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PERSPECTIVES

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in low-paid work
- GIS update
- Pathways into the GIS
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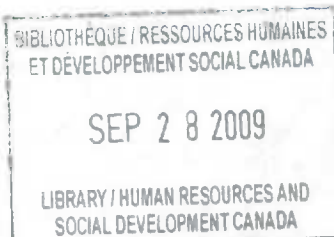
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Sébastien LaRoche-Côté and Claude Dionne

Like the United States and the United Kingdom, Canada has a higher proportion of low-paid jobs than Australia and most countries in continental Europe. While the differences with continental Europe highlight different approaches to the labour market, the much lower rate of low-paid work in Australia is more puzzling since that country shares many similarities with Canada. Differences in wage-setting mechanisms appear to play a role in explaining the disparity in rates of low-paid jobs.

14 GIS update

May Luong

The Guaranteed Income Supplement (GIS) was established to provide low-income seniors with extra income. While simplification of the GIS application process and outreach efforts have increased take-up rates, some seniors are still missing out. This update explores the characteristics of eligible non-recipients.

23 Pathways into the GIS

Sbaranjit Uppal, Ted Wannell and Edouard Imbeau

The probability of receiving GIS benefits is strongly correlated with people's income levels at younger ages, particularly to their earnings in their 40s. Negative labour market and health occurrences, including EI receipt and disability claims, having a low income and the receipt of social assistance benefits increased the probability of GIS receipt, while having an employer pension plan or RRSPs decreased the probability.

PERSPECTIVES

ON LABOUR AND INCOME

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- .. not available for a specific reference period
- ... not applicable
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- 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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Sébastien LaRochelle-Côté and Claude Dionne

Women's labour market participation has increased substantially over recent decades, creating challenges for families in balancing work–life responsibilities. The examination of family work patterns revealed significant differences in annual hours of work between families with and those without children.

45 Barriers to training access

Gordon B. Cooke, Isik U. Zeytinoglu and James Chowan

Workers at the low end of the earnings scale, workers with less education, non-unionized workers and women are all less likely than other workers to receive employer-sponsored training. But they are also less likely to decline it when it is offered. Within each of the first three categories, women lag behind men in receiving training. Controlling for various individual, job and workplace characteristics helps explain some of these persistent labour market differences between men and women.

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Perspectives on Labour and Income

The quarterly for labour market and income information

Highlights

In this issue

■ International differences in low-paid work ... p. 5

- With nearly a quarter of full-year, full-time workers earning less than two-thirds of the median, Canada's proportion of low-paid workers is comparable to that of other nations commonly cited as having a flexible labour market—including the United States and the United Kingdom.
- Countries with lower levels of low pay are typically characterized as having more regulated labour markets. These countries include the Scandinavian countries with levels in the 6% to 11% range and other countries in continental Europe with low-pay rates varying from 13% to 16%.
- Australia has a low-pay rate more in the European mould, even though it has many social and economic characteristics similar to Canada's. A detailed examination shows that pay-setting processes and minimum-wage conditions likely explain at least some of the Canada-Australia difference in low-paid work.

■ GIS update ... p. 14

- The number of seniors eligible for the Guaranteed Income Supplement (GIS) but not receiving it fell from 191,700 in 2000 to 159,400 in 2006.
- Between 2000 and 2006, the GIS take-up rate increased from 87% to 90% with the largest increases for those receiving annual payments of less than \$500 and \$500 to \$999—up 17 and 12 percentage points respectively.
- The GIS application rate increased from 45% to 57% with the largest improvements among those 80 and over, who saw an increase of 27 percentage points, followed by those 70 to 79 at almost 25 points.

- The probability of not applying for the GIS when eligible was significant and negatively related to annual payments in 2000 but not in 2006, suggesting that, by 2006, those receiving small amounts of GIS payments were just as likely to apply as those receiving the maximum.
- Similarly, age was no longer a statistically significant factor in 2006 once automatic applicants (those age 65) were excluded from the sample, suggesting that, by 2006, older seniors (age 70 and over) were just as likely to apply as younger seniors (age 66 to 69).

■ Pathways into the GIS ... p. 23

- Income earlier in life is the strongest correlate of Guaranteed Income Supplement (GIS) receipt. For individuals with average incomes, an additional \$1,000 of earnings in their late 40s would reduce the probability of being a GIS recipient by 1.1 percentage points for men and 1.4 points for women. The effects are similar for other types of income.
- Subsequent income changes are also important. For example, an earnings increase of \$1,000 for a woman in her early 50s would decrease the probability of receiving GIS by 1.1 percentage points. The same increase in her early 60s would reduce the probability by 0.8 points. This general pattern also held for other types of individual and family income.
- Evidence of job or personal difficulties in middle age—such as unemployment, social assistance or disability—increases the probability of receiving GIS benefits later on. On the other hand, participation in an employer pension plan or regular contributions to a registered retirement savings plan reduce the probability of GIS receipt. Both these positive and negative factors were significant even after controlling for income levels and trajectories.

- The effects of all variables were about three times greater for individuals with characteristics likely to place them at risk of GIS receipt. More than half of those who were in the bottom two income quintiles in their late 40s (56% of men and 61% of women) were not consistently collecting the GIS in their late 60s. This result is consistent with the finding that individuals remain quite mobile across income categories between their late 40s and late 60s.

■ Family work patterns ... p. 33

- Despite the substantial increase women's labour market participation in recent decades, the long-term work patterns of families with children remained quite different from those of families without children.
- Taking age differences between family types into account, 14% of families with children and 21% of families without children had both parents working a consistently standard schedule (between 1,500 and 2,300 hours per year) over a period of five years.
- Families with children tended to stay away from long hours. About 14% of families with children were in the long-hours group (at least one parent with particularly long hours—at least once above 2,300 hours, never below 1,500—and the other with at least a consistently standard schedule) compared with 20% of families without children.
- Families with children were more likely to have at least one parent with low hours (at least once below 1,500 hours without ever going above 2,300 hours) and the other parent with at least a standard schedule.
- Families with long hours reported higher levels of stress than other families, but those with children did not report higher stress levels than those without. In fact, the presence of children had a greater impact on the stress level of families with a consistently standard schedule—they tended to have lower levels of stress in the absence of children, but much higher levels with the presence of children.

■ Barriers to training access ... p. 45

- About 60% of all workers received at least one of three types of employer-supported training in 2005, while about 12% declined training.
- Overall, women were as likely as men to access employer-supported training. However, differences appeared when considering low-wage workers (women 43% vs. men 50%), less-educated workers (42% vs. 52%), non-union workers (57% vs. 60%), or low-wage, less-educated, non-union workers (37% vs. 47%). However, women in these four groups were less likely to decline employer-supported training, even after controlling for their lower access.

■ What's new? ... p. 57

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Perspectives

International differences in low-paid work

Sébastien LaRochelle-Côté and Claude Dionne

The Canadian economy includes numerous low-paid jobs, and not just for part-timers. According to the Survey of Labour and Income Dynamics (SLID), one in seven full-time employees (1.4 million workers) were paid less than \$10 per hour in 2004. Other studies, using varying definitions of low-paid work, also found a large number of low-paid jobs (Morissette and Picot 2005, Morissette and Johnson 2005, and Chung 2004).

However, Canada's proportionately larger number of workers with low pay in comparison with other Organisation for Economic Co-operation and Development (OECD) countries is perhaps less well known. In fact, Canada has one of the highest proportions of low-paid workers among similarly industrialized countries (OECD 1996 and 1998).¹ By and large, Canada's rate of low-paid work is higher than in European countries and similar to the American rate. In contrast, Scandinavian countries typically have the lowest shares of low-paid workers (Nolan and Marx 1999) (see *Data sources and definitions*).

International differences in low-paid work are commonly attributed to institutional and regulatory factors clustered among groups of countries. For instance, countries with higher rates of low-paid work are assumed to have a lower degree of labour market intervention with a laissez-faire approach to the labour market (referred to as Anglo-American). In contrast, countries with lower rates of low pay are characterized as more interventionist, with a European approach to the labour market (Cantillon, Marx and Van den Bosch 2002). The contrast between these two typologies has helped fuel debate over the advantages and disadvantages of low-paid work. While some argue that a higher rate of low-paid work provides much-needed flexibility for workers (Siebert 1997), others are concerned by potential problems for indi-

Data sources and definitions

International comparisons are based on the most recent data from the Luxembourg Income Study (LIS). The LIS is a singular source of comparable labour and income microdata for a wide variety of OECD countries. The analysis is supplemented by the Survey of Consumer Finances (SCF) and the Survey of Labour and Income Dynamics (SLID) to generate historical trends of low-paid work in Canada. The SCF was a cross-sectional survey that used a sub-sample of the Labour Force Survey and was conducted every year from 1976 to 1997. The Survey of Labour and Income Dynamics is an annual longitudinal survey that has been conducted every year since 1993. For the overlapping years, a combined sample of the two surveys was used, as their trends were very similar.

Low-paid workers are defined as employees earning less than two-thirds of the median in each country. As a result, the absolute value used to define low pay varies by country and over time. The choice of the cut-off is a compromise between a lower value of, say, 50% (which would be too close to the minimum wage in some countries) and 75% (which would include too many workers in other countries). This method is not a direct measure of deprivation, but is more related to the ideas of inequality and social exclusion. Furthermore, it has been used in many previous studies. Following the OECD approach, the focus is on annual earnings (before taxes) of paid employees who worked full year, full time (in order to avoid cross-country differences in part-time work).²

vidual and family well-being (Maxwell 2002). However, such generalizations must be interpreted with caution as they have been supported by little empirical evidence (Freeman 2005).

In addition, international differences in low-paid work can also result from fundamental differences in demography, industrial structure, living standards, tax incentives, labour supply and institutions. Clearly, the complexity of issues relating to international differences in low-paid work makes it difficult to draw clear inferences to inform labour market policy debates.

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However, if the low-wage share in Canada differs from countries with similar characteristics and a similar approach to the labour market, like Australia, then the study of differences may be more informative.

This paper provides an update on international differences in low-paid work and then explores potential explanations for the large difference between Canada and Australia, two countries that share many similarities in demography, industrial structure, taxation and living standards.

International differences in low-paid work

International comparisons of low-paid work are not straightforward. One approach is an absolute level of low pay—for instance, the proportion of workers earning less than \$10 per hour. But establishing something like a ‘living wage’ would pose problems for international comparisons: an amount deemed appropriate to measure deprivation in Canada may not be so in other countries, simply because of differences in perceptions and in cultural norms. Even with agreement on a basket of goods and services corresponding to a minimum standard of living, converting the basket into various currencies would be difficult.

Measures of relative deprivation—the extent to which a worker’s earnings fall below their country’s median—have been developed to avoid these problems (see *Low-pay threshold*). A measure of relative deprivation can be interpreted as the number of workers who fall significantly below the financial well-being of the median worker. For example, the OECD defines low-paid work as the proportion

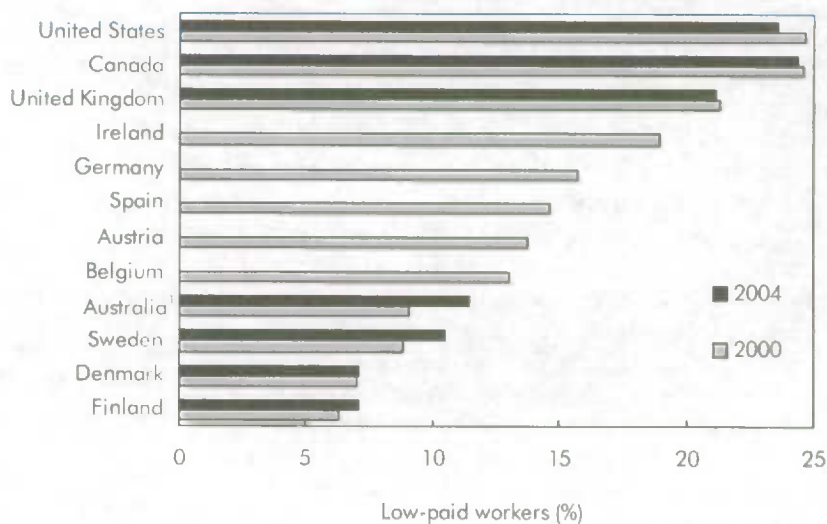
of full-year, full-time workers who fall below two-thirds of the country’s median earnings (OECD 1996 and 1998). This approach is widely used in comparative studies (Nolan and Marx 1999).

Canada and the United States had the highest proportions of low-paid workers among the 12 countries for which data are available, with nearly 1 in 4 workers earning less than two-thirds of median annual earnings in 2000 and in 2004 (Chart A). The United Kingdom (21.3%) and Ireland (18.9% in 2000) also had relatively large contingents of low-paid workers compared with other countries in continental Europe and Australia. Four countries (Germany, Spain, Austria and Belgium) had similar shares of low-paid workers, vary-

ing from 13.0% to 15.7% (for 2000, as 2004 figures were unavailable for these countries). Finally, for both 2000 and 2004, the Scandinavian countries in the sample (Sweden, Denmark and Finland), as well as Australia,¹ had relatively small shares of low-paid workers. For the year 2004, the share of low-paid workers varied from 7.1% (in Finland and Denmark) to 11.4% (in Australia).

These results differ little from previous figures released by the OECD (1996 and 1998), which were based on figures provided by the national statistical agencies. Taking the 1996 study as an example, the United States and Canada had the highest share of low-wage workers, with 25.0% and 23.7% respectively in 1994. By and large,

Chart A Canada and Australia share many characteristics, but low-paid workers are much less common in Australia



1. Results are based on full-time workers who earned at least the federal minimum wage multiplied by 52 weeks.

Source: Luxembourg Income Study, Waves V and VI.

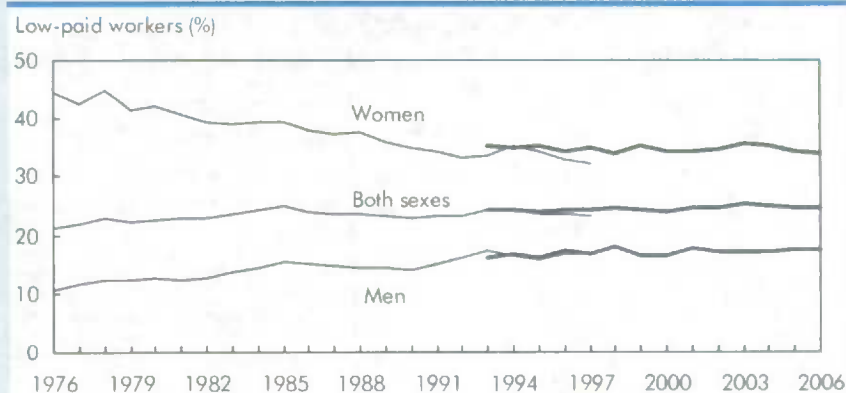
Evolution of low-paid work in Canada

Canada's high level of low-paid work relative to other countries since the mid-1990s raises the question: Did Canada always have a high share of low-wage workers? Data from the Survey of Consumer Finances and the Survey of Labour and Income Dynamics indicate that the share of full-year, full-time workers in low-paid jobs rose from approximately 21% in 1976 to 25% in the mid-1980s, and has remained relatively steady since then, suggesting that the numbers for the years 2000 and 2004 reflect an enduring feature of the Canadian economy.⁴

However, the face of low-paid workers changed over the 30-year period, especially between 1976 and the mid-1990s. The share of women with low-paid jobs decreased significantly, from approximately 45% in 1976 to less than 35% at the beginning of the 1990s. This is consistent with the large gains in educational attainment by women during the 1980s and 1990s and suggests that better education credentials led to better jobs for many of them. In contrast, men became increasingly more likely to work in low-paid jobs. From 1976 to 1993, the proportion of men earning less than two-thirds of the median rose from 11% to 18% (Chart B).

However, not all men were equally affected by the increase in low-paid work. In fact, young men (age 15 to 24) were particularly affected as their incidence of low-paid work increased from approximately 30% in 1976 to more than 60% in the mid-1990s. The share of low-paid work among men age 25 to 34 also rose significantly, from 8% in 1976 to approximately 20% in more recent years. Older men were less affected, but middle-aged men also saw their share of low-paid work increase over the period. Conversely, low-paid work declined among middle-aged and older women over the period, remained the same among women age 25 to 34, but rose among women age 15 to 24.

Chart B After falling for two decades, the incidence of low-paid work among women stabilized in the mid-1990s



Sources: Statistics Canada, Survey of Consumer Finances, 1976 to 1997; Survey of Labour and Income Dynamics, 1993 to 2006.

this suggests that international differences in low-paid work seen in the 1990s remained largely unchanged in the mid-2000s (see *Evolution of low-paid work in Canada*).

These countries differ from each other in many aspects. As mentioned, international differences in low-paid work may relate to varying policy approaches to the labour market. Furthermore, differences in low-paid work also reflect other basic differences in such characteristics as demography, economic structure, labour supply, tax incentives, living standards, and country-specific institutions.

However, Australia has a low-pay incidence more in the European mould, even though it is usually included in the 'Anglo-American, non-interventionist' group of countries (Esping-Andersen 1990). In view of this, a deeper examination of the difference in low-paid work between Canada and Australia follows.

Low-paid work in Canada and Australia

Australia and Canada share many economic, social and political characteristics, often making them the subject of comparative studies. They share a British parliamentary tradition and a federal system of government. Both have small open economies with a relatively modest population (22 million in Australia and 33 million in Canada) and similar immigration rates (Richardson and Lester 2004). Their industrial structures are characterized by abundant natural resources, large exports of raw materials, and large imports of machinery, equipment and production technology (Harchaoui, Jean and Tarkhani 2003). Each has a liberal economy with a social security system characterized by means-testing and private insurance schemes (Esping-Andersen 1990), and a progressive income tax system with similar tax and social security contribution rates (OECD 2009b). Their standards of living are

Low-pay threshold

With a relative measure of low pay (two-thirds of a country's median), the threshold is not the same across countries (Table 1). For comparison purposes, values are expressed in 2002 and 2004 Canadian dollars—based on purchasing power parities (PPP), which allow earnings to be expressed in common currency units. PPPs also take differences in price levels between countries into account. The closer a country is to the Canadian threshold, the more similar its definition of low pay in terms of living standards.

While thresholds differed across countries, some were close to the Canadian one. In 2004, for instance, the low-pay threshold was \$25,700 for Australia (in 2004 Canadian dollars), compared with \$26,700 for Canada (a difference of less than 4%).

Table 1 Low-pay threshold for full-year, full-time workers¹

	2000	2004
		\$
Australia ²	22,300	25,700
Austria	18,500	..
Belgium	22,600	..
Canada	24,700	26,700
Denmark	25,700	29,000
Finland	19,600	24,000
Germany	24,400	..
Ireland	19,300	..
Spain	15,400	..
Sweden ³	20,100	24,100
United Kingdom ⁴	21,800	27,600
United States	26,600	29,600

1. In Canadian dollars.

2. Based on 2001 and 2003.

3. Based on 2000 and 2005.

4. Based on 1999 and 2004.

Note: Figures based on purchasing power parity. Years other than 2000 or 2004 were adjusted using the Consumer Price Index.

Sources: Luxembourg Income Study; Statistics Canada, purchasing power parities for gross domestic product.

Younger workers, women and workers with a lower education level were more likely to have low earnings in both countries (Table 2). The situation of younger workers appears especially striking as 29% of young workers in Australia and as much as 65% in Canada were low paid, compared with national rates of 11% and 24% respectively. Also, the differential between men and women was much smaller in Australia, which is consistent with other research finding that Australia has a smaller male-female earnings gap than Canada (Kidd and Shannon 1996).

Furthermore, even if the two countries are characterized by a strong primary sector, other differences in industrial structure and occupational characteristics could also play a role in explaining differences. Low-paid work is proportionately more prevalent in the wholesale

relatively close, with a gross national income per capita of \$35,760 for Australia versus \$39,650 for Canada, in 2007 US dollars (The World Bank 2009). Economic and productivity growth over the past two decades were similar, as Canada's prosperity grew at an average rate of 1.9% from 1983 to 2000, compared with 2.4% for Australia (Harchaoui, Jean and Tarkhani 2003). Employment rates are close and have increased in tandem (69.3% for Australia and 70.9% for Canada for persons age 15 to 64 in 2000, 70.3% and 72.5% in 2004, and 72.9 and 73.6% in 2007, according to the *Online OECD Employment Database*). Furthermore, their low-pay thresholds are similar when expressed in common currency figures (see *Low-pay threshold*).

Despite these similarities, some observable differences may account for the large gap between the two in low-paid work. These factors include personal characteristics of full-year, full-time workers in the two countries (i.e. specific differences in age-sex distribution and education level) as some demographic groups are more likely than others to be low paid.

Table 2 Share of low-paid work, demographic characteristics

	Canada ¹	Australia ²
		%
Total	24.4	11.4
Age		
Less than 25	65.0	29.4
25 to 54	21.2	8.8
55 and over	22.8	10.7
Sex		
Men	17.2	9.4
Women	33.7	15.0
Education		
University degree	11.7	3.5
No university degree	28.1	14.2

1. 2004 data.

2. 2003 data.

Source: Luxembourg Income Study, Wave VI.

and retail sector, and in personal services (Table 3). Conversely, workers in public administration were least likely to be low paid in both countries. Managers and legislators also tended to exhibit lower rates of low-paid work than others.⁵

Hence, if Canada has proportionately more full-year, full-time workers in lower-paid demographic, industry and occupation groups than Australia, then at least part of the differential in low-paid work could be explained by these. One way to test this hypothesis is to use the Oaxaca decomposition method.⁶ This method works on simple counterfactuals: for example, "What would be the proportion of low-wage workers in Canada if it had the same distribution of workers as Australia across various demographic or industry groups?"

However, results indicate that the difference in low-paid work would persist if Canadian workers had the same demographic, industry, and management characteristics as Australian workers.⁷ This is not entirely unexpected, since inter-country differences in rates of low-paid work were also quite large across nearly all of the above characteristics, suggesting the need to look elsewhere to explain the difference between Canada and Australia.

Table 3 Share of low-paid work, job characteristics

	Canada ¹	Australia ²
	%	
Total	24.4	11.4
Goods-producing industries		
Primary	22.2	20.1
Manufacturing	17.1	12.4
Construction	20.2	11.4
Service-producing industries		
Wholesale and retail	39.9	17.9
Transport and communications utilities	13.6	7.4
Finance and business	21.7	7.9
Education services	15.6	3.7
Health services	23.7	15.9
Public administration	5.7	4.1
Personal services	46.1	15.2
Management		
Managers and legislators	12.7	2.9
Others	25.7	12.2

1. 2004 data.

2. 2003 data.

Source: Luxembourg Income Study, Wave VI.

Canada may also differ from Australia in terms of country-specific labour market institutions. The effect of labour-market institutions on pay rates, inequality, employment and low pay has generated much discussion, but is very difficult to assess empirically (Freeman 2005). However, the literature is clear on one thing: labour-market institutions (pay-setting mechanisms, unionization, and the proportion of workers covered by collective agreements) do affect the dispersion of wages, and, by extension, relative rates of low pay (Wallerstein 1999, and Rueda and Pontusson 2000).

How does Canada differ from Australia in this regard? Union coverage is one place to start, since unionized jobs tend to be better paid and have a lower dispersion. However, Canada actually has a higher rate of unionization (29.4% in 2007) than Australia (18.5%) (OECD 2009a), so unionization itself cannot account for the lower incidence of low-paid jobs in Australia.

Differences in the pay-determination process are more fundamental. In Canada, the union sector is characterized by a highly decentralized system of collective bargaining, which means that bargaining between unions and employers occurs mostly at the plant level. For those that are not part of a union officially recognized as a legal bargaining unit, and therefore not covered by collective agreements, the basic employment conditions (including minimum wage) are generally defined by provincial labour codes.⁸ Canada therefore has what could be termed a two-tier, more flexible approach with respect to labour regulations, which has been a defining feature of the labour market for some time (Fudge and Vosko 2001).

By contrast, the Australian labour market is characterized by a system of 'awards' (compulsory arbitration) dating back to 1907. In this system, government institutions prescribe employment conditions and determine minimum wages for a very large proportion of employees (Kidd and Shannon 1996). Furthermore, the awards system typically covers a large number of employers within a given industry or occupation, including non-unionized workers. The end result is a centralized process of wage determination that provides relatively high minimum standards of pay, the equivalent of which does not exist in Canada.⁹

Because more centralization of the wage-determination process leads to greater wage compression (Wallerstein 1999, and Kidd and Shannon 1996), the

Australian awards system—by providing higher minimum-wage standards—probably explains a good deal of the difference in low-paid work between Canada and Australia. It would also help explain the smaller gap in low-paid work between men and women in Australia, as the system also includes provisions to promote greater equity in the workplace (Garton and McCallum 1996, and Kidd and Shannon 1996). However, the awards system has become increasingly criticized in recent decades as it provides very little flexibility for unions and employers to determine wages at the plant level (Norris 1993). Furthermore, many believe that the system is an obstacle to job creation and prevents the economy from reaching its full potential (Lewis 2006). Others also argue that it restricts the competitiveness of Australian businesses (Wailes and Lansbury 2000).¹⁰

To address some of these concerns, successive Australian governments have introduced several reforms since the mid-1980s. This has led to progressive decentralization of the pay-determination process, from the government and industry to the enterprise level, in order to allow more flexibility in bargaining between employers and employees. Furthermore, a number of changes were designed to make pay rates better reflect the performance of industries and individual firms. Nevertheless, the Australian government (through centralized labour market institutions like the Australian Fair Pay Commission) continues to play an important role in establishing minimum-wage conditions and ensuring that equity and fairness conditions are retained in pay-determination procedures (Wailes and Lansbury 2000, and Fenwick 2006), which remains very different from Canadian practice.

Studying earnings distribution is one empirical strategy used to see if Australia's system of awards is associated with lower rates of low pay. Since the Australian awards system provides minimum employment standards to individuals at the bottom of the distribution, differences would likely be lower between individuals at the bottom and those in the middle. Furthermore, in the absence of other major differences in labour-market intervention, the difference between individuals at the top of the earnings distribution and those in the middle should be similar in the two countries.

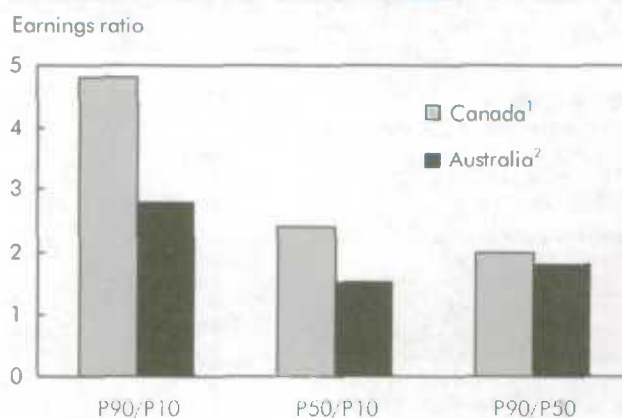
This can be verified by computing a number of earnings dispersion measures (Chart C). In addition to the widely used P90/P10, which compares the earnings at

the 90th percentile with those at the 10th percentile, the P50/P10 can be used to compare earnings of the median worker with those at the bottom of the earnings distribution, and the P90/P50 to compare earnings of the median worker with those at the top.

