectional files were produced: general and health. The general file has sociodemographic and some health information for each household member. The health file contains additional, in-depth information on one randomly selected household member. Starting in 2000/2001, the NPHS became strictly longitudinal, and the two questionnaires were combined.

In addition to the cross-sectional information, a longitudinal file was produced at baseline (1994/1995). In 1994/1995, a member from each participating household was randomly selected and the resulting panel of 17,276 was followed over time. Response rates were 92.8% in 1996/1997, 88.3% in 1998/1999, 84.9% in 2000/2001, 80.8% in 2002/2003, 77.6% in 2004/2005 and 77.0% in 2006/2007.

In this analysis, all seven cycles of the NPHS were used. Those age 40 to 52 who indicated their pattern of working hours in the past 12 months as one full-time job, only full-time at all jobs, or some full-time and some part-time at baseline (n=1,339) were selected for analysis. Only individuals completing all seven cycles and who either stayed in the workforce or retired (or became disabled) in subsequent cycles were selected. Excluded from the model are all individual time units in which events other than the one of interest occurred (the competing risks approach) to focus entirely on the event of interest. For instance, cases of exits due to other reasons were dropped from the model.

A survival analysis model is employed to provide adjusted proportional hazard ratios of retirement between 1996/1997 and 2006/2007 while controlling for various sociodemographic confounders such as age, place of residence, immigration status, family characteristics, income adequacy, educational attainment, class of employment (self-employed/employee), and occupation. The proportional hazards model allows timing of events and their association with various characteristics to be studied. For example, if a respondent reported that she was not working because of her retirement or disability after 1994/1995, this was considered an event. With this method, each individual's event history is broken down into a set of discrete time units (i.e., NPHS cycles) that are treated as distinct observations. After pooling these observations, the next step is to estimate a binary regression model predicting whether an event did or did not occur in each time unit (Allison 1995). Many covariates in this analysis are not constant through the whole study period. For example, self-perceived health may change over time and the risk of retirement in 2006/2007 was related to health status in 2004/2005 rather than the baseline. Thus, those time-varying factors in the model were allowed to change over the period. Time-dependent covariates included in the model were self-perceived health status, chronic conditions, presence of children under 13 (yes/no), marital status (married/not married), place of residence, income adequacy, class of employment, occupation and province, and work stress indicators. On the other hand, only values at baseline were used for age, sex, place of birth, and education. As well, time elapsed since the first cycle (in terms of number of cycles) was included as a continuous variable to correct for the greater chance of retirement with the passing of time. For each person–year, that variable ranged from 1 to 6.

To account for the survey design effects of the NPHS, coefficients of variation and p-values were estimated and significance tests were performed using the bootstrap technique. The significance level was set at $p < 0.05$.

Early retirement comprises the retirement of full-time workers age 40 to 52 in 1994/1995 over the 12-year period that followed. Possible retirement ages of the study population range from 42 to 64. If respondents indicated that they were not currently working and specified their main reason for not working for pay or profit was retirement, or own health or disability, they were considered to have taken early retirement.

To measure **work stress**, the NPHS employed an abbreviated version of Karasek's Job Content Questionnaire (JCQ) (Karasek 1979). The NPHS measured the work stress of respondents who worked at a job or business in the preceding 12 months. Twelve items in the JCQ (for detail measurements, see Park 2007) were used to measure job control, psychological demands, job insecurity, physical exertion and social support at the workplace. The job–strain ratio was calculated by dividing the adjusted score for psychological demands by that of job control. A small constant (0.1) was added to the numerator and denominator to avoid division by 0. To deal with outliers, scores greater than 3 were set to 3. Respondents were classified as being in **high job strain** if the ratio was 1.20 or higher; **medium job strain** if the ratio was between 0.81 and 1.19; and **low job strain** if the ratio was 0.80 or lower.

Respondents who answered "strongly disagree" or "disagree" to the statement, "your job security is good" were classified as having **job insecurity**.

Respondents who answered "strongly agree" or "agree" to the statement, "your job requires a lot of physical effort" were classified as having **physical exertion**.

Respondents were classified as having **low co-worker support** at the workplace if they either agreed or strongly agreed with being exposed to hostility or conflict from the people at work or disagreed or strongly disagreed with co-workers being helpful in getting the job done. Respondents were regarded as having **low supervisor support** if they disagreed or strongly disagreed with supervisors being helpful in getting the job done.

Additionally, respondents were asked if they were "very satisfied," "somewhat satisfied," "not too satisfied" or "not at all satisfied" with their jobs. Those who answered "not too satisfied" or "not at all satisfied" were classified as having **job dissatisfaction**.

Heavy drinking was measured by asking respondents the number of times in the past year they had had 5 or more alcoholic drinks on one occasion. Having done so at least once per month (or 12 or more times in the past year for cycle 1) was classified as heavy monthly drinking.

Daily smokers were defined as those who smoked cigarettes every day.

Body mass index (BMI) is calculated by dividing weight in kilograms by height in metres squared. **Obesity** (a BMI of 30 or more) for people age 18 or older was identified.

Physical inactivity was based on total accumulated energy expenditure (EE) during leisure time. EE was calculated from the reported frequency and duration of all of a respondent's leisure-time physical activities in the three months before the interview and the metabolic energy demand (MET value) of each activity, which was independently established. An EE of 3 or more K/K/D (kilocalories per kilogram of body weight per day) was defined as high, 1.5 to 2.9 was moderate, and less than 1.5 was low. Respondents with high or moderate EE were considered **physically active**, while those with low EE were considered **inactive** (for more details, see Statistics Canada 1995 and Stephens et al. 1986).

men with negative self-perceived health (poor or fair) were almost five times more likely to stop working (Table 2). Although the propensity for female workers with less positive subjective health to exit the labour market was estimated to be greater than for women with excellent health, this result fell just above our significance threshold (p=0.07 versus a threshold of 0.05). The number of chronic conditions was also associated with an early exit for men: for each additional chronic condition, there was a 25% increase in the risk of early departure. Eye problems, back pain, ulcers, and migraines were particularly likely to increase the relative risk of early retirement (data not shown). These findings of health effects on workers' retirement behaviour are consistent with previous research. For instance, Dwyer and Mitchell (1999) suggested that men in poor overall health in the United States were expected to retire one to two years earlier.

Table 2 Adjusted[1] health status risk ratios for not working due to retirement or disability

	Both sexes	Men	Women
		ratio	
Self-perceived health			
Excellent (ref.)	1.00	1.00	1.00
Very good	1.18	1.37	1.03
Good	1.60*	1.59	1.65
Fair or poor	3.46*	4.72*	1.54
Number of chronic conditions	1.17*	1.25*	1.05

* significantly different from reference group (ref.) at the 0.05 level
1. Adjusted for age, place of residence, marital status, household income adequacy, class of employment, highest level of schooling, and occupation.
Source: Statistics Canada, National Population Health Survey, 1994/1995 to 2006/2007.

Additional analysis on labour market exits due to retirement only found that neither self-perceived health status nor the number of chronic conditions significantly affected the risk of early exit from the labour market. Previous research suggests that health status may not be as important to voluntary retirement as to involuntary retirement (Lachance and Seligman 2009, and Szinovacz and Davey 2005). The results of this study are consistent with that interpretation.

Health behaviour and early retirement

It is well-known that problem drinking is associated with a greater prevalence and incidence of limitations in home and work tasks in a near-elderly population (Ostermann and Sloan 2001, and Mullahy and Sindelar 1996). Alcohol consumption has been associated with many types of physical, psychological and cognitive impairments. Heavy drinking increases accidents and injuries, and may lead to liver and heart damage. The consequences of excessive alcohol consumption could reduce a worker's labour market productivity and reliability (Mullahy and Sindelar 1996). In this analysis, the effect of heavy drinking on labour force exits was significant for men (Table 3). Compared with other workers, heavy drinkers (those who consume five or more alcoholic drinks on one occasion at least once per month) were almost twice as likely to exit the labour force early.

Obesity can affect employment decisions directly by creating functional disabilities or indirectly by aggravating or actually causing other health ailments, which can in turn affect employment status (Renna and Thakur 2006, and Houston et al. 2009). Although the general health effect of obesity may apply to all age groups, obesity among older workers, in particular, plays an important role as a catalyst in their labour market exit decisions. Obesity among older women was related to earlier retirement compared with workers without this condition. Obese workers were 1.6 times more likely than the non-obese to retire early.

Table 3 Adjusted[1] health behaviour risk ratios for not working due to retirement or disability

	Both sexes	Men	Women
		ratio	
Daily smoking	1.40*	1.68*	1.16
Physical inactivity	0.93	0.90	1.04
Obesity	1.41*	1.36	1.62*
Heavy drinking	1.95*	1.95*	2.67

* significantly different from those who do not have a given health behaviour at the 0.05 level (e.g., obese versus non-obese people)
1. Adjusted for age, place of residence, marital status, household income adequacy, class of employment, highest level of schooling, and occupation.
Source: Statistics Canada, National Population Health Survey, 1994/1995 to 2006/2007.

In addition, men who smoked daily had a significantly higher risk of early exit from the labour force. Daily smokers were 1.7 times more likely than others to retire early. Previous research has also found a relationship between the number of cigarettes smoked daily and early retirement rates (Rothenbacher et al. 1998). The risk of early retirement was greatest among workers smoking 30 or more cigarettes per day. However, the true impact of smoking behaviour may be underestimated due to a healthy smoker effect (Husemoen et al. 2004). Some smokers may exit the labour market (due to death or disability) quite early in their life course, therefore only smokers who were healthy enough to stay employed at the start of the study period were included for analysis.

Smoking and obesity tend to have an impact on early retirement by affecting health status. When health status was controlled for in an additional regression model, the effects of these two conditions disappeared. Even after controlling for self-perceived health, heavy drinking still had a significant effect on early exits from the labour market. Therefore, heavy drinking seems to have a direct effect on early retirement.

Work stress factors and early retirement

Various indicators of work stress were included to examine the effect of job quality or workplace well-being on early retirement from the labour force. The indicators include job strain, job dissatisfaction, social support at the workplace (from co-workers and supervisors), physical demands, and job insecurity.

Job strain significantly increased the likelihood of early exit for women. Women with high-strain jobs were almost twice as likely as their colleagues with low-strain jobs to exit the labour force early (Table 4). Job strain is determined by the interactions between the level of psychological demand (how mentally demanding a job is) and that of decision latitude (how much control workers have in their jobs). When older workers feel that the psychological demands of their jobs are too high, and/or the job control is too limited, the risk of early retirement tends to increase. These findings are consistent with previous research which shows that early retirement is related to environmental factors at the workplace and that women are more affected than men (Christiansen and Nielsen 2009).

Table 4 Adjusted[1] work stress risk ratios for not working due to retirement or disability

	Both sexes	Men	Women
		ratio	
Job strain			
High	1.78*	1.52	1.81*
Medium	1.08	1.02	1.04
Low (ref.)	1.00	1.00	1.00
Job dissatisfaction	1.62*	1.52	1.60
Low co-worker support	1.02	0.93	1.01
Low supervisor support	1.58*	1.80*	1.40
Physical demands	1.27	1.53*	0.97
Job insecurity	1.15	1.55	0.80

* significantly different from reference group (ref.) at the 0.05 level
1. Adjusted for age, place of residence, marital status, household income adequacy, class of employment, highest level of schooling, and occupation.
Note: To address possible colinearity problem, each indicator of work stress was analyzed in a separate model.
Source: Statistics Canada, National Population Health Survey, 1994/1995 to 2006/2007.

The effects of job strain were similar but not statistically significant for men's retirement.[8] For male workers, however, supervisors' support at the workplace seemed to be an important factor in avoiding early retirement. Men who felt that they had low support from their supervisors had almost twice the risk of retiring early compared with those who had support. As Lin and Hsieh (2001) indicate, the perception of positive evaluations from bosses or supervisors can moderate the relationship between job stress and withdrawal behaviours of employees.

Not surprisingly, job dissatisfaction is related to early retirement. A decrease in overall job satisfaction is found to be one of the most important factors affecting the increase in intentions to retire (Sibbald et al. 2003). In this analysis, dissatisfied workers were 62% more likely than satisfied workers to stop working early, before age 65.

For men, having a physically demanding job increased the risk of retirement by 53%. Previous research has linked conditions of physical work strain with the decision to retire. These conditions include repetitive or continuous strain, musculoskeletal strain, and uncomfortable working positions such as crouching, bending, twisting or being fixed (Lund and Villadsen 2005).

These findings show a close association between one's job quality and the likelihood of early departure from the workforce. Both psychosocial and physical aspects of job quality affect early labour force exits.

Although not presented in the tables, the effects of various socio-economic variables on retirement were consistent with previous studies (Turcotte and Schellenberg 2005). For example, the likelihood of retirement was higher for workers who were older at the start of the period. Compared with paid employees, the self-employed were less likely to retire early. As well, workers in Quebec were more likely to stop working early than those in Ontario. Compared with managers and professionals, blue-collar women tend to exit the labour force early.

Conclusion

With an aging population, older workers are becoming an increasingly larger part of the labour force. Policy makers and employers are becoming more focused on the retention of older workers. And for older workers themselves, control over the timing and circumstances of their retirement is critical to their economic well-being.

This article examined specific associations between various health factors and early departure from the labour market. It made use of the National Population Health Survey, which followed individual respondents for 12 years. Although the sample size for the population of interest was quite small, the richness of the data related to a range of health indicators and workplace factors yielded a number of significant results.

It was found that subjective and objective measures of health status were related to the early exit of men from the labour market. Some health behaviour factors also affect the decision to retire early (obesity for women, and heavy drinking and daily smoking for men). As well, the quality of working conditions was found to have significant effects on retirement behaviour. For instance, high psychological demands and low job control tend to shorten women's careers whereas low support from a supervisor was associated with men's early retirement.

The findings of this study imply that health-related habits of individual workers may affect their retirement decisions and, thus, have financial implications. Therefore, public health policies and programs can potentially play a role in the labour force participation and personal finances of older workers. As well, workplace health programs should be of interest to employers with an aging workforce. Providing a safe, healthy and stimulating work environment seems to minimize early involuntary departures.

Perspectives

Notes

1. A slight increase has been observed in the past decade.
2. Those with pension coverage are about 10 percentage points more likely to be certain about their planned age of retirement than those with no pension coverage, and pension plan members expect to retire about 13 months earlier than non-members (Schellenberg and Ostrovsky 2008).
3. The Canadian Community Health Survey (CCHS) – Healthy Aging, cycle 4.2, may help fill this data gap. This upcoming cycle includes extensive questions on retirement as well as detailed health information.
4. As expected, the proportion of those who indicated retirement as the main reason for exit from the labour force increased over the cycles. In 2006/2007, it accounted for 72% of all exits compared with only 19% in 1996/1997.
5. Only 9% of those who exited the labour market in this analysis were younger than 50 when they left the labour force, 67% were in their 50s, 17% between 60 and 62, and 6% between 63 and 64 (data not shown).
6. The number of chronic conditions was calculated based on respondents' answers to questions about whether they had been diagnosed by professionals as having any of 15 chronic conditions (i.e., asthma, arthritis, high blood pressure, back problems, migraines, epilepsy, bronchitis, diabetes, stroke, heart disease, cancer, ulcers, urinary incontinence, Alzheimer's disease, and eye problems [cataracts and glaucoma]).
7. As the NPHS is not a survey on retirement, respondents' answers on self-perceived health may not be affected by their retirement status as much as it would have been in a survey focused on retirement.
8. The small sample size likely contributed to a test statistic just above the threshold ($p=0.07$ versus 0.05).

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Labour market activity among seniors

Sharanjit Uppal

In Canada, 65 remains the standard retirement age in the sense that full public pension benefits are available given work and residence requirements.[1] However, a number of policy changes have been made to lower barriers for seniors who wish to remain in the labour market. For example, mandatory retirement has been eliminated in most jurisdictions and the earned income exemption for the Guaranteed Income Supplement was recently raised. Other than policy makers, senior labour supply may be of interest to employers who have concerns about issues like knowledge transmission and skill shortages.

Despite the prominence of these issues, relatively little is known about how key factors such as education, health and financial status relate to senior labour market activity. Even though other studies have been devoted to the labour supply of individuals past the traditional retirement age of 65 (Duchesne 2002 and 2004, Haider and Loughran 2001, Walsh 1999, and Blau and Riphahn 1999),[2] recent information on the labour market participation of seniors in Canada is sparse.[3]

This study has three major objectives. First it provides detailed trends on the labour market activity of seniors by calculating employment rates among those at least 65 years of age and examining their industrial and occupational profiles. Next it examines the factors that may be associated with labour market participation after age 64. And, finally, it looks at the intensity of work and the characteristics associated with full-year, full-time hours reported by seniors. The study uses census data, the census being the only data source with an adequate sample size and a wide enough range of information to allow a detailed examination of senior workers.

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Seniors' employment rates

In 2006, about 1 in 10 seniors participated in the labour market. Participation was higher for men (14.8%) than women (5.8%). These compare to rates of 15.9% for men and 5.3% for women in 1981 (Chart A).

The long-term trends in seniors' employment can be broken down into three periods: a period of significant decline (1981 to 1986), a period of relatively stable rates (1986 to 1996), and a period of increasing employment rates (1996 to 2006). For men, the rate fell by 2.6 percentage points between 1981 and 1986, followed by smaller declines in the next 10 years to reach 11.8% in 1996. Subsequent increases in the next two census years brought the employment rate for senior men to almost 15% in 2006. For senior women, the employment rate oscillated between 4% and 6% over the period ending with a gain of 1.4 percentage points between 2001 and 2006.[4]

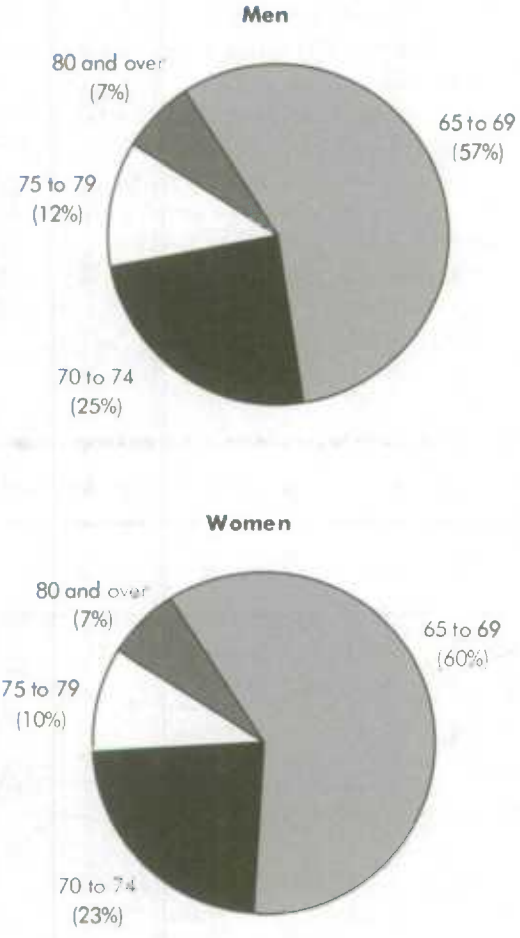
Chart A Employment rates among seniors

Source: Statistics Canada, Census of Population.

Among all employed seniors, 65- to 69-year-olds accounted for 56.5% of employed men and 60.1% of employed women (in 2006), while 70- to 74-year-olds accounted for an additional 24.5% and 23.0% for men and women, respectively (Chart B). Those 75 to 79 constituted 11.9% of the employed among men and 10.0% among women. Men and women 80 and over represented approximately 7% of employed seniors.

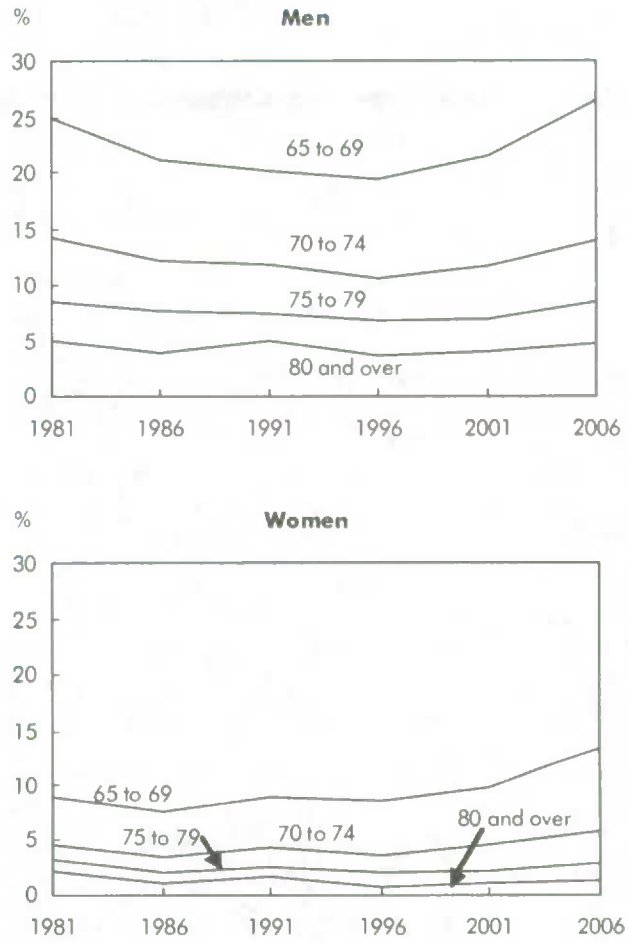
Among seniors, labour market participation generally declines with age. Men age 65 to 69 had higher rates of employment than their older counterparts in all years

Chart B Distribution of employment among seniors by age group



Source: Statistics Canada, Census of Population, 2006.

Chart C Employment rates among seniors by age group



Source: Statistics Canada, Census of Population.

and also showed the largest recent increase between 2001 and 2006: 5.1 percentage points (Chart C). Over the entire 1981 to 2006 period, employment rates increased much faster for women age 65 to 69 than for any other group.

Employment rates typically decline by 40% to 50% for men and 50% to 60% for women from their late 60s to their early 70s. In 2006, men age 70 to 74 had nearly the same employment rate as in 1981 following earlier losses and more recent gains. Women in this age group increased their employment rate by 1.2 percentage points over the 25-year span. Employment

Table 1 Employment by industry, senior versus prime-age workers

	Men		Women	
	25 to 64	65 and over	25 to 64	65 and over
	%			
Primary goods	5.8	17.1	2.3	11.1
Manufacturing	17.7	8.3	8.4	5.2
Construction and utilities	12.0	8.6	2.2	2.3
Transport	6.6	5.5	2.1	1.8
Consumer services	25.6	28.8	28.8	36.4
Business services	16.9	20.6	18.3	17.7
Education	5.0	3.6	11.4	7.6
Health	3.9	4.7	19.9	14.8
Public administration	6.5	2.8	6.5	3.1

Source: Statistics Canada, Census of Population, 2006.

rates were lower for workers age 75 and over and did not vary significantly in the 25-year period.

Many seniors working in consumer services

Older workers were concentrated in a few industries (Table 1).[5] Among men, three industries were of particular importance as they employed two-thirds of all working seniors: consumer services, business services and primary goods. Of the three, consumer services had the largest share of seniors as 28.8% of working men were employed in this industry in 2006. Among older women, more than two-thirds were employed in consumer services, business services or health-related industries with consumer services accounting for 36.4% of employment.