Individuals at the 90th percentile earned 4.8 times as much as individuals at the 10th percentile in Canada. In comparison, the figure was 2.8 in Australia, suggesting that overall dispersion was much larger in Canada than Australia. The ratio of the median and at the 10th percentile was also much larger in Canada, as median workers earned 2.4 times more than individuals at the 10th percentile, compared with 1.5 times in Australia. By contrast, the dispersion at the top of the earnings distribution was similar. This suggests that most of the difference in the overall dispersion between Canada and Australia is due to differences at the bottom of the distribution.¹¹ This also supports the view that the awards system might explain a great deal of the differences in low-paid work between Canada and Australia.¹²

While differences in the pay-determination process explain some of the difference in low-pay rates between Canada and Australia, they likely do not

Chart C Wage dispersion greater in Canada than in Australia at the bottom of the earnings distribution



1. 2004 data.

2. 2003 data.

Source: Luxembourg Income Study, Wave VI.

explain all of it. Other, more subtle, differences could play a role as well. For example, even though Canada and Australia have similar rates of immigration and both select immigrants through a points system, the composition of immigrants is different simply because the two countries are not drawing from the same pool (Richardson and Lester 2004). The implication is that centralized policies aiming to increase minimum-pay standards may not have the same impact on the distribution, or the extent of low pay, in both countries. Furthermore, the impact of such policies on other aspects of the economy (competitiveness, trade and productivity) could also be very different.

Conclusion

This study used the Luxembourg Income Study (LIS) to examine differences in a number of OECD countries in low-paid work, defined as the proportion of full-year, full-time workers earning less than two-thirds of a country's median. The study of low-paid work is motivated by competing views of efficiency and equity in the economy. On the one hand, low-paid work can be advantageous by providing needed work experience for youth and ensuring that the economy has maximum flexibility. On the other hand, a large contingent of low-paid workers presents equity challenges if, for example, many are the sole earners in a family.

Given the debate, international differences in low-paid work are sometimes used to provide information on the relative position of Canada vis-à-vis the rest of the world. Such comparisons yield several groupings of countries with similar economic and social systems: Canada, the United States, the United Kingdom and Ireland have higher rates of low-paid workers than other OECD countries; Western European countries occupy the middle rung; and Scandinavian countries tend to have the lowest proportions of low-paid workers.

Australia is often grouped with Canada, the U.S. and the U.K.—Anglo-American economies that are presumed to have less interventionist policies than European governments. Yet it has a rate of low-paid workers that puts it near the low end of the Western European countries. The detailed examination of low-paid work in Australia and Canada shows that differences in low-paid work are not due to a higher concentration of groups more likely to be low-paid, such as young men, workers without a university

degree, or workers in personal services and retail trade. Rather, differences in pay-setting processes likely explain much of the discrepancy between Canada and Australia in terms of low-paid work. Minimum-wage conditions are regulated for the vast majority of Australian workers through an awards system that forms the basis of the minimum compensation policy in the country. The system has more than a 100-year history in Australia, which implies it may not be a readily transferable model.

Perspectives

■ Notes

1. The OECD also provides statistical information about rates of low pay across countries in its online employment database (OECD 2009a).
2. The definition of a full-time worker may vary across countries (from 27 to 35 hours per week). Furthermore, information on full-time workers could be retrieved only for the survey reference week in some countries.
3. The number of weeks worked was unavailable in the LIS for Australia in 2004, and for only a fraction of the sample in 2000. Results for Australia are therefore based on full-time workers who earned at least the federal minimum wage over 52 weeks. Results obtained are similar to those provided by the Australian government (Australian Government 2008) and are reasonably close to estimates from the smaller 2000 sample with information on weeks worked. Furthermore, taking only paid employees who worked full time during the survey reference week would yield a rate of 17.3% in 2004, still significantly lower than the Canadian rate for full-year, full-time employees.
4. Median earnings remained relatively constant over the same period, varying between \$40,000 and \$44,000 (in 2006 dollars) over the last three decades.
5. Similar results were obtained with the SLID master file.
6. The Oaxaca decomposition was obtained as follows. First, two regressions were run, one for Canada and one for Australia, modeling the probability of earning less than two-thirds of the country's median. Variables included age, sex, a dummy for university education, industry, a dummy for managerial occupations, women–age interactions, and women–university education interactions. An alternative rate of low-paid work for Canada was then estimated by multiplying average Australian values for variables included in the regressions by the coefficients obtained in the Canadian regression.

7. In 2004, the real difference between Canada and Australia in low-paid work was 13.0 percentage points and would have been 12.5 points if Canadian workers had been distributed as in Australia across demographic, industry and occupation groups, for which information is available in the LIS.
8. In the case of federally regulated industries, which include banking, telecommunications and interprovincial transportation, employment conditions are prescribed by the *Canada Labour Code*.
9. The federal minimum wage in Australia is AU\$14.31 (approximately CAN\$13.00) as of October 2008 (Australian Government 2008) and is much higher than the Canadian average, which currently varies between CAN\$7.75 and \$10.00 across Canadian provinces.
10. Originally, Australia introduced the awards system to provide basic standards of living for workers in combination with high tariff barriers to protect Australian businesses from foreign competition. That arrangement was increasingly called into question as terms of trade for primary products declined and trade liberalization increased.
11. These results were tested by developing another measure of income dispersion, largely inspired by the Foster, Greer and Thorbecke (FGT) index. This is simply a weighted average of income gaps for individuals located below the country's median, expressed as: $\sum_{i=1}^q (1 - y_i/z)^2 / n$, where n is the number in the sample, q is the number below the median, z is the country's median, and y_i is the income of individual i . One interesting property of the FGT index is that more weight is given to workers away from the earnings threshold (z). The FGT index was 0.032 for Australia and 0.102 for Canada, suggesting that the earnings of Australian workers below the median were much less dispersed than those of Canadian workers.
12. As Frenette, Green and Picot 2006 showed, individuals at the bottom of the distribution may not be covered identically by different data sources. While there is no obvious solution to this problem, it may have an impact on distributional differences between Canada and Australia at the bottom of the income distribution.

Perspectives

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GIS update

May Luong

In 2006, an estimated 1.4 million eligible seniors received the Guaranteed Income Supplement (GIS). Nevertheless, approximately 159,400 eligible seniors were not receiving any GIS (Table 1). While the 2006 number reflects an improvement in the GIS take-up by historical standards, understanding the characteristics of eligible non-recipients remains important (see *GIS eligibility*).

The GIS was established in 1967 to provide additional benefits to low-income Old Age Security (OAS) recipients in Canada. The combined retirement income system comprising OAS, the GIS, the Canada and Quebec Pension Plans, and private pensions has dramatically reduced the incidence of low income among seniors over time (Myles 2000). However, in 2001, the Standing Committee on Human Resources Development and the Status of Persons with Disabilities found that a substantial number of eligible seniors were not receiving the GIS (HUMA 2001). In response, ongoing efforts by Human Resources and Skills Development Canada (HRSDC), in conjunction with the Canada Revenue Agency (CRA), have aimed to re-

duce the number of eligible non-recipients through increased outreach activities and a simplified application process (see *GIS initiatives and outreach programs*).

To be eligible for the GIS, individuals must be entitled to receive OAS and must meet specific requirements based on their annual family income. For example, as of April 2009, seniors filing their income tax returns as a single person had to have income below \$15,672. The maximum monthly benefit from April to June 2009 for singles was \$652.51 (see *GIS eligibility*).

Prior to 1999, HRSDC required individuals to re-apply for benefits every year by submitting an application form with a detailed income statement. Since 1999, recipients filing an income tax return have been automatically renewed every year. Those not filing a return must still submit an application with a detailed income statement. However, tax filers who lost their entitlement in one particular year because their income exceeded the threshold were required to re-apply. Many eligible seniors likely did not receive the GIS because they were unaware they

GIS initiatives and outreach programs

Since 2002, Human Resources and Skills Development Canada (HRSDC), Service Canada (SC) and the Canada Revenue Agency (CRA) have shared information in order to reach potential beneficiaries.

In 2002, HRSDC and CRA started targeting low-income seniors whose tax returns indicated potential eligibility for GIS benefits. Since then, HRSDC has mailed out simplified application forms to these individuals with pre-filled information based on their returns. In 2003, HRSDC further simplified the process by reducing six GIS application forms to two and providing instruction sheets. In 2007, with the passing of Bill C-36, which amended the Canada Pension Plan and the *Old Age Security Act*, the requirement to re-apply once an initial application had been made was waived. Recipients who filed income tax returns would never have to re-apply and would receive GIS pay-

ments for all years that their income met the specific requirements (HRSDC 2007).

HRSDC launched a national GIS ad campaign in 2002 to increase awareness and target seniors who had not yet applied. The campaign consisted of television, radio and newspaper ads. In addition, outreach efforts were directed at the most vulnerable, for example seniors living in isolation, the homeless, people with disabilities, immigrants and Aboriginals. These efforts included booths and information kits at malls and fairs, media hot spots, targeted mailings, and providing trained service providers. Efforts were also targeted at community organizations with access to hard-to-reach seniors. Other outreach initiatives included information letters sent from CRA on behalf of HRSDC and SC to individuals 65 and older who were not receiving OAS or the GIS.

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had to re-apply after losing their entitlement. In 2007, with the passing of Bill C-36 amending the Canada Pension Plan and the *Old Age Security Act*, the issue of eligible seniors not applying after loss of entitlement in one year was eliminated—eligible seniors now need only file an income tax return or an income statement every year after their initial application to receive supplemental benefits for those years in which their income is below the GIS cut-off.

While the data cannot directly answer why eligible seniors do not apply, possible reasons include isolation, lack of awareness of the program and its application process, physical or mental health problems, language barriers, low literacy skills, or homelessness. In addition, a survey by HRSDC found that some seniors do not apply for the GIS for religious or moral reasons, perceiving the GIS as welfare (HUMA 2001).

Among senior families, those receiving the GIS appear to be the least well-off. A previous study found the median wealth of unattached GIS recipients to be only one-sixth that of unattached non-recipients.¹ GIS families were more vulnerable financially than other senior families and less able to handle an unexpected major expense (Poon 2005). In addition to having a lower income as a result of not receiving the GIS, eligible non-recipients also face secondary effects. For example, in many provinces prescription drug plans, income supplements, heating oil subsidies and home care assistance programs base eligibility on receipt of the GIS (HUMA 2001). Hence, eligible non-recipients are likely to gain not only financially from GIS benefits but possibly also from other programs.

Two sources are available to study GIS-eligible non-recipients: longitudinal administrative data and longitudinal survey data. While the administrative data provide longer time frames and much larger samples, they lack information on personal characteristics (other than age, sex and marital status) that could help explain eligibility and application patterns. Surveys generally span shorter periods and have smaller samples, but are rich in personal and socio-economic information.

Using the 1999 to 2001 Survey of Labour and Income Dynamics (SLID), an earlier study (Poon 2005) looked at eligible seniors not receiving the GIS. The current study updates the findings to 2005 and 2006. More specifically, it examines changes in the GIS take-up and application rates between 2000 and 2006. Logistic regressions estimated the probability of not applying

for the GIS even when eligible, while holding other characteristics constant. In addition, the characteristics associated with the likelihood of not applying were compared over time.

GIS take-up increased between 2000 and 2006

The take-up rate is individuals receiving GIS benefits as a percentage of the total eligible for the GIS (see *Data sources and definitions*). Between 2000 and 2006, eligible non-recipients declined from approximately 191,700 to 159,400,² while the total senior population increased from 3.6 million to 4.0 million (Table 1). The estimate of seniors in both the Longitudinal Administrative Databank (LAD) and SLID is below the 4.3 million reported in the 2006 Census. The lower number in LAD is mainly due to the requirement for individuals to file income tax returns for two consecutive years in order to be included. Seniors are under-represented in SLID because the survey covers about 97% of the Canadian population, excluding those in the territories, in institutions, on First Nations reserves and in military barracks.

Overall, the population and the number of eligible GIS recipients and non-recipients estimates from SLID are in line with those from tax data. The differences arise mainly because LAD represents 20% of all tax filers, while SLID is a survey with a much smaller sample size. In this study, SLID is used for socio-demographic information not available in LAD. However, LAD would be more accurate for estimating the total number of eligible non-recipients.

Table 1 GIS recipients and eligible non-recipients

	LAD	SLID
	'000	
Total seniors	4,122.7	4,006.8
OAS recipients	4,010.3	3,861.4
GIS recipients and eligible non-recipients	1,710.6	1,577.5
Recipients	1,565.1	1,418.1
Non-recipients	145.5	159.4

Sources: Statistics Canada, Longitudinal Administrative Database and Survey of Labour and Income Dynamics, 2006.

Models

Separate logistic regressions were run for 2000 and 2006 to examine the characteristics associated with whether an eligible individual applied during that year. The sample sizes were 895 (representing 345,800 seniors) in 2000 and 876 (369,100) in 2006. Logistic regression estimates the probability of a particular outcome (here, not applying when eligible) as a function of several explanatory variables. The association between each explanatory variable and the outcome was examined while holding all other variables constant. To account for the complex survey design, bootstrap weights were used.

To test whether coefficients were significantly different between the years, all else constant, the two data sets were stacked including the bootstrap weights. A panel dummy was created and set to 0 for respondents in 2000 and to 1 for 2006. Interaction terms between the panel dummy and specific variables were included in the model. These comprised age group, GIS amount, health status, education, and region of residence. Other variables such as economic family, sex, major activity, immigrant status, and home ownership were initially included but were subsequently dropped as they showed no statistical significance and their inclusion did not improve the model.

In 2006, take-up was higher for most groups as the overall rate rose from 87% in 2000 to 90% (Table 2). As might be expected, those entitled to higher benefits (\$2,000 or more) had the greatest take-up rate in both 2000 and 2006. And although significant increases were seen for the two lowest payment groups (less than \$500 and \$500 to \$999), their take-up rates were still significantly lower than the top group's rate. Take-up in the less than \$500 group increased from 55% to 72%, and in the \$500 to \$999 group from 70% to 82%. It may be that some eligible seniors in these low-payment groups choose not to apply for the GIS as the amounts may be too small to trigger interest or to compensate for going through the application process.

Individuals age 70 and over also experienced significant improvement in their take-up rates in 2006. Both men's and women's rates improved significantly. While women had a higher take-up rate in 2006, the increase between 2000 and 2006 was slightly greater for men.

Improved rates were also seen for those with good or fair health, homeowners and immigrants. Although take-up rates increased in all provinces except Quebec, the increase was statistically significant only in Ontario. Overall, these improvements brought other

provinces more in line with high levels of take-up already observed in Quebec and the Atlantic provinces.

Application rates also increased

The application rate is the proportion of GIS recipients who did not receive payments in the previous year and therefore had to apply to receive them in the current year (see *Data sources and definitions*). The take-up rate provides information on who is receiving the GIS and the application rate on who applies for the GIS when eligible. For instance, the take-up rate includes a large portion of recipients who are automatically renewed each year, but some individuals lose their eligibility in a given year if their income exceeds the GIS cut-off during that year. If their income subsequently falls below the GIS cut-off and they regain eligibility, they have to re-apply for benefits.

Overall, 45% of all eligible seniors required to apply for the GIS in 2000 submitted an application. Eligible seniors may not apply for the GIS for many reasons. For example, they may not be aware of the program or how to apply. In the current study period, Bill C-36 had yet to be passed. Those who lost eligibility may not have realized they had to re-apply when they regained eligibility. Regardless of the reasons, a parliamentary committee concluded in 2001 (HUMA 2001) that not enough was being done to reach 'non-subscribed' seniors. Since then, the application process has been simplified and several outreach programs implemented to raise awareness of the GIS (see *GIS initiatives and outreach programs*).

By 2006, the application rate had increased significantly to almost 57%. One of the most significant increases was for those with annual GIS benefits of less than \$500—between 2000 and 2006, their application rate increased more than 20 percentage points and ceased to be significantly different from the rate of those with benefits of \$2,000 or more.

In both 2000 and 2006, the application rate was highest for persons age 65 to 69. However, those 80 and over made the largest gains during the period, followed by those 70 to 79. Application rates for men and women also increased significantly, about 15 and 10 percentage points respectively.

In 2000, the application rates for persons with some secondary education, high school graduates and post-secondary studies (completed or not) were not

Table 2 Characteristics of eligible non-recipients, overall take-up rates and application rates

	Eligible non-recipients		Take-up rate		Application rate	
	2000 (ref.)	2006	2000 (ref.)	2006	2000 (ref.)	2006
			%			
Both sexes	100.0	100.0 ^(*)	87.0	89.9 ^(*)	44.6	56.8 ^(*)
Men (ref.)	46.3	44.5	84.1	88.2 ^(*)	43.9	58.6 ^(*)
Women	53.7	55.5	88.7 [*]	90.9 ^(*)	45.1	55.3 ^(*)
Age						
65 to 69	25.3 [*]	32.4	87.7	87.8	70.1 [*]	68.2 [*]
70 to 79 (ref.)	46.8	41.4	87.1	90.6 ^(*)	24.6	49.4 ^(*)
80 and over	27.9 [*]	26.1 [*]	85.9	90.7 ^(*)	17.8 ^E	45.0 ^(*)
Region						
Atlantic	4.7 ^{*E}	5.4 ^{*E}	94.3 [*]	94.6 [*]	63.8 [*]	65.0
Quebec	19.6 [*]	29.0 ^(*)	91.3 [*]	90.8	51.5	51.5
Ontario (ref.)	41.7	35.9	82.7	88.1 ^(*)	40.0	59.1 ^(*)
Manitoba/Saskatchewan	8.9 [*]	6.8 [*]	86.6	90.4	36.9	59.4 ^(*)
Alberta	11.7 ^{*E}	9.5 ^{*E}	80.8	87.9	36.1 ^E	47.9
British Columbia	13.4 [*]	13.3 ^{*E}	85.1	89.4	46.7	59.9
Economic family						
Unattached (ref.)	37.3	36.6	88.5	90.7	37.6	55.6 ^(*)
Married couple, non-senior ¹	3.9 ^{*E}	5.4 ^{*E}	92.2	92.9	68.1 [*]	66.9
Married couple, senior ¹	40.2	40.9	83.6 [*]	87.9 [*]	45.3	57.1 ^(*)
Other	18.6 [*]	17.1 [*]	87.5	90.7	46.8	54.5
Major activity²						
Working (ref.) ³	4.7 ^{*E}	6.2 ^{*E}	71.9 [*]	78.4 [*]	54.3 ^E	56.7 ^E
Retired (ref.)	79.9	68.6 ^(*)	87.4	90.3 ^(*)	43.8	58.3 ^(*)
Other	8.1 ^{*E}	14.9 ^(*)	88.5	91.4	52.0	57.9
Highest level of education²						
Less than grade 9 (ref.)	35.1	32.0	90.5	91.2	48.5	51.7
Some secondary	23.0 [*]	19.0 [*]	84.5 [*]	88.7	40.1	63.5 ^(*)
High school graduate	17.4 [*]	12.1 ^{*E}	80.4 [*]	89.0 ^(*)	41.9	60.4 ^(*)
Some postsecondary (completed or not)	17.4 [*]	23.9	83.3 [*]	87.9	44.8	57.6
Health status²						
Excellent or very good	30.5 [*]	29.6 [*]	86.1	88.1	47.6	52.6
Good or fair (ref.)	55.4	49.7	86.7	90.9 ^(*)	43.0	61.9 ^(*)
Poor	5.1 ^{*E}	10.1 ^{*E}	93.6 [*]	90.3	54.3	52.2 ^E
Immigrant status²						
Immigrant	26.8 [*]	19.6 [*]	85.6	92.3 ^(*)	45.0	66.7 ^(*)
Non-immigrant (ref.)	69.4	78.4 ^(*)	87.4	89.1	44.2	53.1 ^(*)
Home ownership						
Owned by member of the family (ref.)	76.0	75.0	84.7	88.2 ^(*)	45.2	55.8 ^(*)
Not owned by member of the family	24.0 [*]	25.0 [*]	91.2 [*]	93.0 [*]	42.4	59.5 ^(*)
Annual GIS						
Less than \$500	30.9	23.0 [*]	55.3 [*]	72.3 ^(*)	38.2 [*]	58.4 ^(*)
\$500 to \$999	20.6	13.7 ^{*E}	70.1 [*]	82.1 ^(*)	38.4 [*]	52.1 ^E
\$1,000 to \$1,999	23.9	23.0 [*]	83.7 [*]	85.2 [*]	41.6 [*]	47.6 [*]
\$2,000 or more (ref.)	24.6	40.3 ^(*)	94.9	94.0	56.1	61.2

* statistically significant from the reference group (ref.) at the 5% level

(*) cross-panel statistical significance at the 5% level

1. Based on age of major income recipient.

2. Will not add up to 100% because some figures were not available.

3. Reference for application rates.

Source: Statistics Canada, Survey of Labour and Income Dynamics.

statistically different from the rate for those with less than a grade 9 education. Nevertheless, by 2006, the application rate increased significantly for those with some secondary education and high school graduates.

Higher application rates were also noted for Ontario and Manitoba/Saskatchewan, the unattached, married elderly couples, retirees, those with good or fair health, and both immigrants and non-immigrants.

Who's eligible but not applying?

Logistic regression provides further insight into the characteristics of eligible recipients while controlling for other characteristics. Separate models were run for 2000 and 2006 to test for the statistical significance of differences across characteristics within each panel. For cross-panel comparisons, data for 2005 to 2006 were stacked onto 1999 to 2001 data. Separate regressions were run using different reference profiles in order to test whether coefficients were statistically different between the two panels.³ In addition, logistic models were tested separately by sex but few differences were found. Therefore, the models in this section include both men and women.⁴

In general, the samples were quite small, often leading to large standard errors, which may result in type II error.⁵ In other words, the models may show very little statistical significance with the current sample sizes, whereas larger samples would produce more precise estimates, leading to smaller standard errors. Nevertheless, some significant differences between 2000 and 2006 were noted.

Overall, the probability of not applying for the GIS when eligible decreased significantly for the older age groups (70 to 79 and 80 and over) between 2000 and 2006 (Table 3). In other words, individuals 70 and over were much more likely to apply for the GIS in 2006 than in 2000. An increase in the likelihood of older seniors applying is particularly noteworthy since older seniors may also tend to be more isolated and financially vulnerable.

Nevertheless, despite decreases in the probability of older seniors not applying in 2006, they were still significantly more likely to not apply than those age 65 to 69.

In 2000, the probability of not applying when eligible was significantly related to the annual GIS entitlement. That is, eligible seniors qualifying for benefits of \$2,000 or more were the least likely not to have applied. However, by 2006, they were no longer statistically different from other benefit groups in their likelihood of not applying. This is likely due to the increase in the application rate of those with annual benefits of less than \$500.

Overall, the probability of not applying when eligible fell between 2000 and 2006. However, the changes were statistically different only for some variables. Nevertheless, the results of a joint-significance test for all interaction terms between each variable and a panel indicator suggest that the overall pattern of non-application changed significantly.

Table 3 Probability of not applying when eligible

	2000		2006		Joint model p-value
	Coef-ficient	Predicted probability	Coef-ficient	Predicted probability	
Intercept	-0.402	% 40	-0.925	% 28	0.286
Age (ref. 65 to 69)					
70 to 79	1.918*	82	0.850*	48	0.001*
80 and over	2.458*	89	1.064*	53	0.001*
Annual GIS (ref. less than \$500)					
\$500 to \$999	-0.049	39	0.347	36	0.825
\$1,000 to \$1,999	-0.022	40	0.456	38	0.926
\$2,000 and more	-0.768*	24	0.011	29	0.567
Health status (ref. excellent or very good)					
Good or fair	-0.022	40	-0.408	21	0.053
Poor	-0.368	32	0.069	30	0.897
Region (ref. Ontario)					
Atlantic	-0.750*	24	-0.133	26	0.858
Quebec	-0.204	35	0.485	39	0.743
Manitoba/Saskatchewan	-0.118	37	-0.119	26	0.345
Alberta	0.001	40	0.448	38	0.902
British Columbia	-0.364	32	0.150	32	0.989

* statistically significant from the reference group (ref.) at the 5% level
Source: Statistics Canada, Survey of Labour and Income Dynamics.

Eligible seniors more likely to apply in 2006

Given that at age 65 seniors applying for OAS can simultaneously apply for the GIS, their application process is much simpler than for those who lose their eligibility and are required to re-apply in a subsequent year. In order to understand the factors associated with re-applying for the GIS, 65 year-olds were dropped. In addition, the exclusion of those age 65, who likely were first-time applicants, allowed for an examination of the pure age effect.

Between 2000 and 2006, the number of eligible seniors age 66 and over who applied almost doubled (from 78,000 to 151,600),

while the number eligible but not applying fell (from 189,000 to 146,400).

Logistic regressions were repeated for this sub-sample of eligible seniors.⁶ The smaller sample size decreased the precision of the estimates, resulting in larger standard errors and p-values.

Overall, the results were similar to the full-sample model (Table 4). However, the probability of not applying when eligible was much higher. In contrast with the full-sample model, the age effect was no longer significant in 2006 once the 65 year-olds were dropped, suggesting that the age effect found in the full model probably resulted from individuals age 65 being

more likely to apply since they can apply for the GIS in conjunction with the OAS.

A joint-significance test, where all interaction terms and the panel dummy were tested, yielded results similar to the full-sample analysis: the overall pattern of non-application changed significantly between the 2000 and 2006 cohorts.

Summary

Since the GIS was established, many seniors with little or no income other than OAS have benefited from the extra income. The GIS in conjunction with the combined retirement income system has been instrumental in reducing the number of seniors living in low income. Nevertheless, a previous study found that, in 2000, a large number of eligible seniors were not receiving the GIS (Poon 2005). In response to the recommendations of a House of Commons standing committee, HRSDC and the Canada Revenue Agency addressed this issue by simplifying the application process and initiating outreach efforts to increase awareness of the GIS program. In addition, HRSDC and CRA have shared information in order to reach potential beneficiaries.

Between 2000 and 2006, the number of eligible non-recipients fell as take-up rates rose. The largest increases were for those receiving annual GIS payments of less than \$500 and \$500 to \$999—up 17 and 12 percentage points respectively—possibly because of the simplified application process. Seniors may now be more inclined to go through the application process even for small GIS payments since the time cost of the less complex application process is now lower.

Table 4 Logistic regressions of eligible seniors not applying, age 66 and over

	2000		2006		Joint model p-value
	Coef-ficient	Predicted probability	Coef-ficient	Predicted probability	
		%		%	
Intercept	0.261	56	-0.162	46	0.450
Age (ref. 66 to 69)					
70 to 79	0.853*	75	0.381	55	0.089
80 and over	1.385*	84	0.530	59	0.027*
Annual GIS (ref. less than \$500)					
\$500 to \$999	0.133	60	0.602	61	0.945
\$1,000 to \$1,999	-0.214	51	0.704*	63	0.392
\$2,000 and more	-0.783*	37	-0.054	45	0.547
Highest level of education (ref. less than grade 9)					
Some secondary	0.258	63	-0.274	39	0.107
High school graduate	0.443	67	-0.389	37	0.043*
Some postsecondary (completed or not)	0.120	59	-0.061	44	0.250
Health status (ref. excellent or very good)					
Good or fair	0.110	59	-0.463*	35	0.067
Poor	0.207	61	0.113	49	0.520

* statistically significant from the reference group (ref.) at the 5% level
Source: Statistics Canada, Survey of Labour and Income Dynamics.

Data sources and definitions

The **Survey of Labour and Income Dynamics** (SLID) covers roughly 97% of the Canadian population, excluding those in the territories, in institutions, on First Nations reserves or in military barracks. Each panel of respondents, approximately 15,000 households and 30,000 adults, is surveyed for six consecutive years. A new panel is introduced every three years, so two panels always overlap. This study used the combined overlapping samples for 1999 to 2001 and 2005 to 2006. While three years were available for the initial analysis (1999 to 2001), only two years were available for the update (2005 to 2006) as 2007 was not yet available. However, since 2001 was used only for the imputation of a limited number of cases, the lack of 2007 data likely had a minimal effect on the overall conclusions of the study.

The **Longitudinal Administrative Databank** (LAD) consists of a 20% sample of Canadian tax filers. Once selected, individuals are in the sample for every year they file a return. In addition, part of each year's sample includes individuals appearing for the first time, making the sample current and cross-sectionally representative. In 2000, LAD carried nearly five million individuals.

Eligible non-recipients are individuals age 65 and over deemed eligible for GIS benefits but not receiving any payments for the reference year. They are divided into four groups: single, married to a non-pensioner, married to a pensioner, or married to an 'Allowance' recipient. (The Spousal Allowance provides money for low-income seniors age 60 to 64 whose spouse or common-law partner is receiving or entitled to OAS and the GIS. Allowance recipients must be a Canadian citizen or a legal resident at the time the Allowance is approved or when they last lived in Canada. They must also have lived in Canada for at least 10 years since age 18.) Since one criterion for eligibility is receiving OAS, OAS non-recipients are automatically classified as GIS non-eligible.⁷ Income as defined for the GIS was then calculated for each record based on 1999 or 2005 income. For married or common-law couples, the combined

income of the pensioner and the spouse or partner was taken into account. Family-level cut-offs were then used to determine eligibility in 2000 and 2006. The cut-offs published by HRSDC are for those receiving the maximum OAS; for those not receiving the maximum, the cut-offs depend on the individual's OAS benefits.⁸ Records were checked to see if the GIS was received in 2000 and 2006 to classify respondents into three groups: not eligible, eligible and receiving, and eligible but not receiving.⁹ Theoretical payment amounts were calculated for eligible non-recipients while actual payment amounts were used for recipients.

The **take-up rate** is GIS recipients as a percentage of those eligible.

$$\text{Take-up rate} = \frac{\text{GIS recipients in current year}}{\text{GIS recipients} + \text{eligible non-recipients}}$$

The **application rate** is GIS recipients in 2006 (2000) not receiving GIS in 2005 (1999) as a percentage of the total GIS recipients in 2006 (2000) not receiving GIS in 2005 (1999) plus the eligible non-recipients in 2006 (2000).

For example:

$$\text{Application rate (2006)} = \frac{\text{recipients in 2006 not receiving GIS in 2005}}{\text{recipients in 2006 not receiving GIS in 2005} + \text{eligible non-recipients in 2006}}$$

GIS recipients in 2006 (2000) who did not receive the GIS in 2005 (1999) were assumed to represent those applying for the GIS in 2006 (2000)—they were not automatically renewed since they received no payments the previous year. The eligible individuals in 2006 (2000) who were not receiving the GIS in 2005 (1999) represented those who could have applied in 2006 (2000).

At the same time, the number of seniors applying for the GIS rose from approximately 154,200 to 209,700, representing an increase of 36%. The largest improvements were among those 80 and over, who saw an increase of 27 percentage points, followed by those 70 to 79 at almost 25 points. Regionally, Manitoba/Saskatchewan and Ontario had the largest increases (23 and 19 points respectively).

Overall, the statistical models corroborate the descriptive analyses. The models indicate that although annual GIS payment amounts in 2000 were negatively related to the likelihood of not applying, this was no longer the case in 2006. This is likely due to the significant jump in the GIS application rate among those receiv-

ing less than \$500 in 2006. Overall, the results suggest that, by 2006, those receiving small GIS payments were just as likely to apply as those receiving the maximum.

The probability of not applying also fell significantly between 2000 and 2006 for the two oldest age groups (70 to 79 and 80 and over). And when first-time automatic applicants (age 65) were excluded, the probabilities for the two oldest groups were no longer statistically different from the youngest age group (66 to 69), suggesting that, by 2006, older seniors were just as likely to apply as younger seniors.

Significant increases were seen in the GIS take-up and application rates during the 2000 to 2006 period as HRSDC implemented a number of initiatives and

GIS eligibility

To be eligible for the GIS, an individual must be entitled to OAS and meet the income requirements. Individuals are eligible for OAS if they are 65 or over, a Canadian citizen or a legal resident, and have lived in Canada for at least 10 years after age 18 if currently living in Canada, or for 20 years after age 18 if living outside Canada.

The maximum annual incomes used for this study are different from those listed here (Table 5) since the reference periods were 2000 and 2006. The maximum annual income and monthly benefit increase every quarter to reflect inflation. For example, in 2006, the maximum annual income for single persons was \$14,352.

Table 5 Income cut-offs and benefit rates for GIS, April to June 2009

	Maximum annual income	Maximum monthly benefit
		\$
Single person	15,672	652.51
Spouse of pensioner	20,688	430.90
Spouse of non-pensioner	37,584	652.51
Spouse of Allowance recipient	37,584	430.90

Source: Human Resources and Skills Development Canada.

changes in the GIS application process. Now, with the passing of Bill C-36, seniors need apply only once to receive GIS payments for all years of eligibility. The impact on take-up and application rates will be seen when more recent data become available.

Perspectives

Notes

1. GIS non-recipients, including both OAS recipients and non-recipients.
2. The estimated number of eligible non-recipients in Poon 2005 is slightly different than in this study, mainly because Poon used current-year income to estimate current-year eligibility for those whose income was missing in the previous year, while this study simply excluded individuals with missing previous-year income. Nevertheless, the results for the models and the descriptive statistics are almost identical.
3. Bootstrap weights for the two data sets were also stacked and utilized in the regression.
4. Other variables tested but subsequently dropped for lack of statistical significance and explanatory power were sex, education, immigrant status, home ownership, major activity, and economic family type. The exclusion of these variables did not greatly affect the coefficients of the remaining independent variables. Health status and region were included despite their lack of statistical significance because their exclusion greatly affected the coefficients of the other remaining variables. However, their inclusion did not change the statistical significance of the other variables and the general conclusion of the models.
5. A type II error is not rejecting the null-hypothesis of no statistical significance when it should have been rejected.
6. Similar to the full-sample model, other variables were tested but subsequently dropped as they did not show any statistical significance within panel or over time.
7. Those who have not applied for OAS, have had their OAS clawed back or are not eligible for OAS (i.e. do not meet the residence requirements) are all considered GIS non-eligible.
8. In general terms, the GIS for those receiving partial OAS benefits will be higher by an amount equivalent to the difference between the maximum OAS and their OAS benefits. This was not accounted for in the analysis. However, partial OAS recipients make up only a small portion of domestic recipients (4% in 2000 and 6% in 2006).
9. A number of assumptions were made to account for the difference in payment year (July to June) versus calendar year: an eligible non-recipient remained a non-recipient for the entire year; an individual receiving the GIS in 2000 or 2006 but not eligible based on 1999 or 2005 income was classified as being not eligible and not receiving if they reported GIS in 1999 or 2005; an individual receiving the GIS in 2000 or 2006 but not eligible based on their 1999 or 2005 income and reporting no GIS in 1999 or 2005 was classified as being an eligible recipient who received an option (under certain circumstances, like retirement, an individual can request that an income estimate be used rather than their actual income). These assumptions were not expected to have a significant effect on the results.

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We welcome your views on articles and other items that have appeared in *Perspectives*. Additional insights on the data are also welcome, but to be considered for publication, communications should be factual and analytical. We encourage readers to inform us about their current research projects, new publications, data sources, and upcoming events relating to labour and income.

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Pathways into the GIS

Sharanjit Uppal, Ted Wannell and Edouard Imbeau

Canada has an array of programs to provide financial security to seniors (see *Transfers, pensions and tax-advantaged savings plans*), which have helped reduce the low-income rate among seniors to about one-half that among younger adults.⁶

The Guaranteed Income Supplement (GIS) is a transfer specifically targeted at low-income seniors. The GIS is income-tested—benefits are based on previous year's income and are reduced with additional income, disappearing altogether when a maximum threshold is reached. In 2006, about 36% of seniors received at least some benefits, amounting to about \$6.8 billion.⁷

Viewed through an income-support lens, the tiered system has succeeded in keeping the majority of seniors above the low-income cut-off. Nevertheless, over one-third of individuals 65 and over qualify for a supplement explicitly intended for low-income seniors. Clearly, both individuals and governments would be better off financially if more seniors had higher incomes from other sources and fewer needed GIS benefits.

How do individuals get to the point of needing GIS benefits? Were most at the lower end of the income distribution in middle age? Did their incomes drop further and faster than those of their contemporaries? Were they not covered by employer pension plans? Did they save less frequently? Become disabled? These questions are addressed by tracking individual income histories from age 45 to age 68. In addition to sources of income, the database used contains other relevant information: pension plan membership, RRSP contributions and withdrawals, disability deductions and time-specific family structure (see *Data source and defini-*

tions). Although other factors related to income and earnings—for example, education and occupation—were not available, most of their impact on GIS receipt likely acts through income history.

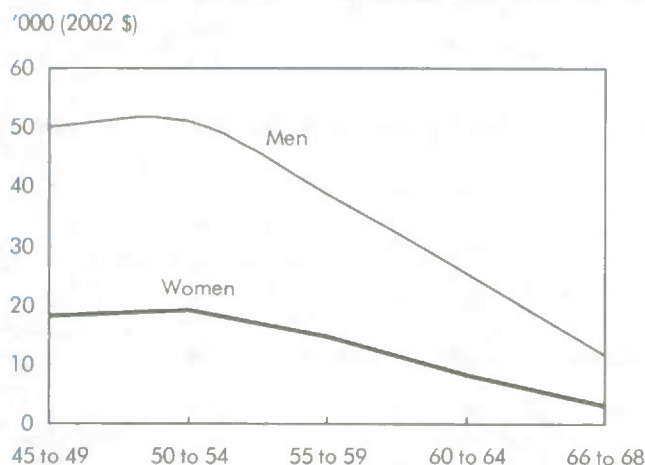
Earnings and income trajectories

Individuals in their late 40s and early 50s are generally in their peak earnings years (Luong and Hébert 2009). Most will have paid off mortgages and other major debts and will be increasingly focused on saving for retirement. Many are then likely to reduce their work hours as their savings goals are achieved. This pattern dominates aggregate age-earnings profiles.

In some cases individuals may lose their jobs before savings goals are reached. Research has shown that middle-aged displaced workers, particularly those with high seniority, have significant long-term earnings losses (Morissette et al. 2007). Health problems and disability become more prevalent in middle age and can decrease the probability of working, hours of work and earnings (Galarneau and Radulescu 2009). And those at the bottom of the earnings distribution may simply not have the financial capability to save for retirement. Persistent low income in middle age is more prevalent among unattached individuals (Feng et al. 2007). This variety of potential outcomes indicates that a distributional approach that accounts for both levels of and changes in income is appropriate for the study of long-term outcomes, like the eventual receipt of GIS benefits.

Corresponding to the standard aggregate profile, average annual earnings peak for both men and women in their early 50s and decline thereafter

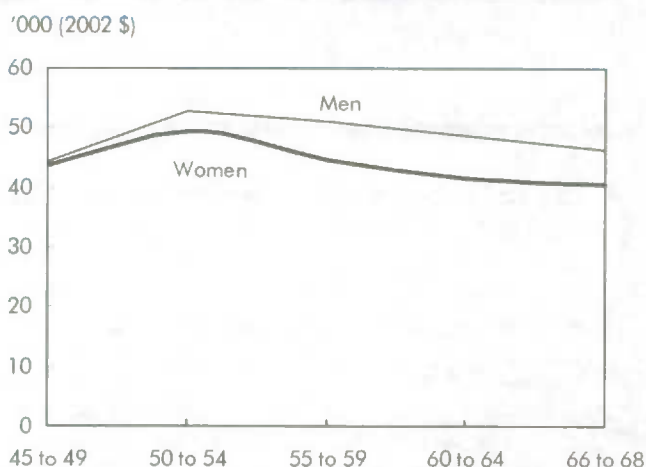
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Chart A Employment earnings for men and women peak in their early 50s

Source: Statistics Canada, Longitudinal Administrative Databank, 2006.

(Chart A). By their late 60s, mean employment earnings have fallen to 23% of their peak value for men and 15% for women.

Size-adjusted family income follows a much different path that corresponds to the life cycle model of income smoothing.¹¹ Like earnings, adjusted income

Chart B Adjusted family income declines gradually after individuals' early 50s

Source: Statistics Canada, Longitudinal Administrative Databank, 2006.

peaks in individuals' early 50s but then declines gradually (Chart B). By their late 60s, women live in families that, on average, retain 82% of the adjusted income experienced in their early 50s. The corresponding figure for men is 88%. These aggregate income replacement ratios are high compared with rules of thumb

Transfers, pensions and tax-advantaged savings plans

Canada has a tiered approach to income support for seniors. The first tier provides transfers to those age 65 and over—the Old Age Security (OAS) pension and the Guaranteed Income Supplement (GIS).¹ The second consists of employment-based public pensions funded by employer and employee contributions—the Canada and Quebec Pension Plans (C/QPP). The third tier comprises tax-sheltered employer pensions and private savings—registered pension plans (RPPs), registered retirement savings plans (RRSPs) and the new tax-free savings account (TFSA).

The tax-advantaged treatment of RRSPs, TFSAs and employer pension plans currently provides incentives to use them for retirement savings. Suggestions have been made to widen this net by developing a readily portable employer pension plan in addition to the CPP (Ambachtsheer 2008).

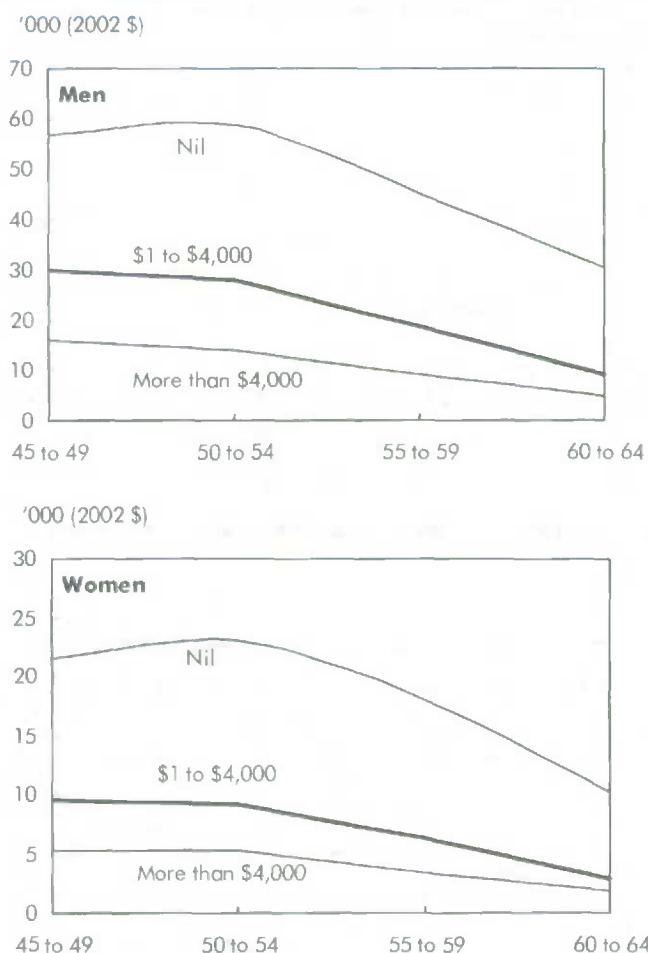
The recently introduced TFSAs overcome some disadvantages of RRSPs noted for low-income earners (Shillington 2003). These plans allow individuals to contribute up to \$5,000 per year, but, unlike RRSP contributions, the amounts are not deductible from taxable earnings. Instead, the original capital and accrued interest or gains can be withdrawn tax-free and

with no impact on social benefits like the GIS.

The OAS is a longstanding program designed to enhance the financial security of seniors. The basic OAS provides a modest complement to income from other sources such as the C/QPP, employer-sponsored pension plans, RRSPs, and other personal savings. To ensure that the incomes of seniors do not fall below a specific threshold, the GIS supplements the basic OAS pension when individuals have little or no other income.

In 2008, the maximum OAS pension was \$6,082.23.² Seniors with little or no other income can have the GIS added to their income. The maximum GIS, paid to seniors with no other income, was \$7,677.03 for single seniors and \$10,139.40 for pensioner couples.³ Combined benefits for seniors with no other income amounted to \$13,759.26 for singles and \$22,303.86 for couples. Since the GIS is reduced by \$0.50 for every dollar of income from other sources (excluding the OAS pension and the first \$3,500 of employment income⁴), no GIS was paid when other sources of income exceeded \$15,672 for singles or \$20,688 for couples.⁵

Chart C Mean employment income at younger ages of persons age 68 or 69 by GIS benefit



Source: Statistics Canada, Longitudinal Administrative Databank, 2006.

discussed in policy documents and recommended by financial advisors, but accord with earlier research that found high rates of adjusted replacement, particularly at the bottom and middle of the income distribution (Larochelle-Côté et al. 2008).

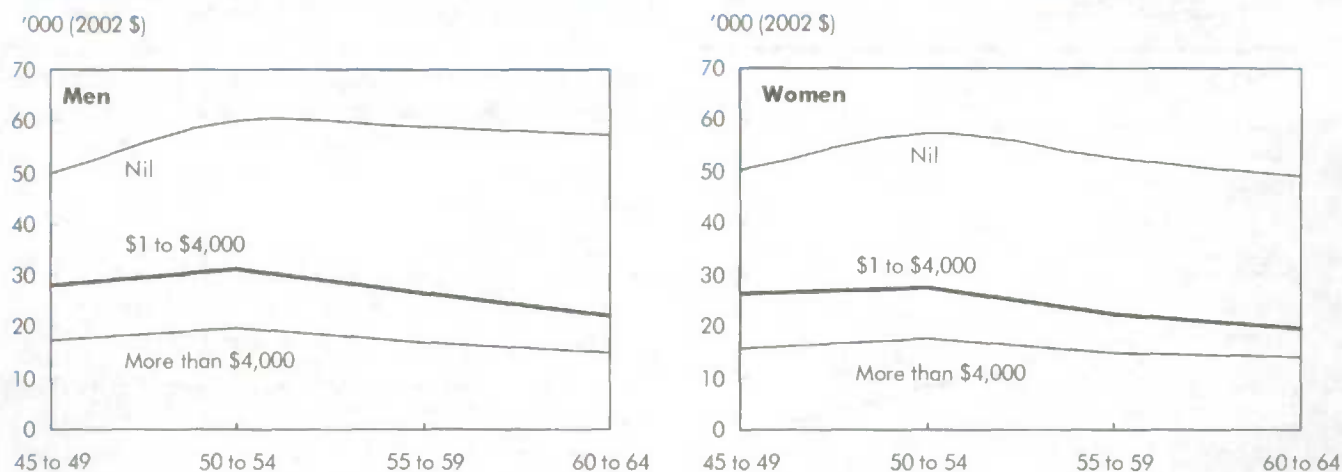
However, aggregates encompass a range of outcomes. Since the outcome of interest is the receipt of GIS benefits, aggregate trajectories were retraced according to the annual average level of GIS benefits received

from age 66 to 68: none, \$1 to \$4,000, and more than \$4,000. For both men and women who did not become GIS recipients, earnings peaked in their early 50s and declined swiftly thereafter, albeit not as steeply as in the aggregate picture (Chart C). Those receiving from \$1 to \$4,000 averaged less than one-half of the peak earnings of non-recipients, and those receiving more than \$4,000 in benefits averaged less than one-quarter. These differences in earnings indicate that earnings in middle age are a primary correlate of future GIS receipt. But the trajectory may also be a significant factor since the earnings of GIS recipients were highest in their late 40s, while earnings of non-recipients continued to increase into their early 50s.

The story is much the same for adjusted family income (Chart D). Those not receiving GIS benefits had a peak family income that was, on average, triple that of those receiving GIS benefits of more than \$4,000 and double that of those receiving from \$1 to \$4,000. But differences in trajectory patterns were less clear-cut for family income than for employment earnings.

Not all types of income have the same relationship with future GIS receipt. Since work interruptions in middle age are likely to have long-term financial consequences, retrospective Employment Insurance (EI) benefits were also calculated for the three GIS benefit categories (Chart E). Among men, GIS recipients averaged three to four times more EI benefits in their late 40s and early 50s than non-GIS recipients. The differences in EI benefits were smaller for women, yet significant enough to indicate that receiving EI was likely to be a strong correlate of future GIS receipt. For both men and women, the gaps in EI benefits started to converge in older age groups, as fewer in the cohort remained in the labour market.

As noted, the incidence of disability increases with age and disabilities have a negative effect on hours of work and earnings. Moreover, to claim the disability deduction—used as the indicator of disability—the benchmark is a severe physical or mental disability that noticeably restricts activities of daily living. As could be expected, those who claimed the disability deduction at least once from ages 45 to 64 were much more likely to receive the GIS than those who never claimed (Chart F). The difference in GIS receipt was much larger among men—38% for those with a disability claim compared with 22% for other men—than among women (32% versus 24%).

Chart D Mean family income at younger ages of persons age 68 or 69 by GIS benefit

Source: Statistics Canada, Longitudinal Administrative Databank, 2006.

Distributional mobility

The receipt of GIS benefits was clearly related to the levels of various types of income some 20 years in the past and, to a lesser extent, their subsequent trajectories as individuals approached age 65. As strong as these correlations may be, they present an aggregate picture that may mask movements up and down the income distribution that lead to very different outcomes for individuals who start at the same point.

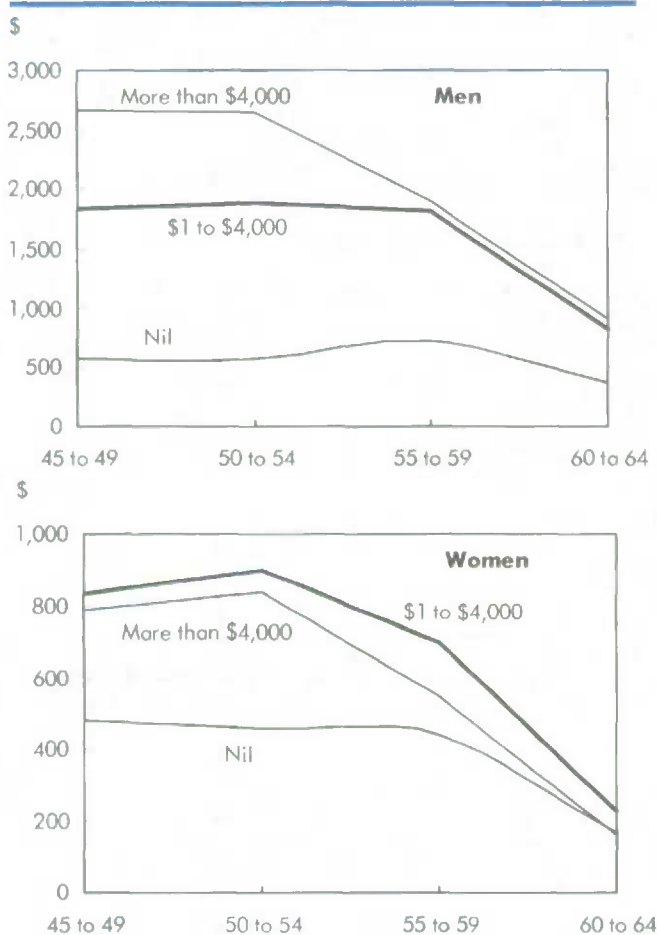
Since LAD follows the same individuals over time, documenting income mobility was simply a matter of determining where someone fit into the income distribution in their late 40s and late 60s. To accomplish this, the sample was divided into five equally sized groups from lowest to highest income for each age group. Cross-classifying these quintiles for each age resulted in a five-by-five matrix (Table 1). For example, 5% of men started in the second income quintile at age 45 to 49 and ended in the bottom quintile at 66 to 68. If everyone had remained within their starting quintile, then 20% of the population would be in each of the diagonal cells from the top left to the bottom right. Incomes were averaged over several years (ages

Table 1 Income mobility of individuals from their late 40s to their late 60s

	Quintile, age 66 to 68				
	Bottom	Second	Middle	Fourth	Top
Quintile, age 45 to 49					
	%				
Men					
Bottom	11.9	4.2	1.9	1.3	0.8
Second	5.0	7.3	4.2	2.3	1.3
Middle	2.0	5.1	6.7	4.3	2.0
Fourth	0.8	2.4	5.2	7.5	4.1
Top	0.4	1.0	2.1	4.6	11.8
Women					
Bottom	9.9	4.7	2.9	1.5	0.9
Second	6.0	6.2	4.0	2.4	1.4
Middle	3.2	5.6	5.4	3.7	2.2
Fourth	0.8	2.9	5.7	6.7	3.9
Top	0.1	0.7	2.0	5.8	11.5

Source: Statistics Canada, Longitudinal Administrative Databank, 2006.

Chart E Employment insurance benefits at younger ages of persons age 68 or 69 by GIS benefit



Source: Statistics Canada, Longitudinal Administrative Databank, 2006.

45 to 49 and 66 to 68) to smooth out temporary fluctuations and yield a conservative estimate of income mobility.

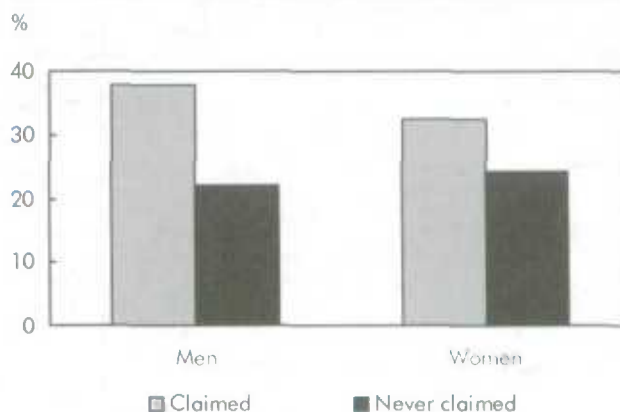
Position in the income distribution remained quite fluid in middle age. More than one-half of the population changed quintiles between their late 40s and late 60s. Although single-quintile moves were the most common, about one in five individuals made at least a two-quintile move. Women were more likely than men to make both single-quintile moves (39% versus 37%) and multiple-quintile moves (21% versus 18%). The

greater mobility of women was evident through the first four quintiles, but women who started in the top quintile were less likely than men to drop into the bottom three quintiles.