Senior men and women were not necessarily employed in the same industries. The male–female gap was the most predominant in the health sector as 14.8% of employed women were working in this industry in 2006 compared with only 4.7% of employed men. In contrast, men were more likely to be employed in primary goods, and in construction and utilities.

The industrial profile of senior workers in 2006 was also quite different from that of younger workers. Senior men were much more likely to be employed in primary goods (17.1% for seniors versus 5.8% for younger workers), whereas men age 25 to 64 were much more likely to be working in manufacturing (17.7% for younger workers versus 8.3% for seniors) and in public administration (6.5% for younger workers versus 2.8% for seniors). Among women, seniors had a much higher likelihood of being employed in primary goods (11.1% for seniors versus 2.3% for younger workers) and in consumer services (36.4% for seniors versus 28.8% for younger workers), but were less likely to work in public administration (3.1% for seniors versus 6.5% for younger workers).

There were also significant changes in the concentration of senior workers across industries between 2001 and 2006 (Table 2).[6] Although consumer services was the largest employer of senior men in both years, other categories varied in importance over the period. Primary goods industries lost the most ground as its share declined by 5.6 percentage points between 2001 and 2006. In contrast, construction and utilities recorded the largest gain (1.4 percentage points). Among employed senior women, health-related industries recorded

Table 2 Senior employment by industry, 2001 versus 2006

	Men		Women	
	2001	2006	2001	2006
	%			
Primary goods	22.8	17.1	16.7	11.1
Manufacturing	8.3	8.3	5.7	5.2
Construction and utilities	7.2	8.6	2.1	2.3
Transport	4.4	5.5	1.3	1.8
Consumer services	27.7	28.8	35.6	36.4
Business services	19.4	20.6	16.7	17.7
Education	2.7	3.6	6.7	7.6
Health	4.5	4.7	12.5	14.8
Public administration	3.0	2.8	2.9	3.1

Source: Statistics Canada, Census of Population.

the biggest gain as their share increased by 2.3 percentage points over the period. In contrast, the share of senior women working in primary goods industries decreased by 5.6 percentage points between 2001 and 2006.

Farmer still the most common occupation for senior men

Among working senior men, the top occupation was farmer and farm manager, with 11.5% of seniors employed in this group in 2006 (Table 3). This differed from men age 25 to 64 as farmers and farm managers represented only 1.6% of the workforce for this group. The second most common occupation for senior men was retail salesperson and sales clerk, employing 3.8% of working men in 2006. The third and fourth most frequent occupational categories were truck driver and janitor, caretaker and building superintendent, at 2.9% each. Among women, the top occupation was retail salesperson and sales clerk (6.6% among seniors versus 3.8% among prime-age workers).

Working seniors were more concentrated in a few occupations compared with younger workers. Among senior men, for example, the top five occupations accounted for 23.7% of employment compared with 12.3% among workers age 25 to 64. Occupational concentration was also much higher among senior women as almost 26% of employed women age 65 and over were concentrated in the top five occupations, compared with about 18% among younger women.

Significant changes also occurred in the occupational profile of seniors between 2001 and 2006 (Table 4). First, the concentration decreased over the period as the top 25 occupations employed 50.4% of working men in 2006 (compared with 53.6% in 2001). Among women, the proportion fell from 62.3% to 59.8% over the same period. The decrease in the concentration of older workers among farmers and farm managers was particularly noticeable. Between 2001 and 2006, the proportion of older men employed in this category fell from 17.6% to 11.5%. Among women, this proportion fell from 10.1% to 6.1%. The share of senior women increased in many other occupations, including retail salespersons and sales clerks, secretaries (except legal and medical) and nurses. Hence, the occupational profile of older workers has become more diverse.

Table 3 Top 5 occupations, seniors versus prime-age

Men	%
25 to 64	
Truck drivers	3.7
Retail salespersons and sales clerks	2.6
Retail trade managers	2.5
Janitors, caretakers and building superintendents	1.8
Automotive service technicians, truck and bus mechanics and mechanical repairers	1.7
65 and over	
Farmers and farm managers	11.5
Retail salespersons and sales clerks	3.8
Truck drivers	2.9
Janitors, caretakers and building superintendents	2.9
General farm workers	2.6
Women	
25 to 64	
Retail salespersons and sales clerks	3.8
Registered nurses	3.8
Secretaries (except legal and medical)	3.4
General office clerks	3.4
Elementary school and kindergarten teachers	3.3
65 and over	
Retail salespersons and sales clerks	6.6
Secretaries (except legal and medical)	6.5
Farmers and farm managers	6.1
Bookkeepers	3.8
General office clerks	2.9

Source: Statistics Canada. Census of Population. 2006.

Descriptive overview of factors associated with employment

Among factors that can be expected to be associated with seniors' employment, four may be of particular significance (see *Data source and definitions*). They are financial status (family income other than individual employment income, adjusted for family size), educational attainment, health status (proxied by activity limitation information), and financial obligations (proxied with a mortgage payment indicator).

Past research indicates that financial resources do not necessarily have a straightforward relationship with work among older workers. The relationship varies according to the level and other sources of income. At the lower end, those with low levels of income other than individual earnings might have to work to maintain a minimum standard of living. At the other

Table 4 Top 25 occupations for employed seniors

	2001	2006
	%	
Men		
Farmers and farm managers	17.6	11.5
Retail salespersons and sales clerks	2.6	3.8
Truck drivers	2.1	2.9
Janitors, caretakers and building superintendents	2.8	2.9
General farm workers	2.5	2.6
Retail trade managers	3.4	2.4
Security guards and related occupations	2.0	2.0
Sales representatives, wholesale trade (non-technical)	1.8	1.7
Financial auditors and accountants	1.6	1.6
Bus drivers and subway and other transit operators	1.1	1.5
Senior managers - goods production, utilities, transportation and construction	1.3	1.4
Real estate agents and salespersons	1.3	1.3
Ministers of religion	1.3	1.2
Senior managers - financial, communications and other business services	1.2	1.2
Senior managers - trade, broadcasting and other services, n.e.c.	1.2	1.2
Taxi and limousine drivers and chauffeurs	...	1.2
Delivery and courier service drivers	1.0	1.2
Lawyers and Quebec notaries	1.1	1.2
Carpenters	1.1	1.2
General practitioners and family physicians	1.3	1.1
Property administrators	1.2	1.1
Landscaping and grounds maintenance labourers	0.9	1.1
Automotive service technicians, truck and bus mechanics and mechanical repairers	...	1.0
Sales, marketing and advertising managers	1.0	1.0
Specialist physicians	0.8	1.0
Construction managers	0.9	...
Restaurant and food service managers	0.9	...
Women		
Retail salespersons and sales clerks	5.3	6.6
Secretaries (except legal and medical)	6.1	6.5
Farmers and farm managers	10.1	6.1
Bookkeepers	4.4	3.8
General office clerks	2.9	2.9
Light duty cleaners	2.6	2.8
Registered nurses	1.5	2.7
Retail trade managers	2.7	2.2
General farm workers	3.4	2.1
Visiting homemakers, housekeepers and related occupations	1.6	2.1
Administrative officers	1.5	2.0
Babysitters, nannies and parents' helpers	3.1	1.9
Receptionists and switchboard operators	1.6	1.9
Cashiers	1.2	1.7
Accounting and related clerks	1.5	1.6
Real estate agents and salespersons	1.2	1.5
Elementary school and kindergarten teachers	...	1.4
Early childhood educators and assistants	1.5	1.4
Janitors, caretakers and building superintendents	1.6	1.4
Food counter attendants, kitchen helpers and related occupations	1.3	1.4
Nurse aides, orderlies and patient service associates	...	1.3
Property administrators	1.3	1.2
Other elemental sales occupations	1.5	1.2
Cooks	1.2	1.2
Financial auditors and accountants	1.2	1.0
Musicians and singers	1.3	...
Accommodation service managers	0.9	...

Source: Statistics Canada, Census of Population, 2001 and 2006.

Data source and definitions

Census data on men and women, 65 years of age and over, for the years 1981, 1986, 1991, 1996, 2001 and 2006 were used in the study. The choice of census as a data source was predominantly motivated by a need for a detailed analysis and the accompanying requirements of relatively large sample sizes for various sub-groups. The census is conducted every five years. Four-fifths of households receive the short form, which asks for basic information only. The remaining 20% of households receive the long form which, in addition to the basic information, also asks more detailed questions on matters including labour market activities. The 20% sample information is later weighted to represent all Canadians.

Variable definitions

Employed: a person is considered employed if he or she had a job in the reference week (week preceding the census)—includes persons who were temporarily absent for the entire week because of vacation, illness, a labour dispute at work, maternity/parental leave, bad weather, fire or family responsibilities, or for some other reason.

Employment rate: the number of employed persons expressed as a percentage of the relevant population.

Employee: a person paid for work via wages, salary, tips or commission.

Self-employed: includes individuals who had a job in the reference week and were self-employed without paid help and not incorporated; self-employed with paid help and not incorporated; or paid workers who were incorporated business owners with or without paid help.

Unpaid family worker: a person working without pay for a relative in a family business or on a farm.

Work activity: based on data prior to the census year as data on weeks worked are for the previous year. An individual was classified as working full year, full time if he or she worked 49 to 52 weeks full time (30 hours or more per week).

Other family income: this variable is calculated by first subtracting individual employment income (if any) from total economic family income and then adjusting for family size by dividing it by an adjustment factor that takes the lower relative needs of additional family members into account. Income quintiles are then calculated using the adjusted other family income. Note that information on income variables is for the year prior to the census year.

Education: education levels are constructed using the highest certificate, diploma or degree variable. The various categories are collapsed into five levels. The lowest level, Level 1, is below a high school graduation certificate or equivalency diploma. Level 2 is a high school graduation certificate or equivalency diploma. Level 3 includes other trade certificates/diplomas or registered apprenticeship certificates. Level 4 consists of college, CEGEP or other non-university certificates or diplomas from a program of 3 months to less than 1 year, college, CEGEP or other non-university certificates or diplomas from a program of 1 year to 2 years, college, CEGEP or other non-university certificates or diplomas from a program of more than 2 years, or certificates or diplomas below bachelor. The highest level, Level 5, includes bachelor's degrees, certificates or diplomas above bachelor, degrees in medicine, dentistry, veterinary medicine or optometry, master's degrees, or earned doctorate degrees.

Activity limitations: the limited often and limited sometimes variables are based on the following census questions, which refer to conditions or health problems that have lasted or are expected to last six months or more:

- 1. "Does this person have any difficulty hearing, seeing, communicating, walking, climbing stairs, bending, learning or doing any similar activities?" (Yes, often; Yes, sometimes; No).
- 2. "Does a physical condition or mental condition or health problem reduce the amount or the kind of activity this person can do: (a) at home? (b) at school or at work? (c) in other activities, for example, transportation or leisure?" (Yes, often; Yes, sometimes; No).

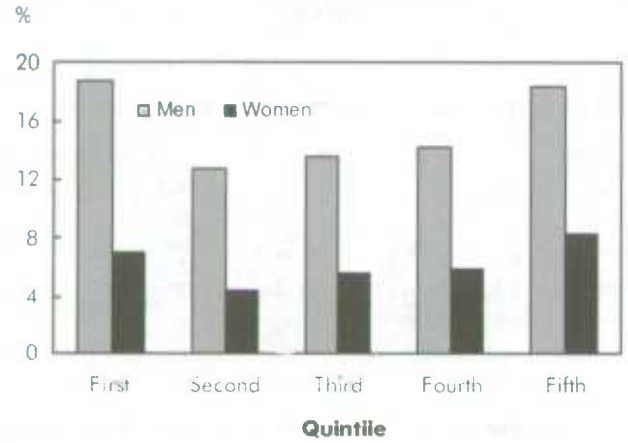
Mortgage payments: the variable is "yes" if any regular mortgage or loan payments are being made; "none" if none are being made; "not applicable" if the individual does not own the dwelling. Other than information on the value of the dwelling and mortgage payments, the census does not include other measures of individual wealth.

Occupation: Based on National Occupational Classification (520 occupations).

extreme, those with high levels of other income are also likely to be highly educated and, given that education is positively related to employment (Haider and Loughran 2001), they are more likely to be employed. In addition, those with high levels of such income are more likely to have spouses who are still employed (as spousal earnings are a part of this income). Earlier research (Blau and Riphahn 1999, and Schirle 2008) has shown that one member of a couple is much more likely to be employed if the other spouse is employed than if the spouse is not employed. Another factor could be that those in higher income quintiles may be business owners.

To account for both income size and composition effects, the total and its separate components were examined. The total, 'other family income,' is defined as family income minus employment income (if any),

Chart D Employment rates among seniors by 'other family income' quintile



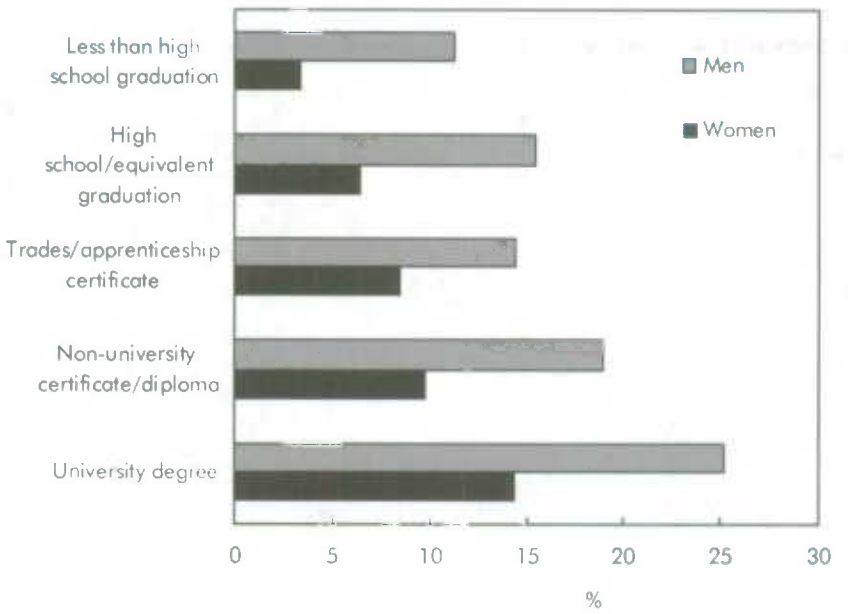
Source: Statistics Canada, Census of Population, 2006.

and is adjusted for family size (see *Data source and definitions*). Other family income consists of three main components: public pensions (Canada Pension Plan/ Quebec Pension Plan, Old Age Security, and other government transfers [e.g., Guaranteed Income Supplement]), private income (private pensions, registered retirement savings plans, investment income, and other money income), and employment income of other family members.[7] Descriptive results are presented for other family income, while the three components are incorporated into multivariate models.

Men and women in the lowest and highest other family income quintiles were more likely to be employed compared with those in the second, third and fourth quintiles. In 2006, 18.7% of men in the first quintile and 18.3% of those in the fifth quintile were employed (Chart D). In the second, third and fourth quintiles, the proportions were 12.7%, 13.5% and 14.2%, respectively. The same pattern is evident for women, although at lower levels than for men.

Highly educated seniors are much more likely to continue working past the traditional retirement age (Haider and Loughran 2001, and Parries and Sommers 1994) (Chart E). In 2006, 25.2% of men with at least a university degree were employed compared with 11.3% of those without a high school diploma. Among women, the respective rates were 14.4% and 3.4%. The employment rates for intermediate levels of education were located between these two extremes. One of the reasons for the positive relationship between education and employment among seniors is that jobs requiring higher levels of education are usually less physically demanding (Park 2007). In such conditions, physical limitations associated with aging may be less likely to lead to retirement.

Chart E Employment rates among seniors by level of education

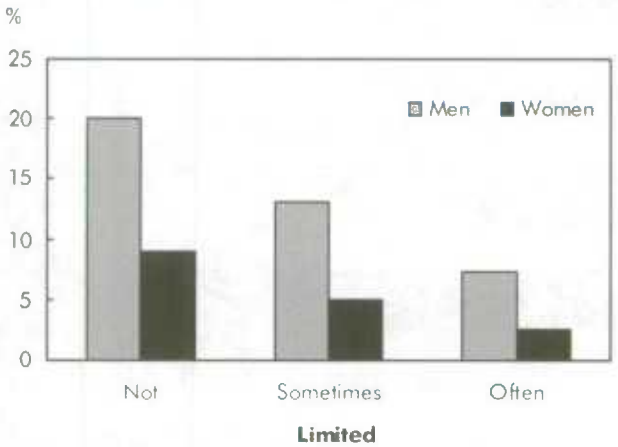


Source: Statistics Canada, Census of Population, 2006.

Health status has also been cited as a determinant of labour market activity among seniors. Activity limitations—a key element of the health status of seniors—have been found to be negatively associated with employment among the elderly (Haider and Loughran 2001, and Parries and Sommers 1994). In 2006, 21.8% of senior men and 24.0% of senior women reported that they were "often" limited in their daily activities. Another 26.2% of men and 27.5% of women stated that they were "sometimes" limited. Activity limitations were associated with employment decisions (Chart F). Among men, 20.1% of those without any limitations were employed, while 13.1% of the "sometimes" limited and 7.3% of the "often" limited were working. Among women, 8.9% of those who did not report any limitations were employed. For those with some form of activity limitation, the rates were less than 5%.

Finally, seniors carrying debt might be constrained to stay in the labour market to meet their financial obligations.[8] Even though the census does not provide a complete balance sheet, it does have information on the presence of a mortgage—the largest debt for most individuals. On the basis of this measure, 18.8% of senior men and 16.3% of senior women reported that their households were making regular mortgage payments. Another 20.9% of men and 28.8% of women did not own their dwellings. The remainder owned their homes mortgage-free. Overall, 22.1% of men and 9.9% of women who had a mortgage were still active in the labour market (Chart G). Seniors without a mortgage, whether renters or mortgage-free owners, were less likely to work.

Chart F Employment rates among seniors by activity limitation

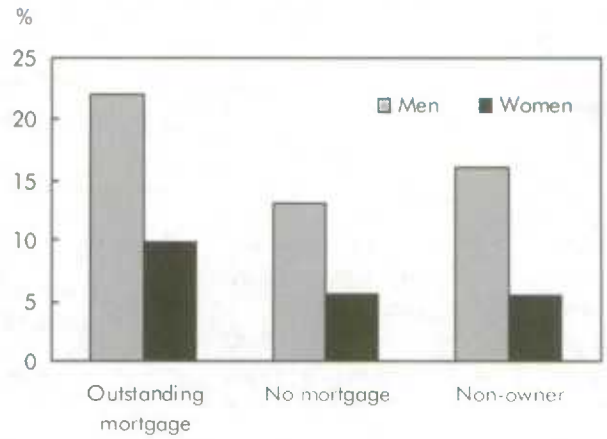


Source: Statistics Canada, Census of Population, 2006.

Modelling the employment of seniors

In order to gauge the potential relationship between the above factors and the probability of being employed, a logit model was estimated with all four explanatory factors as independent variables. A number of sociodemographic variables were also included as controls.

Chart G Employment rates among seniors by outstanding mortgage



Source: Statistics Canada, Census of Population, 2006.

The results indicated that education is positively associated with employment (Table 5). When those with a high school diploma were used as the reference group, women with the lowest educational attainment had lower odds of being employed. In contrast, those with higher education levels were more likely to be employed. This was especially true for university-educated women. In fact, the odds ratio[9] for women in this level was two times higher than for those with a high school diploma. Among men, those with less than high school

Table 5 Odds ratios for employment model[1] for seniors

	Men	Women
	ratio	
Other family income		
First quintile	1.51*	1.59*
Second quintile	1.01	0.93*
Third quintile (ref.)	1.00	1.00
Fourth quintile	0.93*	0.88*
Fifth quintile	1.15*	1.11*
Highest level of education		
Less than high school	0.77*	0.62*
High school or equivalent (ref.)	1.00	1.00
Trades/apprenticeship certificate	0.93*	1.24*
Non-university certificate/diploma	1.23*	1.44*
University degree	1.80*	2.01*
Activity limitations		
None (ref.)	1.00	1.00
Sometimes	0.68*	0.64*
Often	0.39*	0.39*
Mortgage payments		
Yes (ref.)	1.00	1.00
None	0.55*	0.55*
Non-owners	0.92*	0.79*

* significantly different from the reference group (ref.) at the 0.01 level
1. Dependent variable = 1 if employed in the reference week, 0 otherwise.
Note: Models also controlled for age, marital status, immigrant/Aboriginal status, official language, type of region, and province.
Source: Statistics Canada, Census of Population, 2006.

or with a trades/apprenticeship certificate were less likely to be employed. As with women, men with a university education were the most likely to work.

A mortgage can be a good proxy for total household debt levels. Homeowners without mortgage payments and non-owners were less likely to be employed compared with those making regular mortgage payments.[10] The odds ratios were lower by 0.45 and 0.08 for men without mortgage payments and non-owners, respectively. For women, the odds ratios related to these two categories were lower by 0.45 and by 0.21.

Seniors with activity limitations were also less likely to be employed. In comparison with men without any activity limitations, the odds ratio for men who stated they were "sometimes" limited was lower by 0.32. The odds were even lower (by 0.61) for those who stated that they were "often" limited, which is indicative of the severity of a disability. Similarly, the odds were lower by 0.61 for women who indicated they were often limited and by 0.36 for those who were sometimes limited.

The model indicated that men in the bottom and top other family income quintiles were more likely to be employed compared with those in the middle quintile, while the coefficients for the second quintile were not significantly different from the middle quintile.[11] Compared with those in the middle quintile, the odds ratio for those in the bottom quintile was higher by 0.51. The corresponding number for those in the top quintile was 0.15. Similarly, women in the bottom and top income quintiles were more likely to be employed compared with those in the middle. However, women in the second and fourth income quintiles were less likely to be employed. The odds ratios for those in the first and fifth quintiles were higher by 0.59 and 0.11, respectively, compared with the middle quintile. On the other hand, the odds ratios were lower by 0.07 and 0.12 for those in the second and fourth quintiles, respectively.

Descriptive statistics showed that both men and women in the bottom and top income quintiles were more likely to work. However, because employment was also positively related with high educational attainment, and because individuals in the top income quintile are also likely to be highly educated, the impact on employment from being part of the top quintile could be expected to be much lower when education variables are accounted for. However, even after controlling for education, men in the top quintile were still more likely to be working as opposed to those in the middle. One potential explanation is that a high level of other family income may be indicative of other family members working. Moreover, the source of other income may affect the decision to work.

To study the impact of other family income in more detail, it was split into three components: public pensions (Canada Pension Plan/Quebec Pension Plan, Old Age Security, and other government transfers [e.g., Guaranteed Income Supplement]), private income (private pensions, registered retirement savings plans, investment income, and other money income), and an indicator for the presence of another family member with positive employment earnings. Quintiles for public pensions and private income were included in the model. However, earnings of other family members could not be split into quintiles as approximately 70% did not have another family member with positive earnings.