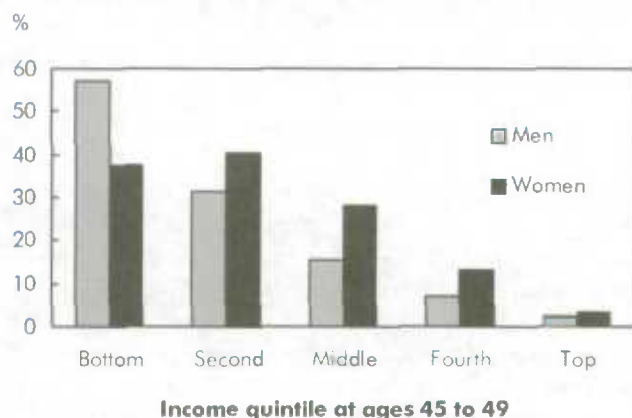
Regardless of the degree of income mobility, a very strong gradient across earlier income quintiles was evident for GIS receipt among men—more than one-half (57%) of those who were in the bottom income quintile in their late 40s would go on to collect GIS benefits in their late 60s (Chart G). Future GIS receipt then dropped by roughly one-half in each subsequent quintile: to 31% in the second, 16% in the middle, 7% in the fourth and 2% in the top. Although the gradient again shows a strong relationship between income and later GIS receipt, it also reveals some significant variation, especially at the bottom end. While less than 5% in the top two quintiles went on to receive some GIS benefits, more than one-half of the bottom two quintiles ended up as non-recipients.

The income–GIS gradient was less clear for women at the bottom of the income scale. Women who were in the second income quintile in their late 40s were more likely to collect GIS in their late 60s (40%) than those in the bottom quintile (37%). The gradient was more evident in the top three quintiles, as future GIS receipt fell from 28% in the middle quintile to 13% in the fourth and 3% in the top. The gradient was not as

Chart F Disability claimants more likely to be GIS recipients



Source: Statistics Canada, Longitudinal Administrative Databank, 2006.

Chart G GIS receipt¹ by late 40s income quintile

1. Age 66 to 68.

Source: Statistics Canada, Longitudinal Administrative Databank, 2006.

well defined for women in this cohort (born in the late 1930s), since those in couples were less likely to work and most who did work earned less than their spouse (84%).¹² Therefore, family income should show more correlation with future GIS receipt for married women.

Overall, these descriptive statistics indicate a strong relationship between earlier income and GIS receipt, but with enough variation to suggest that more detailed models could yield further insight.

Modeling GIS receipt

Past research found some variability in GIS application and take-up rates across personal characteristics (Poon 2005). Although more recent research indicates that application and take-up rates are increasing, as of 2006 a significant number of eligible recipients still did not apply for or receive benefits (Luong 2009). Moreo-

Data source and definitions

The Longitudinal **Administrative Databank** (LAD) is a 20% sample of T1 tax returns. It carried 93,714 individuals age 68 or 69 in 2006 who filed a valid tax return for 2006.⁸ The GIS was missing or zero for one or two years from age 66 to 68 for 12,510 of them. Also, income information was missing for another 21,690 individuals for at least one year between ages 45 and 64. Finally, the average GIS amount was greater than \$7,000 for 150 individuals.⁹ These GIS recipients were also excluded from the sample. The tables are based on 28,533 men and 30,831 women, with income adjusted to 2002 dollars.

The **Guaranteed Income Supplement** (GIS) is a transfer from the federal government to seniors with low or no income. The GIS and the Spousal Allowance are part of the OAS program. Their combined total is shown on tax returns as Net Federal Supplements (NFSL). For the sample used (individuals age 68 or 69 in 2006), the GIS would be equal to the NFSL amount since the 'Allowance' would be zero.

Employment income from T4 slips consists of all wages, salaries and commissions from paid employment.

Other employment income comprises any taxable receipts from paid employment other than wages, salaries and commissions, including tips, gratuities, or director's fees not reported on a T4 slip and some other components that have changed over time.

Self-employment income is all net earnings from self-employment in an unincorporated venture. Income from limited or non-active partnerships may have been included in this variable between 1982 and 1987 when it was part of self-employment business income. Now, only the tax filer's share of active self-employment partnership income is included.

Total income (individual or family) is everything from taxable and non-taxable sources. The definition has changed over the years to reflect changes in the tax form, refundable tax credits, and income calculations.¹⁰

Employment Insurance benefits are paid to eligible individuals experiencing paid employment-income interruptions. Benefits are also available for those who stop working because of sickness, injury, pregnancy, or the birth or adoption of a child.

Social assistance is a provincial or municipal transfer to cover basic needs of low-income individuals or families who have exhausted all other financial resources.

Registered Retirement Savings Plan (RRSP) contributions are the amounts claimed for a taxation year. The contribution limit is a percentage of the previous year's employment income up to an annual maximum, less any pension adjustment from an RPP.

Registered Pension Plan (RPP) contributions made by tax filers may be deducted from their total income. Under an RPP, approved by the Canada Revenue Agency, funds are set aside by an employer (and in many cases, also by the employee) to provide periodic payments to the employee upon retirement.

The **family-size adjustment** takes the total number of adults and children in a family into account to calculate family income adjusted for family size.

Table 2 Logit regression results

	Coefficient	Average marginal effect	Marginal effect for at-risk individual
Men			
Employment income, 45-49	-0.14*	-0.011	-0.035
Change in employment income			
45-49 to 50-54	-0.11*	-0.009	-0.027
50-54 to 55-59	-0.11*	-0.009	-0.027
55-59 to 60-64	-0.11*	-0.008	-0.027
Other individual income, 45-49	-0.21*	-0.017	-0.052
Change in other individual income			
45-49 to 50-54	-0.17*	-0.013	-0.042
50-54 to 55-59	-0.16*	-0.013	-0.040
55-59 to 60-64	-0.13*	-0.010	-0.032
Other family income, 45-49	-0.16*	-0.013	-0.040
Change in other family income			
45-49 to 50-54	-0.12*	-0.009	-0.030
50-54 to 55-59	-0.11*	-0.009	-0.027
55-59 to 60-64	-0.10*	-0.008	-0.025
Years of RRSP contributions	-0.03*	-0.003	-0.008
Years of RPP contributions	-0.04*	-0.003	-0.009
Years with EI benefits	0.08*	0.007	0.021
Years with social assistance payments	0.32*	0.026	0.079
Disability	0.54*	...	...
Intercept	3.56*	...	...
Women			
Employment income, 45-49	-0.18*	-0.014	-0.042
Change in employment income			
45-49 to 50-54	-0.14*	-0.011	-0.032
50-54 to 55-59	-0.12*	-0.010	-0.028
55-59 to 60-64	-0.11*	-0.008	-0.025
Other individual income, 45-49	-0.21*	-0.017	-0.049
Change in other individual income			
45-49 to 50-54	-0.17*	-0.014	-0.039
50-54 to 55-59	-0.17*	-0.013	-0.039
55-59 to 60-64	-0.10*	-0.008	-0.023
Other family income, 45-49	-0.19*	-0.015	-0.044
Change in other family income			
45-49 to 50-54	-0.15*	-0.012	-0.035
50-54 to 55-59	-0.13*	-0.010	-0.030
55-59 to 60-64	-0.11*	-0.008	-0.025
Years of RRSP contributions	-0.04*	-0.003	-0.010
Years of RPP contributions	-0.06*	-0.005	-0.014
Years with EI benefits	0.08*	0.006	0.019
Years with social assistance payments	0.35*	0.028	0.081
Disability	0.22*	...	...
Intercept	4.37*	...	...

* statistically significant at the 5% level or better

Note: Dependent variable = 1 if GIS collected all years from age 66 to 68, 0 if never collected.

Income is in thousands of dollars. A cohort dummy and regional dummies were also included in the regression.

Source: Statistics Canada, Longitudinal Administrative Databank, 2006.

ver, some individuals will have income near the boundaries of GIS eligibility and cycle in and out of receipt regularly, while others may drop into or out of GIS receipt because of one-time factors such as RRSP withdrawals or investment gains. To minimize the effect of such variability on model results, the population was limited to those who consistently received full or partial GIS benefits and those receiving no benefits from ages 66 to 68.¹³ Since the relationships seemed to differ for men and women, separate models were run. The probability of consistently receiving GIS benefits was 23% for men and 24% for women, compared with annual rates of 30% and 32% for those age 66 to 68 in 2006.

The models accounted for both income level and trajectory with variables representing levels averaged across ages 45 to 49 and subsequent changes through ages 50 to 54, 55 to 59 and 60 to 64. Three types of income were included: employment income, all other individual income, and total income of other family members adjusted for family size.¹⁴

The models implicitly assume that all types of income have a similar impact on future GIS benefits. This makes sense in terms of marginal impact on individual well-being, since a dollar is a dollar regardless of the source. On the other hand, long-term receipt of EI and social assistance benefits can result in labour market scarring effects, deterioration of human capital, or other unmeasured impediments to employment earnings. To capture these effects, years of non-zero EI and social assistance were included in the models. Similarly, another variable indicated whether the disability deduction was claimed at any time during the study period.

The models included several characteristics likely to reduce the probability of receiving GIS. Since employer pension plans are specifically designed to provide retirement benefits, membership in such plans should decrease the likelihood of GIS receipt relative to others with similar earnings but no pension plan. And because plan benefits are closely related to tenure, the variable counts years with a positive pension adjustment.¹⁵ Similarly, since those predisposed to planning for the future are likely to make use of tax-advantaged savings options, years of RRSP contributions were also included. Controls for current province of residence and birth-year cohort (1937 or 1938) completed the list.

With LAD, some variables of interest were not available. Earnings before age 45, education and occupation are all likely to have some impact on GIS receipt.¹⁶ However, each would also be related to income, especially long-term income, so much of their effects should be captured by the trajectories. CPP contributions were not included in the models since they would be almost perfectly collinear with earnings up to the industrial average. The models do not contain explicit information on marital status—although marital status and changes thereto affect individual finances, they do so mainly through the size-adjusted earnings of other family members.¹⁷ The models were estimated using logistic regressions, the coefficients showing the effects of the different variables on the natural logarithm of the odds ratio.¹⁸

Income levels and trajectories are significantly related to GIS receipt

As expected, income levels and trajectories were the most important factors associated with eventual receipt of GIS benefits (Table 2). For women in their late 40s, all types of income reduced the probability by about the same amount. For example, an extra \$1,000 of other family income diminished the probability by an average of 1.5 percentage points. For men, the effects were similar, with effects for all types of income varying from 1.1 to 1.7 points, for an extra \$1,000 of income.

A \$1,000 increase in income at older ages reduced the probability by 0.8 to 1.4 percentage points. The results also confirmed that changes in income at younger ages had larger effects.

Because the effects of extra income vary with characteristics of individuals and because lifetime GIS receipt is more common among people with lower

career earnings, the effects of changes in income were examined for a representative individual who was more at risk—someone with income, income increases and years of pension and RRSP contributions equal to one-half of the sample mean.

For this person, the effects were much larger. An extra \$1,000 of average income in the individual's late 40s diminished the probability by 4 or 5 percentage points. A similar increase later in life diminished the probability by 2 to 4 points.

RRSP and pension contributions reduce probability of GIS receipt

The probability of becoming a consistent GIS recipient diminished with each year of contributions to a private pension plan or an RRSP. Contributing regularly to these savings vehicles builds a pool of tax-sheltered capital that later provides a retirement income stream. For men, one extra year of contributions to an RRSP or pension plan diminished the probability by 0.3 percentage points. The effects were similar for women, diminishing the probability by 0.3 points for one extra year of RRSP contributions and 0.5 for a private pension plan. For the representative at-risk individual, the effects were much larger. One extra year of contributions led to a 1-point fall in the probability.

Unemployment, social assistance and disability increase likelihood of GIS benefits

Although EI and social assistance benefits were included in other income, which reduced the probability of GIS receipt, looking at them separately actually showed the opposite effect. Average effects were similar for men and women. One extra year of EI benefits increased the probability by 0.7 percentage points. For social assistance, this figure was 3 points. For the at-risk individual, the effects were much larger again: 2 points for EI and 8 for social assistance. Having a disability also increased the probability of becoming a lifetime GIS recipient.¹⁹

Summary

The GIS is an income-tested supplement to the basic OAS pension for seniors with little or no income from other sources. Benefits are reduced as income from other sources increases so that no benefits are paid to individuals with other income exceeding \$15,672 or pensioner couples with income exceeding \$20,688.²⁰

GIS benefits have been instrumental in keeping many seniors above the low-income cut-off. Nevertheless, the program costs the government some \$6.8 billion

dollars per year and seniors would be better off financially if their other sources of income put them above program thresholds.

The primary goal of this study was to document factors contributing to consistent GIS receipt from ages 66 to 68. The key result should surprise no one: the probability of receiving GIS benefits was strongly correlated to earlier income levels, specifically earnings in an individual's late 40s. However, low earnings at that stage do not presage an immutable path into later GIS receipt.

Both the descriptive and multivariate analyses point to non-trivial income mobility in late middle age. More than one-half of men and women change income quintiles between their late 40s and their late 60s, with about one in five moving at least two quintiles. While very few who started in the top quintiles went on to receive GIS benefits, almost one-half of those starting in the bottom two quintiles eventually collected benefits. The multivariate models provided some evidence on how these results came about.

First, subsequent income changes mattered, particularly those that took place in individuals' early 50s. Second, negative labour market and health shocks—measured by years of EI receipt or any claiming of the disability deduction—significantly increased the probability of becoming a GIS recipient. Similarly, social assistance benefits significantly raised the incidence of GIS receipt. Third, employer pension plans and RRSPs reduced the probability of GIS receipt. Finally, all of these effects were stronger at the lower end of the income distribution, accounting for the greater variability of outcomes there.

These results were based on a sample of younger seniors. Among this group, just over one-half (54%) of GIS recipients were women. That proportion steadily rose with age: 57%, 62% and 73% for the age groups 70 to 74, 75 to 79, and 80 and above respectively. Thus income dynamics among older seniors would be a logical extension to the work presented here, particularly as it pertains to the well-being of older women.

Perspectives

■ Notes

1. The OAS program also includes the Allowances for survivors and for spouses or common-law partners of GIS recipients between the ages of 60 and 64. The Allowances have somewhat different benefit levels and reduction formula than the regular GIS. This article refers only to GIS benefits available to individuals 65 and over.
2. The maximum was paid to seniors meeting the full residence requirements and having incomes of less than \$64,718. The basic pension is reduced by 15 cents for every dollar of income above the threshold. Therefore, the OAS pension was fully recovered when income exceeded \$105,266. These thresholds are adjusted annually. The full OAS pension is paid to seniors who meet the 40-year residence requirement. Seniors with 10 to 39 years in Canada, after age 18, are granted a partial pension at the rate of 1/40 of a full pension benefit for each year of residence. Additional years of residence in Canada do not increase the OAS pension payable once payments have begun.
3. The single rate is also paid when the spouse is not eligible for OAS benefits.
4. All OAS benefits are indexed quarterly to the Consumer Price Index. Thus, GIS recipients in the sample received comparable real benefits up to 2006. Two significant changes have been made since then: the GIS was increased in 2006 and 2007 by a total of 7%, over and above regular indexation; and the GIS earnings exemption was increased from \$500 to \$3,500 in 2008. The GIS earnings exemption enables seniors to exclude some of their employment income from GIS benefit calculations.
5. GIS recipients who choose to work can have slightly higher incomes because of the GIS earnings exemption.
6. According to the Survey of Labour and Income Dynamics, the 2007 low-income rate was 4.8% for seniors, 9.9% for those age 18 to 64 and 9.5% for those under 18.
7. Calculated using Human Resources and Skills Development Canada (HRSDC) administrative data.
8. The data were for individuals residing in the 10 provinces, as the samples for the territories were too small to reach meaningful conclusions.
9. For low-income seniors who qualify for a partial OAS pension and are eligible for the GIS, the GIS is topped up. This is sometimes referred to as 'super GIS.' It provides partial OAS recipients with the same minimum income guarantee (i.e. the total amount of OAS/GIS) as full OAS recipients. The models were rerun to test their robustness to this restriction with these individuals included—with no material changes to the results presented.
10. Statistics Canada's definition of total income (XTIRC) differs from Canada Revenue Agency's definition (TIRC) as follows (see Statistics Canada 2005 for a complete list of variables): XTIRC = TIRC – adjustment for dividends – capital gains + refundable tax credits + other non-taxable income.

11. Family income is divided by the square root of family size to account for changes in demands on family finances over time.
12. Among women who were married from age 45 to 49, 58% reported positive earnings each year compared with 72% among other women (not married for at least one year).
13. The models were also run on a broader population that included occasional recipients with the non-recipient group. The results were similar but with some loss of precision.
14. The proxy is family income, adjusted for family size, minus total individual income. Another model that adjusted the different types of income by family members for family size was also estimated, with nearly identical results.
15. The pension adjustment variable is used rather than the contribution variable since it includes individuals in plans not requiring employee contributions.
16. Other than its effect on income, education may also correlate to retirement-planning skills, but this should be largely accounted for by RRSP contribution history.
17. Models with various formulations of marital status produced inconsistent and sometimes contradictory results. The preferred model thus excluded family status as a separate variable. The variations of family status included indicators for ever being married, number of years married, and the death of a spouse.
18. The odds ratio is $p/(1-p)$, where p is the probability of interest.
19. The presence of a disability was indicated by the claiming of the disability deduction in any year and was statistically significant for both men and women. Average marginal effects cannot be calculated for binary variables.
20. GIS recipients who choose to work can have slightly higher incomes due to the GIS earnings exemption.

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Family work patterns

Sébastien LaRochelle-Côté and Claude Dionne

One of the most significant social transformations of the past few decades has been the increase in the total time spent at the workplace by couples, essentially driven by the substantial rise in the labour market participation of women (Marshall 2009). While this increase in labour market participation has been advantageous in many ways (e.g. rising economic output, more income to meet family needs), parents may feel they have less and less time available for their children or for themselves, and may find it increasingly challenging to reconcile family and work responsibilities—especially if they consistently work long hours year after year.

This paper looks at the work patterns of families over a five-year period. The longitudinal focus is necessary because other studies have shown that individual work patterns may vary extensively over time (Bluestone and Rose 1997). It is also advantageous because relationships between work time and indicators of well-being are likely to be more robust when studied over a longer period (see *Data source and definitions*). Furthermore, longer-term patterns of labour market participation are likely to be more representative of what families experience in terms of time spent at work and elsewhere (Heisz and LaRochelle-Côté 2006).

The paper also documents differences in work patterns between families with children and families without children and discusses the potential effects of long work hours on the well-being of families with children. Families with children may face a particular set of challenges related to work–life balance when working long hours. Families with long hours are those with two adults working full time, with at least one working a particularly high number of hours.

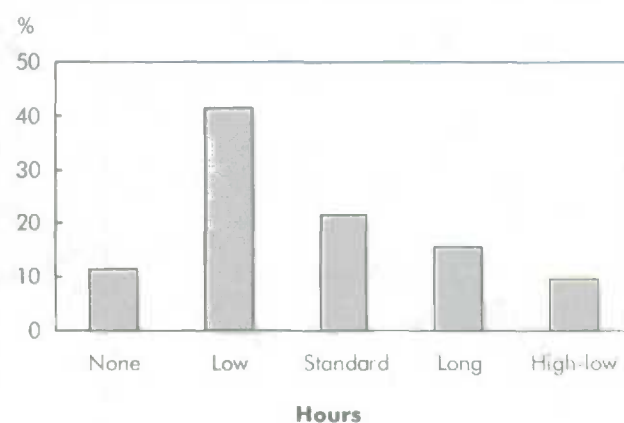
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Long-term work patterns

The study of work patterns over several years requires a careful approach as the work patterns of individuals and families may vary substantially over time. To deal with this, a relatively simple method (Bluestone and Rose 1997, and Heisz and LaRochelle-Côté 2006) can be used (Chart A).

The first category—those never working—consisted of individuals who did not participate in the labour market in any of the five years (12% of adults in sample). The second category covered workers with at least one year below 1,500 hours and none above the 2,300-hour threshold (42% of adults). These workers were considered to be working ‘low’ hours since they averaged 1,000 hours per year over the five years.

Chart A Work hours of individuals over five years



Note: Adults for whom hours information was not available in all five years were excluded, with the remaining sample reweighted.

Source: Statistics Canada, Survey of Labour and Income Dynamics, longitudinal panels 1996 to 2001, 1999 to 2004, and 2002 to 2007.

Data source and definitions

The longitudinal **Survey of Labour and Income Dynamics** (SLID) is conducted every year to collect information about income and labour market activity. Respondents are asked about hours usually worked at all jobs, which are then aggregated into annual paid hours. Paid hours include paid holidays, paid sick or maternity leave, and usual paid overtime. For example, an individual reporting 2,000 hours per year is typically working a 40-hour week, 52 weeks per year.

Since information on work hours was gathered for six years for all individuals age 16 and over, it was possible to create categories of long-term work patterns as suggested in Bluestone and Rose 1997. The work patterns of couples were then regrouped into family work patterns.

Three longitudinal panels (1996 to 2001, 1999 to 2004, and 2002 to 2007) were combined to create a sample of two-adult families with sufficient labour and demographic information for both in at least five of the six years.¹ Families with missing information for two or more years were dropped from the sample and the weights of the remaining sample were adjusted to compensate.² Because of the requirement for families to be in sample for all years, those that experienced a change in marital status (divorce, separation or death) also had to be excluded, but these amounted to a relatively small portion. Of the 8,800 families remaining in sample, approximately 4,800 had at least one child under age 18 in all six years (excluding children born over the period). As work patterns might have different implications for families with children, they are shown separately. Standard errors were generated using bootstrap weights.

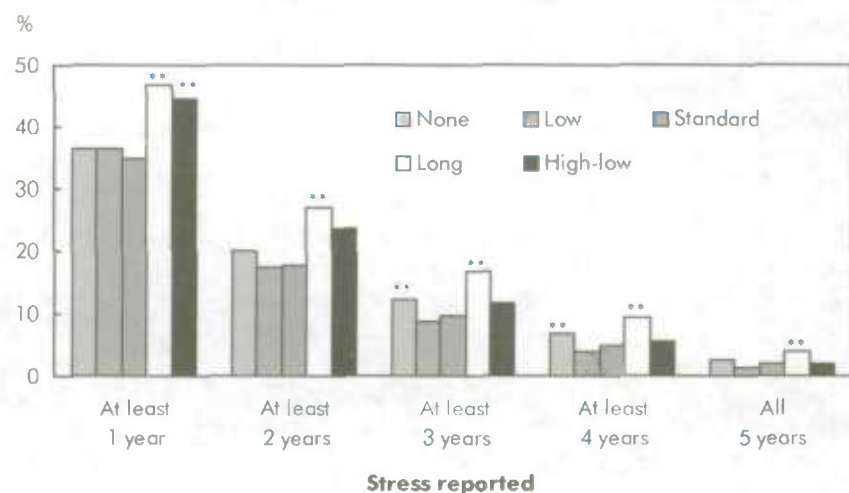
The third category contained individuals consistently working 1,500 to 2,300 hours (22%). This is the 'standard' category since the average 2,000 hours per year corresponds roughly to one full year at 40 hours per week. The fourth category was those with 'long' hours—at least one year above the 2,300-hour threshold and no year below 1,500 hours (16%). These individuals worked 2,500 hours per year on average, surpassing the standard group by 25%. Finally, in the 'high-low' category were individuals with particularly variable work hours—less than 1,500 hours in at least one year, more than 2,300 in at least one other—but with an average very similar to the standard category (1,800 hours compared with 2,000).

Work patterns and well-being

Work patterns are not necessarily problematic as they are often the product of individual choices. However, those that involve longer hours may become more challeng-

ing when they are associated with adverse effects on well-being. Stress, in particular, is an important effect that is widely used as a prime indicator of well-being in the literature, as it is associated with adverse effects on psychological and physiological health (Wilkins and Beaudet 1998). Stress is

Chart B Individuals working long hours reported more stress



** significantly different from the standard category at the 5% level or better
 Note: Adults for whom hours information was not available in all five years were excluded, with the remaining sample reweighted.

Source: Statistics Canada, Survey of Labour and Income Dynamics, longitudinal panels 1996 to 2001, 1999 to 2004, and 2002 to 2007.

also a natural consequence of 'role overload'—having too much to do and too little time to do it (Higgins and Duxbury 2002).

The importance of stress has led a number of commentators to investigate the association between stress levels and work hours (Higgins and Duxbury 2002, Hébert and Grey 2006, and Heisz and LaRochelle-Côté 2006). As a result, stress can reasonably be used as a good proxy for work patterns more likely to be associated with adverse effects on well-being.³

Individuals working long hours consistently reported significantly higher levels of stress (Chart B). For instance, 16.9% of individuals with long hours reported higher stress levels in at least three of the five years, compared with 10.9% of the population as a whole and 9.7% among those with consistently standard schedules. Nearly half of all individuals with long hours were stressed in at least one year, compared with 38.5% of the population as a whole. This suggests that individuals with long schedules are more likely than others to feel the adverse effects of work time. It also suggests that long hours are less likely to be welfare-maximizing choices for individual workers.⁴

Family work patterns

Describing long-term work patterns of individuals is relatively straightforward, but describing family work patterns is more complicated since every family has two adults who may have variable work schedules over time. To simplify this, the high-low and standard categories were combined. The merger of these two categories is perhaps debatable as high-low workers might face different labour market challenges (and they also report slightly higher stress levels than standard individuals), but it is reasonable since they work as many hours as standard workers on average and are closer to standard workers than individuals with long hours are in terms of stress levels. The work patterns of the two adults in the family were then used to create 10 family work patterns, ranging from the least labour intensive (both adults not working) to the most (both with long hours) in terms of average annual family work hours over five years.

Families were clearly concentrated in certain patterns (Table 1). More specifically, almost 43% of families had one adult with low hours and another with a stand-

Table 1 Long-term family work patterns

	Two-adult families	Annual work hours
	%	hours
Two not working	4.4	0
One not working, one low hours	5.8	900
Two low hours	10.2	2,200
One not working, one standard	5.3	1,900
One not working, one long hours	3.7	2,500
One low hours, one standard	25.6	3,100
One low hours, one long hours	17.3	3,500
Two standard	13.7	3,900
One standard, one long hours	10.9	4,400
Two long hours	3.2	5,000

Note: 'Standard' includes high-low individuals.

Source: Statistics Canada, Survey of Labour and Income Dynamics, longitudinal panels 1996 to 2001, 1999 to 2004, and 2002 to 2007.

ard or long hours. Families having one adult with low hours and one with standard hours put in approximately 3,100 hours per year on the job, while those having one adult with low hours and one with long hours did approximately 3,500 hours.

The category with both adults working a consistently standard schedule was only 14%, which suggests a lot of variation in family work patterns and underscores the need to examine patterns over a longer run. Consistently standard families spent an average 3,900 hours per year at work, which is the equivalent of two full-year schedules at 40 hours per week.

Work-intensive categories—one adult with long hours and the other with at least a standard schedule—also accounted for 14% of families (only 3% had both adults with consistently long hours). These families averaged at least 4,400 hours per year on the job.

At the other end of the spectrum, 9% of families had one adult not working at all over the five years but the other with at least a standard schedule. Those with the working partner putting in long hours did nearly 2,500 hours on average; those with a standard-schedule partner, 1,900. The three least labour-intensive categories together accounted for approximately 20% of families with two adults.