Men and women in the top two quintiles of public pensions and private income became less likely to be employed than those in the middle quintile when earnings of other family members were taken out of the equation, while those in the bottom two quintiles of public and private pensions remained more likely to work (Table 6). Seniors with positive earnings from other family members (spouses in most cases) were more likely to be working themselves, especially men. Thus, the employment decision for those in the top quintile appears to be driven by work decisions of other family members (mostly the spouse), and for those in the bottom quintile by relatively low income from public pensions and private sources. The models were also estimated separately for the youngest group (65 to 69 years of age) as they constitute the majority of senior workers. The conclusions remained unchanged.[12]

Descriptive overview of work intensity

The amount of time seniors spend on the job is also of interest. A significant minority of senior workers reported full-year, full-time jobs (Chart H).[13] Among men, slightly more than 40% worked full year, full time in 2005. Just under one-third of working women also worked on a full-year, full-time basis in 2005 (31%), although just as many worked on a part-time, part-year basis (31%). These results were similar across census years.

The proportion of seniors working full time, full year varied little across age groups (Table 7). Among men, those age 65 to 74 were slightly more likely to work full year, full time compared with those 75 and over (41.8% versus 40.4%). Among women, 30.2% of the 65 to 74 group worked full year, full time in 2005, compared with 32.2% of working women 75 and over.

Table 6 Odds ratios for alternative seniors' employment model[1]

	Men	Women
	ratio	
Public pensions/government transfers		
First quintile	1.92*	1.83*
Second quintile	1.20*	1.19*
Third quintile (ref.)	1.00	1.00
Fourth quintile	0.90*	0.93*
Fifth quintile	0.93*	0.95*
Private income		
First quintile	1.30*	1.10*
Second quintile	1.34*	1.21*
Third quintile (ref.)	1.00	1.00
Fourth quintile	0.78*	0.79*
Fifth quintile	0.81*	0.69*
Other family member with positive earnings		
Yes	2.16*	1.68*
No (ref.)	1.00	1.00

* significantly different from the reference group (ref.) at the 0.01 level
1. Dependent variable = 1 if employed in the reference week, 0 otherwise.
Note: Models also controlled for education, activity limitations, mortgage payment indicator, age, marital status, immigrant/Aboriginal status, official language, type of region, and province.
Source: Statistics Canada, Census of Population, 2006.

Chart H Seniors employed full year, full time

Source: Statistics Canada, Census of Population, 1981 to 2006.

Some personal and job characteristics were associated with a higher probability of working full year, full time. This was the case for women who were unpaid family workers and men who were self-employed. Both men and women in management positions were much more likely to work full year, full time (53.0% for men and 46.4% for women). In contrast, unskilled workers were much less likely to work on a full-year, full-time basis.

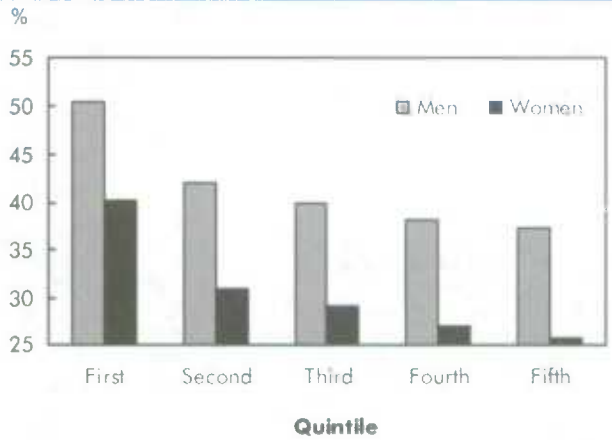
In the previous section, results indicated that men who were in the bottom quintile of other family income were more likely to be employed. They were not only

Table 7 Full-year, full-time employment rates by age, employment status and occupation

	Men	Women
	%	
Total	**41.6**	**30.6**
Age		
65 to 74	41.8	30.2
75 and over	40.4	32.2
Employment status		
Employee	39.8	29.6
Self-employed	43.8	32.0
Unpaid family worker	30.1	40.4
Occupation		
Management	53.0	46.4
Professional	35.9	23.4
Skilled	45.4	33.5
Semi-skilled	38.3	29.6
Unskilled	30.1	23.2

Source: Statistics Canada, Census of Population, 2006.

Chart 1 Full-year, full-time rates by other family income quintile



Source: Statistics Canada, Census of Population, 2006.

more likely to be employed, but were also working more intensively as 50.4% of employed men and 40.2% of employed women in the bottom quintile worked the entire year on full-time basis (Chart I).

Results indicated that men in the top quintile were more likely to be working as opposed to those in the middle. However, they were less likely to be working full-year, full-time compared with men in any other quintile. Similar trends were found among women.

Modelling work intensity

To test the robustness of the above findings, another logit model was estimated to study the association of various variables with the probability of working full year, full time. Results indicate that working seniors in the bottom income quintile were more likely to work full year, full time in comparison with those in the middle quintile, while the opposite was true for seniors in the top two quintiles (Table 8). Among men, the odds ratio for those in the bottom quintile was higher by 0.46 compared with those in the middle.

Although higher educational attainment was associated with a lower probability of working full year, full time for men, the results for women were not as clear. Those with a trades/apprenticeship certificate were less likely to work on a full-year, full-time basis than those with a high school diploma, with results statistically insignificant for other levels. Seniors with activity limitations were less likely to work full year, full time than those without. Finally, those without mortgage payments were less likely to work full year, full time.

Models were again re-estimated after splitting other family income into public pensions, private income, and an indicator of another family member with positive earnings. Men in the bottom two quintiles of public pensions and private income were more likely and those in the top two quintiles less likely to work full year, full time compared with those in the middle quintile (Table 9). For women, this was only true for private income.

For public pension income, women in the bottom two quintiles and the top quintile were more likely to work full year, full time compared with those in the third quintile. For both men and women, those who had another family member with positive earnings were more likely to work full year, full time.

When the models were estimated to include only those age 65 to 69, the conclusions remained unchanged for men. For women, one conclusion regarding public pensions changed—the coefficient for the fifth quintile was statistically insignificant.[14]

Table 8 Odds ratios for seniors' work intensity model[1]

	Men	Women
	ratio	
Other family income		
First quintile	1.46*	1.48*
Second quintile	1.06	1.04
Third quintile (ref.)	1.00	1.00
Fourth quintile	0.94**	0.89**
Fifth quintile	0.90*	0.82*
Highest level of education		
Less than high school	1.08*	1.03
High school or equivalent (ref.)	1.00	1.00
Trades/apprenticeship certificate	0.91*	0.89**
Non-university certificate/diploma	0.92*	0.94
University degree	0.84*	0.93
Activity limitations		
None (ref.)	1.00	1.00
Sometimes	0.74*	0.74*
Often	0.74*	0.81*
Mortgage payments		
Yes (ref.)	1.00	1.00
None	0.71*	0.68*
Non-owners	1.08*	0.91**

* significantly different from the reference group (ref.) at the 0.01 level; ** at the 0.05 level

1. Dependent variable = 1 if employed full year, full time, 0 otherwise.

Note: Models also controlled for age, marital status, immigrant/Aboriginal status, official language, industry, occupation, employment status, type of region, and province.

Source: Statistics Canada, Census of Population, 2006.

Table 9 Odds ratios for alternative seniors' work intensity model[1]

	Men	Women
	ratio	
Public pensions/government transfers		
First quintile	1.68*	1.75*
Second quintile	1.16*	1.25*
Third quintile (ref.)	1.00	1.00
Fourth quintile	0.91*	0.99
Fifth quintile	0.90*	1.10**
Private income		
First quintile	1.42*	1.51*
Second quintile	1.34*	1.28*
Third quintile (ref.)	1.00	1.00
Fourth quintile	0.81*	0.84*
Fifth quintile	0.68*	0.65*
Other family member with positive earnings		
Yes	1.19*	1.08**
No (ref.)	1.00	1.00

* significantly different from the reference group (ref.) at the 0.01 level; ** at the 0.05 level

1. Dependent variable = 1 if employed full year, full time, 0 otherwise.

Note: Models also controlled for education, activity limitations, mortgage payment indicator, age, maritol status, immigrant/Aboriginal status, official language, industry, occupation, employment status, type of region, and province.

Source: Statistics Canada, Census of Population, 2006.

Conclusion

While most seniors retire by age 65, many continue to work beyond this traditional milestone. In addition to policy changes that have eliminated the mandatory age of retirement, improved education levels and health status over time have created conditions for people to work longer.

Using Canadian census data, this study examined trends in work activity among seniors at least 65 years of age from 1981 to 2006. It also used 2006 Census data to study the factors that are associated with employment at this age. Results indicate that the employment rate among seniors has been on the rise in recent years after registering declines in the 1980s and early 1990s. Between 1996 and 2006, the rate increased from 11.8% to 14.8% for men and from 4.0% to 5.8% for women.

Among those who also worked the previous year, many did so on a full-time, full-year basis (41.6% of men and 30.6% of women). Working seniors were highly concentrated in consumer services and had a less diverse occupational profile than younger workers.

This study also modelled many factors associated with the labour market participation of seniors. Men and women in the bottom and top quintiles of other family income were more likely to be employed compared with those in the middle, although the association was stronger for those in the bottom quintile. Bottom-quintile individuals were not only more likely to work—they also worked more intensively. However, a detailed analysis of income sources showed that not all sources of income equally affected seniors' probability of working. Private sources of income and public pensions were negatively associated with labour market participation, while earnings of family members (mostly spouses) were positively associated with

labour market participation. Higher levels of education, the absence of activity limitations and the presence of mortgage payments were other factors associated with a higher probability of employment. Overall, such results suggest that even if some seniors stay in the labour market by choice, many others likely remain working out of necessity. And the work intensity of those who are financially constrained is significantly higher.

Perspectives

Notes

1. Other countries also began introducing policy changes to deal with an aging workforce. For example, the United States raised the eligibility age for social security to 67 for those born after 1960. Also, it provides delayed retirement credits to seniors working past retirement age.

2. However many studies focus on early retirement behaviour. Examples of studies using Canadian data include Baker et al. 2003, Campolieti 2001 and 2002, and Maki 1993.

3. Some examples of studies on the determinants of labour market participation among seniors can be found in other countries. For example, Haider and Loughran (2001) used U.S. data and found that the labour supply of seniors was concentrated among the most educated, wealthiest and healthiest. It also reported that non-pecuniary considerations play an important role in determining employment decisions among seniors. Using data from Germany, Blau and Riphahn (1999) found that one member of a couple was much more likely to be employed if the other spouse was also employed.

4. These numbers are mainly influenced by the labour market participation of pre-baby boomers. With the much better-educated baby boomers now approaching their retirement years, the employment rates could rise even further in the future.

5. For the remainder of the paper, institutional residents are excluded from the analysis as information on various variables is not available for them. Note that for the rest of the population, the employment rate in 2006 was 15.5% among men and 6.3% among women.

6. Comparisons are made with 2001 rather than 1981 as the industrial and occupational classification has changed over time. Also, most of the increase in labour market participation occurred between 2001 and 2006.

7. Some of the existing Canadian studies addressing the association between labour market decisions and pensions include Baker et al. (2003), and the association between labour market decisions and spousal earnings include Schirle (2008). Parries and Sommers (1994) study the relationship between "non-labour income" (in addition to other variables) and the labour force participation of men age 68 and over in the United States.

8. Fortin (1995) shows that among married Canadian women age 35 to 65, labour force participation rates were higher for women in home-owning families with mortgages compared with women from families that either rent or own a home with no mortgage. Using Australian data, Belkar et al. (2007) find that indebtedness increases an individual's probability of participation in the labour force, especially the levels of owner-occupied mortgage debt for men.

9. The odds ratio is the ratio for the odds of an event occurring in one group compared with the odds of it occurring in another group. An odds ratio greater than 1 indicates that the event is more likely to occur in that particular group compared with the reference group. On the other hand, an odds ratio less than 1 indicates that the event is less likely to occur. For example, in an employment model, if the odds ratio for men is 1.20 with women being the reference group, it would imply that the odds for men being employed are higher by 0.20 compared with women. On the other hand, an odds ratio of 0.80 for men can be interpreted as the odds for men being employed are lower by 0.20 compared with women.

10. The causal nature of the relationship between mortgage debt and employment might be argued. Belkar et al. (2007), Del Boca and Lusardi (2002), and Fortin (1995) find that mortgage payments are exogenous to the labour force decision. This exogeneity is more likely to hold for seniors as they are less likely to take on bigger mortgage debts due to their work activity.

11. Some of the independent variables might be related. For example, individuals in the higher income quintile are also likely to be the ones with higher levels of education. Keeping this in mind, first a model was estimated without education and a mortgage rate indicator. The results, which are qualitatively the same as the ones from the full model presented here, are available from the author upon request.

12. The results are available from the author upon request.

13. The employed sample was restricted to men and women 66 years of age and over in the census year because information on weeks of work is available for the year prior to the census. The sample consisted of individuals who worked both in the census year and the previous year. This should not create much of a bias given that a very small proportion of individuals worked in the census year and not the previous year. For example, for the 2006 Census this proportion was 0.9% among men and 0.5% among women.

14. The results are available from the author upon request.

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Income in manufacturing regions

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Shrinking employment in manufacturing is a trend observed in OECD (Organisation for Economic Co-operation and Development) countries as a whole (Bernard 2009a). From 2000 to 2007, the sector lost 278,000 jobs in Canada, or one in six, which reduced its share of total employment from 16% to 12%.[1] The decline took place during a period of general economic growth with a vibrant labour market and low unemployment: in 2007, there were employment gains in every sector except manufacturing, and the unemployment rate fell to 6.0%, its lowest level in 33 years. Some sectors, such as natural resources, experienced vigorous growth, even verging on a shortage of workers. During those years, for every job lost in manufacturing, nearly two jobs were created in construction, health care and social assistance (Lin 2008).

The decline of the manufacturing sector can have serious repercussions for the economic health of some regions, particularly when jobs with manufacturing firms are an important source of employment at the local level. In those regions, the downsizing or closure of a single company can have a snowball effect, affecting not only the company's employees but also business activity and employment among its suppliers. The decrease in employment earnings of workers who are laid off or affected by cuts in work hours can lead to lower household spending and reduced profitability for local retail stores and service firms. The indirect layoffs that result from this process increase the number of unemployed workers, which puts downward pressure on the wages offered by local employers in every sector. Ultimately, the combined effects may impede the local job creation process and thereby weaken the economy of the affected regions.[2]

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Economic and employment trends in the manufacturing sector are fairly well documented. Much less so, however, is the impact that those trends have on personal income, depending on the sector's regional importance. Taking advantage of the high level of regional detail in the Longitudinal Administrative Database (LAD) (see *Data source and definitions*), this article examines median income, low-income incidence and use of Employment Insurance (EI) in the various regions, which are ranked by the level of concentration in manufacturing employment. These indicators are compared at two points in time: the most recent peak in manufacturing employment (2000) and the last full year of economic growth (2007). The probability of income loss between those two years for persons living in the same region in 2000 and 2007 is then studied. The estimated probabilities are based on the degree of regional concentration of manufacturing employment and whether these individuals were working in manufacturing in 2000.

Since the economic environment is fundamentally different between major centres and smaller cities (especially with regard to low income), the results of the cross-sectional analysis for metropolitan areas with a population of more than 500,000 are presented separately from the results for smaller areas (see *Income and employment in census metropolitan areas with a population of 500,000 or more*).

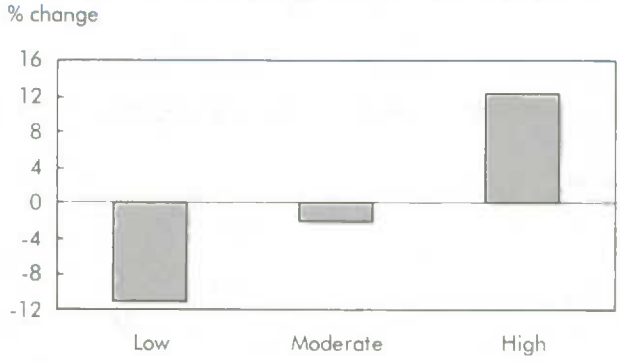
Greater decline in employment in regions with high manufacturing concentration

The loss of a job can result in several unemployment episodes and a loss of employment income (Galarneau and Stratychuk 2001, Bernard and Galarneau 2010) when workers are forced to take lower-paying jobs. Employment income may start falling even before the job loss, and such decreases often persist much longer

than the duration of unemployment benefits (Morissette et al. 2007). The following sections describe some indicators of the incidence of the decline in manufacturing at the regional level, with census metropolitan areas (CMAs) and census agglomerations (CAs) grouped by level of employment concentration in manufacturing (low, moderate and high) (see *Concentration rate*).

The majority of regions with a high concentration of manufacturing employment are in Quebec (for example, Granby and Thetford Mines) and Ontario (for example, Windsor and Oshawa)—a complete list of CMAs and CAs is provided in the appendix. Those regions have been hardest hit by the slump in manufacturing. From 2000 to 2007, losses of manufacturing jobs totalled 68,600, a 21.9% drop. In comparison, low-concentration regions lost 11,300 manufacturing jobs, a decline of 13.3%.

Chart A Change in number of EI beneficiaries



Note: The concentration of manufacturing employment was kept constant with that calculated in 2000.
Source: Statistics Canada, Longitudinal Administrative Database, 2000 and 2007.

Income and employment in census metropolitan areas with a population of 500,000 or more

From 2000 to 2007, manufacturing employment shrank in every census metropolitan area (Table 1). The leaders were Toronto and Montréal, which together lost 172,800 jobs. Toronto suffered the heaviest loss (95,300 jobs).[3] Along with Hamilton, which had the largest proportion of manufacturing employment, Toronto was one of the few regions that experienced a decline in market income (6.8%). However, because those regions have a very different economic profile than smaller regions, it is difficult to draw any conclusions from these statistics.

Table 1 Change in employment and income in census metropolitan areas with a population of 500,000 or more

	Share of manufacturing employment	Number of manufacturing jobs			Median market income		
	%	2000	2007	% change	2000 ($)	2007 ($)	% change
Ottawa-Gatineau	9.1	42,530	25,300	-40.5	37,800	38,500	1.9
Québec	10.8	34,440	30,325	-11.9	29,500	32,300	9.5
Edmonton	11.5	48,850	45,710	-6.4	31,700	37,700	18.9
Vancouver	12.1	97,540	88,335	-9.4	29,500	30,700	4.1
Calgary	12.3	54,365	47,660	-12.3	33,500	38,700	15.5
Winnipeg	16.1	48,970	42,150	-13.9	29,300	31,200	6.5
Montréal	19.6	292,945	215,420	-26.5	29,100	29,000	-0.3
Toronto	20.4	399,995	304,675	-23.8	33,600	31,300	-6.8
Hamilton	23.3	62,645	51,220	-18.2	35,200	34,200	-2.8

Note: The concentration of manufacturing employment was kept constant with that calculated in 2000.
Source: Statistics Canada, Longitudinal Administrative Database, 2000 and 2007.

More people on Employment Insurance

Manufacturing layoffs had a significant impact on the number of EI beneficiaries, and that impact varied considerably with the regional rate of employment concentration in the sector. In regions with a high concentration of manufacturing employment, job losses resulted in an increase of 12.4% in the number of people on EI, from 173,600 in 2000 to 195,000 in 2007 (Chart A).

Data source and definitions

The **Longitudinal Administrative Database** (LAD) is a longitudinal and cross-sectional sample composed of 20% of Canadian tax filers. The data are drawn from the T1 income tax returns of individuals. The large number of observations in LAD makes it possible to produce reliable estimates, not only for all of Canada and the provinces, but also for census metropolitan areas (CMAs) and census agglomerations (CAs). LAD also provides a wide range of income sources, which facilitates the study of changes in income and its composition over time. The industry sector variable, based on the North American Industry Classification System, is produced by matching LAD with the Business Register.

This article has a cross-sectional part and a longitudinal part. The target population is somewhat different depending on whether the analysis is cross-sectional or longitudinal. For the cross-sectional analysis, the 2000 and 2007 samples are independent and include persons age 20 to 64 living in a CMA or CA. Non-CMA and non-CA residents are excluded. The longitudinal sample includes all persons age 20 to 57 in 2000 (27 to 64 in 2007) living in the same CMA or CA in 2007 and 2000. The age restrictions for the longitudinal sample were established to avoid having to take variations due to retirement into account, without excluding variations due to unplanned and early retirement that may be the result of a decline in a company's business activity. The longitudinal population makes up 90% of the 2000 population. For both analyses, the 2000 boundaries are used for CMAs and CAs. For 2007, the 2000 boundaries were recreated using postal codes available in LAD. For more information on the advantages of keeping area boundaries constant over time, see Heisz et al. (2005).

All amounts are in 2007 constant dollars.

Employment income is the sum of all employment income reported on T4 slips. It includes salaries, wages and commissions before deductions and excludes self-employment income.

Market income includes the following components:

- employment income (reported on T4 slips)
- other employment income
- net self-employment income
- exemption of Indian employment income
- income from other pensions and retirement pensions
- dividends
- interest and other investment income
- net partnership income
- net rental income
- support payments
- registered retirement savings plan income of persons age 65 and over
- other income

Total income includes all market income components plus the following:

- Old Age Security pension
- Canada Pension Plan and Quebec Pension Plan benefits
- family benefits
- Employment Insurance benefits
- Universal Child Care Benefit
- non-taxable income
- refundable provincial tax credits
- child tax credits
- Canada Child Tax Benefit
- goods and services tax (GST) and Québec sales tax (QST) credits

Total income after tax is total income minus provincial and federal income tax, plus the Quebec abatement.

The **low-income indicator** identifies low-income persons according to the Low Income Measure (LIM). LIM represents one-half of median family income after tax, adjusted for family size.

The analysis covers only two periods and cannot capture all labour and income dynamics between the two periods. A more detailed study of the dynamics between personal income and labour market activity is needed to better understand how wealth creation mechanisms were affected in regions with a high concentration of manufacturing employment. Moreover, since the study focuses largely on people who lived in the same place during the observation period, it does not take labour mobility into account. It thus excludes people who moved to improve their employment conditions. Consider the case of Alberta, for example. The province benefited substantially from declining employment in manufacturing in other regions and served as a major source of re-employment, notably in construction, for less skilled manufacturing workers. It is also important to note that LAD contains relatively little information on the demographic characteristics of the persons included in the database. For example, it has no information on level of schooling, an essential variable for studying employment income and workers' ability to find new jobs.

In contrast, regions with a low concentration of manufacturing employment saw a decrease of 22,500 beneficiaries, or 11.0%, over the same period. These statistics suggest that job security deteriorated in regions of high manufacturing concentration, leaving workers at greater risk of unemployment episodes and hence more likely to be on EI.

Sharp decline in income in regions with high manufacturing concentration

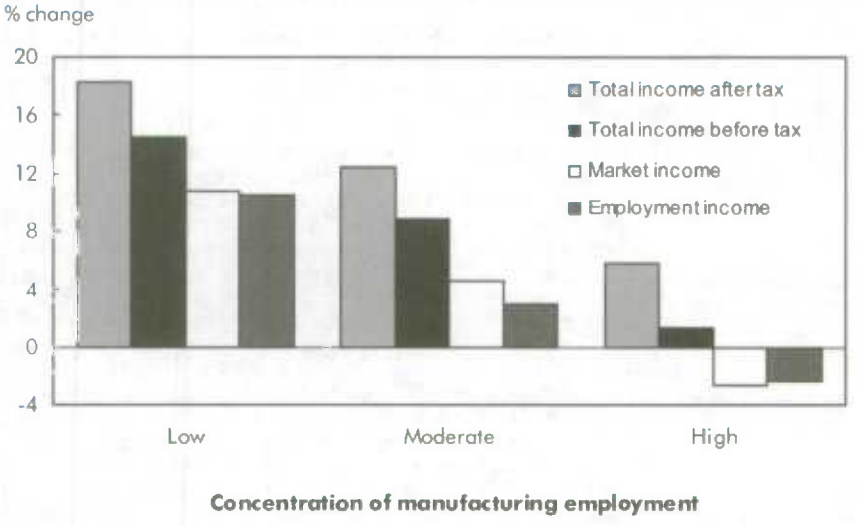
A high level of employment concentration in manufacturing also appears to be associated with larger income losses.[4] In high-concentration regions, employment income fell by 2.4%, compared with low-concentration regions, where it rose by 10.5% (Chart B). The pattern is similar for market income, which indicates that the decrease in employment income was not offset by increases in other components of market income (see *Data source and definitions*). This finding suggests that the decline in employment income is not due to a rise in retirement in those regions, mainly because the decline in employment income would have been partially offset by an increase in pension income for those persons. The decrease in market income would have been smaller than the decline in employment income, however, the data show the opposite.[5] Government transfers and the tax system had a stabilizing effect in those regions, since total income before tax and total income after tax rose during the period.

The variations changed the regions' comparative income ranking. In 2000, regions with high manufacturing concentration had the highest median income (all types of income), while in 2007 the reverse was true, as those regions had the lowest incomes.

Moreover, residents of high-concentration regions who were in the lowest income quartile (1st quartile) experienced relatively large losses—a 4.8% drop in their market income, compared with a 16.8% increase for their counterparts in low-concentration regions (Chart C). The median income in the lowest income quartile was higher in low-concentration regions ($7,200) than in high-concentration regions ($6,100), whereas the opposite was true in 2000.

These trends have widened income disparity in high-concentration regions and reduced it in low-concentration regions. Income decreases in the two lower quartiles in high-concentration regions were accompanied by an increase in the number of low-income people—from 2000 to 2007, the number of low-income people rose 5.6% in those regions, compared with a drop of 15.5% in low-concentration regions (Chart D).

Chart B Change in median total[1] market and employment incomes

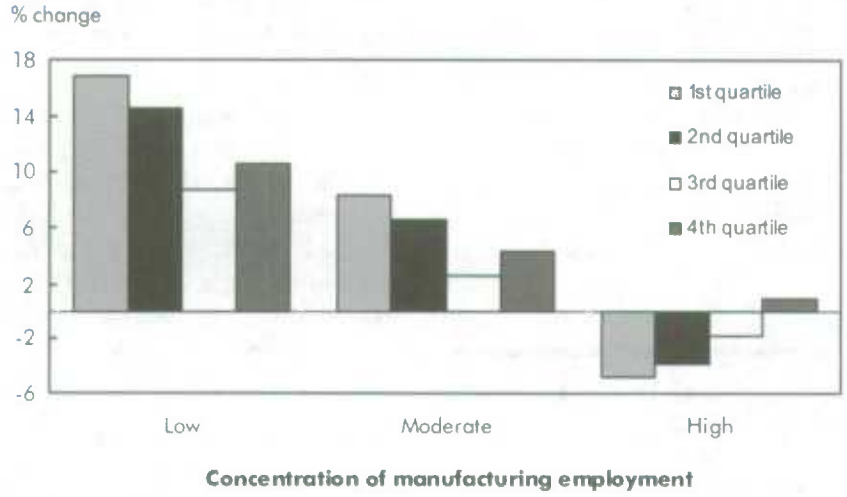


1. Before and after tax.
Note: The concentration of manufacturing employment was kept constant with that calculated in 2000.
Source: Statistics Canada, Longitudinal Administrative Database, 2000 and 2007.

More frequent income declines in small, high-concentration regions

The following sections concern workers who were living in the same CMA or CA in 2000 and 2007. The data are from an ordered logistic regression model. The model isolates the effects of manufacturing concentration on income changes, for various levels of income loss, depending on whether the worker was employed in the manufacturing sector.[6] More specifically, it estimates the probability of experiencing various levels of total income loss,[7] by relative concentration of local employment in the manufacturing sector, for the

Chart C Change in median income, by market income quartile



Note: The concentration of manufacturing employment was kept constant with that calculated in 2000. For a given quartile, the income change is equal to the difference between the median income of persons in this quartile based on the 2007 income distribution, and the median income of persons in the same quartile based on the 2000 income distribution.
Source: Statistics Canada, Longitudinal Administrative Database, 2000 and 2007.

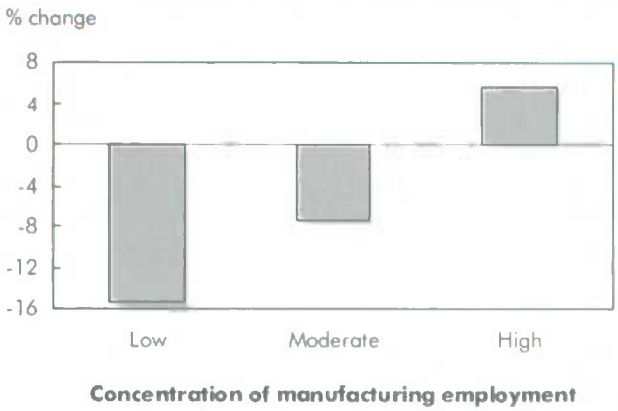
People in high-concentration regions were more likely to experience relatively large income losses (20% or more of their initial income), the probability of experiencing such a loss was between 18.4% and 29.9% higher than in low-concentration regions, depending on region size. They were also less likely to experience an income gain or no income loss during the period—the probability was between 4.1% and 6.0% lower than in low-concentration regions.

Region size mattered as well, since residents of small cities were more likely to experience income loss than residents of large urban centres. Residents of small regions (population 30,000 or less) with high manufacturing concentration were between 20.8% and 29.9% more likely to experience income loss than those in low-concentration regions of comparable size.

entire population, for manufacturing workers and for workers in other sectors. The same model was also used to estimate the probability that workers would receive EI benefits a specific number of times during the period. The results are all presented in the form of differences in predicted probabilities relative to the reference group, to determine how likely individuals are to experience one of the events in question: income loss, receiving EI or low-income status (see *Models*).

The probability that a person will experience a decline in total income[8] is significantly associated with the concentration of local employment in manufacturing (Table 2). In fact, the higher the concentration of employment in manufacturing, the greater the probability of experiencing a decline in total income. The probability was between 12.6% and 18.4% higher than in low-concentration regions (for all region sizes combined). In moderate-concentration regions, the probability was between 7.1% and 10.1% higher.[9]

Chart D Change in number of persons with low income after tax



Note: The concentration of manufacturing employment was kept constant with that calculated in 2000.
Source: Statistics Canada, Longitudinal Administrative Database, 2000 and 2007.

Manufacturing workers lost more income in regions with high manufacturing concentration

Workers employed in manufacturing were at greater risk of experiencing a decrease in income if they were employed in regions with high manufacturing concentration. That was the case regardless of region size or magnitude of loss. Overall, they were between 9.4% and 16.3% more likely to experience income loss than workers in a comparable job in a low-concentration region, and 5.0% less likely to experience a gain or no loss in income (Table 2). In addition, manufacturing workers were at greater risk of experiencing relatively high income losses, regardless of region size, but to a greater extent if they were employed outside a large urban centre. In such cases, the effect ranged between 19.6% for regions with a population of 30,000 or less and 36.0% for regions with a population of 500,000 or less.

Table 2 Marginal effect on probability of loss in total income, by region size and concentration of manufacturing employment

		Census metropolitan areas and census agglomerations		Census agglomerations	
	All regions combined	1 million or less	500,000 or less	100,000 or less	30,000 or less
			%		
Overall population					
Moderate concentration					
Gain or no loss	-2,3	-1,6	-2,0	-1,6	-2,7
10% or less	7,1	5,0	6,7	5,4	9,7
Between 10% and 20%	8,3	5,8	7,8	6,2	11,3
20% or more	10,1	7,0	9,3	7,4	13,4
High concentration					
Gain or no loss	-4,1	-4,2	-5,3	-5,4	-6,0
10% or less	12,6	13,2	17,3	17,4	20,8
Between 10% and 20%	14,8	15,5	20,4	20,6	24,7
20% or more	18,4	19,1	25,0	25,4	29,9
Manufacturing workers					
High concentration					
Gain or no loss	-5,0	-5,1	-9,1	-6,7	-5,2
10% or less	9,4	10,7	21,4	14,0	12,1
Between 10% and 20%	12,3	13,8	27,8	18,3	15,6
20% or more	16,3	17,8	36,0	23,8	19,6
Workers in other sectors					
High concentration					
Gain or no loss	-2,3	-2,5	-3,2	-3,4	-4,4
10% or less	7,5	7,9	10,7	11,5	16,8
Between 10% and 20%	8,6	9,2	12,4	13,4	19,5
20% or more	10,5	11,1	15,0	16,2	23,3

Note: All data represent a significant difference from the reference group (persons age 20 to 29 in Quebec, living as a couple, with or without children, in a region with a low concentration of manufacturing employment) at the 0.05 level. The concentration of manufacturing employment was kept constant with that calculated in 2000.
Source: Statistics Canada, Longitudinal Administrative Database, 2000 to 2007.

Income also decreases for workers in other sectors

Although the decline in manufacturing had a greater impact on the incomes of manufacturing workers, it also affected the incomes of workers in other sectors. The latter also had a significantly higher risk of experiencing income loss if they were employed in a region with high manufacturing concentration. That was the case for all levels of income loss and all sizes of region of residence. However, the effect was more pronounced outside large urban centres (population of 500,000 or less). For income losses of 20% or more of initial income, the effect ranged between 15.0% and 23.3%, compared with 10.5% for all regions, including large centres. This finding indicates that the decline in manufacturing employment seems to have had a greater impact on smaller regions, where labour demand is less diversified.

Risk of income loss higher among younger workers

For all sectors and concentration levels combined, persons age 40 and over in 2000—especially those from 50 to 57—had a significantly higher risk of experiencing income loss during the study period. The latter group was, on average, nearly 1.5 times more likely to experience income loss than those age 20 to 29 (Table 3). This may be attributable to the higher propensity of persons in the older age group to go into semi-retirement or retirement.

On the other hand, the most affected groups differ when degree of concentration and sector are

Table 3 Marginal effect on probability of loss in total income, by age group in 2000 and size of area of residence

		Census metropolitan areas and census agglomerations		Census agglomerations	
	All regions combined	1 million or less	500,000 or less	100,000 or less	30,000 or less
Overall population			%		
30 to 39	46.4	43.6	45.3	44.1	47.2
40 to 49	82.7	79.6	84.6	82.7	92.7
50 to 57	141.6	144.7	149.9	144.8	162.0

Note: All data represent a significant difference from the reference group (persons age 20 to 29) at the 0.05 level. The concentration of manufacturing employment was kept constant with that calculated in 2000.
Source: Statistics Canada, Longitudinal Administrative Database, 2000 to 2007.

controlled for. For example, among manufacturing workers in high-concentration regions, younger people were hardest-hit by the decline in manufacturing employment (Table 4). Workers age 20 to 29 were more likely to experience income loss (between 29.1% and 102.7%) than their same-age counterparts in low-concentration regions. However, they were also more likely to experience a loss of income when they lived in a smaller region. This suggests that younger workers were the first to be affected by the decline in manufacturing employment, probably because they had less job tenure.

Models

The estimates were generated by an ordered logistic regression model. The model's specifications are as follows:

$$Prob(y_i = m_k) = \alpha + \beta_1 Z_i + \beta_2 C_i + \varepsilon_i$$

The **dependent variable** (y_i) is **total income loss** as a percentage of initial income for the analysis of income change, and **number of years** of receipt when the probability of being on EI is analyzed. In each case, the dependent variable is an ordered categorical variable—since the events (m_k) can be arranged in order of size—and requires the use of an ordered model.

The **events** considered in the analysis of income change are the following:
- gain or no loss in total income;
- total income loss less than or equal to 10%;
- total income loss greater than 10% but less than 20%;
- total income loss equal to or greater than 20%.

For the analysis of EI use, the events are the following:
- did not receive EI benefits at any time;
- received EI benefits for a period of one year;
- received EI benefits for a period of two consecutive years or not;
- received EI benefits for a period of three consecutive years or not, or for a longer period of time.

The C_i **term** refers to a vector of dummy variables indicating the level of local manufacturing concentration (as previously defined). The Z_i term contains dummy variables for province of residence, age and family composition.

The **predicted probabilities** were calculated using the ordered logistic regression model. Since the variables indicating the level of manufacturing concentration are dummy variables, the marginal effect of living in a high-concentration region is equal to the difference in predicted probability between this group and the reference group, when the other independent variables are held constant. The reference group is composed of persons age 20 to 29 in 2000 (27 to 36 in 2007) living as a couple, with or without children, in a region with a low concentration of manufacturing employment in Quebec.

To **control for the effect of the size** of census metropolitan areas (CMAs) and census agglomerations (CAs), separate models were estimated for various subsamples based on population size:
- all CMAs and CAs;
- CMAs and CAs with a population of 1 million or less;
- all CMAs and CAs with a population of 500,000 or less;
- CAs with a population of 100,000 or less;
- CAs with a population of 30,000 or less.

Separate models were also estimated for manufacturing workers and workers in other sectors.

The **data in Tables 3 and 4** are from a simple logistic regression model. In the model, the dependent variable has a value of 1 if there is a loss in total income between 2000 and 2007, and 0 otherwise. The explanatory variables and the model's specifications are identical to those used in the ordered model.

The **data in Tables 5 and 7** are also from a simple logistic regression model. In this case, however, the dependent variable has a value of 1 if the person receives EI benefits or is in a low-income situation (depending on the situation studied), and 0 otherwise.

Table 4 Marginal effect on probability of loss in total income, by age group in 2000, size of area of residence, and concentration of manufacturing employment

		Census metropolitan areas and census agglomerations		Census agglomerations	
	All regions combined	1 million or less	500,000 or less	100,000 or less	30,000 or less
			%		
Manufacturing workers					
High concentration					
20 to 29	29.1	31.7	60.4	50,0	102.7
30 to 39	13.5	14.2	30.3	23.6	27.9
40 to 49	8.1	10.0	17.9	11.7	n.s.
50 to 57	9.5	8.5	11.1	5.6	n.s.
Workers in other sectors					
High concentration					
20 to 29	19.5	20.6	23.1	19.3	14.5
30 to 39	11.1	13.1	17.6	16.3	22.0
40 to 49	7.5	8.1	10.0	12.2	19.9
50 to 57	n.s.	n.s.	2.8	5.3	10.8

Note: n.s. is a not significant difference relative to the reference group (persons age 20 to 29 in Quebec, living as a couple, with or without children, in a region with a low concentration of manufacturing employment) at the 0.05 level. The concentration of manufacturing employment was kept constant with that calculated in 2000.
Source: Statistics Canada, Longitudinal Administrative Database, 2000 to 2007.

The same was also true, though to a lesser degree, for younger workers in other sectors, who were generally more likely to experience income loss if they were employed in a large urban centre than in a small city. The opposite effect was observed for older workers, who were more likely to experience income loss if they had a job in a small city.

Greater receipt of EI benefits in high-concentration regions

Overall, workers employed in a region with high manufacturing concentration were significantly more likely to receive EI benefits, irrespective of whether they were employed in manufacturing. However, workers employed in manufacturing had a higher probability of EI use (Table 5).[10] This is consistent with the findings of a previous study (Bernard 2009b), namely that job security dropped significantly for manufacturing workers, and, as a result, the difference in the duration of unemployment spells between manufacturing workers and workers in other sectors has never been so large. In other words, the job stability of manufacturing workers appears to have declined faster in regions with high manufacturing concentration, which can affect the job stability of workers in other sectors.

The risk of receiving EI for a (consecutive or not consecutive) period of one year, two years or three years or more between 2000 and 2007 (see *Models*) was also calculated. Overall, the findings show that living in a region with high manufacturing concentration

Table 5 Marginal effect on probability of being on Employment Insurance in 2007, by size of area of residence and concentration of manufacturing employment

		Census metropolitan areas and census agglomerations		Census agglomerations	
	All regions combined	1 million or less	500,000 or less	100,000 or less	30,000 or less
			%		
High concentration					
Manufacturing workers	39.1	36.3	21.9	10.6	n.s.
Workers in other sectors	17.6	16.4	5.6	4.6	26.0

Note: n.s. is a not significant difference relative to the reference group (persons age 20 to 29 in Quebec, living as a couple, with or without children, in a region with a low concentration of manufacturing employment) at the 0.05 level. The concentration of manufacturing employment was kept constant with that calculated in 2000.
Source: Statistics Canada, Longitudinal Administrative Database, 2000 to 2007.

Table 6 Marginal effect on probability of being on Employment Insurance between 2000 and 2007, by size of area of residence and concentration of manufacturing employment

		Census metropolitan areas and census agglomerations		Census agglomerations	
	All regions combined	1 million or less	500,000 or less	100,000 or less	30,000 or less
Manufacturing workers			%		
High concentration					
0	-12.9	-13.1	9.0	n.s.	n.s.
1 year	-4.4	-5.3	-3.8	n.s.	n.s.
2 years	1.7	0.2	-0.4	n.s.	n.s.
3 years or more	13.8	12.6	7.8	n.s.	n.s.
Workers in other sectors					
High concentration					
0	-10.5	-10.3	-1.9	-2.1	-17.6
1 year	-1.9	-2.9	-0.7	-0.8	-7.2
2 years	3.3	1.8	n.s.	n.s.	-0.9
3 years or more	13,0	11.2	1.7	1.8	16.9

Note: n.s. is a not significant difference relative to the reference group (persons age 20 to 29 in Quebec, living as a couple, with or without children, in a region with a low concentration of manufacturing employment) at the 0.05 level.
Source: Statistics Canado, Longitudinal Administrative Database, 2000 to 2007.

ers living in high-concentration regions with a population of 100,000 or less were not significantly more likely to receive EI than their counterparts in low-concentration regions (Table 6). In contrast, the effect on workers in other sectors tended to increase as region size decreased, rising from 13.0% for all CMAs and CAs to 16.9% for CAs with a population of 30,000 or less. In other words, manufacturing workers were more likely to receive EI if they were employed in a large urban centre, while workers in other sectors had a higher risk if their jobs were outside the major urban centres.

Increased low-income incidence in regions of high manufacturing concentration

Between 2000 and 2007, low-income incidence increased in regions with a high concentration

significantly increased the risk of receiving EI on several occasions (three years or more) during this period. It also lowered the probability of never filing an EI claim. That was true for both manufacturing workers and other workers.

Manufacturing workers in these regions were from 7.8% to 13.8% more likely to receive EI for a period of three years or more than their counterparts in low-concentration regions. For workers in other sectors, the difference was between 1.7% and 16.9% (Table 6).

The higher risk of receiving EI on several occasions in high-concentration regions disappears, however, with decreasing region size. In other words, manufacturing work-

Table 7 Marginal effect on probability of being in low income

		Census metropolitan areas and census agglomerations		Census agglomerations	
	All regions combined	1 million or less	500,000 or less	100,000 or less	30,000 or less
High concentration			%		
Combined population					
2000	-7.3	-1.8	-5.6	-5.6	n.s.
2007	10.5	16.1	11.8	16.6	34.9
Manufacturing workers					
2000	-30.2	-17.2	-18.5	-16.6	n.s.
2007	n.s.	17.4	18.8	33.5	n.s.
Workers in other sectors					
2000	4.4	6.3	n.s.	n.s.	n.s.
2007	21.1	25.6	24.6	28.1	41.6

Note: n.s. is a not significant difference relative to the reference group (persons age 20 to 29 in Quebec, living as a couple, with or without children, in a region with a low concentration of manufacturing employment) at the 0.05 level. The concentration of manufacturing employment was kept constant with that calculated in 2000.
Source: Statistics Canada, Longitudinal Administrative Database, 2000 to 2007.

of manufacturing employment (Table 7). The higher incidence affected the overall population as well as manufacturing workers and workers in other sectors. In 2000, manufacturing workers living in high-concentration regions were less likely to be in low income than their counterparts in low-concentration regions, but in 2007, they were more likely.

Workers in other sectors living in high-concentration regions were 4.4% more likely in 2000 to be in low income than their counterparts in low-concentration regions. By 2007, the difference had increased to 21.1%. The incidence was considerably greater as region size decreased: 25.6% for areas with a population of 1 million or less and 41.6% for areas with a population of 30,000 or less. The increase in low-income incidence among those workers supports the idea that the decline in manufacturing employment affected the employment and income of workers in other sectors if manufacturing was an important part of the regional economy. A similar effect among manufacturing workers was observed, but the effect on smaller regions was not significant.

Conclusion

The global slowdown in manufacturing has affected Canada in a number of ways. Plant closures and mass layoffs had an impact not only on employment and working conditions for workers in the manufacturing sector, but also on economic activity and workers in other sectors. The goal of this study was to determine whether job losses in manufacturing were actually accompanied by income decreases at the regional level, and, if so, whether those losses were associated with the local rate of employment concentration in the manufacturing sector. Its aim was also to determine whether those job losses were behind a widespread slowdown in employment affecting the income of workers with jobs in other sectors.

The overall growth of employment and income in Canada masked changes experienced by some population groups, particularly those living in regions of high manufacturing concentration. These regions suffered the biggest job losses, which led to an increase in the number of workers on EI at the local level. Employment income and market income also declined in these regions, whereas they rose substantially in low-concentration regions. Moreover, the slowdown in manufacturing activity had a greater effect on those who were least well off, which resulted in an increase in the number of low-income people.

At the individual level, even though manufacturing workers were more affected by recent layoffs, workers in other sectors were significantly more likely to experience income loss if their jobs were in regions with a high concentration of manufacturing employment. They were also more likely to go receive EI benefits, which appears to indicate a decrease in job stability in those regions. The bottom line is that low-income incidence increased significantly for both the population as a whole and workers in all sectors.

These findings confirm the idea that the decline in manufacturing employment had an impact on the entire economy of regions where manufacturing activity played a key

Concentration rate

The **rate of employment concentration** in manufacturing was calculated for each census metropolitan area (CMA) and each census agglomeration (CA) in 2000. It is equal to the relative proportion of local employment in manufacturing, i.e., the number of manufacturing workers divided by the total number of workers. For comparability purposes, and because 2000 was the most recent peak in manufacturing employment, the concentration rate used for the entire observation period is the 2000 rate.

CMAs and CAs with a population of 500,000 or less were divided into three equally sized groups by level of concentration of local employment in manufacturing. The categories are as follows:

- **Low concentration**: 12% or less of employed persons in the CA or CMA work in manufacturing;
- **Moderate concentration**: more than 12% but less than 20% of employed persons in the CA or CMA work in manufacturing;
- **High concentration**: 20% or more of employed persons in the CA or CMA work in manufacturing.

CMAs and CAs with a population of more than 500,000 were excluded because they could skew the results with the size of their populations.

part, thus affecting the employment and income of workers in other sectors. In those regions, job and income losses among manufacturing workers may have disrupted the employment market and local consumption decisions, thereby affecting all mechanisms of regional wealth creation. Apart from those considerations, the results show that not only manufacturing workers, but all types of workers in those regions, may experience income losses when there is a slowdown in the sector.