Work patterns among families with children

Lack of time raises a different set of well-being issues for families with children. For instance, studies have shown that children enjoying more available parental hours fare better at school (Curtis and Phipps 2000). Other studies also correlate children's health with hours worked by parents (Anderson et al. 2003). Significant differences in work patterns can be seen between families with children and families without children, even after adjusting for age differences (Table 2).⁵ More particularly, after adjusting for age differences, families with children were less likely to have both parents working a consistently standard schedule (14%) than families without children (21%). Families with children were also much more likely to have one parent with low hours and the other with at least a standard schedule—51% compared with 41% of age-adjusted families without children. Parents with children were also less likely to fall into the two most work-intensive categories. These results suggest that the presence of children is correlated with differences in work patterns. The greater share of families with children having at least one parent with low hours (mostly mothers) also suggests that many families with children are organized so that at least one parent (mostly mothers) spends less time at a paid job.⁶

Families with long hours

Families with very long work hours likely face extra challenges in balancing personal and work responsibilities, with the hours spent by both adults on the job leaving little time for family or personal duties. Who are these families? Clearly, those with both parents consistently putting in long work hours qualify, with 5,000 hours annually (100 hours per week) over five years. Both individuals are more likely to report higher levels of stress and suffer other adverse effects of long work hours. Arguably, families having at least one parent with fewer work hours should not be part of this definition as this parent has, at least in theory, more time available to compensate for the increased workload of the other parent. Similarly, families with two adults consistently working standard hours should also be excluded because individuals with standard hours tend not to exhibit higher levels of stress, and, despite the relatively high level, these hours are less variable year over year (Heisz and LaRochelle-Côté 2006), facilitating the dual management of work and family responsibilities.

According to the literature on work time, it appears reasonable to include families having at least one parent with long hours and the other with a consistently standard schedule—particularly families with children—in the long hours group, for several reasons.

First, these families spend a considerable number of hours on the job (4,400 per year on average), which reduces the time available for parental duties and family activities (Curtis and Phipps 2000). Second, most families with two full-time, full-year paid jobs face a challenge with work-life balance as conflicting demands and role overload increase (Burton and Phipps 2007), with these likely to be particularly sensitive among families with children. Third, a parent with long hours may also affect the well-being of the other parent since these spouses, mainly women, see increased parental work (and stress) in response to work stress experienced by their partner (MacDonald et al. 2005 and Bolger et al. 1989). Finally, families with both parents working at least

Table 2 Detailed family work patterns

	Two-adult families		
	With children ¹	Without children	Without children (age-adjusted)
		%	
Both not working	1.2	8.8	1.1
One not working, one low hours	2.4	10.4	3.0
Both low hours	8.5	12.4	9.0
One not working, one standard	4.8	5.9	2.0
One not working, one long hours	4.2	3.0	1.9
One low hours, one standard	29.6	20.2	26.5
One low hours, one long hours	21.6	11.5	14.9
Both standard hours	13.8	13.5	21.1
One standard, one long hours	11.0	10.7	15.5
Both long hours	2.9	3.4	4.9

1. 'Families with children' refer to those with two spouses and at least one child under 18.

Note: 'Standard' includes high-low individuals.

Source: Statistics Canada, Survey of Labour and Income Dynamics, longitudinal panels 1996 to 2001, 1999 to 2004, and 2002 to 2007.

Table 3 Long-term work patterns of families with and without children

	With children ¹	Without children ²
	%	
Families with long hours	13.9	20.5
Consistently standard couples	13.8	21.1
One low, other at least standard	51.2	41.4
Other (lower labour market engagement)	21.1	17.0

1. 'Families with children' refer to those with two spouses and at least one child under 18.

2. The weights of families without children were modified to account for age differences with families with children.

Note: 'Standard' includes high-low individuals.

Source: Statistics Canada, Survey of Labour and Income Dynamics, longitudinal panels 1996 to 2001, 1999 to 2004, and 2002 to 2007.

45 hours per week (approximately 4,500 per year) can be described as very short of time (Burton and Phipps 2007), which reinforces the argument that these families face a particular challenge in maximizing their welfare due to time constraints.

For this study, 'families with long hours' includes those with two adults working long hours as well as those with one adult working long hours and the other a consistently standard schedule. Based on this definition, 14% of families with children had particularly long hours (compared with 20% for age-adjusted families without children).

For simplicity, the remaining categories were also regrouped to create four categories of family work patterns. These categories accounted for the major differences shown in work patterns between families with children and without children. In addition to families with long hours, the categories were families with both adults consistently working standard hours; families with one parent working low hours and another with at least a standard schedule; and all other family work arrangements involving less than standard hours (Table 3).

Families with and without children showed substantial differences in work patterns. For instance, 14% of families with children worked long hours compared with 20% of those without. Furthermore, while 21% of families without children consistently worked stand-

ard hours, only 14% of families with children did so. Finally, 51% of all families with children were in the one low, 'one at least' standard mould, compared with 41% of families without children—suggesting that the model whereby one parent has more time available for purposes other than work is common among families with children.³

Long hours and presence of children

If long hours do have a particular impact on the welfare of families with children, then there may be a negative association between long hours and the presence of children. While the average number of children under 18 was virtually identical by family work pattern (Table 4), differences were apparent in the proportion of families with young children (under age 6). More preschool children were in families with less intensive work patterns (15% to 17%) than in families with long hours (9%) or consistently standard hours (11%).

Since the presence of children may be related to other family or personal characteristics, a series of regressions were conducted to test the robustness of the association between the presence of children (including young children) and long family hours. Both the

Table 4 Presence of children by family work pattern¹

	Total	Average number of children	With preschool children ²
	%		
All family work patterns	100.0	1.7	14.2
Families with long hours	13.9	1.7	9.3
Consistently standard couples	13.8	1.7	11.2
One low, other at least standard	51.2	1.7	15.4
Other (lower labour market engagement)	21.1	1.8	16.5

1. 'Families with children' refer to those with both a head and a spouse and at least one child under 18. The weights of families without children were modified to account for age differences with families with children.

2. Children under 6 at the end of the 5-year period.

Note: 'Standard' includes high-low individuals.

Source: Statistics Canada, Survey of Labour and Income Dynamics, longitudinal panels 1996 to 2001, 1999 to 2004, and 2002 to 2007.

Children and family work patterns

To ensure that the association between work patterns and the presence of children was not due to other personal or family characteristics, a regression was designed to control for demographic characteristics that might affect work time patterns—a multinomial logit to determine the probability of being in one of the four family work patterns. The objective was to see if the relationship between the presence of children and certain family work patterns remained when all demographic characteristics were taken into account (Table 5).

The presence of children was negatively correlated with the probability of being in consistently standard families or in families with long work hours. However, after adding a dummy variable indicating the presence of young children, both child variables were negatively associated with the probability of being in consistently standard- or long-hour families—but the presence of young children was negatively correlated only with long hours. These results confirm that families may have a preference for fewer hours on the job when children—particularly young ones—are present, even after demographic and family characteristics are taken into account.

Table 5 Association between the presence of children and family work patterns

	Children present			Young children present		
	Lower engagement	Consistently standard	Long family hours	Lower engagement	Consistently standard	Long family hours
	coefficient					
Constant	-1.684**	-0.406	-0.205	-1.684**	-0.406	-0.206
Presence of children	0.029	-0.648**	-0.610**	0.008	-0.631**	-0.552**
Presence of young children	...	...	...	0.153	-0.124	-0.483**
Demographic controls ¹	Yes	Yes	Yes	Yes	Yes	Yes
Panel controls	Yes	Yes	Yes	Yes	Yes	Yes

** statistically significant at the 5% level or better

1. Region of residence, age, immigration status and education level.

Note: The reference category is one parent with low hours and one at least standard parent. 'Standard' includes high-low individuals.

Source: Statistics Canada, Survey of Labour and Income Dynamics, longitudinal panels 1996 to 2001, 1999 to 2004, and 2002 to 2007.

presence of children and young children were negatively associated with long hours when demographic characteristics were taken into account. The presence of children, but not young children, was negatively associated with consistently standard hours (see *Children and family work patterns*). Such results raise the possibility that families with children are less likely to choose situations that would expose them to long work hours and time-crunch issues. It also suggests that families with young children are particularly averse to long hours.

Long work hours and family well-being

It is often argued that long hours are associated with detrimental effects on well-being, particularly for families with children. The association between well-being and hours can be investigated by looking at the relationship between long family hours and various statis-

tical indicators, and also by examining whether these indicators tend to be more significant when the focus is restricted to families with children.

A good starting point is the link between family hours and family earnings. The issue of time and money is a crucial one for families in general, and for families with children in particular. For instance, higher-income parents might be able to substitute money for their own time—at least partially—by hiring nannies or housekeepers (Burton and Phipps 2007). In other words, if families with long hours can generate more earnings from their longer work hours, then the welfare consequences of an elevated workload may be smaller.

Among families with children, those working long hours made significantly less money on average than consistently standard families, despite working 600 (or 15%) more hours—\$86,500 per year on average, compared with \$97,700 (Table 6). The difference was

Table 6 Earnings by family work pattern

	Annual family hours	Annual family earnings			
		Mean	25th percentile	Median	75th percentile
	hours	2007 \$			
Families with children¹					
All work patterns	3,300	73,600	42,400	69,000	97,500
Families with long hours	4,500	86,500	52,900	82,800	118,200
Consistently standard couples	3,900	97,700	70,100	94,000	120,500
One low, other at least standard	3,300	74,400	47,200	69,600	94,700
Other (lower labour market engagement)	2,100	47,100	18,400	40,900	64,800
Families without children²					
All work patterns	3,500	73,800	48,800	71,300	95,400
Families with long hours	4,500	90,500	64,100	88,100	112,900
Consistently standard couples	3,900	85,900	64,300	83,500	106,300
One low, other at least standard	3,400	72,100	50,400	68,200	87,700
Other (lower labour market engagement)	2,000	42,700	15,200	38,800	61,500

1. 'Families with children' refer to those with two spouses and at least one child under 18.

2. The weights of families without children were modified to account for age differences with families with children.

Note: 'Standard' includes high-low individuals.

Source: Statistics Canada, Survey of Labour and Income Dynamics, longitudinal panels 1996 to 2001, 1999 to 2004, and 2002 to 2007.

even larger at the 25th percentile, where families with long hours were worse off by \$17,200. At the 75th percentile, however, earnings levels became similar.⁸

Such differences in earnings levels were not seen among families without children, even if similar differences were found in average hours across family work patterns. At first glance, the lower earnings of parents with the most hours compared with those working consistently standard hours appears counterintuitive. Some parents may have had to work long hours in order to maintain a minimum standard of living—they could not afford to reduce their hours. Such findings suggest that long-hour

families with children do not necessarily have additional resources to better cope with work-life balance issues.

Other indicators can also be used to investigate the relationship between long hours and well-being. Job and occupation characteristics, in particular, can be related to differences in work time and have the potential to reveal information about family well-being (Heisz and LaRochelle-Côté 2006 and 2007). Differences between families with (and without) children across family work patterns could therefore reveal more about the preferences of families with children, and, by extension, their state of well-being.⁹ Since job information was available

only for when individuals were employed, only the first three work-pattern categories were examined: families with long hours, consistently standard families, and families with one low, one at least standard parent (Table 7).

Job-quality indicators are used by many analysts to classify jobs as good or bad. Good jobs tend to have better pension and union coverage, and are more likely to be found in large firms. More particularly, good jobs also tend to be associated with stable, full-time hours, and bad jobs with more 'unstable' work arrangements (Gundersen and Riddell 2000). In general, families with and without children were not significantly different in terms of job-quality indicators. However, fathers in families working long hours tended to be more unionized than their counterparts without children. Since unionized jobs tend to be more secure and associated with more predictable shifts, this may indicate that, given the long work hours, families with children are looking for more security and stability. It also suggests that parents may try to reduce the adverse effects of long work hours on their families.

Differences were also examined by occupation and industry (Table 8). Mothers in families working long hours were more likely than other women to work in the public sector. Since husbands typically spend the most time on the job in such families, mothers may be compensating for their husband's long hours by working in industries generally known for more stable schedules to ensure that one parent has hours that help them fulfill their parental duties. Furthermore, parents in families with long hours were also much more likely than

Table 7 Job quality indicators by family work pattern

	Families with children ¹			Families without children ²		
	Long family hours	Consistently standard	One low, one at least standard	Long family hours	Consistently standard	One low, one at least standard
%						
Union coverage³						
Men	24.8	38.2	28.1	16.6	44.4	29.7
Women	30.0	36.1	29.2	26.5	40.9	26.5
Pension coverage³						
Men	43.2	63.8	47.8	40.2	63.0	47.9
Women	46.5	61.7	37.1	47.0	60.0	39.2
Firm size^{3,4}						
Men						
Less than 100 employees	55.9	32.6	45.1	53.0	29.2	48.4
100 to 499 employees	11.1	13.1	12.6	11.4	11.3	11.1
500 employees or more	29.9	51.9	39.1	33.9	56.4	37.5
Women						
Less than 100 employees	50.0	33.2	48.9	44.8	30.5	46.2
100 to 499 employees	14.3	12.0	11.8	20.3	13.9	15.2
500 employees or more	33.5	50.6	35.2	33.9	52.2	34.2
Multiple jobs at some point						
Men	23.0	10.5	18.7	22.1	10.5	19.9
Women	24.3	15.2	20.7	22.5	16.1	17.9
Experienced a job change						
Men	21.3	23.6	28.3	29.3	26.2	29.8
Women	24.6	21.9	29.1	27.7	25.6	34.6

1. 'Families with children' refer to those with both a head and a spouse with at least one child under 18.

2. The weights of families without children have been modified to account for age differences with families with children.

3. Based on main job in the year they reported the most hours.

4. Statistics about firm size may not add up because of 'unknown' answers in SLID.

Note: 'Standard' includes high-low individuals. Includes families in which both parents are participating in the labour market.

Source: Statistics Canada, Survey of Labour and Income Dynamics, longitudinal panels 1996 to 2001, 1999 to 2004, and 2002 to 2007.

non-parents to be self-employed. Among those with children, 31% of fathers and 24% mothers were self-employed, compared with just 22% and 10% of non-parents. Since the self-employed typically have more control over their schedules than paid employees, this may not be a surprise as parents with long hours may need more flexibility to deal with parental duties.¹⁰

Mothers in consistently standard families were much more likely than other women to be managers. This is not too surprising since consistently standard work still involves a large number of hours, which means these mothers may be more likely to need (or choose) to put in the hours for professional reasons.¹¹

The results suggest that parents working long hours may respond to the presence of children by making different choices to reduce the welfare impact of long hours on the family. To test that hypothesis, an empirical strategy was needed to examine whether long work hours had different welfare implications on parents. Although SLID does not provide much information on the state of family well-being, it does enquire about the general level of perceived stress. This measure is not perfect since stress can be caused by many factors not necessarily related to work hours. Furthermore, the direction of the causality is not always clear as work hours can cause stress, but stress can also affect work hours. The best that can be done

Table 8 Industry and occupation by family work pattern

	Families with children ¹			Families without children ²		
	Long family hours	Consistently standard	One low, one at least standard	Long family hours	Consistently standard	One low, one at least standard
%						
Industry³						
Men						
Public administration	13.9	19.7	14.6	11.2	21.5	14.3
Business services	13.6	14.0	14.7	14.5	14.2	14.3
Other services	30.7	25.5	29.0	39.8	22.5	36.0
Goods-producing	38.9	37.4	38.4	33.0	35.4	28.8
Women						
Public administration	39.6	35.9	36.2	28.8	38.3	27.3
Business services	14.9	16.7	15.8	17.1	17.7	19.4
Other services	26.0	22.1	32.2	33.3	26.1	34.7
Goods-producing	15.1	20.1	13.1	17.4	15.2	16.0
Self-employed³						
Men	31.4	7.6	17.8	21.9	7.5	15.9
Women	23.5	9.1	13.7	10.4	6.0	6.8
Manager³						
Men	18.2	13.0	15.0	26.2	13.0	13.7
Women	12.4	13.6	6.6	15.3	6.0	9.6

1. 'Families with children' refer to those with both a head and a spouse with at least one child under 18.

2. The weights of families without children were modified to account for age differences with families with children.

3. Based on main job in the year they reported the most hours.

Note: Only families in which both parents are in the labour market. 'Standard' includes high-low individuals.

Source: Statistics Canada, Survey of Labour and Income Dynamics, longitudinal panels 1996 to 2001, 1999 to 2004, and 2002 to 2007.

is to develop a family measure of stress by using information on individual stress levels, and by assuming that a measure of family stress is a good proxy for family well-being.¹² One measure used was the proportion of families in which both parents reported at least one episode of stress over the period (Table 9).¹³ As expected, families with long hours had significantly higher levels of stress (28%) than consistently standard couples (17%), and more than families with one low hours and another with at least standard hours (22%), although the latter difference was not significant.

However, a different picture emerged when family stress levels were examined separately for families with and without children. While families with long hours reported relatively high levels of stress even in the absence of children, consistently standard families with children were much more likely than those without children to report higher levels of stress (22% compared with 13%), suggesting that consistently standard

families with children—who also spend a large number of hours in the labour market—also face well-being issues of their own.

Because stress levels can also be associated with other demographic and job characteristics, the robustness of the association between family stress and family work arrangements was tested with regressions that included a dummy variable to account for the presence of children and used families with consistently standard hours as a reference group. Once again, families with long hours were much more likely to be stressed than consistently standard families (Table 10). Families in the one low, one at least standard group were also more likely to be stressed than consistently standard families, albeit by a less significant margin.

After adding a dummy variable to account for children's interactions with family work patterns, both coefficients associated with work patterns remained

Family work patterns

7. This does not mean that families in other categories are not dealing with work-life balance issues of their own. Rather, the issue should be viewed in terms of available time, which is particularly low in the case of families that spend a considerable amount of time on the job.
8. Figures are expressed in 2007 dollars.
9. All job characteristics are based on the main job held in the year with the most hours (or if the same hours are reported in more than one year, for the job associated with the most earnings).
10. The higher proportion of self-employment among parents working long hours may also help explain why they earn less than those with consistently standard hours, since the self-employed earn less on average than employees.
11. Demographic characteristics were also examined, but major differences were not seen between the two types of families and therefore had little potential to reveal much on well-being differences.
12. The focus is on families with two working adults to remove stress caused by lack of work from consideration.
13. Similar results were obtained with family stress defined as the proportion of families with the two parents combined reporting at least two episodes of stress.

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Barriers to training access

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Many researchers contend that a well-trained labour force is a way to achieve and maintain a competitive advantage in today's global business market (Aragon-Sanchez et al. 2003, Industry Canada 2002, and Turcotte and Rennison 2004). Thus, providing training has been advocated as sound social policy for competitiveness (Conference Board of Canada 2008 and OECD 2006). Recently, the Conference Board of Canada (2008) reported that Canada does not have a focused strategy to ensure that work-based skills training and lifelong education are prioritized. Furthermore, Canadian employers are low investors in workplace training programs on an absolute basis (Betcherman et al. 1998) and relative to their European counterparts (Goldenberg 2006).

Others argue that working conditions in Canada are polarized (Betcherman and Lowe 1997). Simply put, a substantial number of individuals are in jobs featuring relatively poor pay, benefits, security and stability (Chaykowski 2005, and Morissette and Zhang 2005). Moreover, this dichotomy seemingly extends to the receipt of employer-supported training opportunities, with some receiving much more training than others (Peters 2004, Saunders 2003 and Sussman 2002).

An abundance of Canadian and international studies indicate that less-educated workers are much more likely than others to have low-paid jobs (e.g. Cooke 2007, and OECD 2005 and 2006). Not surprisingly, these workers are among those with relatively poor access to training (Zeytinoglu et al. 2008). Historically,

unionization has led to improved conditions of work, and recent studies suggest that unionization continues to be associated with higher wages (Fang and Verma 2002). While the benefits of unionization are potentially shrinking in today's era of open and global markets, recent evidence suggests that unionized workers continue to have better access to training than non-union workers (Boheim and Booth 2004, Cooke 2007, and Turcotte et al. 2003), although the effects are potentially different for men and women (Hurst 2008).

Women are over-represented among those in lower-quality jobs (Cranford et al. 2003 and McGovern et al. 2004). These authors also indicate that women continue to be disadvantaged even among those with poor employment. This is consistent with the historical notion that women have faced additional barriers in the labour market, intentional or otherwise (e.g. Padavic and Reskin 2002). In terms of training in particular, previous research on women's receipt of employer-supported training is inconclusive.

Some studies show that, relative to their male counterparts, women are less likely to receive employer-supported training (e.g. Frazis et al. 2000, Knoke and Ishio 1998, OECD 2006 and Sussman 2002), while others report either unsubstantial differences, or slightly better access for women (e.g. Peters 2004, Turcotte et al. 2003, Underhill 2006, and Simpson and Stroh 2002). Moreover, differences in the receipt of employer-supported training, when comparing men and women, are not always apparent unless the effects of other related factors in the workplace are

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controlled for (Knoke and Ishio 1998). Consequently, it can be argued that among the key characteristics associated with a poor-quality job, all else being equal, are earning low wages, having a lower education, not having the protection of a trade union, and, in particular, being a woman. To be consistent with existing research (e.g. Saunders 2003, Chaykowski 2005 and Vallée 2005), individuals with these characteristics are referred to as 'vulnerable' workers in this article. While workers with vulnerable characteristics are clearly not a homogeneous group, the literature suggests that workers with these characteristics are, on average, relatively vulnerable compared with other workers.

Using the 2005 and 2003 Workplace and Employee Survey (WES), this article explores the receipt of employer-supported training among these potentially vulnerable workers (see *Data source and definitions*). Training increases earning potential and access to higher-quality employment opportunities (OECD 2005 and 2006, Morissette and Zhang 2005, and Vallée 2005). Having a highly trained workforce also benefits employers in terms of productivity and adaptability, particularly given the emerging shortage of skilled workers in Canada (e.g. Aragon-Sanchez et al. 2003 and Goldenberg 2006). It is therefore important to ascertain whether certain identifiable subgroups of workers receive tangibly different levels of training from their employers. Secondly, the proportion of these workers declining employer-supported training is also considered. Although reasons for declining training are undoubtedly numerous, they can provide general insight into the importance of training to the various workers.¹

In terms of the theoretical foundation for employer-supported training, Becker's labour economics theory (1964) suggests that workers should pay for any general training that leads to the acquisition of new skills and earning higher wages, and employers should pay only for firm-specific training. Empirical evidence, however, suggests that Becker's theory is more a way of understanding the investment in human capital in its pure form than a description of what can be observed in practice (Acemoglu and Pischke 1998 and 1999, and Ahlstrand et al. 2003). In practice, employers train for three purposes: to increase the productivity or performance of workers; to achieve organizational goals; and to invest in workers to succeed in the unpredictable and turbulent business environment (Belcourt et al. 2000). The potential result is that employers might

direct their training resources towards their most valued workers for strategic business reasons and away from less privileged workers (Rainbird 2000).

This study examines five overlapping groups of workers: all workers; low-wage workers; less-educated workers; non-union workers; and low-wage, less-educated, non-union workers. All five were also split by sex. In the multivariate analysis, employer-supported training was the dependent variable and sex, wage level, attained education, and unionization were examined as independent variables, along with interaction variables where appropriate. Several other individual, work, workplace and industry factors can, independently and collectively, influence an employer's tendency to provide training. Many of these are included as control variables: employment status, occupation, marital status, presence of dependent children, workplace tenure, worker age, workplace size, industry, and workplace profitability.²

Receipt of employer-supported training among all workers

About 60% of all workers receive employer-supported training, while about 12% decline it (Table 1). This figure is similar to other estimates when considering that the broad definition of access includes three types of employer-supported training received as well as those offered but declining this training. A previous study found that about one-half of Canadian workers receive employer-supported training in a given year (Turcotte et al. 2003). According to the current study, 33% of workers received on-the-job training, 37% received classroom training, and a small number received 'outside' training supported by their employer. And about one in eight declined training in the past year.

Slightly more than one-half of the respondents were women, while one-quarter were categorized as low-wage. In terms of education, 1 in 10 had not completed high school, while 1 in 6 had high school but no postsecondary education. About 1 in 5 workers had a university degree, while slightly more than one-half had some postsecondary education but no degree. For some analyses, the 27% of workers with at most a high school education were also grouped as being less educated, while the other 73% had at least some postsecondary education. Finally, almost three-quarters of workers were non-union (i.e. not covered by a collective agreement).

Table 1 Characteristics of all workers

	%
Dependent variables	
Received employer-supported training	60.1
On-the-job	32.9
Classroom	36.5
Outside	4.4
Declined training	12.2
Independent variables	
Women	52.2
Low-wage	25.6
Education	
Less than high school	10.0
Completed high school	16.6
Postsecondary, non-university	52.3
University degree	21.1
Non-union	73.1
Low-wage, less-educated, non-union	8.7
Control variables: Worker	
Non-permanent	9.1
Part-time	15.7
Occupation	
Manager	12.6
Professional	17.2
White collar	22.8
Blue collar	47.4
Marital status	
Married/common-law	68.4
Other	31.6
Dependent children	43.5
Workplace tenure ¹	8.7
Workplace tenure squared ¹	152.9
Worker age ¹	40.9
Worker age squared ¹	1,814.7
Control variables: Workplace	
Workplace size (employees) ¹	482.7
Workplace size (log form) ¹	1.8
Industry	
Primary	1.7
Manufacturing and related	31.8
Retail trade	24.3
Finance and insurance	4.7
Education and health	21.8
Other services	15.6
Profitable workplace	66.5

1. Indicates the mean among all workers. All other figures indicate the proportion of workers having a particular characteristic.
Source: Statistics Canada, Workplace and Employee Survey, 2005.

Uncovering the gender barrier in training

Among all workers, women were insignificantly less likely than men (60% vs. 61%) to receive employer-supported training (Chart A). However, that difference became significant when considering only

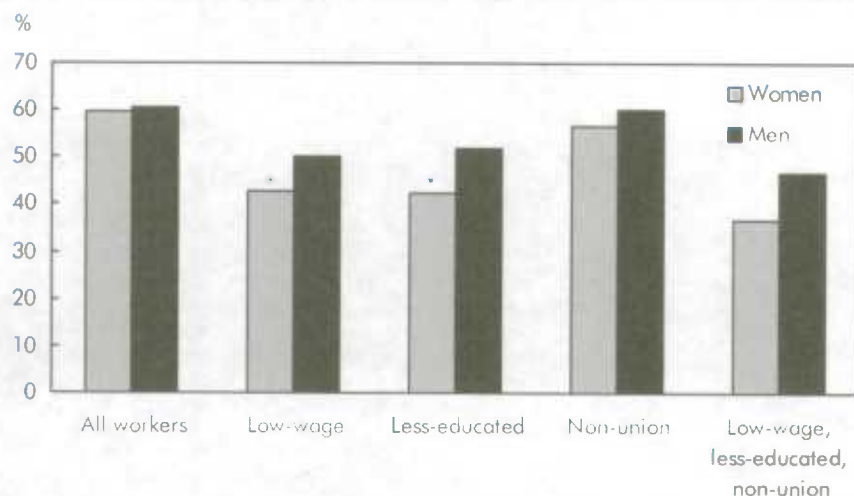
Limitations

While the Workplace and Employee Survey covers much of the Canadian labour market, it somewhat under-represents non-permanent workers because only employees receiving T4 slips from their employer are included. Thus, agency temporary workers are included only if the agency itself is included as an employer. Moreover, casual and on-call workers could identify themselves as being 'regular' employees, even though they are more accurately categorized as non-permanent.

Second, it is reasonable to presume that omitted-variable bias exists in the models. Simply put, many workplace and worker factors likely affect the receipt of training. While several of these factors were included and controlled for, all of the influential ones may not have been taken into account. For instance, an employer's perception of the 'talent' of a worker could affect the likelihood of training. A related issue is the hierarchical or clustered nature of WES data—respondents were randomly chosen from within selected organizations. Nonetheless, an assumption underlying the regression models was that all observations (i.e. individuals) were independent. This would not be the case if workplace variables (e.g. employer strategies) affected the receipt of training. Finally, it was not possible to separate workers according to province of employment.³ This would have been helpful since small but noticeable (and apparently shrinking) differences in the receipt of training have been noted by province (Peters 2004).

Although these limitations are important, the results should still hold. If anything, the regression results would likely have been stronger with controls for geography and other omitted variables. The most potentially problematic issue is the hierarchical nature of the WES data, since it could result in an over-estimation of the relationship between workplace variables and the receipt of training. Overall, the model choice, while common in the literature and able to provide insight into training issues, is a significant simplification of the full set of factors affecting training.

low-wage workers (43% vs. 50%) or only less-educated workers (42% vs. 52%). The difference was insignificant but nonetheless present among non-union workers (57% vs. 60%) and low-wage, less-educated, non-union workers (37% vs. 47%). Two main observations can be made. First, low-wage, less-educated, or non-union workers received less employer-supported training relative to all workers, although only slightly so in the third case. Moreover, this disparity was particularly substantive when comparing low-wage, less-educated, and non-union workers to all workers. The second observation is that although women and men received essentially equivalent shares of employer-supported training overall, women were less likely to receive training than their male counterparts in the four smaller subsamples.

Chart A Women in some groups less likely to receive employer-supported training

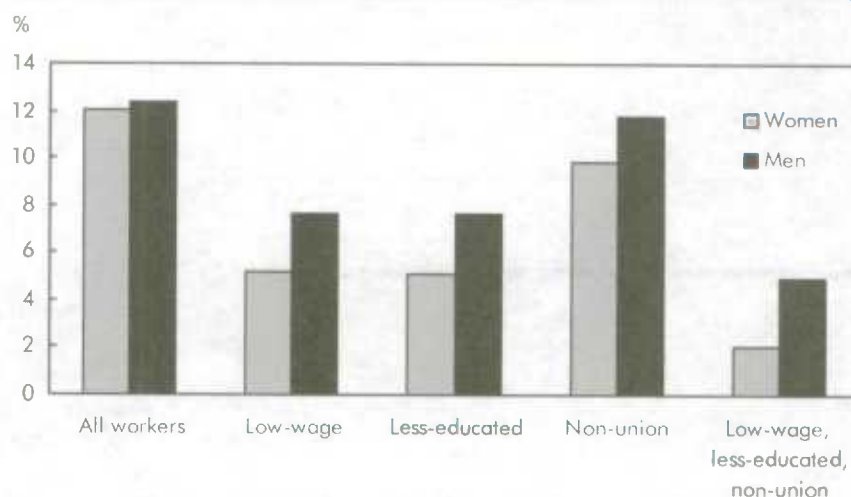
* statistically significant difference at the 0.10 level or better
 Source: Statistics Canada, Workplace and Employee Survey, 2005.

Although not shown, similar differences also existed in 2003. These persistent differences between women and men for multiple subsamples and multiple years could be an indication of a 'gender training barrier.' (For more details on the substantive or statistical significance of these differences, see *Data source and definitions*).

By way of corroboration of the existence of the training barrier, the proportions of workers who declined employer-supported training in the past year were calculated. If women, on average, are disadvantaged by relatively low access to employer-supported training, one would expect them to be less likely to decline it (Chart B). Among all workers, women were only marginally less likely than men to decline employer-supported training (12.0% vs. 12.4%), but among low-wage workers, the difference increased (5.2% vs. 7.7%). A similar difference existed among less-educated workers (5.1% vs. 7.6%). The difference shrank but

remained apparent among non-union workers (9.9% vs. 11.8%). Finally, among the low-wage, less-educated, non-union workers, the difference was small in absolute size, but very substantive on a relative basis (at 2.0% vs. 4.9%). Overall, workers in the four subsamples received less employer-supported training and were less likely to decline that training. Also, within each subsample, women were less likely than men to receive training, and were also less likely to decline it, particularly among low-wage, less-educated and non-union workers.

Although the pattern among those declining training was distinct, one possible explanation is that these workers were less likely to decline training because they were less likely to receive it. A training 'vulnerability proxy' (the ratio of the proportion receiving employer-supported training to the proportion declining training) was created to test this

Chart B Women less likely to decline employer-supported training

Source: Statistics Canada, Workplace and Employee Survey, 2005.

Data source and definitions

The **Workplace and Employee Survey (WES)** 2005 sample comprised 24,197 employees from 6,693 workplaces with response rates of 81.2% and 77.7% respectively. Weighted, this represented 12.2 million workers. The WES covers all business locations in Canada except employers in Yukon, Nunavut and the Northwest Territories, and employers in crop production, animal production, fishing, hunting and trapping, private households, religious organizations and public administration. (For more on sampling and sample design, see Statistics Canada 2008). Although all presented results are from the 2005 WES dataset, 2003 was also used.

Employer-supported training is classroom, on-the-job or 'outside' training supported or provided by an employer in the last 12 months. Although not shown, the receipt of each of these three types is positively correlated to the others.

Although no standard definition of vulnerability has emerged, the one used here is consistent with several recent Canadian studies (e.g. Saunders 2003, Chaykowski 2005 and Vallée 2005)—workers with some or all of the following characteristics: female, low wages, less education, not unionized. These vulnerability characteristics constitute the set of independent variables. For wages, a boundary of \$13.00 per hour was established. This emerged from an analysis of the distribution of wages in this dataset. Since a standard definition of a low-wage worker does not exist, the cut-off point was set to permit identification of the lowest-paid quartile of workers. These workers should or could face different working conditions than their better-paid counterparts. Large-enough cell counts were also provided when concurrently sorting workers by education and union status. Workers were sorted into four categories according to attained education. The first two were those with less than high school and those completing only high school. To avoid small cell counts in some cases (e.g. wage level), these two were combined. The other two categories were those with at least some postsecondary education (but no degree), and those with at least a bachelor's degree. Again, in some analyses it was necessary to combine these two.

In all regression analyses, in addition to vulnerability proxy variables, controls for the possible effects of a number of other factors were also used: employment status, occupation, marital status, presence of dependent children, workplace tenure, worker age, workplace size, industry, and workplace profitability. Employment status distinguished between permanent and non-permanent jobs, and those with a full-time or part-time schedule (using 30 hours per week as the boundary). Four occupational categories were defined:

managerial, professional, lower white collar (i.e. marketing, sales, clerical or administrative), and blue collar (i.e. technical, trades, production workers, operations and maintenance). Marital status was married (including common-law) or other (i.e. separated, divorced, widowed or single). Presence of dependent children indicated an individual responsible for at least one child. Workplace tenure indicated the number of years since employees started working for their current employer. Workplace tenure squared was also included in case the relationship between workplace tenure and training was non-linear. Worker age and worker age squared were measured in years using birthdates. Workplace size was the number of employees at the employer's location. The logarithmic form of this variable was utilized to normalize its distribution. Six industry categories were defined: primary (forestry, mining, and oil and gas extraction), manufacturing and related (construction, transportation, warehousing, communication and other utilities), retail trade, finance and insurance, education and health, and other. The final control variable, workplace profitability, identified employers whose gross revenue exceeded gross expenditures for that location.

An odds ratio can be interpreted as how many times higher (or lower, if less than 1) the examined group's odds of access to employer-supported training are. Goodness of fit was measured with the pseudo R^2 and Wald chi-square. The analysis used weighted micro data accessed via the Statistics Canada Research Data Centres. Regression results were bootstrapped using Statistics Canada's recommended set of weights via the Stata function (Chowhan and Buckley 2005).

Statistical significance refers to the situation where the arithmetic likelihood indicates that a given result would be very likely to occur by random chance. On the other hand, substantive significance refers to the magnitude or importance of a given result. Researchers have high confidence if a given result, like the detected gender training barrier, is consistently shown to be both statistically and substantively significant. If, on the other hand, a result is statistically significant but not substantive, then the importance of the finding is low, and a result that is substantively significant but not statistically significant could be considered to be merely an interesting anomaly. In this paper, the male-female differences are tangible and repeatable over multiple years. However, the statistical significance in the bar charts (and via t-tests) and the odds ratios in the multiple regressions are somewhat lower in 2005 than in 2003, but nonetheless exist in multiple instances in both years, essentially indicating more variation in these key variables in 2005.

hypothesis. About five workers received employer-supported training for each one that declined it among all men and all women (Chart C). However, among low-wage, less-educated, non-union men, about nine accessed employer-supported training for every one that declined it. This suggests that these men were more

reluctant, on average, than those not sharing these attributes to decline employer-supported training. However, among similar women, 18 accessed training for every 1 declining. Thus, if the presumption is correct regarding those most likely to accept employer-supported training, then low-wage, less-educated,

Chart C Ratio of accessing versus declining employer-supported training higher among women



Source: Statistics Canada, Workplace and Employee Survey, 2005.

non-union women are the most vulnerable. This is also consistent with themes in recent academic literature exploring the plight of so-called 'vulnerable' workers (e.g. Saunders 2003, Chaykowski 2005 and Vallée 2005).

Multivariate regressions were used to see whether the descriptive patterns were replicated while controlling for other possibly influential worker and workplace variables (Table 2). Model 1 showed the relative effect of each vulnerability characteristic. Model 2 added variables to isolate the interaction of sex with each of the low-wage, less-education, and non-union variables. Model 3 was the same as Model 1 except that a single interaction variable was added to understand the combined effect of the low-wage, less-education and non-union characteristics. To recap, previous research on women's receipt of training seemed inconclusive. While

some studies showed women to be less likely than men to receive employer-supported training, others reported either unsubstantial differences or slightly better access to training among women. In this study, women were less likely to receive employer-supported training (about 93% as likely as men), although the effect was not statistically significant. In Model 2, low-wage, less-educated or non-union women were all less likely to receive training, as shown by the odds ratios for the interaction variables. In particular, less-educated women were significantly less likely to receive employer-supported training than those without these characteristics. On the other hand, women who were not low-wage, less-educated or non-union were 22% more likely than men to receive training (although this difference was not statistically significant).

Low-wage workers were only about two-thirds as likely as higher-wage workers to receive employer-supported training, with this gap statistically significant for all three models. In addition, less-educated workers were three-quarters as likely as better-educated workers to receive employer-supported training, with this gap statistically significant for two of the three models. In Model 2, less-educated women were significantly less likely than those without these characteristics to receive employer-supported training, while less-educated men did not face a similar circumstance. All three models showed non-union workers to be significantly more likely than unionized workers to receive employer-supported training, and by a factor of 16% or more after controlling for other factors. Finally, Model 3 showed that low-wage, less-educated, non-union workers did not receive significantly less employer-supported training than other workers. Nonetheless, each of those traits was individually related to the receipt of employer-supported training, with low wages and less education negatively related, and non-union status positively related.

Given the large number of control variables included in the regression results, only general observations are possible. The control variables statistically related to employer-supported training in this study were: employment status, occupation, marital status, workplace tenure, worker age, workplace size, and industry. Non-permanent workers were less likely to receive employer-supporting training relative to permanent workers, while lower-level white-collar and blue-collar workers were less likely than professionals to receive this

Table 2 Odds ratios associated with employer-supported training among all workers

	Model 1	Model 2	Model 3
	Odds ratio		
Independent variables			
Women (ref. men)	0.93	1.22	0.94
Low-wage (ref. higher-wage)	0.61*	0.68*	0.62*
Less-educated (ref. better-educated)	0.74*	0.85	0.74*
Non-union (ref. unionized)	1.16*	1.26*	1.17*
Women and low-wage	...	0.84	...
Women and less-educated	...	0.73*	...
Women and non-union	...	0.84	...
Low-wage, less-educated, non-union	...	...	0.94
Control variables			
Non-permanent (ref. permanent)	0.66*	0.65*	0.66*
Part-time	0.89	0.90	0.89
Occupation (ref. professional)			
Manager	0.94	0.95	0.94
White collar	0.53*	0.54*	0.53*
Blue collar	0.74*	0.74*	0.74*
Other marital status (ref. married)	0.82*	0.82*	0.82*
Dependent children	0.99	1.00	0.99
Workplace tenure	0.97*	0.97*	0.97*
Workplace tenure squared	1.00	1.00	1.00
Worker age	0.94*	0.94*	0.94*
Worker age squared	1.00*	1.00*	1.00*
Workplace size	1.52*	1.52*	1.52*
Industry (ref. manufacturing and related)			
Primary	1.43*	1.42*	1.43*
Retail trade	1.01	1.01	1.01
Finance and insurance	3.23*	3.18*	3.22*
Education and health	1.65*	1.59*	1.65*
Other services	1.16	1.16	1.16
Profitable workplace	0.87*	0.87	0.87*

* statistically significant for the reference group (ref.) at the 0.10 level or better

Source: Statistics Canada, Workplace and Employee Survey, 2005.

training. Married/common-law workers were more likely to receive employer-supported training than workers with another marital status. Controlling for other factors, workplace tenure and age were negatively related to receiving employer-supported training, although the effect was very small in both cases. In terms of order of magnitude, the two seemingly most influential variables were workplace size and industry. Those in larger workplaces were significantly more likely than those in smaller workplaces to receive employer-supported training, while those in primary industries, finance and insurance, or education and health were much more likely than those in

manufacturing and related industries to receive training. Somewhat surprisingly, working in a profitable workplace was associated with less employer-supported training. This is counterintuitive since profitable organizations have more resources for training, and training investments have generally been shown to have a favourable impact on organizational outcomes (Turcotte and Rennison 2004).

Do vulnerable workers access employer-supported training?

The regressions were also run for the four subsamples. Among low-wage workers, the least educated ones (i.e. with less than a high school education) were significantly less likely to receive employer-supported training, and by a substantive margin (Table 3). None of the other key characteristics were statistically significant for this group. Among less-educated workers, women were less likely than men to receive employer-supported training, and low-wage workers were less likely than those with higher wages to receive training. And the non-unionized in the group were more likely than the unionized to receive training, albeit at only a weak level of significance. In the regressions results for non-union workers, the lower-wage were less likely than their higher-paid counterparts to receive employer-supported training, while those with less than a high school education received less training than those with more education. Among low-wage, less-educated, non-union workers, women were 25% less likely than men to receive employer-supported training, although this difference was not statistically significant.

Several control variables were significantly associated with training in one or more of the models. More specifically, workplace tenure was negatively associated with employer-supported training in all four subsamples, meaning that low-tenure workers were less likely than those with higher tenure to receive training. Workplace size was again positively and significantly related to employer-supported training, meaning that those in larger workplaces were more likely to receive training. Workers in finance and insurance or education and health also had much better odds of receiving training than those in manufacturing and related industries. Other variables sometimes significantly associated with receiving employer-supported training were non-permanent employment status, occupation and worker age, although no particular pattern was seen across multiple subsamples. Workers with non-permanent employment status, a part-time

Table 3 Odds ratios associated with employer-supported training among worker subsamples of interest

	Low-wage	Less-educated	Non-union	Low-wage, less-educated, non-union
Odds ratio				
Independent variables				
Women (ref. men)	0.77	0.72*	0.88	0.75
Low-wage (ref. higher-wage)	...	0.64*	0.58*	...
Education (ref. some postsecondary)				
Less than high school	0.58*	...	0.63*	...
Completed high school	1.04	...	0.89	...
University degree	1.08	...	1.14	...
Non-union (ref. unionized)	1.07	1.34*	...	...
Control variables				
Non-permanent (ref. permanent)	0.73	0.91	0.72*	0.88
Part-time	0.85	0.78	0.92	0.67
Occupation (ref. professional)				
Manager	1.56	1.52	0.93	4.48
White collar	0.72	0.95	0.60*	1.10
Blue collar	0.92	1.22	0.81*	1.32
Other marital status (ref. married)	0.76*	0.82	0.83*	0.91
Dependent children	0.98	1.10	1.00	1.35
Workplace tenure	0.91*	0.96*	0.96*	0.87*
Workplace tenure squared	1.00	1.00	1.00*	1.00
Worker age	0.94*	0.95	0.93*	1.00
Worker age squared	1.00	1.00	1.00*	1.00
Workplace size	1.61*	1.61*	1.64*	1.91*
Industry (ref. manufacturing and related)				
Primary	2.08	0.89	1.69*	5.46*
Retail trade	1.31	0.87	1.12	1.58*
Finance and insurance	3.92*	4.21*	3.50*	11.06*
Education and health	2.56*	1.50*	1.62*	2.81*
Other services	1.40*	1.41	1.20	2.41*
Profitable workplace	0.82	0.75	0.87	0.68

* statistically significant for the reference group (ref.) at the 0.10 level or better
Source: Statistics Canada, Workplace and Employee Survey, 2005.

schedule or a profitable workplace had relatively low odds of receiving employer-supported training, although significantly so in only one case.

Sensitivity analyses: Another look at training for men and women

The regression models were generated separately for men and women to assess whether the roles of the other independent variables differed between the sexes

(Table 4). In both subsamples, those with low wages and those with the least education were substantially and significantly less likely to receive employer-supported training. That said, the odds ratios show that having less than a high school education was associated with much lower receipt of training among women than among men. Other education levels and non-union status had insignificant effects with similar odds for both sexes.

Turning to control variables, those with different associations for women and men were employment status, occupation and industry. Although non-permanent workers were generally less likely to receive employer-supported training, the effect was insignificant for men, but women in non-permanent jobs were only about one-half as likely as those with a permanent job to receive training. Among men, occupation was not significantly related to employer-supported training. Conversely, professional women were roughly twice as likely as women in other occupations to receive employer-supported training. Finally, regardless of sex, workers in finance and insurance were about three times as likely as those in manufacturing and related industries to receive employer-supported training. While no other significant differences were seen by industry among men, women in education and health were also much more likely to receive training. The results suggest that while similarities exist between men and women regarding the factors associated with employer-supported training, a much more sizeable variation is seen among women for two structural factors—employment status and occupation. In other words, having a non-permanent job or a non-professional occupation was associated with sharply lower odds of receiving training among women, but not among men.

Conclusion

Consistent with human capital theory and existing research, better-educated, higher-wage workers would be expected to have better access to training by their employer (Becker 1964, Underhill 2006 and Hurst 2008). Based on existing

Table 4 Odds ratios associated with employer-supported training among all workers by sex

	Women	Men
	Odds ratio	
Independent variables		
Low-wage (ref. higher-wage)	0.64*	0.65*
Education (ref. some postsecondary)		
Less than high school	0.42*	0.73*
Completed high school	0.79	0.90
University degree	1.08	1.22
Non-union (ref. unionized)	1.15	1.17
Control variables		
Non-permanent (ref. permanent)	0.57*	0.79
Part-time	0.99	0.71*
Occupation (ref. professional)		
Manager	0.59*	1.42
White collar	0.38*	0.91
Blue collar	0.56*	1.06
Other marital status (ref. married)	0.90	0.71*
Dependent children	1.04	0.95
Workplace tenure	0.97	0.97
Workplace tenure squared	1.00	1.00
Worker age	0.92*	0.94*
Worker age squared	1.00*	1.00
Workplace size	1.53*	1.56*
Industry (ref. manufacturing and related)		
Primary	1.65	1.34*
Retail trade	0.99	1.06
Finance and insurance	3.42*	2.92*
Education and health	1.82*	1.07
Other services	1.21	1.11
Profitable workplace	0.92	0.80*

* statistically significant for the reference group (ref.) at the 0.10 level or better

Source: Statistics Canada, Workplace and Employee Survey, 2005.

studies (e.g. Boheim and Booth 2004, and Turcotte et al. 2003), non-union workers were also expected to have relatively low access to employer-supported training. Finally, after controlling for other individual, job and workplace characteristics, it was expected that training access for women would be poorer than for men even though recent studies had yielded mixed results. This expectation was based on literature suggesting that women are over-represented among workers considered vulnerable (e.g. Saunders 2003) and in poorer-quality employment (e.g. Cranford et al. 2003, and Padavic and Reskin 2002). This study used existing literature (Saunders 2003, Chaykowski 2005 and Vallée 2005) to select some of the key characteristics of 'vulnerable' workers: female, low wages, less education and non-union.

Workers in the four 'vulnerable' groups were less likely to receive, and also less likely to decline, employer-supported training. Also, within each group, women were less likely than men to receive, and also less likely to decline, employer-supported training, particularly among those theoretically most 'vulnerable'—low-paid, less-educated and non-union workers. These persistent differences between women and men across multiple groups and multiple years indicate a 'gender training barrier.'

Overall, the regression results consistently showed that, controlling for other factors, low-wage and less-educated workers were less likely to receive employer-supported training. Unexpectedly though, non-union workers generally had better odds than their unionized counterparts of receiving training. This was also contrary to the findings of other training studies. Although more analysis is required, one possible explanation is that unionization generally results in better wages, permanent employment status and a full-time schedule. Controlling for those factors disconnects the benefits of unionization. The odds ratios consistently indicated that women were less likely to receive employer-supported training, although the effect was statistically significant in only two of the six models. That said, in the subsamples of workers using the vulnerability characteristics, women were roughly one-quarter less likely than comparable men to receive training.

The separate regression models for women and men yielded two potentially important findings. First, having low education seems to be more problematic for women since the odds ratios showed that less than a high school education was associated with much lower odds of receiving training for women than for men. Second, non-permanent employment or a non-professional occupation was associated with sharply lower odds of receiving employer-supported training among women, but not among men. These results provide a further indication that women are potentially disadvantaged with respect to training, although it would be prudent to see whether these results are replicated in other studies. Like other research (Turcotte et al. 2003 and Peters 2004), this study found that, in the aggregate, men and women receive similar shares of training. The reason for women's lower share of training here but not elsewhere is that the difference is revealed only in the groups with 'vulnerable' characteristics.

The partial lack of statistical significance by sex in the regression results does not mean that the training barrier found in the descriptive statistics is illusory. On the contrary, the robustness of those differences indicates that the barrier is real. Thus, the somewhat differing results when controlling for other factors help clarify the results. More specifically, the results as a set suggest that the receipt of training varies not only on the basis of sex, but also on some or all of wage, education, unionization, employment status, occupation, workplace tenure, worker age, and industry. This is generally consistent with other studies (e.g. Turcotte et al. 2003, Hurst 2008 and Peters 2004).

Since it is well-established that women are over-represented in poor-quality jobs and some of the characteristics of poor jobs are associated with less training, it is as much a philosophical as a computational issue to quantify the effects of sex on the receipt of training. In any case, based on the overall results, workers having so-called vulnerable characteristics are indeed less likely to receive employer-supported training in Canada. That said, it remains unclear whether the training barrier is due to being female specifically, or whether those women are over-represented among workers having difficulty receiving training from their employer. While the answer remains elusive, the evidence is compelling that vulnerable workers are less likely to receive training and that women are relatively more disadvantaged among those workers. (For a more philosophical discussion of this dilemma, see Cooke and Zeytinoglu 2006).

To shed more light on this issue, the roles of employment status, worker age and workplace tenure on receiving training also deserve further investigation. In addition, the reasons various groups of workers accept or decline training warrant additional investigation. It is also reasonable to expect that some workers want training more than others, and that workers in certain industries or occupations will need more training than others. Thus, more research into the management decision-making process would be beneficial to clarify how and why employers allocate training resources among workers.

Perspectives

■ Notes

1. Since declining training is defined to capture the instance where workers opt out of training offered by their employers, the 'unmet need' for training is explored according to Peters (2004).

2. For additional details, see *Data source and definitions*. Recent studies exploring the relationships between training and various worker and workplace variables in Canada are available in Turcotte et al. 2003, Hurst 2008 and Peters 2004. For an international view of the value of skills attainment for workers, see OECD 2005.
3. Although the WES dataset contains provincial identifiers, this information is not contained in the version of the dataset that is available to researchers via the Statistics Canada Research Data Centres.

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What's new?

Recent reports and studies

■ From Statistics Canada

■ *Labour productivity*

Labour productivity rose 0.3% in the first quarter, in a context of sharply lower output and hours worked. In addition, the decline in unit labour costs stated in U.S. dollars for Canadian businesses continued for a third consecutive quarter, as their costs decreased by 1.8% in the first quarter.

The drops in real gross domestic product (GDP) of Canadian businesses and in the hours worked related to this production were the largest since the first quarter of 1991. The downturn in hours worked accelerated in the first quarter (-2.2%) compared with the fourth quarter of 2008 (-1.3%). This decline more than offset the decrease in output in the first quarter.

Productivity in the goods sector grew 1.7% in the first quarter, despite a further decline in manufacturing, but was partly counterbalanced by a 0.5% productivity decrease in services.

Over the last two quarters, productivity has followed much the same pattern in Canada and the United States. American businesses had a 0.4% gain in productivity in the first quarter, after a 0.1% decline the previous quarter.

Labour costs per unit of production in Canadian dollars rose by 0.8% for Canadian businesses in the first quarter. That was slightly less than half the rate of 1.7% registered in the previous quarter. This improvement is attributable to a modest gain in productivity and slower growth in hourly compensation, which moderated from 1.5% in the last quarter of 2008 to 1.2% in the first quarter.

For more information, see the June 16, 2009 issue of *The Daily* on the Statistics Canada's website (www.statcan.gc.ca).

■ *Employer pension plans (trusteed pension funds)*

The market value of retirement savings held in employer-sponsored pension funds declined by \$58.1 billion, or 6.7%, during the fourth quarter of 2008 to \$810.9 billion. This was attributable mainly to a fall in the market value of stocks and equity funds. The drop followed a decrease of \$82.7 billion in the third quarter, which was the largest quarterly decline in a decade.

The fourth-quarter level was well below the peak market value of \$954.6 billion reached at the end of 2007.

Expenditures of \$49.3 billion exceeded revenues of \$21.6 billion in the fourth quarter. This was the third time in 2008 that pension funds experienced a negative cash flow. The negative cash flow resulted from significant net losses on the sale of securities. Collectively, pension fund managers reported \$34.6 billion in fourth-quarter losses.

Revenue from employer and employee contributions in the fourth quarter of 2008 amounted to \$9.8 billion. Benefits paid to retirees reached \$10.1 billion, up 3.4% from the previous quarter. Benefits exceeded pension contributions for a sixth quarter in a row.

For more information, see the June 11, 2009 issue of *The Daily* on the Statistics Canada's website (www.statcan.gc.ca).

■ *Income of Canadians*

Median after-tax income, adjusted for inflation, for families with two or more people rose 3.7% from 2006 to \$61,800 in 2007. Median after-tax income for unattached individuals rose 3.9% to \$24,200.

Since 2002, the year following the high-tech slowdown, the average annual growth of the median after-tax income for families was 1.8%. Over the same period, the average annual growth for unattached individuals was 1.4%.

Market income (earnings from employment, investment income and private retirement income) was the main contributor to the increase in after-tax income. Median market income for families rose 3.0% from 2006 to \$62,700 in 2007, while it increased 6.7% for unattached individuals to \$20,600.