Notes

1. For more details concerning recent trends in manufacturing, see Kowaluk and Larmour (2009).
2. For information on the relationship between manufacturing and services, see François and Woerz (2007).
3. For more information on the dynamics of the manufacturing sector in Toronto, Montréal and Vancouver, see Vinodrai (2001).
4. This applies to total income (before and after tax), market income and employment income.
5. This is further supported by the proportion of people who reported earnings from retirement-related sources, which is quite similar from one concentration category to another in 2000 and 2007. In addition, the distribution of the proportion of those earnings relative to total reported income was, for all intents and purposes, identical for the three categories.
6. The levels of loss considered are as follows: 10% or less loss of total income, between 10% and 20% loss of total income, and 20% or more loss of total income.
7. The model includes variables for province of residence, family composition and age.
8. The same patterns were found in separate analyses for employment income and market income. However, total income is a better indicator of individual standard of living because it captures changes in income composition that may be due to retirement, transition from paid employment to self-employment, or job loss.
9. The comparison here is between total income in 2000 and 2007, in 2007 constant dollars.
10. The data in Table 5 are from a simple logistic regression model on the probability of a person being on EI in 2007 if he or she was not on EI in 2000. The model uses the same specifications as the ordered model.

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Appendix Ranking of census metropolitan areas and census agglomerations by relative proportion of manufacturing employment

Low concentration of manufacturing employment

St. John's	Corner Brook	Charlottetown
Gander	Labrador City	Halifax
Cape Breton	Thompson	Grande Prairie
Fredericton	Regina	Wood Buffalo
Bathurst	Yorkton	Wetaskiwin
Rimouski	Moose Jaw	Cranbrook
Sept-Îles	Swift Current	Victoria
Val-d'Or	North Battleford	Nanaimo
Rouyn-Noranda	Prince Albert	Courtenay
Kingston	Estevan	Prince George
North Bay	Medicine Hat	Dawson Creek
Sudbury	Lethbridge	Fort St. John
Elliot Lake	Red Deer	Whitehorse
Timmins	Camrose	Yellowknife
Kenora	Lloydminster	
Portage la Prairie	Grand Centre	

Moderate concentration of manufacturing employment

Grand Falls-Windsor	Pembroke (Quebec)	Brandon
Summerside	Belleville	Saskatoon
Kentville	Peterborough	Penticton
Truro	Lindsay	Kelowna
Moncton	St. Catharines-Niagara	Vernon
Saint John	London	Kamloops
Campbellton (Quebec)	Sarnia	Chilliwack
Matane	Owen Sound	Abbotsford
Rivière-du-Loup	Barrie	Duncan
Chicoutimi-Jonquière	Orillia	Campbell River
Alma	Haileybury	Powell River
Trois-Rivières	Sault Ste. Marie	Williams Lake
Joliette	Thunder Bay	Terrace

High concentration of manufacturing employment

New Glasgow	La Tuque	Hawkesbury
Edmundston	Drummondville	Brockville
Baie-Comeau	Granby	Cobourg
Dolbeau	Saint-Hyacinthe	Port Hope
Saint-Georges	Sorel	Oshawa
Thetford Mines	Saint-Jean-sur-Richelieu	Kitchener
Sherbrooke	Salaberry-de-Valleyfield	Brantford
Magog	Lachute	Woodstock
Cowansville	Cornwall	Tillsanburg
Victoriaville	Windsor	Simcoe
Shawinigan	Collingwood	Guelph
Stratford	Midland	Quesnel
Chatham	Port Alberni	Prince Rupert
Leamington		Kitimat
Strathroy		

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Income replacement during the retirement years

Sébastien LaRochelle-Côté, Garnett Picot and John Myles

The retirement income sources of Canadians have received increased attention recently with a spate of new proposals emerging from governments, think tanks and labour organizations. Some of this attention is due to recent economic events that have affected private retirement savings and registered pension plans. But longer-term trends—such as increasing longevity, lower savings rates and higher household debt levels—also play a role.

Income support programs for seniors have a long history in Canada. The federal Old Age Security program began in 1952, replacing provincial programs dating from the 1920s. The Canada Pension Plan, designed to replace a portion of employment earnings, was introduced in 1965. Shortly thereafter, policy analysts began to question whether the retirement income system would be effective in replacing income earned during the working years.[1]

An assessment of retirement income replacement requires two key components. First, long-term data on individuals' income are required. Such data covering a span of more than one-quarter of a century are available based on a sample of tax records (see *Data source and definitions*). Second, an operational definition of 'replacement rate' is required. The approach used here is to establish a baseline total income for individuals in their mid-fifties and track their inflation-adjusted income through to their mid-seventies. Incomes are adjusted to reflect changes in family size so that the replacement rates account for the estimated spending requirements of the household.

Using this definition, an earlier study focused on those with strong labour market attachment (LaRochelle-Côté et al. 2008). It found that the family income of a typical individual in his or her mid-seventies was nearly 80% of that person's income around age 55.[2] Among low-income individuals, the typical replacement rate was 100%; among middle-income individuals, 80%; and among high-income individuals, about 70%. The study also found that income during the retirement years has increased over time.

Other studies expanded the study of replacement rates to examine differences in various sub-groups (Schellenberg and Ostrovsky 2009) or examined alternative definitions of income (Brown et al. 2010 and Denton et al. 2009) and found similar results. The consensus is that the current retirement income system, blending public programs and private savings, provides adequate replacement rates for median workers—at least in contrast with the more pessimistic predictions of the 1960s and 1970s.

Yet median replacement rates only capture the central tendencies of the population or a defined group. They do not indicate how all individuals in the group fare. For example, the 2008 study found that one-quarter of middle-income individuals had replacement rates below 60% by the time they reached their mid-seventies. This raises the possibility that many middle-income Canadians experience a decline in economic well-being in retirement.

One key question is whether most Canadians—not just those with strong labour market attachment—achieve similar levels of retirement income. For example, spouses who have full-time employed partners, but who themselves are not working or are working part time, would have been excluded from the earlier study. Yet, the extent to which individuals maintain their pre-retirement living standards in their senior years is no less important. In all, about 50% of the population was excluded from the earlier study. This study

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Data source and definitions

This study uses annual data from the Longitudinal Administrative Database (LAD). LAD is a 20% random sample of the T1 Family File, a yearly cross-sectional file of all tax filers. Individuals selected for LAD are linked across years in order to create a longitudinal profile of each individual. LAD contains demographic, income and other taxation information for the period from 1982 to 2007. This information makes it possible to follow the evolution of the financial situation of individuals over a long period of time.

In the early 1980s, individuals who were part of families with less than $10,000 in family adult-equivalent-adjusted (AEA) income had a much lower probability of filing since refundable tax credits were not implemented until the early 1990s. Individuals with very low permanent family incomes at age 55—below $14,000 for a family of two, or below $20,000 for a family of four—were therefore excluded from our sample. Overall, approximately 80% to 85% of the Canadian population is included, depending on the cohort examined.

Although most results are based on a cohort of individuals age 54 to 56 in 1983, replacement rate results were also examined for five other cohorts of younger retirees to determine whether results varied across cohorts. The five other cohorts comprised individuals 54 to 56 years of age in 1986, 1989, 1992, 1995 and 1998.

expands the scope to include 80% to 85% of the population approaching retirement and measures the extent to which family income levels are maintained in individuals' senior years.[3]

Income sources

Since families generally share resources, total family income is a better indicator of financial resources than individual income. All income sources from all family members are thus included in the analysis: government transfers (Old Age Security, Guaranteed Income Supplement, Canada Pension Plan, Quebec Pension Plan, and all other government transfer programs), private sources (registered pension plans and registered retirement savings plan income, earnings, investments, dividends, and capital gains) as well as income from 'other' sources. Since families also achieve some economies of scale, income levels are also adjusted to account for the size of the family.[4] To limit the potential impact of short-run fluctuations, all income values are calculated by three-year moving averages. Income values have been deflated by using the national Consumer Price Index to represent constant 2006 dollars.

As in LaRochelle-Côté et al. (2008), tax data from the Longitudinal Administrative Databank (LAD) are used to examine the evolution of income among a group of individuals age 54 to 56 in 1983 until they reached 77 to 79 years of age in 2006 (see *Data source and definitions*). Cosidering individuals age 54 to 56 was necessary to increase the sample size, enabling more detailed analyses. The unit of analysis is the individual, but all incomes are reported at the family level. Income components are reported in the same manner, for instance, the values reported for investment do not refer to individual investment income, but the income of the family to which the individual belongs.

In addition to total income, four sub-categories are examined:

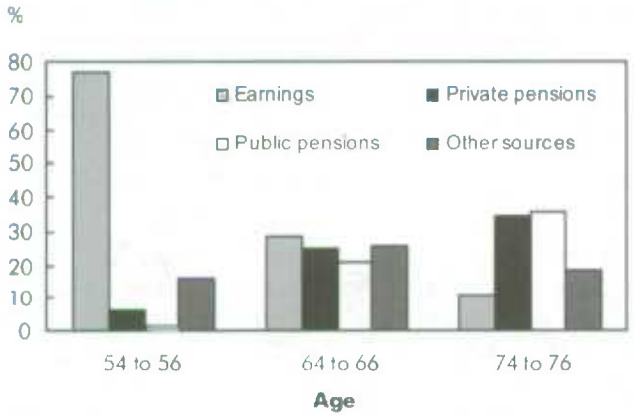
- earnings obtained as an employee or from self-employment;
- private pension sources, which include benefits from registered pension plans (RPP), registered retirement saving plans (RRSP), retirement income funds (RIF) and 'other income' (including severance payments, annuity payments, and other sources of private pension income);
- public pension sources, including Old Age Security (OAS), the Guaranteed Income Supplement (GIS) and the Canada and Quebec Pension Plans (CPP and QPP);
- other sources, including income from investments, capital gains and dividends, and from miscellaneous sources (e.g., employment insurance benefits, Goods and Services Tax credits).

Average total income declines with age

When they were in their mid-fifties, individuals averaged about $50,000 in family adult-equivalent-adjusted (AEA) income before tax. Ten years later, this figure was down to $46,700, and, 20 years later, the same individuals earned approximately $42,700 in family AEA income.

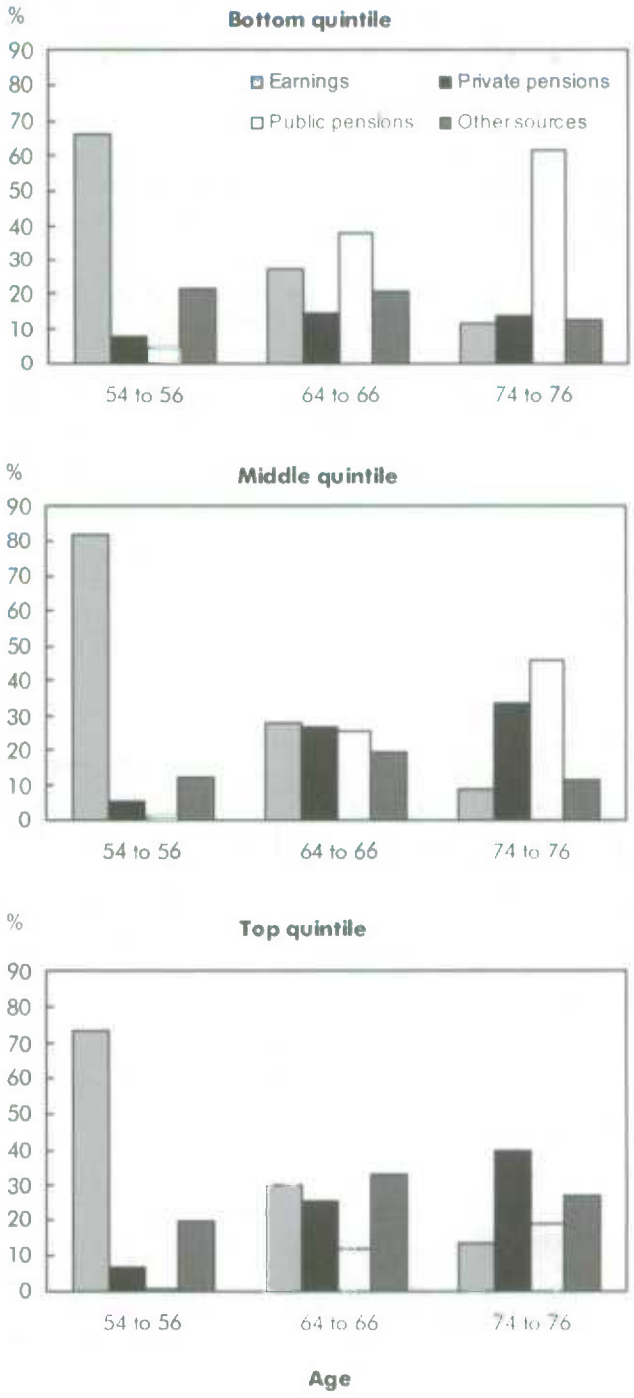
As Canadians age, their sources of income change (Chart A). At 54 to 56 years of age, more than 75% of family income came from earnings. By age 74 to 76, private pensions accounted for about one-third of all income and public pensions for another one-third, while income from investments, capital gains and dividends account for almost 20%. Employment earnings still generated about 10% of average family income for individuals in their mid-seventies.

Chart A Average family adult-equivalent adjusted income before taxes



Source: Statistics Canada, Longitudinal Administrative Data, 1982 to 2007.

Chart B Average family adult-equivalent adjusted income before taxes by quintile



Source: Statistics Canada, Longitudinal Administrative Data, 1982 to 2007.

An individual's starting position in the income distribution may affect both subsequent income levels and the sources of income. The key question is: given a certain level of income at the beginning of the period, how do total income and its components evolve over time? Individuals are assigned to income quintiles[5] on the basis of their AEA family income around age 55. Under this approach, each person's quintile remains fixed as he or she ages.

For those in the bottom quintile, average before-tax family income *increases* by age 65. For people in their mid-fifties, family AEA income averaged about $20,000 (before tax) in the bottom quintile. For those in their mid-sixties, total family income rose to $25,000 for the same individuals, and fell back $23,400 by their mid-seventies. Labour income accounted for two-thirds of total income around age 55 for those in the bottom quintile (Chart B). By the time individuals reached their mid-seventies, income from public sources (OAS, GIS, CPP, QPP) represented 62% of total income for this group. Clearly, public pensions play a major role in the maintenance of living standards among lower-income families.

Income trajectories were quite different in the middle quintile. Individuals in that quintile saw average AEA family income fall from $43,100 around age 55 to $38,600 when they were in their mid-sixties, and to $33,300 around age 75. Since income among lower-

income families rose with age, and fell among middle-income families, the income gap between these two groups decreased as the cohort aged.

Earnings comprised 82% of AEA family income of middle-quintile individuals around age 55, but, by age 75, public pensions also played an important role. Public pensions accounted for 46% of before-tax family income, and an additional one-third came from private pensions. Thus while public pensions comprised the largest single source of income for middle-quintile seniors more than one-half of their income came from private pensions and individual savings and investments.

Top-quintile individuals saw their average AEA family income fall as they moved from their mid-fifties to their mid-seventies—from $99,200 to $80,900. At all ages, income from investments, dividends and capital gains comprised a larger portion of total income compared with those in lower quintiles. For individuals around age 55, earnings represented 73% of family income and other sources (investments, dividends and capital gains) comprised 20%. By their mid-seventies, private pensions contributed the most to their family incomes (40%) for the top quintile, followed by income from investments, capital gains and dividends (27%), public pensions (19%), and earnings (14%). Hence, when individuals are in their mid-seventies, public pensions account for one-fifth of income for those in the top quintile, two-fifths for those in the middle quintile and two-thirds for those in the bottom quintile.

Replacement rates

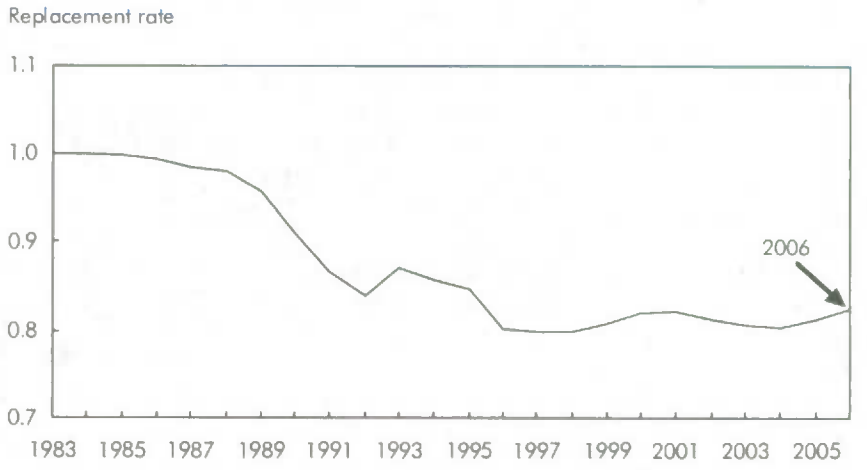
A replacement rate measures the extent to which income flows (mainly earnings) are 'replaced' by various sources of income (public and private pensions, investments and earnings) as an individual makes the transition from the workforce to retirement.

Replacement rates are calculated for each individual in each year based on his or her starting income when those individuals are in their mid-fifties.[6] For example, the replacement rate for an individual in 2000 is obtained by dividing his or her total family AEA income in 2000 by the total family income of that same individual in 1983 (with both values expressed in three-year moving averages). Then, for every year of the panel, the median replacement rate of a given population is calculated in order to get a sense of what should be interpreted as a 'typical' replacement rate. Since after-tax income is the best measure of 'disposable' income available for this study, it is used in the calculation of replacement rates.[7]

The median AEA family income replacement rate after age 65 is about 0.8 (or 80%) of the mid-fifties income of individuals (Chart C). Median replacement rates for the cohort of Canadians who were age 54 to 56 in 1983 fell from 1.0 (by definition) to 0.8 in the mid-1990s (when they were in their late sixties), and remained stable at this level well into the 2000s (when they were in their late seventies).[8] By and large, these results are similar to earlier findings using a more restricted population (LaRochelle-Côté et al. 2008).

These results pertain to the median worker, and may not be representative other areas of the income distribution. A more complete picture requires an examination of replacement rates across and within quintiles.

Chart C Median replacement rates of family adult-equivalent adjusted income for all individuals age 54 to 56 in 1983



Source: Statistics Canada, Longitudinal Administrative Data, 1982 to 2007.

Higher replacement rates among lower income groups

Reflecting average income trends, replacement rates vary by the location in the income distribution (Chart D). In general, the higher the income at age 54 to 56, the lower the replacement rate during the retirement years. Based on within-quintile medians, individuals in the bottom quintile (age 54 to 56) had median replacement rates greater than 1.0. In this group, the median replacement rate rose to slightly over 1.1 in the early 1990s, and remained around 1.1 until 2006, when the cohort was age 77 to 79.

Replacement rates were lower in the middle quintile. Their median replacement rate fell to about 0.75 during the mid-1990s (for those in their late sixties), and again remained stable over the 2000s.

Persons in the top income quintile had the greatest amount of income to replace and experienced the lowest replacement rates. Median rates for this group fell to around 0.65 in the mid-1990s, and recovered to about 0.7 in the early 2000s when individuals were in their mid-seventies.

Replacement rates vary among all income levels

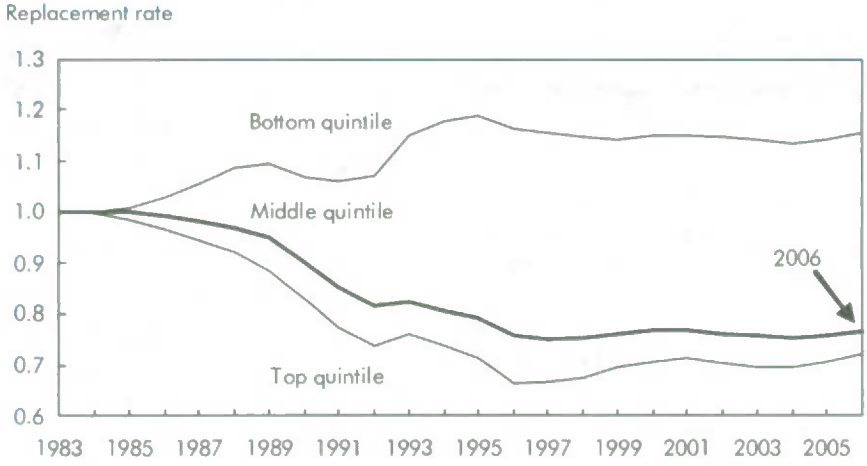
As replacement rates vary across quintiles, they may also vary *within* income quintiles. For example, not all individuals in the bottom income quintile achieved replacement rates above 100%. Similarly, not all individuals in the top income quintile had replacement rates in the 0.6 to 0.7 range. Thus we examine *distributions* of replacement rates within each income quintile at various points in time (Table 1).

By definition, all individuals had a 1.0 replacement rate in 1983. However, even if individuals within a quintile had similar income levels at age 55, replacement rates diverged as they aged.

In the bottom quintile, for example, although most individuals had replacement rates above 100%, about one-third had replacement rates below that threshold in their mid-seventies. Within that group, 24% had replacement rates between 0.8 and 1.0, and another 9% of individuals had replacement rates at or below 0.8. Conversely, more than two-thirds had replacement rates above 1.0 and 23% even had replacement rates above 1.5. To add some perspective, the average income level before tax for individuals in their mid-fifties in the bottom quintile was approximately $25,000.

Compared to those in the bottom quintile, replacement rates in the middle income quintile were lower and more spread out. Just over one-third of individuals who were in the middle quintile had replacement rates between 0.6 and 0.8 in their mid-seventies. Another one-quarter replaced between 0.8 and 1.0 of their earlier income while another one-fifth had rates of 0.6 or below. On the other hand, about one in five in this quintile had replacement rates higher than 1.0. Some have argued that low replacement rates may be indicative of a lack of retirement preparation for a sizeable minority of middle-income earners (Mintz 2009).

Chart D Median replacement rates of family adult-equivalent adjusted income by income quintile



Source: Statistics Canada, Longitudinal Administrative Data, 1982 to 2007.