Canadians paid \$16.70 in income taxes for each \$100 of total income in 2007, down from \$17.10 in 2006, as a result of the introduction of several changes to the tax system. At the same time, growing market incomes meant that more tax filers found themselves in higher tax brackets.

In 2007, 3 million Canadians lived in a low-income situation, down by 400,000 from 2006. This represents 9.2% of the population, the lowest rate since the current series began in 1976. Also, the proportion of children in low-income families was 9.5% in 2007, about half its peak of 18% in 1996.

For more information, see the June 3, 2009 issue of *The Daily* on the Statistics Canada's website (www.statcan.gc.ca).

■ *Labour productivity in the provinces and territories*

Labour productivity rose in four provinces and one territory in 2008, led by Saskatchewan with a gain of 1.8% and Nunavut with an increase of 9.5%. The largest productivity declines were in British Columbia and in the Northwest Territories.

The volume of hours worked rose in every province. However, in Saskatchewan, Manitoba, Nova Scotia and Prince Edward Island the growth in economic output outpaced growth in hours.

Nationally, productivity declined 0.5% in 2008, after rising 0.5% in 2007. This occurred as the growth in real GDP decelerated significantly. At the same time, hours worked continued to rise, albeit at about half the pace of the previous two years.

At the national level, productivity in the goods-producing sector declined 2.2%, the first decline in four years. In services, it rose 0.4%.

The continued expansion of the job market for most of the year led to a 3.7% increase in hourly compensation at the national level in 2008, down from the 4.0% gain in 2007.

Alberta posted the strongest provincial increase in hourly compensation (7.0%) followed by Saskatch-

ewan (5.0%) and Manitoba (4.3%). These three posted the strongest job gains of all provinces in 2008.

For more information, see the May 13, 2009 issue of *The Daily* on the Statistics Canada's website (www.statcan.gc.ca).

■ *Cyclical changes in output and employment*

A recurring question during economic downturns is the relationship between output and employment. Do changes in employment lag output growth? Do employers cut output faster than jobs during recessions? And have these relationships changed over time? This paper tries to answer these questions by comparing monthly and quarterly GDP and employment. It also compares Canadian and U.S. results.

Comparing year-over-year growth of monthly real GDP and employment since 1982 shows the two change direction in tandem most of the time. More specifically, turning points in the growth of output and employment appear to have been virtually the same over the past three decades.

For more information, see "Cyclical changes in output and employment" by Philip Cross, *Canadian Economic Observer*, May 2009.

■ *Entry earnings of immigrants following the IT bust*

Using administrative data, this paper asks whether the changing characteristics of immigrants, notably the rise in the proportions with university education and in the 'skilled economic' immigrant class, contributed positively to immigrant entry earnings during the 1990s, and whether the entry earnings of immigrants improved after 2000.

Through the 1990s, the rising number of entering immigrants with university degrees and in the skilled economic class did little to improve earnings at the bottom of the earnings distribution (and reduce low-income rates among entering immigrants), but the changes did increase earnings among immigrants at the middle and top of the earnings distribution. The increasing numbers of highly educated at the bottom of the earnings distribution were unable to convert their education and 'skilled class' designation to higher earnings: they found themselves with low incomes. These outcomes may be related to language, credentials, education quality or supply issues.

From 2000 to 2004, the entry earnings of immigrants renewed their slide, but for reasons that differed from the standard explanations for the earlier decline. Much of the fall after 2000 was concentrated among immigrants intending to practice in the information technology (IT) or engineering occupations. This coincided with the IT downturn, which appears to have significantly affected outcomes for these immigrants, particularly men. Following the significant increase in supply in response to the call for more high-tech workers in the late 1990s, the large numbers of entering immigrants were faced with the IT downturn.

For more information, see *Immigrant Characteristics, the IT Bust, and Their Effect on Entry Earnings of Immigrants* by Garnett Picot and Feng Hou, Analytical Studies Branch Research Paper Series, April 2009.

■ ***The impact of U.S. recessions on Canada***

This paper looks at the broad implications for Canada of past U.S. recessions, and some of the factors that separate a severe downturn from milder slumps in Canada.

Recessions in the United States have been accompanied by a wide range of outcomes in Canada. The sharp contractions in the U.S. during 1974-1975 and 1981-1982 were associated with a mild and a severe recession respectively here in Canada. The mild downturns in the U.S. in 1990-1991 and 2001 were accompanied in Canada by a severe recession and no recession respectively. This article also examines some of the reasons for these different outcomes, and provides an overview of how recessions compare in Canada and the U.S.

For more information, see "The impact of recessions in the United States on Canada" by Philip Cross, *Canadian Economic Observer*, March 2009.

■ **From other organizations**

■ ***Household debt, assets and income in Canada***

Microdata from the 1999 and 2005 Survey of Financial Security are used to identify changes in household debt, and discuss their potential implications for mon-

etary policy and financial stability. This paper documents an increase in the debt-income ratio, which rose from 0.75 to 0.95. Rising debt ratios were driven by a 50% increase in mortgage balances among the middle-aged, a doubling of credit card debt among households over 55, and a quadrupling in home equity lines of credit among small business owners and households without high school diplomas.

The rising debt-income ratio for households in the bottom income quintile is the most important development of the period from 1999 to 2005, signalling greater sensitivity to rising interest rates or negative income shocks—particularly among income-poor homeowners, whose 2005 mortgage obligations totalled 72% of income. Meanwhile, an increase in the portfolio share of real estate, particularly among the middle-aged, suggests that household balance sheets have become more sensitive to changes in the housing market. In addition to poor households, the study identifies former bankrupts, younger households, and the self-employed as more indebted and hence at greater risk. See *Household Debt, Assets, and Income in Canada: A Microdata Study* by Césaire A. Mch, Yaz Terajima, David Xiao Chen and Tom Carter, Bank of Canada Discussion Paper 2009-7, June 2009.

■ ***Shifting occupational composition and the real average wage***

This article examines the U.S. real average wage growth by quantifying how changes in the occupational composition of U.S. employment have affected the average wage. It analyzes occupational wage and employment data from the Occupational Employment Survey to understand how changes in occupation wages and changes in occupation levels of employment have each contributed to growth in the U.S. real average wage from 2002 to 2007. A shift in employment towards lower paying occupations hindered wage growth, increases in the real mean wages of individual occupations were the only factor of growth, and most of that growth was due to increases in the wages of the highest paying occupations. Employment also shifted toward the highest paying and lowest paying occupations and away from middle-paying occupations. See "How shifting occupational composition has affected the real average wage" by Rebecca Keller, *Monthly Labor Review*, U.S. Bureau of Labor Statistics, June 2009.

■ *International comparisons of hours worked*

The number of hours individuals work stimulates debate on the quality of life in an international context: do some societies live to work while others work to live? Also, international differences in hours worked fuel discussion of economic growth, employment, and unemployment. But any comparative measure depends on a standardization of concepts, sources, and methods. The U.S. Bureau of Labor Statistics and the Organisation for Economic Co-operation and Development, whose datasets on work hours were used, caution that international comparisons based on average hours worked per year are prone to error and that the data best describe changes over time. See "International comparisons of hours worked: an assessment of the statistics" by Susan E. Fleck, *Monthly Labor Review*, U.S. Bureau of Labor Statistics, May 2009.

■ *Depression babies and risk-taking*

Based on the Survey of Consumer Finances for 1964-2004, combined with stock and bond returns, the "experienced stock and bond returns" are calculated for each household in the study sample. These "experienced returns" are the weighted average of returns over the lifetime of each household (so far), where the weights are simultaneously estimated from the data. For those who lived during a period of high stock market returns—inflation-adjusted experienced returns in the 90th percentile, or a rate of return of about 11% for the period 1964 to 2004—the investment of liquid assets in stocks is 5.7 percentage points higher than for those who lived in periods with returns in the 10th percentile.

Experiencing returns in the 90th percentile also increased the probability that a household would participate in the stock market by about 10.6 percentage points. Similar results were observed in bond markets. Households that experienced inflation-adjusted bond returns in the 90th percentile, or a positive return of 4.6%, were 11 points more likely to invest in bonds than those who experienced returns in the 10th percentile.

The data suggest that 28.5% of the U.S. population participated in the stock market between 1964 and 2004. In the late 1960s, participation rates were above

30% and comparable to rates reached in the late 1990s. Participation fell in the 1970s and early 1980s. Although households appear to place more weight on recent market returns, good or bad investing experiences early in life leave a lasting impression that "fades away only very slowly." See *Depression Babies: Do Macroeconomic Experiences Affect Risk-Taking* by Ulrike Malmendier and Stefan Nagel, NBER Working Paper, NBER Digest Online, June 2009.

■ *Long-run effects of unions on firms*

A successful effort to unionize a workplace apparently reduces the market value of affected publicly traded firms, even with no immediate change in their operating performance. The average effect of a union win at a workplace is to decrease the market value of the affected business by at least \$40,500 (in 1998 US\$) per worker eligible to vote, based on monthly stock prices for 24 months before and after a vote to unionize. The study suggests that a policy-induced doubling of unionization in the United States would "lead to a 4.3% decrease in the equity value of all firms at risk of unionization."

The decrease in equity value associated with unionization begins at the time the union wins its election and continues for about 15 months afterward. Calculations of the effects of a union victory suggest that it produces negative returns of 10% to 14%. The effects are highly variable, depending on the degree of support for the union. When unions win with a bare majority, almost no effect is seen. But when unions win by a large margin, the effect can be as large as 25% to 40%.

The advantage of analyzing the stock market response to unionization is that if the market "correctly prices the firm, it should capture the sum of all costs imposed by the union, and effects that might occur many years in the future should be capitalized into the stock market valuation of the firm in the short run." See *Long-Run Impacts of Unions on Firms: New Evidence from Financial Markets, 1961-1999* by David Lee and Alexandre Mas, NBER Working Paper, NBER Digest Online, May 2009.

Perspectives

Varia

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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

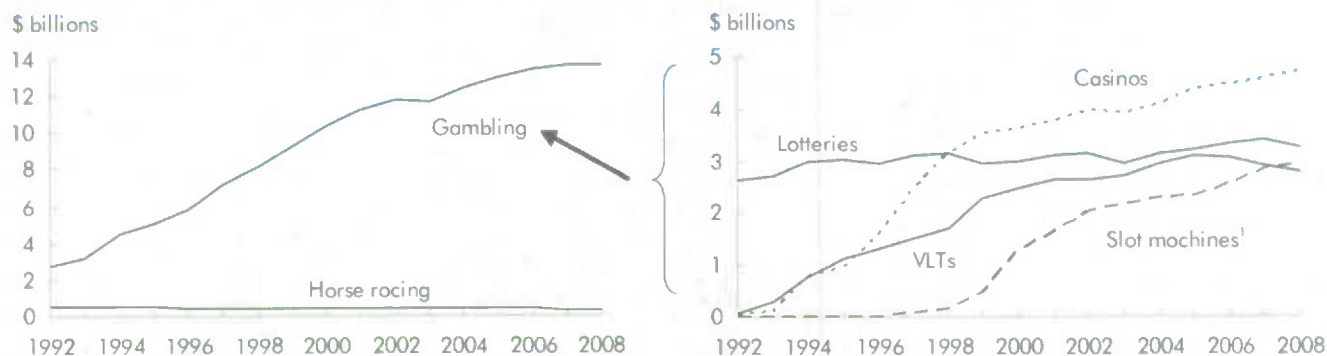
Adult Education and Training Survey
Client Services
613-951-7608 or 1-800-307-3382

National Graduates Survey
Client Services
613-951-7608

Gambling

- 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 over \$13 billion since 2005, but then dropping for the first time in 2008, to \$13.67 billion from \$13.70 in 2007.¹
- Net revenue from pari-mutuel betting (horse racing) dropped from \$532 million to \$378 million over the same period (1992 to 2008).
- Casinos and slot machines outside casinos (mainly at racetracks) continued to increase their share of the gambling industry in 2008 (reaching 34% and 22% respectively) while revenue and representation dropped for lotteries (24%) and VLTs (20%).
- Average gambling revenue per person 18 and over in 2008 ranged from \$114 in the three territories to \$825 in Saskatchewan, with a national average of \$528.²
- Compared with workers in non-gambling industries, those in gambling were more likely to be non-unionized (74% versus 69%), paid by the hour (81% versus 65%), and paid less (\$19.85 hourly versus \$21.30) and receiving tips at their job (33% versus 7%).
- Men increased their share of employment in gambling industry from 35% in 1992 to 51% in 2008. Similarly the rate of full-time jobs increased from 60% to 84% between the two years.³
- Just under half of women and men living alone reported spending money on at least one gambling activity; however, the men spent 50% more than women—\$814 compared with \$516.⁴
- Gambling participation and expenditure rates increased with household income. For example, 34% of households with incomes of less than \$20,000 gambled in 2007 and spent an average of \$678, while equivalent figures for those with incomes of \$80,000 or more were 58% and \$798.

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

Chart A Net revenue from government-run gambling has increased steadily

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

Table 1 Gambling revenues and profits

	Gambling revenue¹		Gambling profit²		Share of total revenue³		Revenue per capita (18 and over)⁴	
	1992	2008	1992	2008	1992	2006	1992	2008
	\$ millions (current)				%		\$	
Canada	2,734	13,926	1,680	7,144	1.9	4.8	128	528
Newfoundland and Labrador	80	197	42	99	2.3	4.1	189	477
Prince Edward Island	20	46	7	16	2.7	3.3	209	413
Nova Scotia	125	324	72	143	2.8	4.5	180	426
New Brunswick	117	219	49	129	2.7	3.3	209	363
Quebec	693	2,790	472	1,539	1.8	3.9	128	449
Ontario	853	4,841	529	1,680	1.9	5.2	106	475
Manitoba	153	645	105	358	2.5	5.3	186	696
Saskatchewan	62	641	39	325	1.1	5.4	86	825
Alberta	225	2,254	125	1,759	1.6	5.5	118	809
British Columbia	403	1,962	239	1,089	2.2	5.2	153	556
Yukon, Northwest Territories and Nunavut	5	9	1	7	0.3	0.3	82	114

1. Total revenue from wagers on government-controlled lotteries, casinos and VLTs, minus prizes and winnings. Revisions to provincial estimates will occur in November 2009.

2. Net income of provincial governments from total gambling revenue, less operating and other expenses (see Data sources and definitions).

3. The 2006 share of total revenue calculation is based on 2006 gambling revenue and 2006 total provincial revenue. The 2007 provincial revenue will be available autumn 2009.

4. Persons 18 and over were selected as this is the legal age of gambling in most provinces.

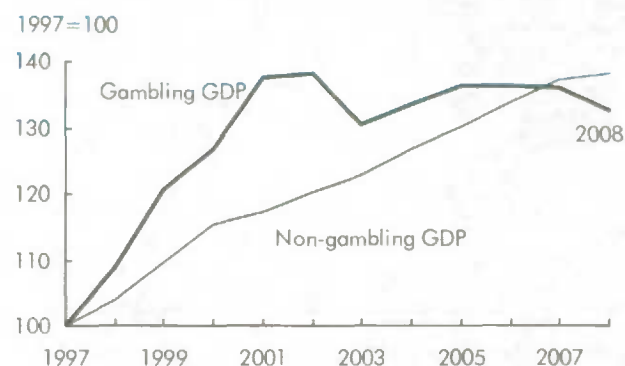
Sources: Statistics Canada, National Accounts, Public Institutions (Financial management statistics) and post-censal population estimates.

Table 2 Characteristics of workers

	Gambling ¹		Non-gambling	
	1992	2008	1992	2008
Total employed	11	41	12,720	17,084
		thousand		
Sex		%		
Men	35	51	55	53
Women	65	49	45	47
Age				
15 to 34	57	42	45	37
35 and over	43	58	55	63
Education				
High school or less	66	47	57	41
Postsecondary certificate or diploma	21	34	27	35
University degree	13	19	16	24
Work status				
Full-time	60	84	81	82
Part-time	40	16	19	18
Provinces				
Atlantic provinces	8	3	7	6
Quebec	F	16	24	23
Ontario	28	39	39	39
Prairie provinces	30	20	17	18
British Columbia	25	22	13	13
Class of worker				
Employee	99	98	85	85
Self-employed	F	F	15	15

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 Growth in gambling has leveled off

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, or building and equipment maintenance are not included.

Source: Statistics Canada, National Accounts.

Table 3 Characteristics of jobs

	Gambling		Non-gambling	
	1997	2008	1997	2008
Employees¹	33	41	11,323	14,456
		thousand		
		%		
Unionized ²	29	26	34	31
Non-unionized	71	74	66	69
Permanent job	91	91	89	88
Temporary job	9	9	11	12
Usually receive tips	27	33	7	7
No tips	73	67	93	93
Paid by the hour	80	81	61	65
Not paid hourly	20	19	39	35
Average hourly earnings³				
			\$	
Men: full-time	13.50	23.00	17.85	24.30
Women: full-time	13.05	18.70	14.80	20.80

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	492	74	239	63	82	31	523	21	729	9
2001	513	72	249	61	94	29	536	20	797	9
2002	570	73	252	63	123	30	679	21	901	7
2003	506	74	237	64	95	28	649	19	800	8
2004	514	71	262	61	100	28	653	19	802	6
2005	549	69	251	60	141	26	712	17	946	6
2006	493	73	254	64	109	28	686	19	521	6
2007 ¹	646	52	282	48	123	17	850	17	792	4
One-person households²	670	45	241	40	150	12	1,111	14	774	3
Men	814	49	312	44	226	12	1,438	15	892	2
18 to 44	578	49	155	41	118	12	1,033	19	F	F
45 to 64	1,084	54	384	51	163	14	2,895	11	F	F
65 and over	874	42	545	38	780	8	772	13	F	F
Women	516	40	165	36	87	13	795	14	717	4
18 to 44	285	39	147	35	80	16	246	18	F	F
45 to 64	679	50	176	47	87	15	1,586	14	657	4
65 and over	530	35	167	29	96	9	739	11	978	5
All households										
Newfoundland and Labrador	567	52	303	48	97	25	611	8	701	11
Prince Edward Island	525	54	258	47	107	26	385	13	918	9
Nova Scotia	599	55	266	50	96	26	498	12	1,278	9
New Brunswick	440	54	246	51	116	21	512	7	683	7
Quebec	456	55	284	53	63	11	585	12	521	5
Ontario	726	50	297	45	142	17	905	21	671	3
Manitoba	709	56	243	49	83	26	736	25	1,044	7
Saskatchewan	731	55	264	49	115	31	748	24	1,058	6
Alberta	927	48	282	42	183	24	1,246	20	950	4
British Columbia	628	52	264	48	114	17	847	17	1,060	3
Income after tax										
Less than \$20,000	678	34	198	30	234	7	1,624	8	621	4
\$20,000 to \$39,999	602	49	271	45	101	13	794	15	734	6
\$40,000 to \$59,999	587	55	277	50	98	18	761	17	766	5
\$60,000 to \$79,999	558	61	306	57	99	22	592	21	562	4
\$80,000 and over	798	58	311	54	149	25	951	23	1,309	3

1. New screening questions were added in 2007 to reduce response burden, but for some categories, including games of chance, the response rate was lower than expected. These screening questions will be 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 2007.

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 provincial and territorial government-run lotteries, casinos and VLTs, after prizes and winnings, operating expenses (including wages and salaries), payments to the federal government and other overhead costs are deducted.

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 expenditure on all gambling activities by income groups, 2007

	Average expenditure		Percentage reporting ¹	Gaming as % of total income	
	All households	Reporting households		All households	Reporting households
	\$			%	
Income after tax	336	646	52	0.5	0.8
Less than \$20,000	229	678	34	1.7	4.8
\$20,000 to \$39,999	296	602	49	1.0	2.0
\$40,000 to \$59,999	320	587	55	0.6	1.2
\$60,000 to \$79,999	340	558	61	0.5	0.8
\$80,000 and over	465	798	58	0.4	0.7

1. New screening questions were added in 2007 to reduce response burden, but for some categories, including games of chance, the response rate was lower than expected. These screening questions will be modified for 2008. See catalogue no. 62F0026M, no. 1 for more details.

Source: Statistics Canada, Survey of Household Spending.

Notes

1. Refers to total money wagered on non-charity 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'.
4. New screening questions were added in 2007 to reduce response burden, but for some categories, including games of chance, the response rate was lower than expected. These screening questions will be modified for 2008. See catalogue no. 62F0026M, no. 1 for more details.

Unionization

Unionization rates in the first half of 2008 and 2009

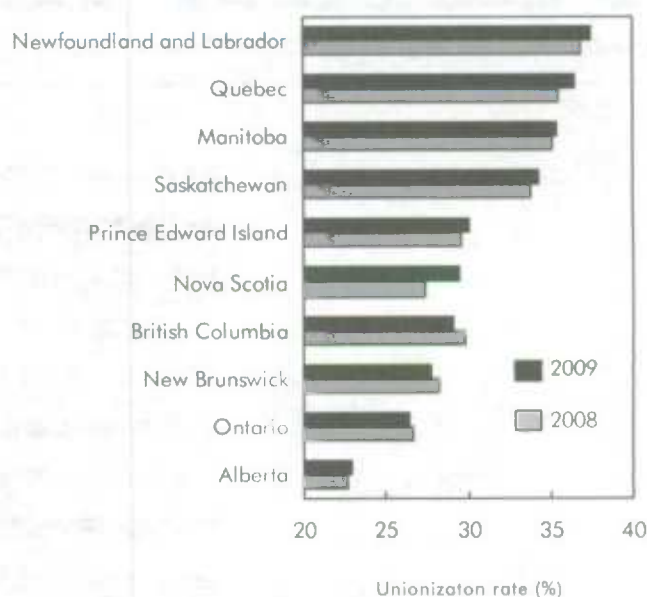
Average paid employment (employees) during the first half of 2009 was 14.1 million, a decrease of 317,000 over the same period a year earlier (Table 1). The number of unionized employees also fell, by 72,000 (to 4.2 million). However, since union membership fell slightly less rapidly than employment, the unionization rate edged up from 29.4% in 2008 to 29.5% in 2009.

As men suffered disproportionately more losses in unionized jobs, their unionization rate fell to 28.2%. By contrast, the number of unionized women increased, bringing their rate to 30.8% in 2009. As a result, the gap in the rates between men and women widened further in 2009.

Private-sector employees lost a significant number of unionized jobs between 2008 and 2009. As a result, the unionization rate declined from 16.3% to 16.1% in the private sector, while the rate increased from 71.0% to 71.3% in the public sector.

As with overall job losses, losses in unionized jobs were concentrated among full-time jobs. However, unionization remained relatively stable among full-time workers at 31.0%. The unionization rate of part-time workers rose to 23.3% in 2009.

Chart A Newfoundland and Labrador, the most unionized province; Alberta, the least



Source: Statistics Canada, Labour Force Survey, January-to-June averages.

Data sources

Information on union membership, density and coverage by various socio-demographic characteristics, including earnings, are from the Labour Force Survey. Further details can be obtained from Marc Lévesque, Labour Statistics Division, Statistics Canada at 613-951-4090. Data on strikes, lockouts and workdays lost, and those on major

wage settlements were supplied by Human Resources and Skills Development Canada (HRSDC). Further information on these statistics may be obtained from Client services, Workplace Information Directorate, HRSDC at 1-800-567-6866.

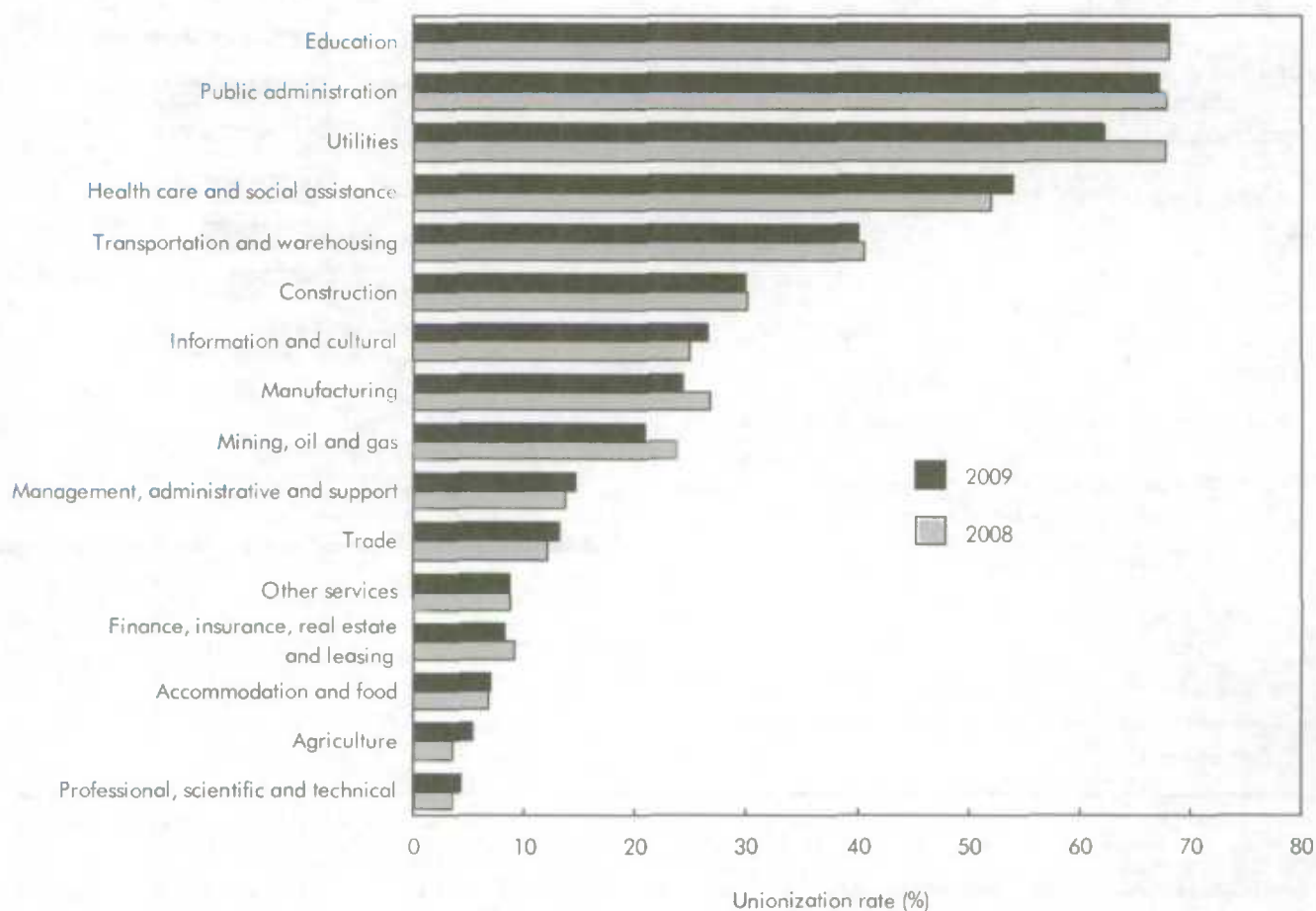
The unionization rate for permanent employees remained relatively stable at 29.8%, but increased to 27.7% for those in non-permanent jobs. Between 2008 and 2009, the unionization rate also rose in firms of all sizes, except those with 20 to 99 employees where the rate remained stable.

The provincial picture was more mixed (Chart A). Seven provinces recorded increases in their unionization rate, including those that had a relatively high rate

to begin with. By contrast, unionization decreased in British Columbia, New Brunswick, and Canada's most populous province (Ontario).

Changes in unionization rates varied across industries. Notable declines were observed in utilities, in mining, oil and gas, and in manufacturing. Notable increases occurred in health care and social assistance; information and cultural; management, administrative and support; trade and agriculture (Chart B).

Chart B The highest unionization rates were in public sector industries



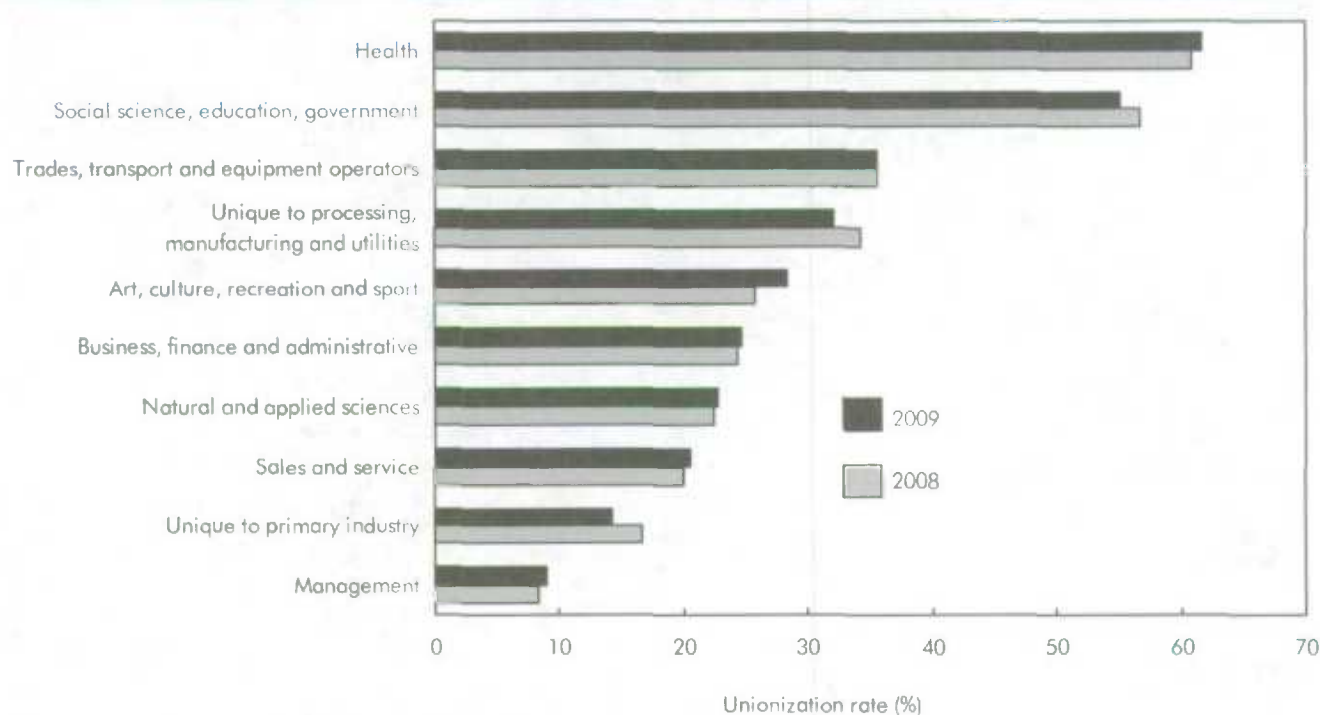
Source: Statistics Canada, Labour Force Survey, January-to-June averages.

Changes in the unionization rate also varied across 10 major occupational groups (Chart C). Consistent with the industrial picture, unionization declined most in occupations unique to primary industries and among occupations unique to processing, manufacturing and utilities. The unionization rate also declined in social science, education and government occupations. Conversely, it rose in health occupations, and in art, culture, recreation and sport occupations.

Changes in the unionization rate were more modest among other major occupational categories.

Finally, the number of employees who were not union members but were covered by a collective agreement averaged 300,000 in the first half of 2009, little changed from last year's total of 301,000.

Chart C Unionization in community service occupations far outpaced that in others



Source: Statistics Canada, Labour Force Survey, January-to-June averages.

Table 1 Union membership and coverage by selected characteristics

	2008			2009		
	Total employees	Union density		Total employees	Union density	
		Members	Coverage ¹		Members	Coverage ¹
	'000	%	%	'000	%	%
Both sexes	14,404	29.4	31.5	14,087	29.5	31.6
Men	7,221	28.7	31.1	6,963	28.2	30.4
Women	7,183	30.0	31.9	7,123	30.8	32.9
Sector²						
Public	3,443	71.0	74.5	3,423	71.3	75.1
Private	10,962	16.3	17.9	10,664	16.1	17.7
Age						
15 to 24	2,464	13.5	15.2	2,321	14.7	16.5
25 to 54	10,032	32.3	34.5	9,800	31.9	34.1
25 to 44	6,614	29.4	31.8	6,415	29.4	31.6
45 to 54	3,418	37.7	39.7	3,385	36.6	38.8
55 and over	1,909	34.6	36.5	1,966	35.2	37.3
Education						
Less than Grade 9	316	24.7	26.0	289	24.4	26.4
Some high school	1,502	19.9	21.6	1,344	20.1	21.6
High school graduation	2,877	25.9	27.5	2,788	25.3	26.9
Some postsecondary	1,283	22.1	23.8	1,229	21.6	23.3
Postsecondary certificate or diploma	5,063	33.0	35.3	5,003	33.2	35.6
University degree	3,364	34.3	36.9	3,434	34.5	37.1
Province						
Atlantic	962	29.7	31.2	954	30.5	32.0
Newfoundland and Labrador	193	36.8	39.0	189	37.5	39.3
Prince Edward Island	60	29.6	31.1	58	30.1	32.6
Nova Scotia	390	27.4	28.2	388	29.5	30.8
New Brunswick	319	28.3	30.0	319	27.7	29.1
Quebec	3,299	35.5	39.2	3,257	36.5	40.0
Ontario	5,658	26.7	28.2	5,480	26.4	28.1
Prairies	2,592	26.9	28.8	2,585	27.3	29.2
Manitoba	517	35.1	37.1	520	35.4	37.4
Saskatchewan	415	33.8	35.3	422	34.3	36.3
Alberta	1,660	22.7	24.6	1,643	22.9	24.8
British Columbia	1,894	29.8	31.4	1,811	29.1	30.6
Work status						
Full-time	11,765	30.9	33.1	11,398	31.0	33.2
Part-time	2,639	22.7	24.3	2,689	23.3	25.1
Industry						
Goods-producing	3,214	28.4	30.4	2,970	26.5	28.5
Agriculture	116	3.5	4.2	114	5.3	6.3
Natural resources	285	23.7	25.6	271	20.9	22.3
Utilities	151	67.7	70.5	147	62.2	67.0
Construction	802	30.2	32.0	744	30.0	31.8
Manufacturing	1,861	26.8	28.8	1,694	24.2	26.2
Service-producing	11,190	29.6	31.8	11,117	30.3	32.5
Trade	2,392	12.2	13.8	2,319	13.1	14.7
Transportation and warehousing	700	40.6	42.5	690	40.0	41.7
Finance, insurance, real estate and leasing	894	9.0	10.6	902	8.2	9.6
Professional, scientific and technical	811	3.6	4.9	786	4.3	5.2
Management, administrative and support	522	13.7	15.3	490	14.6	16.2
Education	1,187	68.1	71.7	1,163	68.0	71.9
Health care and social assistance	1,650	52.1	53.8	1,704	54.0	56.4
Information and cultural	632	24.9	26.9	626	26.6	28.6
Accommodation and food	964	6.7	7.6	972	7.0	7.8
Other	519	8.7	10.7	546	8.8	10.1
Public administration	918	67.9	73.6	920	67.2	72.8

Table 1 Union membership and coverage by selected characteristics (concluded)

	2008			2009		
	Total employees	Union density		Total employees	Union density	
		Members	Coverage ¹		Members	Coverage ¹
	'000	%	%	'000	%	%
Occupation						
Management	1,036	8.3	10.8	1,019	8.9	11.2
Business, finance and administrative	2,840	24.3	26.3	2,787	24.6	26.7
Professional	395	17.1	18.9	420	18.0	19.5
Financial and administrative	775	22.4	24.6	733	24.2	26.5
Clerical	1,670	26.9	28.8	1,634	26.5	28.7
Natural and applied sciences	1,074	22.5	24.8	1,036	22.8	24.9
Health	882	60.9	63.1	912	61.7	64.2
Professional	89	41.6	47.0	105	40.2	46.1
Nursing	275	77.2	79.1	273	81.5	83.1
Technical	208	56.4	58.5	216	57.5	60.0
Support staff	310	55.1	56.6	319	54.8	56.7
Social and public service	1,351	56.7	59.4	1,387	55.1	58.2
Legal, social and religious workers	640	37.1	39.4	683	35.9	38.4
Teachers and professors	711	74.3	77.4	704	73.7	77.4
Secondary and elementary	480	86.4	88.2	485	85.5	88.2
Other	231	49.0	54.8	219	47.5	53.7
Art, culture, recreation and sport	330	25.8	28.8	322	28.3	30.9
Sales and service	3,658	20.1	21.8	3,658	20.5	22.3
Wholesale	361	4.9	6.0	383	4.9	6.1
Retail	1,037	11.6	12.8	1,025	11.7	12.9
Food and beverage	533	9.1	10.0	531	9.9	10.8
Protective services	245	51.8	59.0	250	54.0	61.4
Child care and home support	185	47.3	49.6	195	49.6	51.2
Travel and accommodation	1,297	25.9	27.3	1,274	25.7	27.3
Trades, transport and equipment operators	2,094	35.5	37.5	1,968	35.6	37.6
Contractors and supervisors	134	28.6	30.6	140	27.2	29.6
Construction trades	274	37.5	39.6	271	38.1	39.7
Other trades	850	36.4	38.6	768	38.1	40.3
Transportation equipment operators	492	37.0	38.6	490	34.7	36.0
Helpers and labourers	343	32.3	34.4	300	32.1	34.8
Unique to primary industry	263	16.7	18.6	253	14.3	15.9
Unique to processing, manufacturing and utilities	876	34.2	36.4	745	32.1	34.3
Machine operators and assemblers	697	34.5	36.8	603	31.7	33.7
Labourers	178	33.0	34.9	143	34.0	36.9
Workplace size						
Under 20 employees	4,713	12.6	14.2	4,697	13.4	14.9
20 to 99 employees	4,708	30.3	32.4	4,732	30.2	32.4
100 to 500 employees	3,073	39.6	42.0	2,883	40.4	43.1
Over 500 employees	1,910	52.0	54.8	1,775	52.7	55.4
Job tenure						
1 to 12 months	3,432	15.9	18.2	3,053	16.4	18.6
Over 1 year to 5 years	4,584	22.8	24.6	4,753	23.4	25.3
Over 5 years to 9 years	2,135	33.4	35.6	2,051	32.2	34.4
Over 9 years to 14 years	1,434	35.3	37.0	1,464	34.9	36.8
Over 14 years	2,819	50.4	52.8	2,766	49.6	52.1
Job status						
Permanent	12,728	29.7	31.7	12,449	29.8	31.8
Non-permanent	1,676	26.8	29.6	1,638	27.7	30.4

1. Union members and persons who are not union members but covered by collective agreements (for example, some religious group members).

2. Public sector employees are those working for government departments or agencies; Crown corporations; or publicly funded schools, hospitals or other institutions. Private sector employees are all other wage and salary earners.

Source: Statistics Canada, Labour Force Survey, January-to-June averages.

2008 annual averages

Approximately 4.2 million employees (29.1%) belonged to a union in 2008 and another 304,000 (2.1%) were covered by a collective agreement (Table 2).

The public sector, which consisted of government, Crown corporations, and publicly funded schools or hospitals, had 70.6% of its employees belonging to a union. This was more than four times the rate for the private sector (16.3%).

Approximately one-third of full-time employees belonged to a union, compared with about one-fourth of the part-time. Also, almost 30% permanent employees were union members, compared with about 25% of the non-permanent.

Unionization rates also varied by age group with 37.4% of those aged 45 to 54 being members of a union as compared to 14.0% of those aged 15 to 24. High unionization rates were also found among those with a university degree (33.6%) or a post-secondary certificate or diploma (33.0%); in Newfoundland and Labrador (36.6%) and in Quebec (35.8%); as well as in educational services (67.4%); public administration (67.0%), and utilities (66.6%), and in health care occupations (61.1%). Low unionization rates were recorded in Alberta (21.9%); in agriculture (4.2%) and professional, scientific and technical services (4.0%); and in management occupations (8.4%).

Table 2 Union membership, 2008

	Total employees	Union member ¹	
		Total	Density
	'000	'000	%
Both sexes	14,496	4,223	29.1
Men	7,302	2,080	28.5
Women	7,195	2,143	29.8
Sector²			
Public	3,424	2,418	70.6
Private	11,072	1,805	16.3
Age			
15 to 24	2,522	353	14.0
25 to 54	10,050	3,209	31.9
25 to 44	6,610	1,921	29.1
45 to 54	3,440	1,288	37.4
55 and over	1,924	662	34.4
Education			
Less than Grade 9	313	75	24.0
Some high school	1,506	302	20.1
High school graduation	2,906	736	25.3
Some postsecondary	1,300	295	22.7
Postsecondary certificate or diploma	5,082	1,676	33.0
University degree	3,390	1,139	33.6
Province			
Atlantic	978	289	29.5
Newfoundland and Labrador	197	72	36.6
Prince Edward Island	61	18	29.5
Nova Scotia	396	109	27.6
New Brunswick	324	90	27.6
Quebec	3,339	1,194	35.8
Ontario	5,685	1,498	26.4
Prairies	2,608	688	26.4
Manitoba	521	181	34.8
Saskatchewan	419	140	33.5
Alberta	1,667	366	21.9
British Columbia	1,886	554	29.4
Work status			
Full-time	11,911	3,641	30.6
Part-time	2,586	582	22.5
Industry			
Goods-producing	3,296	920	27.9
Agriculture	123	5	4.2
Natural resources	292	65	22.3
Utilities	152	101	66.6
Construction	860	255	29.7
Manufacturing	1,869	493	26.4
Service-producing	11,200	3,303	29.5
Trade	2,389	299	12.5
Transportation and warehousing	711	285	40.0
Finance, insurance, real estate and leasing	897	77	8.6
Professional, scientific and technical	802	32	4.0
Business, building and other support	521	75	14.5
Education	1,141	769	67.4
Health care and social assistance	1,670	882	52.8
Information, culture and recreation	636	151	23.8
Accommodation and food	983	66	6.7
Other	526	47	8.9
Public administration	926	620	67.0

Differences between the sexes

For the fifth year in a row, the unionization rate for women in 2008 surpassed that of men (29.8% vs. 28.5%). The gap widened slightly, by 0.3%, as compared to that in 2007.

Among men, part-time employees had a much lower rate than full-time employees (18.1% versus 29.7%). Among women, the gap was narrower (24.5% versus 31.6%) (data not shown). The unionization rate for women in the public sector (71.9%) exceeded that of men (68.5%), reflecting women's presence in public administration, and in teaching and health positions. However, in the private sector, only 12.2% were unionized, compared with 19.8% of men. The lower rate among women reflected their predominance in sales and several service occupations.

A higher-than-average rate was recorded among men with a post-secondary certificate or diploma (33.0%). For women, the highest rate was among those with a university degree (39.8%), reflecting unionization in occupations like health care and teaching.

Among those in permanent positions, the rate for men (29.2%) was similar to that for women (30.2%). Among those in non-permanent positions, women were more unionized than men (27.2% versus 23.3%).

Table 2 Union membership, 2008 (concluded)

	Total employees	Union member ¹	
		Total	Density
	'000	'000	%
Occupation			
Management	1,058	89	8.4
Business, finance and administrative	2,844	691	24.3
Professional	397	69	17.4
Financial and administrative	781	176	22.5
Clerical	1,666	447	26.8
Natural and applied sciences	1,066	241	22.6
Health	899	550	61.1
Professional	94	40	42.1
Nursing	280	219	78.3
Technical	217	126	58.0
Support staff	307	165	53.6
Social and public service	1,326	739	55.7
Legal, social and religious workers	646	237	36.6
Teachers and professors	680	502	73.9
Secondary and elementary	451	391	86.6
Other	228	111	48.6
Art, culture, recreation and sport	339	84	24.7
Sales and service	3,668	736	20.1
Wholesale	364	17	4.7
Retail	1,052	125	11.9
Food and beverage	542	50	9.3
Protective services	240	129	53.7
Child care and home support	174	80	45.9
Travel and accommodation	1,296	335	25.8
Trades, transport and equipment operators	2,155	758	35.1
Contractors and supervisors	143	42	29.6
Construction trades	300	109	36.2
Other trades	845	310	36.7
Transportation equipment operators	512	183	35.7
Helpers and labourers	355	114	32.0
Unique to primary industries	279	46	16.4
Processing, manufacturing and utilities	861	291	33.8
Machine operators and assemblers	690	235	34.0
Labourers	171	56	32.7
Workplace size			
Under 20 employees	4,794	614	12.8
20 to 99 employees	4,746	1,417	29.9
100 to 500 employees	3,022	1,194	39.5
Over 500 employees	1,934	998	51.6
Job tenure			
1 to 12 months	3,470	547	15.8
Over 1 year to 5 years	4,640	1,063	22.9
Over 5 years to 9 years	2,139	713	33.3
Over 9 years to 14 years	1,431	502	35.1
Over 14 years	2,815	1,399	49.7
Job status			
Permanent	12,721	3,774	29.7
Non-permanent	1,775	449	25.3

1. Excludes non-members covered by a collective agreement.

2. Public sector employees are those working for government departments or agencies; Crown corporations; or publicly funded schools, hospitals or other institutions. Private sector employees are all other wage and salary earners.

Source: Statistics Canada, Labour Force Survey.

Average earnings and usual hours

Earnings are generally higher in unionized as compared to non-unionized jobs. Factors other than collective bargaining provisions contribute to this. These include varying distributions of unionized employees by age, sex, job tenure, industry, occupation, firm size, and geographical location. The effects of these factors are not examined here. However, unionized workers and jobs clearly have characteristics associated with higher earnings. For example, unionization is higher for older workers, those with more education, those with long tenure, and those in larger workplaces. Still, a wage premium exists, which, after controlling for employee and workplace characteristics, has been estimated at 7.7% (Fang and Verma 2002).

Average hourly earnings of unionized workers were higher than those of non-unionized workers in 2008 (Table 3). This held true for both full-time employees (\$25.06 vs. \$21.54) and part-timers (\$20.79 vs. \$13.16). Unionized part-time employees not only had higher weekly earnings, but they also worked more (19.2 hours vs. 16.8). This led to a larger gap in weekly earnings (\$405.97 vs. \$225.94).

On average, full-time unionized women earned 94% as much per hour as their male counterparts. In contrast, those working part-time earned 16% more.

Table 3 Average earnings and usual hours by union and job status, 2008

	Hourly earnings			Usual weekly hours, main job		
	All employees	Full-time	Part-time	All employees	Full-time	Part-time
		\$			hours	
Both sexes	21.32	22.70	14.96	35.5	39.4	17.3
Union member	24.47	25.06	20.79	35.9	38.6	19.2
Union coverage ¹	24.46	25.07	20.64	36.0	38.6	19.1
Not a union member ²	19.89	21.54	13.16	35.3	39.8	16.8
Men	23.18	24.30	13.91	38.0	40.6	16.6
Union member	25.26	25.76	18.56	38.3	39.8	18.2
Union coverage ¹	25.28	25.78	18.57	38.3	39.8	18.1
Not a union member ²	22.24	23.60	12.76	37.9	41.0	16.2
Women	19.43	20.77	15.42	32.9	38.0	17.7
Union member	23.71	24.27	21.51	33.6	37.3	19.5
Union coverage ¹	23.65	24.25	21.33	33.6	37.3	19.5
Not a union member ²	17.48	19.01	13.34	32.6	38.3	17.0
Atlantic	18.08	19.10	12.68	36.7	40.4	17.4
Union member	22.80	23.10	20.00	37.8	39.6	20.1
Union coverage ¹	22.78	23.08	19.95	37.7	39.6	19.9
Not a union member ²	15.98	17.12	11.01	36.3	40.7	16.8
Quebec	20.03	21.23	14.74	34.5	38.2	17.9
Union member	22.81	23.23	20.16	35.2	37.5	20.0
Union coverage ¹	22.69	23.13	19.85	35.3	37.6	19.8
Not a union member ²	18.30	19.86	12.68	33.9	38.6	17.2
Ontario	22.15	23.81	14.58	35.5	39.5	17.2
Union member	25.92	26.75	20.52	36.1	38.8	18.7
Union coverage ¹	25.96	26.83	20.36	36.1	38.8	18.6
Not a union member ²	20.68	22.55	13.04	35.2	39.7	16.8
Prairies	22.26	23.48	16.05	36.6	40.5	17.3
Union member	24.61	25.18	21.27	36.4	39.4	19.1
Union coverage ¹	24.77	25.32	21.50	36.5	39.5	19.1
Not a union member ²	21.27	22.73	14.23	36.7	40.9	16.7
British Columbia	21.46	22.75	16.09	35.1	39.5	16.9
Union member	24.87	25.40	22.19	35.5	38.8	18.8
Union coverage ¹	24.89	25.46	21.95	35.5	38.8	18.7
Not a union member ²	19.93	21.46	13.99	34.9	39.8	16.3

1. Union members and persons who are not union members but covered by collective agreements (for example, some religious group members).

2. Workers who are neither union members nor covered by collective agreements.

Source: Statistics Canada, Labour Force Survey.

References

- Fang, T. And Verma, A. 2002. "Union wage premium." *Perspectives on Labour and Income*. Statistics Canada Catalogue no. 75-001-XIE. p. 13-19.
<http://www.statcan.ca/english/freepub/75-001-XIE/75-001-XIE2002109.pdf>
 (accessed July 30, 2009).

Wage settlements, inflation and labour disputes

The wage rate increase in 2008 remained the same as in the previous year at 3.3% (Table 4). This was the fourth consecutive year when the increase in wages surpassed the rate of inflation. For the third year in a row the wage gain in the public sector exceeded that in the private sector (3.5% versus 2.7%). However, there was a reversal of the trend in the first four months of 2009 whereby the gains stood at 2.8% in the private sector and 2.4% in the public sector.

Annual statistics on strikes, lockouts and person-days lost are affected by several factors, including collective bargaining timetables, size of the unions involved, strike or lockout duration, and state of the economy. The number of collective agreements up for renewal in a year determines the potential for industrial disputes. Union size and strike or lockout duration determine the number of person-days lost. The state of the economy influences the likelihood of an industrial dispute, given that one is legally possible. Similar to 2006, in 2008 the proportion of estimated working time lost due to strikes and lockouts was 0.02%.

Table 4 Major wage settlements, inflation and labour disputes

Year	Average annual increase in base wage rates ¹			Annual change in consumer price index	Labour disputes and time lost ³			
	Public sector employees ²	Private sector employees ²	Total employees		Strikes and lockouts ⁴	Workers involved	Person-days not worked	Proportion of estimated working time
			%			'000	'000	%
1980	10.9	11.7	11.1	10.0	1,028	452	9,130	0.37
1981	13.1	12.7	13.0	12.5	1,049	342	8,850	0.35
1982	10.4	9.5	10.2	10.9	679	464	5,702	0.23
1983	4.6	5.5	4.8	5.8	645	330	4,441	0.18
1984	3.9	3.2	3.6	4.3	716	187	3,883	0.15
1985	3.8	3.3	3.7	4.0	829	164	3,126	0.12
1986	3.6	3.0	3.4	4.1	748	486	7,151	0.27
1987	4.1	3.8	4.0	4.4	668	582	3,810	0.14
1988	4.0	5.0	4.4	3.9	548	207	4,901	0.17
1989	5.2	5.2	5.2	5.1	627	445	3,701	0.13
1990	5.6	5.7	5.6	4.8	579	271	5,079	0.17
1991	3.4	4.4	3.6	5.6	463	254	2,516	0.09
1992	2.0	2.6	2.1	1.4	404	152	2,110	0.07
1993	0.6	0.8	0.7	1.9	381	102	1,517	0.05
1994	0.0	1.2	0.3	0.1	374	81	1,607	0.06
1995	0.6	1.4	0.9	2.2	328	149	1,583	0.05
1996	0.5	1.7	0.9	1.5	330	276	3,269	0.11
1997	1.1	1.8	1.4	1.7	284	258	3,608	0.12
1998	1.6	1.8	1.7	1.0	381	244	2,440	0.08
1999	1.9	2.7	2.2	1.8	413	160	2,441	0.08
2000	2.5	2.4	2.5	2.7	378	143	1,644	0.05
2001	3.4	3.0	3.3	2.5	381	221	2,203	0.07
2002	2.9	2.6	2.8	2.2	294	166	2,986	0.09
2003	2.9	1.2	2.5	2.8	266	79	1,730	0.05
2004	1.4	2.3	1.8	1.8	297	259	3,185	0.09
2005	2.3	2.5	2.3	2.2	260	199	4,148	0.11
2006	2.6	2.3	2.5	2.0	151	42	793	0.02
2007	3.4	3.2	3.3	2.2	206	66	1,771	0.05
2008	3.5	2.7	3.3	2.3	187	41	876	0.02
2009 ⁵	2.4	2.8	2.4	1.0				

1. Involving 500 or more employees.

2. Public sector employees are those working for government departments or agencies; Crown corporations; or publicly funded schools, hospitals or other institutions. Private sector employees are all other wage and salary earners.

3. Involving 1 worker or more.

4. Ten person-days not worked.

5. 2009 data refer to January to April only.

Sources: Statistics Canada, Prices Division; Human Resources and Skills Development Canada, Workplace Information Directorate.

In the works

Some of the topics in upcoming issues

■ Employer top-ups

A look at the trends in the proportion of mothers with a paid job who receive a top-up from their employer after birth, as well as their socio-demographic and job characteristics.

■ Employment patterns of enrolled postsecondary students

A look at which postsecondary students are likely to be employed and their hours of work, earnings and job characteristics.

■ Employment stability and unemployment duration in manufacturing

An examination of employment and unemployment dynamics in the manufacturing sector, using job retention rates for various groups of workers. These rates would help identify the profile of workers facing layoff risks.

■ Laid-off workers

A look at the characteristics of workers affected by layoff between 2002 and 2006 and the effects of a layoff on subsequent labour market outcomes.

■ Family earnings and changes in family work time

An analysis of changes across the family earnings distribution and changes in family earnings inequality among couples with children in the context of increasing family work time in Canada and the U.S.

■ Health and labour market activity

A look at the relationship between mental and physical health and employment and hours worked for working-age men and women.

■ Student loans

An attempt shed some light on the effect of student loans on household financial behaviour, this study will examine historical default rates as one indicator of repayment hardship and how families manage their household budgets and expenditures and continue to pay these loans.

■ Non-tax-sheltered investments

This study will examine families with investment income from non-tax-sheltered sources of saving and present a comparative profile of investors and non-investors.

■ Job quality indicators

A look at the provincial differences in the socio-economic well-being of employed persons by occupation-education mix of factors.

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