Table 1 Replacement rate categories among individuals age 54 to 56 in 1983

	Distribution across age groups				
	Age 54 to 56 in 1983	Age 59 to 61 in 1988	Age 64 to 66 in 1993	Age 69 to 71 in 1998	Age 74 to 76 in 2003
			%		
All individuals					
≤ 0.4	0.0	3.1	3.1	2.4	2.8
> 0.4 and ≤ 0.6	0.0	7.9	13.5	16.6	16.6
> 0.6 and ≤ 0.8	0.0	17.0	25.2	31.2	29.8
> 0.8 and ≤ 1.0	100.0	24.7	20.9	22.0	22.3
> 1.0 and ≤ 1.5	0.0	36.6	25.4	20.4	20.7
> 1.5	0.0	10.7	11.9	7.4	7.8
Bottom quintile					
≤ 0.4	0.0	5.2	1.9	0.2	0.2
> 0.4 and ≤ 0.6	0.0	6.4	3.6	0.5	0.9
> 0.6 and ≤ 0.8	0.0	11.8	10.9	8.3	8.0
> 0.8 and ≤ 1.0	100.0	17.8	18.9	24.0	24.4
> 1.0 and ≤ 1.5	0.0	37.2	37.9	43.9	43.4
> 1.5	0.0	21.5	26.7	23.0	23.2
Middle quintile					
≤ 0.4	0.0	2.1	2.0	0.7	0.9
> 0.4 and ≤ 0.6	0.0	7.6	14.2	19.9	21.0
> 0.6 and ≤ 0.8	0.0	17.5	30.5	37.8	35.5
> 0.8 and ≤ 1.0	100.0	27.3	22.8	23.1	23.1
> 1.0 and ≤ 1.5	0.0	38.7	23.0	15.2	16.0
> 1.5	0.0	6.9	7.5	3.1	3.5
Top quintile					
≤ 0.4	0.0	3.4	6.4	7.7	8.4
> 0.4 and ≤ 0.6	0.0	10.8	21.0	28.1	25.9
> 0.6 and ≤ 0.8	0.0	20.3	27.2	34.1	31.1
> 0.8 and ≤ 1.0	100.0	25.3	17.8	15.6	17.7
> 1.0 and ≤ 1.5	0.0	31.2	19.3	10.6	12.2
> 1.5	0.0	9.0	8.3	4.0	4.7

Source: Statistics Canada, Longitudinal Administrative Data, 1982 to 2007.

Finally, individuals in the top income quintile also experienced variation in their replacement rates. About one-third of top-quintile individuals had replacement rates of 0.6 or below around age 75, and another one-third had replacement rates located between 0.6 and 0.8. While similar proportions in the top and middle quintiles had income replacement rates above 1.0, those in the top quintile were more likely to have a replacement rate of 0.6 or below (34% versus 22%).[9] Although the replacements rates in the top quintile were somewhat lower than in the middle quintile, it is worth noting that the base-period average AEA income in the top quintile was more than double the average for the middle quintile.

How are more recent cohorts doing?

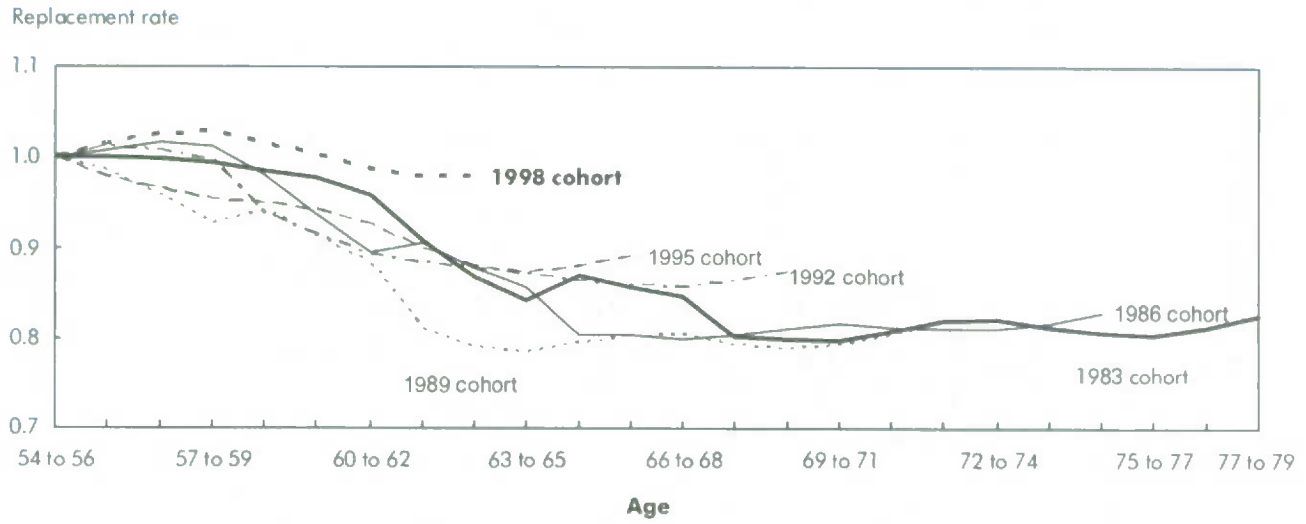
The cohort followed in this article was 54 to 56 years of age in 1983. Most of those individuals would have retired, fully or partially, by the mid-1990s. Their income replacement rates would thus be affected by earnings patterns and transfer programs particular to that period, as well as subsequent economic events. This raises the issue of whether the patterns observed for this cohort would apply to more recent cohorts. As such, five subsequent cohorts age 54 to 56 in 1986, 1989, 1992, 1995 and 1998 were followed to 2006 (Chart E). While more recent cohorts have shorter observation spans than older cohorts, they do enable the comparison of trajectories for a minimum of eight years.

Generally, more recent cohorts have higher incomes than the 1983 cohort. When capital gains are excluded from the total, AEA family income around age 55 averaged $49,300 for the 1983 cohort then climbed steadily to $58,100 for the 1998 cohort. These income gains for younger cohorts relative to earlier cohorts were sustained until they were all at least in their early sixties.

Even working from the higher average income base, median replacement rates are also rising for more recent cohorts—particularly among those who reached age 55 after 1990. More detailed calculations (data not shown) indicate that median replacement rates generally increased in the bottom and middle quintiles, but no clear trend was evident for the top quintile.

Factors contributing to this increase in family income include rising earnings for older workers, particularly women, and increasing private pension income for retirees from the early 1980s to the mid-1990s. Since then, employment rates have increased for the population age 55 and over. For more detailed results, see LaRochelle-Côté et al. (2010).

Chart E Median replacement rates of family adult-equivalent adjusted income for all individuals by cohort



Source: Statistics Canada, Longitudinal Administrative Data, 1982 to 2007.

Summary

In an earlier study, LaRochelle-Côté et al. (2008) analyzed family income replacement rates for individuals who had a substantial attachment to the labour force—about 50% of those in their mid-fifties. The majority of them were able to replace more than three-quarters of their income from the time they were in their mid-fifties, even long after retirement.

This paper extends that analysis to include all those in their mid-fifties with a family income of at least $10,000. As a result, this analysis covers a much larger group than the earlier study—80% to 85% of 54 to 56 year-olds—depending on the cohort studied.

Despite these changes, the results of the two analyses are similar. In 2006, the adjusted family income of the median senior in his late seventies was about 80% of his or her income in his or her mid-fifties. As in the earlier study, the lower the income in individuals' mid-fifties, the higher the replacement rate in their senior years. Individuals in the bottom quintile typically achieved a 110% replacement rate by their mid-sixties, while individuals in the top income quintile had replacement rates in the 0.7 range. There was some variation within quintiles. For example, more than 20% of middle-income Canadians had replacement rates of 0.6 or below of their mid-fifties income after two decades.

Similar replacement rates were found for other cohorts of retirees who reached retirement age in the 1980s. Although data do not cover as long a period, the results suggest that replacement rates may be marginally higher for cohorts that reached age 55 in the 1990s.

Perspectives

Notes

1. See Perrin (1969) and the 1980 report of the federal Task Force on Retirement Income Policy (Government of Canada 1980).
2. More specifically, individuals in the sample had to have had wages and salaries of at least $10,000 at age 55 in order to be included in the study. The primary concern during the 1970s was whether Canadians with significant earnings during their working years would see that income replaced as they entered their senior years. LaRochelle-Côté et al. (2008) examined that issue.

3. In this study, all individuals with a moving average of at least $10,000 in family adult-equivalent-adjusted (AEA) income were included in the sample. The choice of this new cutoff was motivated by the fact that individuals who were part of families with less than $10,000 in AEA income had a lower probability of filing an income tax return in the early 1980s.
4. The adult-equivalent-adjusted (AEA) family income is a per capita measure of family income that accounts for economies of scale in larger families. It is calculated by dividing family income by the square root of family size. For example, if a family of four has an unadjusted family income of $50,000, the AEA income for that family would be $25,000.
5. A quintile represents one-fifth of the population by total income. The bottom quintile consists of the lowest 20% in terms of total income, the middle quintile is the middle 20% and the top quintile is the highest 20%.
6. Individuals who died over the period are included in the sample until their last complete year in the data.
7. As noted earlier, a form of 'permanent' income is used, whereby the family income reported at each age is a three-year moving average. For example, the family income of someone age 55 in 1983 is really the average adult-equivalent-adjusted (AEA) family income of that individual at ages 54 to 56 (between 1982 and 1984 inclusively), and income of that same individual at age 78 is the average income over ages 77 to 79 (between 2005 and 2007 inclusively).
8. The small bump in replacement rates seen at the beginning of the 1990s coincided with a change in tax policy whereby individuals could no longer claim a deduction for capital gains realized after February 1994. This encouraged individuals to declare higher-than-usual capital gains in order to benefit from any part of their $100,000 unused capital gains exemption. Replacement rates were smoother when capital gains were removed from the numerator and denominator. The effect of the policy change also had effects on two more years as all income figures are expressed in terms of three-year moving averages.
9. To the extent that those in the top income quintile have greater available wealth on which they can draw, as evidenced by high levels of investment earnings, replacement rates may underestimate their level of economic well-being in comparison to those in lower quintiles.

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Adapted from *"Replacing family income during the retirement years: How are Canadians doing?,"* Analytical Studies Branch Research Paper Series, Statistics Canada Catalogue no. 11F0019M – No. 328, http://www.statcan.gc.ca/pub/11f0019m/11f0019m2010328-eng.pdf.

In the works

Some of the topics in upcoming issues

Income and wealth of older immigrants in Canada

Using data from the Survey of Labour and Income Dynamics and the Survey of Financial Security, this article attempts to shed light on the income and wealth of older immigrants in Canada.

The impact of labour force aging on hours worked

This study looks at general trends in actual hours from 1976 to 2008, focusing on recent years in order to determine how much of the decline in work hours is attributable to the workforce aging and whether there are differences between the public sector and the private sector. Using employment projections, the study will also examine work hours during the next five years.

Retiring with debt

Using data from the Canadian Financial Capability Survey, this article examines the debt load situation of people in pre-retirement and those retired. The paper will include an overview of the financial situation, budget and savings behaviour, and financial knowledge of these groups, as well as an analysis of factors associated with the likelihood of carrying consumer or mortgage debt.

Spending and consumption patterns among seniors

Applying a synthetic cohort approach to data from the Survey of Household Spending and the Family Expenditure Survey, this article examines how consumption patterns change for a given cohort of seniors as they age.

Retirement, health and labour market characteristics among older workers

This article uses the Canadian Community Health Survey to examine how health factors are related to different retirement statuses (currently retired, partially retired, never retired, previously retired but returned to work), and how such relationships are associated with other labour market characteristics such as work hours, work patterns, occupation and industry.

What's new?

Recent reports and studies

From Statistics Canada

Home equity and incomes of retirement-age households

By retirement age, three-quarters of households are homeowners, and about three-quarters of these own their homes without a mortgage.

The economic benefit of owning a home is equivalent to the rent that does not have to be paid. In 2006, when the value of this benefit was taken into account for households headed by individuals age 60 to 69, it increased incomes by $5,500 or 10%. For households headed by individuals age 70 and over, incomes rose by $5,400 or 12%.

Across all households that own their home, the average benefit from owner-occupied housing is lowest in Newfoundland and Labrador ($2,000) and highest in British Columbia ($7,300). Across metropolitan areas, this benefit is lowest in Saguenay, Quebec ($1,900), and highest in Vancouver, British Columbia ($8,900).

For more information, see "Incomes of Retirement-age and Working-age Canadians: Accounting for Home Ownership," *Economic Analysis Research Paper Series*, Statistics Canada.

Employment Insurance Coverage Survey

As a result of the labour market downturn, the unemployment rate rose from 6.1% in 2008 to 8.3% in 2009. On average, there were 1.5 million unemployed in Canada in 2009.

Among the 1.04 million unemployed individuals who contributed to the Employment Insurance (EI) program in 2009, 857,000 had a recent job separation that met the EI program criteria. Of those, 86% were eligible to receive regular EI benefits because they worked enough hours, up from 82% in 2008.

Of the unemployed individuals who had contributed to the EI program and had a valid job separation in 2009, 65% were men, the majority of whom (87%) were eligible for regular benefits, up from 85% in 2008.

About 84% of the unemployed women who were contributors with a valid job separation were eligible for EI benefits in 2009, an increase from 78% a year earlier.

Coverage and eligibility of mothers for maternity or parental benefits have varied little from 2003 to 2009 nationally.

In 2009, 76% of all recent mothers (with a child age 12 months or less) had insurable employment; among these insured mothers, 88% were receiving maternity or parental benefits. Both rates were unchanged from 2008.

Quebec, which has the Quebec Parental Insurance Plan (QPIP), had the highest share of recent mothers with insurable employment (82%) and the highest share of insurable recent mothers receiving maternity or parental benefits (95%).

Introduced in 2006 and including leave that applies exclusively to fathers, the QPIP continued to have a major impact on the number of fathers who claimed or intended to claim parental benefits—the proportion of fathers in Quebec who took or intended to take parental leave nearly tripled since the introduction of the plan, from 28% in 2005 to 79% in 2009.

Outside Quebec, 12.8% of recent fathers took or intended to take parental leave in 2009, compared with 10.4% in 2008.

For more information, see the June 21, 2010 issue of *The Daily* on the Statistics Canada's website (www.statcan.gc.ca).

Labour productivity

The labour productivity of Canadian businesses rose 0.7% in the first quarter of 2010, following an increase of 1.2% in the previous quarter.

The pace of growth in the real gross domestic product of businesses accelerated in the first quarter (+1.8%) compared with the previous quarter (+1.4%). This acceleration was largely due to spending on consumer goods and services, spending on shelter, and inventory accumulation.

Hours worked in Canadian businesses rose 1.1% in the first quarter, following two quarters of slight gains. That was the highest quarterly growth rate since the second quarter of 2004. Employment was up 0.7%, its biggest increase since the first quarter of 2008, while hours worked per job increased 0.4%.

In the United States, productivity gains in the business sector slowed to 0.6% in the first quarter, slightly lower than Canada's growth rate.

In the first quarter, productivity gains in Canadian businesses outpaced the 0.2% increase in hourly compensation. As a result, unit labour costs of Canadian businesses in Canadian dollars fell 0.5%. In the previous three quarters, hourly compensation and productivity grew at a similar rate.

For more information, see the June 15, 2010 issue of *The Daily* on the Statistics Canada's website (www.statcan.gc.ca).

Foreign nationals working temporarily in Canada

Temporary workers are admitted to Canada to address specific labour shortages, to facilitate the transfer of staff within multinational companies and to fulfil Canada's obligations under international trade agreements. Other non-permanent residents who may be permitted to work include foreign students attending a Canadian institution and refugee claimants.

In 2006, there were 230,000 non-permanent residents age 15 and over. Of these, over 112,000 were working in Canada at the time of the 2006 Census and about 84% worked full time, more than double the number in 1996.

While they make up less than 1% of all full-time workers in Canada, non-permanent residents play an important role in the labour market in some regions, sectors and occupations. In 2006, non-permanent residents accounted for more than 20% of people employed full time as a nanny or parent's helper, as well as 14% of postsecondary teaching and research assistants, 9% of harvesting labourers, 8% of nursery workers and 6% of physicists and astronomers.

Women who are non-permanent residents and employed full time work most often as caregivers and domestic helpers. In 2006, most women in these occupations were from the Philippines. Non-permanent resident males, especially those from Mexico, Central America and the Caribbean, were more often employed in agriculture.

For more information, see "Foreign nationals working temporarily in Canada," *Canadian Social Trends,* June 2010, Statistics Canada.

Income of Canadians

Median after-tax income for families with two or more people, adjusted for inflation, was $63,900 in 2008, virtually unchanged from 2007. This followed four years of growth.

For unattached individuals, after-tax income also remained unchanged, at $24,900. This was the first time in three years in which no significant change was observed.

In 2008, the 20% of persons with the highest family after-tax income had, on average, 5.4 times the family after-tax income as those in the lowest 20%. This ratio has been virtually unchanged since 2000.

Just over 3 million Canadians lived in low income in 2008, virtually unchanged from 2007. This represents about 9% of the population. The proportion of children in low-income families was 9% in 2008, half the peak of 18% in 1996.

For more information, see the June 17, 2010 issue of *The Daily* on the Statistics Canada's website (www.statcan.gc.ca).

Employer pension plans

The market value of employer-sponsored pension funds amounted to $920.4 billion at the end of the fourth quarter of 2009, up 2.5% from the previous quarter. This was the third consecutive quarter of growth in pension fund assets, as they rebounded from significant losses in 2008 and in the first quarter of 2009.

Just over 6.0 million Canadian workers are members of employer pension plans. Of this group, 4.9 million workers are members of trusteed plans. The remaining 1.1 million members with employer pension plans are managed principally by insurance company contracts.

For more information, see the June 10, 2010 issue of *The Daily* on the Statistics Canada's website (www.statcan.gc.ca).

From other organizations

Multiple jobholding in the U.S. during the 2000s

This article discusses the measurement of multiple jobholding, examines historical trends, and provides an overview of the characteristics of multiple jobholders. In 2009, more than 7 million workers in the United States held more than one job, and the multiple jobholding rate was 5.2%. Both the number of multiple jobholders and the rate of multiple jobholding have been stable in recent years and remain below the levels recorded during the mid-1990s. Among the occupational groups, the multiple jobholding rates were highest for workers in professional and related occupations and service occupations.

Multiple jobholders worked an average of 46.8 hours per week in 2009, while workers with one job worked fewer hours on average (35.8 hours per week). This pattern holds across all of the major demographic groups. Women multiple jobholders were nearly twice as likely as men to work at multiple part-time jobs. Economic factors continued to predominate among the reasons for having multiple jobs. See "Multiple jobholding during the 2000s" by Steven F. Hipple, *Monthly Labor Review*, July 2010, U.S. Bureau of Labor Statistics.

Compensation costs in manufacturing

The United States remains the world's leading producer of manufactured goods, accounting for 17.5% of total world manufacturing output in 2008. However, manufacturing employment in the United States has been declining over the long term, partly because of rising productivity and partly because of the emergence of developing economies as important producers and exporters of manufactured goods.

One of the important factors used in evaluating international manufacturing competitiveness is the hourly compensation cost. Average compensation costs in industries within the manufacturing sector, however, can differ greatly from the average cost of manufacturing compensation.

This article compares hourly compensation cost data from 1975 to 2007 across 18 industries within manufacturing in the United States and in selected countries, including Canada, Japan, France, Germany, Italy, the United Kingdom, Mexico, South Korea, Taiwan, and Sweden. See "Compensation costs in manufacturing across industries and countries, 1975–2007" by Elizabeth Zamora and Jacob Kirchmer, *Monthly Labor Review*, June 2010, U.S. Bureau of Labor Statistics.

Varia

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Previous updates

Minimum wage – Summer 2010

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Economic and social indicators

Property taxes – Autumn 2003

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Tourism – Summer 2005

Residential construction – Autumn 2005

Education – Winter 2005

Personal debt – Spring 2007

Provincial labour force differences by education – Summer 2008

Contacts

Administrative data

Small area and administrative data
Customer Services
613-951-9720

Business surveys

Annual Survey of Manufactures and Logging
Client Services
613-951-9497

Annual surveys of service industries
Client Services
613-951-4612

Business Conditions Survey of Manufacturing Industries
Claude Robillard
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Census

Labour force characteristics
Sandra Swain
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Income statistics
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Employment and income surveys

Labour Force Survey
Marc Lévesque
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Survey of Employment, Payrolls and Hours
Sylvie Picard
613-951-4003

Employment Insurance Statistics Program
Gilles Groleau
613-951-4091

Major wage settlements
Workplace Information Directorate
(Human Resources and Social Development Canada)
819-997-3117 or 1-800-567-6866

Labour income
Anna MacDonald
613-951-3784

Survey of Labour and Income Dynamics
Survey of Financial Security
Survey of Household Spending
Client Services
613-951-7355 or 1-888-297-7355

General Social Survey

Education, Work and Retirement
Aging and Social Support
Time Use
Client Services
613-951-5979

Pension surveys

Pension Plans in Canada Survey
Bruno Pépin
613-951-4023

Quarterly Survey of Trusteed Pension Funds
Gregory Sannes
613-951-4034

Special surveys

Adult Education and Training Survey
Client Services
613-951-7608 or 1-800-307-3382

National Graduates Survey
Client Services
613-951-7608

Work absences in 2009

There are many kinds of absence. Some, such as annual vacation, are generally considered beneficial for both the organization and the employee. Since they are usually scheduled, their effect on the organization can be fairly easily absorbed; the same can be said of statutory holidays. Other absences, such as those caused by illness and family-related demands, are generally unavoidable, as are those due to inclement weather.

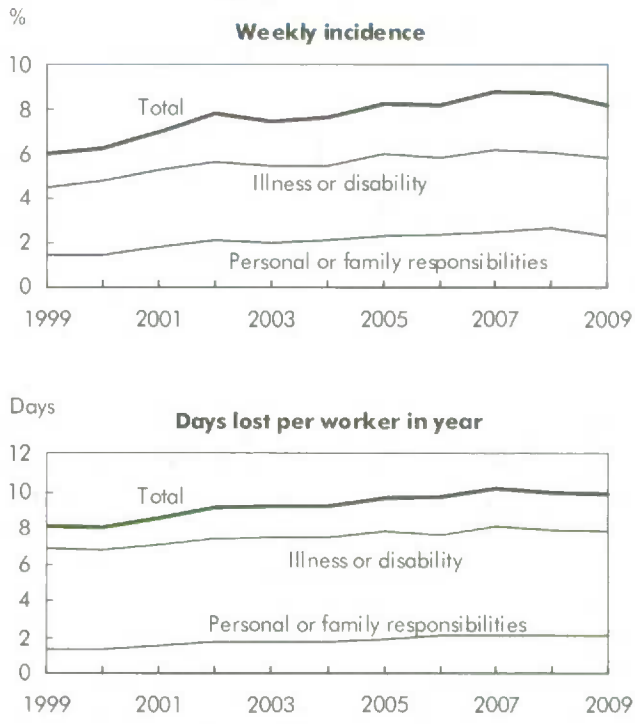
Absenteeism, a term used to refer to absences that are avoidable, habitual and unscheduled, is a source of irritation to employers and co-workers. Such absences are disruptive to proper work scheduling and output, and costly to an organization and the economy as a whole. Although absenteeism is widely acknowledged to be a problem, it is not easy to quantify. The dividing line between avoidable and unavoidable is difficult to draw, and absenteeism generally masquerades as legitimate absence. The Labour Force Survey (LFS) can provide measures of time lost because of personal reasons—that is, illness or disability, and personal or family responsibilities. However, within these categories, it is impossible to determine if an absence is avoidable or unscheduled. LFS data on absences for personal reasons can, however, be analyzed to identify patterns or trends that indicate the effect of absenteeism (see *Data source and definitions*).

Recent trends—1999 to 2009

Since 2000, both the incidence and the number of days lost for personal reasons (illness or disability, and personal or family responsibilities) have shown a rising trend (Chart). Several factors have contributed: notably, an aging workforce, the growing share of women in the workforce (especially those with young children), high worker stress,[1] and more generous sick- and family-related leave benefits.

In an average week in 1999, excluding women on maternity leave,[2] 6.0% of all full-time employees holding one job were absent from work for all or part of the week for personal reasons. By 2009, the figure had risen to 8.2% (890,000) (Table 1). Total work time missed also rose, from 3.2% of the scheduled week in 1999 to 3.9% in 2009; this was slightly down from 2008. Extrapolated over the full year, work time lost for personal reasons increased from the equivalent of 8.1 days per worker in 1999 to 9.8 days in 2009.

Chart Work absence rates, 1999 to 2009



Source: Statistics Canada, Labour Force Survey.

Variations in absence rates in 2009

Absence for personal reasons differs among various worker groups. Several factors are responsible, principally working conditions (physical environment, degree of job stress, employer-employee relations, collective agreement provisions, work schedules);

adequacy and affordability of community facilities such as child-care centres and public transportation; family circumstances, especially the presence of pre-school children or other dependent family members; and physical health of the worker, a factor closely related to age. Measuring the effects of these and other contributing factors is not easy since many are not captured by the LFS. However, some insight is gained by examining personal absences in 2009 by selected demographic characteristics, occupation and industry, and other attributes such as union and job status.

Demographic differences

In 2009, excluding women on maternity leave, an estimated 8.2% of full-time employees missed some work each week for personal reasons: 5.8% for own illness or disability, and 2.3% for personal or family responsibilities (Table 2). As a result, full-time employees lost 3.9% of their work time each week.

On average, each full-time employee lost 9.8 days in 2009 for personal reasons (7.8 for own illness or disability plus 2.1 for personal or family demands). This amounted to an estimated 107 million workdays for all full-time employees. Men lost fewer days than women—8.6 (6.6 for illness or disability plus 2.1 for personal or family demands) versus 11.4 (9.3 plus 2.0).

The presence of pre-school aged children exerts a strong influence on work absences for personal or family responsibilities.[3] In 2009, full-time employees in families with at least one pre-school aged child lost an average of 6.0 days, compared with only 1.5 for those in families without children.

Workdays missed because of illness or disability tended to rise with age, from an average of 6.5 days for youth (15 to 19) to 12.5 for full-time employees aged 55 to 64.

Industry and sector

Work absence rates differ by sector (public or private) and industry, with almost all of the difference arising from illness and disability absences (Table 3). Contributing factors include the nature and demands of the job, the male–female composition of the workforce, and the union density—the last being a strong determinant of the presence of paid sick or family leave.

Full-time employees in the public sector (more likely unionized or female) lost more work time (12.6 days) in 2009 for personal reasons than their private-sector counterparts (8.9 days).

At the major (2-digit) industry level, the most workdays were missed by employees in health care and social assistance (14.1 days), transportation and warehousing (13.0), and public administration (12.5).

The lowest averages were recorded by full-time workers in primary industries (6.5) and in professional, scientific and technical services (6.7).

Occupation

Contributing factors for absence rates by occupation are similar to those for industry (Table 4). Again, as by major industry, differences arise mainly from time lost due to illness or disability.

The most days lost in 2009 were recorded for full-time employees in health occupations (15.0), and occupations unique to production (12.6). Workers in management (6.3), in occupations unique to primary industry (6.7) and in natural and applied sciences (7.4) recorded the fewest days lost.

Union coverage, job status, workplace size and job tenure

Full-time workers who belonged to unions or were covered by collective agreements missed more workdays on average in 2009 for personal reasons than their non-unionized counterparts (13.7 versus 8.0) (Table 5).

Workers with permanent jobs (more likely to be unionized) lost more workdays (10.0) than those whose jobs were not permanent (7.7).

Days lost tended to rise with workplace size, increasing from a low of 8.1 in workplaces with fewer than 20 employees (firms more likely to have low union rates) to 12.3 in workplaces with more than 500 employees (firms likely to have high union rates).

Days lost tended to rise with job tenure, with almost all the differences arising from illness and disability. Employees with tenure of up to one year lost 7.1 days, while those with over 14 years lost 11.5 days (the latter group were also likely older).

Province and CMA

Work absence levels differed by geographic area (Table 6), with most of the variation again arising from illness or disability.

Full-time employees in Quebec (11.8) and Newfoundland and Labrador (11.5) lost the most work time in 2009. Those in Alberta (7.9) and Prince Edward Island (8.6) lost the least.

Among the census metropolitan areas, Gatineau (15.1), Greater Sudbury (12.4) and Kingston (12.3) lost the most days per full-time worker. Calgary (7.7), Toronto (8.1) and Edmonton (8.1) had the least.

Perspectives

Notes

1. For more information on this subject, see Margot Shields, "Stress, health and the benefit of social support," Health Reports (Statistics Canada Catalogue 82-003-X) vol. 15, no. 1, January 2004. Also see Cara Williams, "Sources of workplace stress," *Perspectives on Labour and Income* (Statistics Canada Catalogue 75-001-X) vol. 4, no. 6, June 2003 online edition.
2. Exclusion of maternity leave started in 1997 with the introduction of the revised Labour Force Survey questionnaire.
3. The data show an increasing rate for men, which is likely tied to their greater use of paid paternity (in Quebec only) and parental leave. Currently, men on such leave are included in the calculation, but they will be excluded in the near future, as are women on maternity leave.

For further information, contact Labouaria Yssaad, Labour Statistics Division. She can be reached at 613-951-0627 or labouaria.yssaad@statcan.gc.ca.

Data source and definitions

The data in this article are annual averages from the **Labour Force Survey** (LFS). They refer to full-time employees holding only one job. Part-time, self-employed and unpaid family workers are excluded because they generally have more opportunity to arrange their work schedules around personal or family responsibilities. Multiple-job holders, too, are excluded because it is not possible, using LFS data, to allocate time lost, or the reason for it, to specific jobs. Women on maternity leave are also excluded. However, men using paid paternity (in Quebec only) and parental leave are currently included in the calculation, but they will be excluded in the near future, as are women on maternity leave.

Some human resource practitioners exclude persons on long-term illness or disability leave (exceeding one year) from their attendance management statistics. Such persons are, however, included in Statistics Canada's work absence estimates if they count themselves as employed (that is, they continue to receive partial or full pay from their employer). In 2009, the number of employed persons on such long-term illness or disability leave averaged 26,700 in a typical week. Their exclusion would have reduced the weekly work absence incidence for illness or disability from 5.8% to 5.6%, the inactivity rate from 3.1% to 2.9%, and days lost per worker that year from 7.8 to 7.2.

Personal reasons for absence are split into two categories: 'own illness or disability' and 'personal or family responsibilities' (caring for own children, caring for elder relative, and other personal or family responsibilities). Absences for these two types of reasons represented 27% of all time lost by full-time paid workers each week in 2009. Vacations, which accounted for 40% of total time away from work, are not counted in this article, nor are statutory holidays, which represented 15%. Maternity leave represented 11% and other reasons, 7%.

The **incidence of absence** is the percentage of full-time paid workers reporting some absence in the reference week. In calculating incidence, the length of work absence—whether an hour, a day, or a full week—is irrelevant.

The **inactivity rate** shows hours lost as a proportion of the usual weekly hours of full-time paid workers. It takes into account both the incidence and length of absence in the reference week.

Days lost per worker are calculated by multiplying the inactivity rate by the estimated number of working days in the year (250).

Reasons for work absences in the LFS

The LFS sets out the following reasons for being away from work:

- own illness or disability
- caring for own children
- caring for elder relative (60 years or older)
- maternity leave (women only)
- other personal or family responsibilities
- vacation
- labour dispute (strike or lockout)
- temporary layoff due to business conditions
- holiday (legal or religious)
- weather
- job started or ended during week
- working short time (because of material shortages, plant maintenance or repair, for instance)
- other

As normally published, personal or family responsibilities consist of caring for own children, caring for elder relative, and other personal or family responsibilities.

Table 1 Absence rates for full-time employees by sex, 1999 to 2009[1]

	Incidence[2]			Inactivity rate[3]			Days lost per worker in year[4]		
	Total	Illness or disability	Personal or family respon-sibilities	Total	Illness or disability	Personal or family respon-sibilities	Total	Illness or disability	Personal or family respan-sibilities
	%			%			days		
Both sexes									
1999	6.0	4.5	1.5	3.2	2.7	0.5	8.1	6.8	1.3
2000	6.3	4.8	1.5	3.2	2.7	0.5	8.0	6.7	1.3
2001	7.0	5.3	1.8	3.4	2.8	0.6	8.5	7.0	1.5
2002	7.8	5.6	2.1	3.6	3.0	0.7	9.1	7.4	1.7
2003	7.5	5.5	2.0	3.7	3.0	0.7	9.2	7.5	1.7
2004	7.6	5.5	2.1	3.7	3.0	0.7	9.2	7.5	1.7
2005	8.3	6.0	2.3	3.9	3.1	0.7	9.6	7.8	1.8
2006	8.2	5.8	2.4	3.9	3.0	0.9	9.7	7.6	2.1
2007	8.8	6.2	2.5	4.1	3.2	0.8	10.2	8.1	2.1
2008	8.7	6.1	2.6	4.0	3.2	0.9	10.0	7.9	2.1
2009	8.2	5.8	2.3	3.9	3.1	0.8	9.8	7.8	2.1
Men									
1999	5.2	3.9	1.3	2.8	2.4	0.4	7.0	5.9	1.1
2000	5.5	4.1	1.4	2.8	2.4	0.4	7.0	5.9	1.1
2001	6.1	4.6	1.6	3.1	2.5	0.5	7.6	6.3	1.3
2002	6.7	4.8	1.9	3.2	2.6	0.6	8.0	6.5	1.6
2003	6.5	4.7	1.8	3.3	2.6	0.6	8.2	6.6	1.5
2004	6.6	4.6	2.0	3.2	2.6	0.7	8.0	6.4	1.6
2005	7.2	5.2	2.1	3.4	2.7	0.7	8.6	6.9	1.7
2006	7.2	5.1	2.1	3.5	2.7	0.8	8.7	6.7	1.9
2007	7.5	5.1	2.4	3.5	2.7	0.8	8.8	6.7	2.1
2008	7.5	5.1	2.4	3.5	2.7	0.8	8.8	6.7	2.1
2009	7.0	4.9	2.2	3.5	2.6	0.8	8.6	6.6	2.1
Women									
1999	7.1	5.4	1.8	3.8	3.2	0.6	9.6	8.0	1.6
2000	7.5	5.7	1.8	3.8	3.2	0.6	9.4	7.9	1.5
2001	8.2	6.2	2.0	3.9	3.2	0.7	9.8	8.0	1.8
2002	9.2	6.7	2.4	4.3	3.5	0.8	10.7	8.7	1.9
2003	8.9	6.6	2.3	4.3	3.5	0.8	10.7	8.8	1.9
2004	8.9	6.6	2.3	4.3	3.6	0.7	10.8	9.0	1.9
2005	9.6	7.0	2.6	4.5	3.7	0.8	11.2	9.1	2.0
2006	9.5	6.8	2.7	4.5	3.5	1.0	11.2	8.8	2.4
2007	10.3	7.5	2.8	4.8	3.9	0.9	12.0	9.9	2.1
2008	10.2	7.3	2.8	4.7	3.8	0.9	11.8	9.6	2.2
2009	9.5	7.0	2.5	4.5	3.7	0.8	11.4	9.3	2.0

1. Excluding maternity leave. However, men on paid paternity (in Quebec only) or parental leave are currently included in the calculation, but in the near future men on such leave will be excluded, as are women on maternity leave.
2. Absent workers divided by total.
3. Hours absent divided by hours usually worked.
4. Inactivity rate multiplied by working days in year (250).

Source: Statistics Canada, Labour Force Survey.

Table 2 Absence rates for full-time employees by sex, age, education and presence of children, 2009[1]

	Incidence[2]			Inactivity rate[3]			Days lost per worker in year[4]		
	Total	Illness or disability	Personal or family responsibilities	Total	Illness or disability	Personal or family responsibilities	Total	Illness or disability	Personal or family responsibilities
Age	%			%			days		
Both sexes	**8.2**	**5.8**	**2.3**	**3.9**	**3.1**	**0.8**	**9.8**	**7.8**	**2.1**
15 to 19	6.6	4.7	1.9	2.6	1.9	0.7	6.5	4.8	1.8
20 to 24	6.9	5.0	1.9	2.8	2.1	0.6	7.0	5.4	1.6
25 to 34	8.4	5.7	2.7	3.6	2.6	1.0	9.1	6.6	2.5
35 to 44	8.6	5.9	2.8	4.0	3.0	1.0	10.1	7.6	2.5
45 to 54	7.9	5.9	2.0	4.0	3.4	0.6	10.1	8.6	1.6
55 to 64	8.7	6.6	2.1	5.0	4.3	0.7	12.5	10.7	1.8
65 and over	7.7	5.9	1.8	4.0	3.6	0.4	9.9	8.9	1.0
Men	**7.0**	**4.9**	**2.2**	**3.5**	**2.6**	**0.8**	**8.6**	**6.6**	**2.1**
15 to 19	6.3	4.3	2.0	2.6	1.8	0.8	6.4	4.5	1.9
20 to 24	6.1	4.3	1.8	2.6	1.9	0.7	6.6	4.9	1.7
25 to 34	7.3	4.7	2.6	3.3	2.1	1.1	8.2	5.4	2.8
35 to 44	7.5	4.9	2.6	3.6	2.5	1.1	9.0	6.3	2.7
45 to 54	6.6	4.8	1.8	3.4	2.8	0.5	8.5	7.1	1.4
55 to 64	7.5	5.7	1.7	4.4	3.9	0.5	11.1	9.7	1.3
65 and over	7.1	5.3	1.8	3.7	3.3	0.4	9.3	8.4	1.0
Women	**9.5**	**7.0**	**2.5**	**4.5**	**3.7**	**0.8**	**11.4**	**9.3**	**2.0**
15 to 19	7.2	5.5	F	2.7	2.1	F	6.8	5.4	F
20 to 24	7.9	6.0	1.9	3.0	2.4	0.6	7.6	6.1	1.5
25 to 34	9.8	7.0	2.8	4.2	3.3	0.8	10.4	8.3	2.1
35 to 44	10.1	7.0	3.0	4.6	3.7	0.9	11.5	9.2	2.3
45 to 54	9.3	7.1	2.2	4.8	4.1	0.7	12.1	10.3	1.8
55 to 64	10.0	7.6	2.5	5.7	4.7	0.9	14.2	11.8	2.3
65 and over	8.9	7.2	F	4.5	4.1	F	11.3	10.2	F
Educational attainment									
Both sexes	**8.2**	**5.8**	**2.3**	**3.9**	**3.1**	**0.8**	**9.8**	**7.8**	**2.1**
Less than grade 9	7.4	5.6	1.7	4.2	3.7	0.5	10.5	9.2	1.3
Some secondary	9.0	6.7	2.4	5.0	4.1	0.9	12.6	10.3	2.2
High school graduation	7.7	5.6	2.1	3.9	3.1	0.8	9.7	7.8	1.9
Some postsecondary	8.6	6.1	2.5	3.9	3.0	0.8	9.7	7.6	2.1
Postsecondary certificate or diploma	8.7	6.2	2.4	4.3	3.5	0.8	10.7	8.6	2.1
University degree	7.5	5.1	2.4	3.1	2.3	0.9	7.8	5.6	2.1
Presence of children									
Both sexes	**8.2**	**5.8**	**2.3**	**3.9**	**3.1**	**0.8**	**9.8**	**7.8**	**2.1**
With children	9.0	5.9	3.1	4.3	3.1	1.2	10.7	7.8	2.9
Preschoolers-under 5 years	10.8	5.8	5.0	5.2	2.8	2.4	12.9	7.0	6.0
5 to 12 years	8.9	6.0	2.9	3.9	3.1	0.8	9.7	7.7	1.9
13 years and over	7.7	5.8	2.0	4.0	3.4	0.6	10.1	8.5	1.6
Without children	7.6	5.8	1.8	3.7	3.1	0.6	9.2	7.7	1.5

1. Excluding maternity leave. However, men on paid paternity (in Quebec only) or parental leave are currently included in the calculation, but in the near future men on such leave will be excluded, as are women on maternity leave.
2. Absent workers divided by total.
3. Hours absent divided by hours usually worked.
4. Inactivity rate multiplied by working days in year (250).

Source: Statistics Canada, Labour Force Survey.

Table 3 Absence rates for full-time employees by industry and sector, 2009[1]

	Incidence[2]			Inactivity rate[3]			Days lost per worker in year[4]		
	Total	Illness or disability	Personal or family responsibilities	Total	Illness or disability	Personal or family responsibilities	Total	Illness or disability	Personal or family responsibilities
	%			%			days		
All industries	**8.2**	**5.8**	**2.3**	**3.9**	**3.1**	**0.8**	**9.8**	**7.8**	**2.1**
Public employees	10.1	7.6	2.5	5.1	4.1	0.9	12.6	10.3	2.3
Private employees	7.5	5.3	2.3	3.6	2.8	0.8	8.9	7.0	2.0
Goods-producing	**7.5**	**5.1**	**2.4**	**3.7**	**2.9**	**0.8**	**9.3**	**7.2**	**2.1**
Primary	5.4	3.6	1.8	2.6	1.9	0.7	6.5	4.8	1.7
Agriculture	6.1	3.5	2.6	2.7	1.8	0.9	6.8	4.6	2.2
Other	5.1	3.6	1.5	2.6	1.9	0.6	6.4	4.8	1.6
Utilities	8.0	5.7	2.3	3.9	3.2	0.7	9.7	7.9	1.8
Construction	7.0	4.6	2.4	3.5	2.6	0.8	8.7	6.6	2.0
Manufacturing	8.1	5.6	2.5	4.1	3.2	0.9	10.2	8.0	2.3
Durable	8.1	5.4	2.7	4.0	3.0	1.0	9.9	7.4	2.4
Non-durable	8.1	5.8	2.3	4.3	3.5	0.8	10.7	8.7	2.0
Service-producing	**8.4**	**6.1**	**2.3**	**4.0**	**3.2**	**0.8**	**10.0**	**8.0**	**2.0**
Trade	7.4	5.2	2.2	3.4	2.6	0.7	8.4	6.6	1.8
Wholesale	7.3	4.8	2.5	2.9	2.2	0.7	7.4	5.6	1.8
Retail	7.4	5.4	2.0	3.6	2.8	0.7	8.9	7.1	1.8
Transportation and warehousing	8.5	6.3	2.2	5.2	4.2	1.0	13.0	10.6	2.4
Finance, insurance, real estate and leasing	7.1	5.0	2.2	3.2	2.5	0.7	7.9	6.2	1.7
Finance and insurance	7.4	5.1	2.3	3.3	2.6	0.7	8.3	6.5	1.8
Real estate and leasing	6.0	4.3	1.8	2.6	2.0	0.6	6.6	5.1	1.5
Professional, scientific and technical	7.4	4.7	2.7	2.7	1.9	0.8	6.7	4.7	2.0
Business, building and support services	8.9	6.7	2.2	4.2	3.4	0.8	10.5	8.4	2.1
Educational services	8.9	6.5	2.4	4.0	3.2	0.9	10.1	7.9	2.1
Health care and social assistance	10.5	8.3	2.2	5.6	4.8	0.8	14.1	12.1	2.0
Information, culture and recreation	7.5	5.6	1.9	3.7	3.0	0.7	9.2	7.4	1.8
Accommodation and food services	6.6	4.7	1.9	3.2	2.6	0.7	8.1	6.4	1.7
Other services	7.1	4.8	2.3	3.0	2.2	0.8	7.6	5.5	2.1
Public administration	10.8	7.7	3.1	5.0	3.9	1.1	12.5	9.8	2.7
Federal	13.6	9.0	4.6	5.8	4.2	1.6	14.6	10.5	4.0
Provincial	9.6	7.6	2.1	4.7	4.1	0.7	11.9	10.1	1.7
Local, other	8.2	6.1	2.1	4.2	3.4	0.7	10.4	8.6	1.8

1. Excluding maternity leave. However, men on paid paternity (in Quebec only) or parental leave are currently included in the calculation, but in the near future men on such leave will be excluded, as are women on maternity leave.
2. Absent workers divided by total.
3. Hours absent divided by hours usually worked.
4. Inactivity rate multiplied by working days in year (250).

Source: Statistics Canada, Labour Force Survey.

Table 4 Absence rates for full-time employees by occupation, 2009[1]

	Incidence[2]			Inactivity rate[3]			Days lost per worker in year[4]		
	Total	Illness or disability	Personal or family responsibilities	Total	Illness or disability	Personal or family responsibilities	Total	Illness or disability	Personal or family responsibilities
		%			%			days	
All occupations	**8.2**	**5.8**	**2.3**	**3.9**	**3.1**	**0.8**	**9.8**	**7.8**	**2.1**
Management	5.7	3.8	1.9	2.5	1.9	0.6	6.3	4.7	1.6
Business, finance and administrative	9.0	6.3	2.7	4.1	3.1	0.9	10.1	7.9	2.3
Professional	8.3	5.4	2.8	3.5	2.6	0.9	8.8	6.4	2.3
Financial and administrative	8.1	5.6	2.5	3.6	2.7	0.8	8.9	6.8	2.1
Clerical	9.7	6.9	2.8	4.4	3.5	0.9	11.1	8.8	2.3
Natural and applied sciences	7.6	5.0	2.6	2.9	2.1	0.9	7.4	5.2	2.2
Health	10.7	8.7	1.9	6.0	5.2	0.8	15.0	13.1	1.9
Professional	6.8	5.3	F	3.3	2.6	F	8.2	6.6	F
Nursing	11.0	9.2	1.8	6.7	5.8	0.9	16.8	14.6	2.1
Technical	10.8	8.5	2.2	5.7	4.9	0.8	14.3	12.2	2.1
Support staff	11.7	9.8	1.9	6.7	6.0	0.7	16.8	15.1	1.7
Social and public service	9.0	6.5	2.5	3.9	3.0	0.9	9.6	7.5	2.1
Legal, social and religious	9.3	6.5	2.8	3.9	3.0	0.9	9.7	7.5	2.1
Teachers and professors	8.7	6.4	2.3	3.8	3.0	0.9	9.6	7.4	2.2
Secondary and elementary	10.0	7.6	2.4	4.4	3.5	0.9	11.0	8.8	2.2
Other	5.6	3.6	2.0	2.5	1.7	0.8	6.3	4.3	2.0
Culture and recreation	7.8	5.4	2.5	3.0	2.3	0.7	7.5	5.7	1.9
Sales and service	7.4	5.5	1.9	3.8	3.1	0.7	9.5	7.7	1.8
Wholesale	5.5	3.7	1.9	2.3	1.8	0.5	5.7	4.4	1.3
Retail	7.4	5.5	1.9	3.5	2.9	0.7	8.9	7.1	1.7
Food and beverage	6.3	4.5	1.8	3.1	2.4	0.7	7.8	6.1	1.7
Protective services	8.0	6.3	1.7	5.1	4.2	0.9	12.8	10.6	2.2
Childcare and home support	9.9	7.1	2.8	4.4	3.7	0.7	11.0	9.2	1.8
Travel and accommodation	8.7	6.5	2.1	4.7	3.8	0.9	11.8	9.6	2.2
Trades, transport and equipment operators	8.0	5.7	2.4	4.3	3.4	0.9	10.8	8.6	2.2
Contractors and supervisors	7.5	4.8	2.6	3.6	3.0	0.7	9.0	7.4	1.7
Construction trades	8.4	5.9	2.5	4.4	3.5	0.9	10.9	8.7	2.3
Other trades	7.8	5.4	2.4	4.0	3.0	0.9	9.9	7.6	2.3
Transport equipment operators	7.2	5.3	1.9	4.5	3.7	0.8	11.2	9.3	2.0
Helpers and labourers	9.8	7.0	2.8	5.2	4.2	1.0	12.9	10.4	2.5
Occupations unique to primary industry	5.2	3.4	1.9	2.7	2.0	0.7	6.7	4.9	1.8
Occupations unique to production	9.3	6.7	2.6	5.0	4.1	0.9	12.6	10.3	2.3
Machine operators and assemblers	9.3	6.6	2.6	4.9	4.0	0.9	12.3	10.0	2.2
Labourers	9.5	7.1	2.4	5.6	4.6	1.0	14.0	11.4	2.6

1. Excluding maternity leave. However, men on paid paternity (in Quebec only) or parental leave are currently included in the calculation, but in the near future men on such leave will be excluded, as are women on maternity leave.
2. Absent workers divided by total.
3. Hours absent divided by hours usually worked.
4. Inactivity rate multiplied by working days in year (250).

Source: Statistics Canada, Labour Force Survey.

Table 5 Absence rates for full-time employees by workplace size, job tenure, job status and union coverage, 2009[1]

	Incidence[2]			Inactivity rate[3]			Days lost per worker in year[4]		
	Total	Own illness or disability	Personal or family responsibilities	Total	Own illness or disability	Personal or family responsibilities	Total	Own illness or disability	Personal or family responsibilities
		%			%			days	
Workplace size									
Both sexes	**8.2**	**5.8**	**2.3**	**3.9**	**3.1**	**0.8**	**9.8**	**7.8**	**2.1**
Under 20 employees	7.0	4.7	2.2	3.2	2.5	0.7	8.1	6.3	1.8
20 to 99 employees	8.1	5.7	2.4	3.8	3.0	0.8	9.5	7.4	2.1
100 to 500 employees	9.0	6.6	2.4	4.5	3.6	0.9	11.2	8.9	2.3
Over 500 employees	9.5	7.1	2.4	4.9	4.0	0.9	12.3	10.1	2.2
Job tenure									
Both sexes	**8.2**	**5.8**	**2.3**	**3.9**	**3.1**	**0.8**	**9.8**	**7.8**	**2.1**
1 to 12 months	7.0	4.8	2.2	2.8	2.1	0.8	7.1	5.2	1.9
Over 1 to 5 years	8.1	5.6	2.4	3.8	2.9	0.9	9.4	7.1	2.2
Over 5 to 9 years	8.6	6.0	2.6	4.1	3.2	0.9	10.3	8.0	2.3
Over 9 to 14 years	9.1	6.5	2.5	4.6	3.7	0.9	11.5	9.3	2.2
Over 14 years	8.5	6.4	2.1	4.6	3.9	0.7	11.5	9.7	1.7
Job status									
Both sexes	**8.2**	**5.8**	**2.3**	**3.9**	**3.1**	**0.8**	**9.8**	**7.8**	**2.1**
Permanent	8.3	6.0	2.3	4.0	3.2	0.8	10.0	8.0	2.1
Non-permanent	6.8	4.5	2.3	3.1	2.2	0.8	7.7	5.6	2.1
Union coverage									
Both sexes	**8.2**	**5.8**	**2.3**	**3.9**	**3.1**	**0.8**	**9.8**	**7.8**	**2.1**
Union member or covered by collective agreement	10.3	7.8	2.5	5.5	4.5	1.0	13.7	11.3	2.5
Non-unionized	7.1	4.9	2.3	3.2	2.4	0.7	8.0	6.1	1.9

1. Excluding maternity leave. However, men on paid paternity (in Quebec only) or parental leave are currently included in the calculation, but in the near future men on such leave will be excluded, as are women on maternity leave.
2. Absent workers divided by total.
3. Hours absent divided by hours usually worked.
4. Inactivity rate multiplied by working days in year (250).

Source: Statistics Canada, Labour Force Survey.

Table 6 Absence rates for full-time employees by province, region and census metropolitan area (CMA), 2009[1]

	Incidence[2]			Inactivity rate[3]			Days lost per worker in year[4]		
	Total	Illness or disability	Personal or family respon-sibilities	Total	Illness or disability	Personal or family respan-sibilities	Total	Illness or disability	Personal ar family respon-sibilities
Province and region		%			%			days	
Both sexes	**8.2**	**5.8**	**2.3**	**3.9**	**3.1**	**0.8**	**9.8**	**7.8**	**2.1**
Atlantic	8.7	6.5	2.3	4.4	3.6	0.8	10.9	9.0	1.9
Newfoundland and Labrador	8.3	6.5	1.7	4.6	4.0	0.7	11.5	9.9	1.6
Prince Edward Island	7.5	5.3	2.1	3.4	2.8	0.7	8.6	6.9	1.6
Nova Scotia	9.2	6.8	2.4	4.5	3.7	0.8	11.4	9.3	2.1
New Brunswick	8.6	6.2	2.4	4.2	3.4	0.8	10.5	8.6	1.9
Quebec	9.0	6.7	2.3	4.7	3.9	0.8	11.8	9.7	2.1
Ontario	7.8	5.4	2.5	3.6	2.7	0.8	8.9	6.9	2.0
Prairies	7.9	5.5	2.4	3.5	2.7	0.8	8.8	6.8	2.0
Manitoba	8.8	6.3	2.5	4.0	3.3	0.7	10.1	8.3	1.8
Saskatchewan	9.1	6.3	2.8	4.3	3.3	1.0	10.7	8.2	2.5
Alberta	7.3	5.1	2.2	3.2	2.4	0.8	7.9	5.9	2.0
British Columbia	7.6	5.6	2.0	4.0	3.1	0.9	10.0	7.8	2.2
CMA									
Both sexes	**8.2**	**5.8**	**2.3**	**3.9**	**3.1**	**0.8**	**9.8**	**7.8**	**2.1**
All CMAs	8.1	5.8	2.3	3.8	3.0	0.8	9.5	7.4	2.1
St. John's	9.1	7.3	1.8	4.8	4.1	0.7	12.0	10.4	1.6
Halifax	9.3	7.0	2.3	4.4	3.6	0.8	11.0	9.0	2.0
Saint John	7.2	4.7	2.5	3.3	2.5	0.9	8.3	6.1	2.2
Saguenay	7.9	5.7	F	4.0	3.3	F	10.0	8.3	F
Québec	8.8	6.7	2.1	4.0	3.3	0.7	10.0	8.4	1.7
Montréal	9.2	6.8	2.4	4.6	3.7	0.9	11.6	9.3	2.3
Trois-Rivières	7.9	6.2	F	4.6	3.9	F	11.4	9.7	F
Sherbrooke	8.6	6.1	F	4.3	3.5	F	10.6	8.8	F
Gatineau	12.3	8.3	4.0	6.1	4.6	1.5	15.1	11.5	3.7
Ottawa	9.2	6.2	3.0	3.7	2.7	1.0	9.3	6.8	2.5
Kingston	9.7	7.0	F	4.9	4.0	F	12.3	10.1	F
Greater Sudbury/ Grand Sudbury	9.7	7.1	F	4.9	4.0	F	12.4	10.0	F
Toronto	7.3	5.0	2.3	3.3	2.5	0.8	8.1	6.2	2.0
Hamilton	7.0	4.9	2.2	3.4	2.6	0.8	8.6	6.5	2.1
St. Catharines-Niagara	8.2	6.1	2.2	4.0	3.4	0.7	10.1	8.4	1.6
London	8.3	5.6	2.7	3.8	2.9	0.9	9.5	7.4	2.2
Windsor	8.1	5.4	2.7	4.1	3.0	1.0	10.1	7.5	2.6
Kitchener-Waterloo	8.0	5.5	2.5	3.3	2.5	0.8	8.2	6.2	2.0
Oshawa	8.2	5.9	2.3	3.7	3.0	0.7	9.3	7.5	1.8
Thunder Bay	8.9	6.1	F	4.0	2.9	F	9.9	7.3	F
Winnipeg	8.8	6.4	2.4	3.9	3.2	0.7	9.7	8.1	1.7
Regina	9.8	6.9	2.9	4.4	3.4	1.1	11.1	8.4	2.7
Saskatoon	9.3	6.6	2.7	4.2	3.3	1.0	10.5	8.1	2.4
Calgary	7.3	5.1	2.3	3.1	2.3	0.8	7.7	5.7	1.9
Edmonton	7.3	5.2	2.1	3.2	2.5	0.7	8.1	6.3	1.8
Abbotsford	7.9	5.6	F	4.0	3.2	F	10.1	8.0	F
Vancouver	7.3	5.3	2.0	3.8	2.9	0.9	9.4	7.2	2.1
Victoria	8.8	6.6	2.2	4.2	3.3	0.9	10.6	8.2	2.3
Non-CMAs	8.0	5.7	2.3	4.2	3.4	0.8	10.4	8.4	2.0
Urban Centres	8.6	6.2	2.4	4.3	3.5	0.8	10.8	8.8	2.0

1. Excluding maternity leave. However, men on paid paternity (in Quebec only) or parental leave are currentlyincluded in the calculation, but in the near future men on such leave will be excluded, as are women on maternity leave.
2. Absent workers divided by total.
3. Hours absent divided by hours usually worked.
4. Inactivity rate multiplied by working days in year (250).

Source: Statistics Canada, Labour Force Survey.

Gambling, 2010

- Net revenue from government-run lotteries, video lottery terminals (VLTs), casinos and slot machines not in casinos rose steadily from $2.73 billion in 1992, before levelling off and remaining at around $13.7 billion since 2007 ($13.75 billion in 2009).[1]

- Net revenue from pari-mutuel betting (horse racing) dropped from $532 million to $355 million over the same period (1992 to 2009).

- Net revenue from casinos continued to represent one-third of the gambling industry (34%) in 2009, while revenue and representation were up for lotteries (26%) and down slightly for both slot machines outside casinos (mainly at racetracks) (21%) and VLTs (19%).

- Average gambling revenue per person 18 and over in 2008 ranged from $115 in the three territories to $830 in Saskatchewan, with a national average of $520.[2]

- Compared with workers in non-gambling industries, those in gambling were more likely to have a high school education or less (53% versus 40%), be paid by the hour (85% versus 65%), be paid less ($20.25 hourly versus $23.55), and receive tips at their jobs (31% versus 7%).

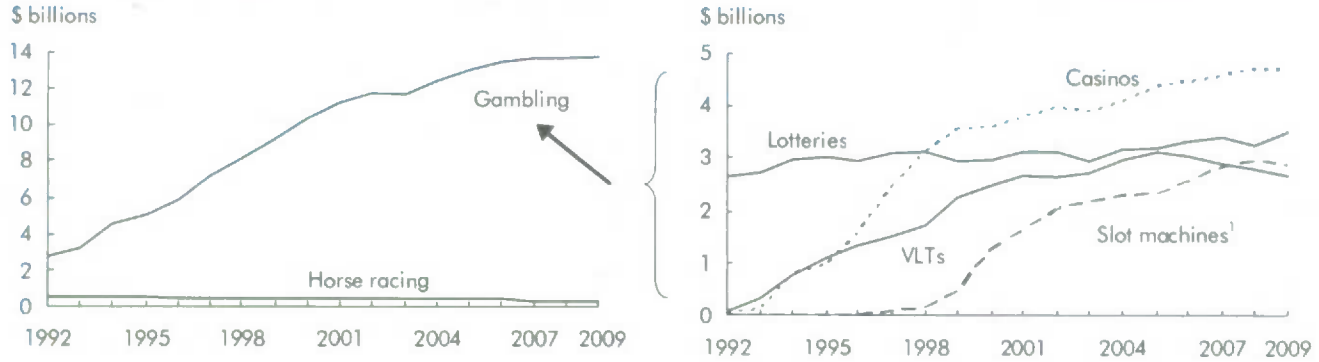
- Men increased their share of employment in the gambling industry from 35% in 1992 to 51% in 2009. Similarly the rate of full-time jobs increased from 60% to 82% between the two years.[3]

- Around 6 in 10 women and men living alone reported spending money on at least one gambling activity; however, on average the men spent more than women—$560 compared with $455.

- Gambling participation and average expenditures increased with household income. For example, 51% of households with incomes of less than $20,000 gambled in 2008 and spent an average of $395, while equivalent figures for those with incomes of $80,000 or more were 78% and $555.

For further information on any of these data, contact Katherine Marshall, Labour Statistics Division. She can be reached at 613-951-6890 or at katherine.marshall@statcan.gc.ca.

Chart A Net revenue from government-run gambling has levelled off recently



1. Refers to those found outside government-run casinos.
Source: Statistics Canada, Notional Accounts.

Table 1 Gambling revenues and profits

	Gambling revenue[1]		Gambling profit[2]		Share of total revenue[3]		Revenue per capita (18 and over)[4]	
	1992	2008	1992	2008	1992	2007	1992	2008
	$ millions (current)				%		$	
Canada	**2,734**	**13,665**	**1,680**	**6,747**	**1.9**	**4.7**	**130**	**520**
Newfoundland and Labrador	80	198	42	103	2.3	2.9	190	480
Prince Edward Island	20	43	7	16	2.7	3.2	210	385
Nova Scotia	125	317	72	144	2.8	3.9	180	420
New Brunswick	117	219	49	137	2.7	3.1	210	365
Quebec	693	2,744	472	1,419	1.8	3.6	130	440
Ontario	853	4,733	529	1,716	1.9	4.8	105	465
Manitoba	153	639	105	305	2.5	5.3	185	690
Saskatchewan	62	643	39	343	1.1	5.8	85	830
Alberta	225	2,205	125	1,479	1.6	6.2	120	790
British Columbia	403	1,915	239	1,078	2.2	5.6	155	540
Yukon, Northwest Territories and Nunavut	5	9	1	7	0.3	0.3	80	115

1. Total revenue from wagers on all government-controlled gambling, such as lotteries, casinos and VLTs, minus prizes and winnings. Revisions to provincial estimates will occur in November 2010.
2. Net income of provincal governments from total gambling revenue, less operating and other expenses (see Data sources and definitions).
3. The 2007 shore of total revenue calculation is based on 2007 gambling revenue and 2007 total provincial revenue. The 2008 provincial revenue will be available in November 2010.
4. Persons 18 and over were selected as this is the legol age of gambling in most provinces.
Sources: Statistics Canada, National Accounts, Public Institutions (Financial management statistics) and post-censal population estimates.

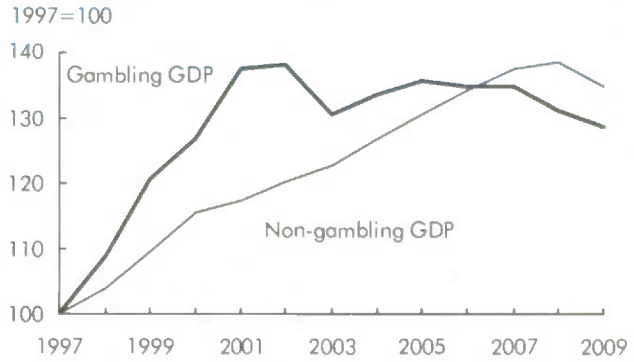
Table 2 Characteristics of workers

	Gambling[1]		Non-gambling	
	1992	2009	1992	2009
	thousand			
Total employed	**11**	**43**	**12,720**	**16,806**
	%			
Sex				
Men	35	51	55	52
Women	65	49	45	48
Age				
15 to 34	57	39	45	36
35 and over	43	61	55	64
Education				
High school or less	66	53	57	40
Postsecondary certificate or diploma	21	31	27	35
University degree	13	15	16	25
Work status				
Full-time	60	82	81	81
Part-time	40	18	19	19
Provinces				
Atlantic provinces	8	3	7	7
Quebec	F	16	24	23
Ontario	28	37	39	39
Prairies	30	26	17	18
British Columbia	25	17	13	13
Class of worker				
Employee	99	97	85	84
Self-employed	F	F	15	16

1. Employment at racetracks and 'racinos' (racetracks with slots and/or other gaming activities) is excluded. These activities are coded under 'spectator sports.'

Source: Statistics Canada, Labour Force Survey.

Chart B Gambling GDP turned down before the rest of the economy



Note: The price, at basic prices, of the goods and services produced. The GDP figures for the gambling industry refer strictly to wagering activities, such as lottery ticket sales, VLT receipt sales, and bets at casinos. Other economic spinoffs, such as hotel and restaurant business, security services and building and equipment maintenance are not included.

Source: Statistics Canada, National Accounts.

Table 3 Characteristics of jobs

	Gambling		Non-gambling	
	1997	2009	1997	2009
	thousand			
Employees[1]	**33**	**41**	**11,323**	**14,106**
	%			
Unionized[2]	29	30	34	31
Non-unionized	71	70	66	69
Permanent job	91	93	89	87
Temporary job	9	7	11	13
Usually receive tips	27	31	7	7
No tips	73	69	93	93
Paid by the hour	80	85	61	65
Not paid by the hour	20	15	39	35
Average hourly earnings,[3] full-time			$	
Both sexes	13.30	20.25	16.55	23.55
Men	13.75	21.70	17.85	25.05
Women	12.90	18.60	14.75	21.70

1. More detailed questions on employees were introduced with the 1997 revision of the Labour Force Survey.
2. Includes persons who are not union members, but whose jobs are covered by collective agreements.
3. Includes tips and commissions.

Source: Statistics Canada, Labour Force Survey.

Table 4 Household expenditures on gambling activities

	At least one gambling activity		Government lotteries		Other lotteries/raffles, etc.		Casinos, slot machines and VLTs		Bingos	
	$	%	$	%	$	%	$	%	$	%
All households										
2000	490	74	240	63	80	31	525	21	730	9
2001	515	72	250	61	95	29	535	20	795	9
2002	570	73	250	63	125	30	680	21	900	7
2003	505	74	235	64	95	28	650	19	800	8
2004	515	71	260	61	100	28	655	19	800	6
2005	550	69	250	60	140	26	710	17	945	6
2006	495	73	255	64	110	28	685	19	520	6
2007[1]	645	52	280	48	125	17	850	17	790	4
2008	480	70	250	62	110	25	695	18	655	5
One-person households[2]	505	61	230	52	95	17	945	15	640	5
Men	560	64	290	55	130	18	925	17	835	2
18 to 44	270	59	135	49	115	19	355	20	F	F
45 to 64	680	71	365	64	115	21	1,220	16	F	F
65 and over	945	63	445	55	235	13	2,180	14	F	F
Women	455	58	170	49	60	16	970	13	600	7
18 to 44	525	55	135	45	45	17	1,005	20	F	F
45 to 64	390	66	165	59	75	20	670	12	1,385	5
65 and over	470	55	195	43	60	14	1,140	11	435	9
All households										
Newfoundland and Labrador	455	75	270	63	85	36	635	8	665	14
Prince Edward Island	400	73	250	61	95	42	450	11	440	11
Nova Scotia	410	76	215	63	100	45	440	16	815	7
New Brunswick	450	72	300	61	85	39	350	8	800	10
Quebec	390	71	245	67	65	16	780	11	380	5
Ontario	490	71	260	62	115	24	590	21	715	4
Manitoba	580	72	245	59	120	36	650	24	885	9
Saskatchewan	720	76	220	62	125	48	1,050	27	825	7
Alberta	645	64	275	55	165	32	915	19	1,140	3
British Columbia	460	65	220	58	90	25	745	19	425	3
Income after tax										
Less than $20,000	395	51	150	42	50	11	1,090	10	465	6
$20,000 to $39,999	500	66	270	57	75	15	730	16	745	7
$40,000 to $59,999	475	73	260	66	105	28	555	20	785	5
$60,000 to $79,999	390	77	255	71	110	29	370	20	490	4
$80,000 and over	555	78	260	69	130	40	870	21	605	2

1. New screening questions were added in 2007 to reduce the response burden, but for some categories, including games of chance, the response rate was lower than expected. These screening questions were modified for 2008. See catalogue no. 62F0026M, no. 1 for more details.
2. Using one-person households allows examination of individual characteristics. Persons 18 and over were selected as this is the legal age for gambling in most provinces.

Note: Expenditures are per spending household. Unless otherwise indicated, figures are for 2008.

Source: Statistics Canada, Survey of Household Spending.

Data sources and definitions

Labour Force Survey: a monthly household survey that collects information on labour market activity, including detailed occupational and industrial classifications, from all persons 15 years and over.

National Accounts: The quarterly Income and Expenditure Accounts (IEA) is one of several programs constituting the System of National Accounts. The IEA produces detailed annual and quarterly income and expenditure accounts for all sectors of the Canadian economy, namely households, businesses, governments and non-residents.

Survey of Household Spending (SHS): an annual survey that began in 1997 and replaced the Family Expenditure Survey and the Household Facilities and Equipment Survey. The SHS collects data on expenditures, income, household facilities and equipment, and other characteristics of families and individuals living in private households.

Gambling industries: This industry group covers establishments primarily engaged in operating gambling facilities, such as casinos, bingo halls and video gaming terminals, or providing gambling services, such as lotteries and off-track betting. It excludes horse race tracks and hotels, bars and restaurants that have casinos or gambling machines on the premises.

Gambling profit: net income from all provincial and territorial government-controlled gambling, such as lotteries, casinos and VLTs after prizes and winnings, operating expenses (including wages and salaries), payments to the federal government, other overhead costs, and other expenses are deducted. Other expenses includes categories such as 'special payments' or 'win contributions,' which vary by province and can influence profit rates.

Gambling revenue: all money wagered on provincial and territorial government-run lotteries, casinos and VLTs, less prizes and winnings. Gambling revenue generated by and for charities and on Indian reserves is excluded.

Government casino: a government-regulated commercial casino. Permits, licences and regulations for casinos, both charity and government, vary by province. Government casinos, now permitted in several provinces, also vary by the degree of public and private involvement in their operations and management. Some government casinos are run entirely as Crown corporations, while others contract some operations—for example, maintenance, management or services—to the private sector.

Video lottery terminal (VLT): a coin-operated, free-standing, electronic game of chance. Winnings are paid out through receipts that are turned in for cash, as opposed to cash payments from slot machines. Such terminals are regulated by provincial lottery corporations.

Table 5 Household expenditures on all gambling activities by income group, 2008

	Average expenditure			Gaming as % of total income	
	All households	Reporting households	Percentage reporting	All households	Reporting households
	$			%	
Income after tax	**335**	**480**	**70**	**0.5**	**0.6**
Less than $20,000	200	395	51	1.5	2.8
$20,000 to $39,999	330	500	66	1.1	1.7
$40,000 to $59,999	345	475	73	0.7	1.0
$60,000 to $79,999	305	390	77	0.4	0.6
$80,000 and over	430	555	78	0.4	0.5

Source: Statistics Canada, Survey of Household Spending.

Notes

1. Refers to total money wagered on all non-charity government-controlled gambling, such as lotteries, casinos and VLTs, minus prizes and winnings.
2. Survey of Household Spending (SHS) and National Accounts rankings of provincial expenditures differ, in part because the SHS includes both charity and non-charity gambling activity.
3. Employment at racetracks and 'racinos' (racetracks with slots and/or other gaming activities) is excluded. These activities are coded under 'spectator sports.'

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