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- PENSIONS AND RETIREMENT SAVINGS OF FAMILIES

- DEPRESSION AT WORK

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Highlights

In this issue

Pensions and Retirement Savings of Families

■ A decline in the pension coverage of male employees between 1978 and 2005, combined with a slight decrease in men's labour force participation, led to a 10 percentage point decline in the proportion of men with an RPP over the last two decades. In contrast, the percentage of women with an RPP rose, thanks to a strong increase in their participation rate and a slight increase in RPP coverage among female employees.

■ The increase in the proportion of women with an RPP almost fully offset the decline among men. As a result, the percentage of individuals with an RPP changed very little over the last two decades: from 24% in 1978 to 22% in 2005.

■ The proportion of couples with at least one RPP fell moderately over the past 15 to 20 years, as the growth in the proportion of wives with an RPP helped mitigate a substantial decline in the proportion of husbands with an RPP.

■ On average, retirement savings of Canadian families rose over the last two decades. However, the distribution of retirement savings became more unequal. While two-parent families in the top 20% of the earnings distribution increased the sum of their RPP and RRSP contributions since the mid-1980s, contributions of those in the bottom 20% stagnated. To a large extent, the uneven growth in retirement savings appears to be driven by the sharp increase in family earnings inequality.

Depression at work

■ In 2002, nearly half a million employed Canadians aged 25 to 64, almost 4% of the workforce, reported a major depressive episode in the previous 12 months. An additional million workers had experienced depression during some other period.

■ In 2002, the majority (71%) of 25-to 64-year-old Canadians who reported having experienced a major depressive episode in the previous 12 months were employed; however, symptoms associated with this condition may have hampered their ability to perform their jobs.

■ Overall, workers with major depression had been totally unable to work or carry out normal activities for 32 days in the previous year.

■ In Canada, the cost of productivity losses in the form of short-term disability days due to depression was estimated at $2.6 billion in 1998.

■ The occurrence of depression in the workforce was twice as prevalent among women as men (5.1% vs. 2.6%) and was much more common among persons who were divorced, separated or widowed (7.5%)—as opposed to those married or in a common-law relationship (3.0%).

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Pensions and retirement savings of families

René Morissette and Yuri Ostrovsky

A re Canadian families better prepared for retirement today than in the past? Since the late 1970s, the proportion of employees covered by a registered pension plan (RPP) has dropped (Chart A)—the decline in coverage by defined-benefit RPPs more than offsetting growth in coverage by defined-contribution plans. Over the 1978 to 2005 period, male employees saw their RPP coverage decrease by almost 15 percentage points while female employees enjoyed little growth in coverage. However, the stagnation for women masks two opposing trends. Between the mid-1980s and the mid-1990s, RPP coverage fell slightly among women aged 25 to 34 but rose among those aged 35 to 54 (Morissette and Drolet 2001).

However, the individual-level data cannot be used to assess whether families are better prepared for retirement now than in the past. That depends, among other things, on changes in the degree to which men and women with high earnings and good RPP coverage marry each other. For instance, the share of couples with at least one RPP might not have fallen over the last two decades if some men who experienced a drop in RPP coverage married women who experienced the opposite.

This notion is more than a remote possibility. Decades ago, women married to high-income men typically did not work outside the home, while those married to lower-income men often did so to alleviate very tight family budgets.

In the 1970s, women married to higher income men increasingly began to enter the labour market. Since most of them were highly educated and since highly educated workers generally have relatively good pen-

The authors are with the Business and Labour Market Analysis Division. René Morissette can be reached at 613-951-3608, Yuri Ostrovsky can be reached at 613-951-4299, or both at perspectives@statcan.ca.

Chart A   Pension coverage of men and women has converged
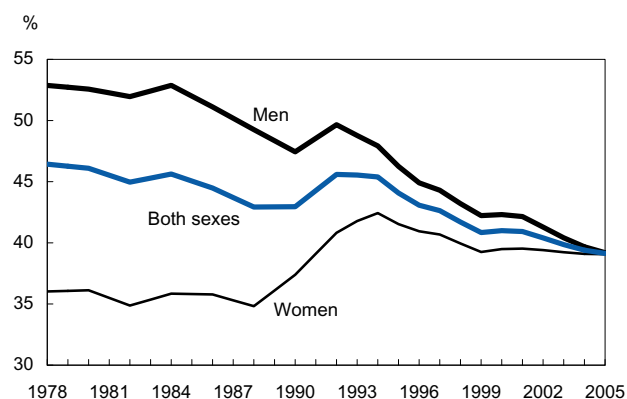
Source: Statistics Canada, Pension Plans in Canada

sion coverage, the entry of these women into the labour market may have increased RPP coverage among wives of high-income males. This in turn may have partly offset the decline in pension coverage experienced by some higher-income men.

While changes in women's labour market participation may have affected the degree to which families prepare for retirement, changes in the distribution of family earnings likely played an important role as well. Since the early 1980s, family earnings inequality rose in Canada, as families at the top of the earnings distribution enjoyed much greater increases in employment income than those at the bottom (Frenette, Green and Picot 2006). In the absence of behavioural changes in savings rates, these changes in the distribution of family employment income likely changed the distribution of retirement savings.

This paper documents the evolution of pension coverage and retirement savings of families between 1986 and 2004 (see *Data sources and definitions*).

Table 1   Pension coverage of men and women

	Employees with an RPP[1]				Taxfilers contributing to an RPP[2]			
	Men		Women		Men		Women	
	25 to 34	35 to 54	25 to 34	35 to 54	25 to 34	35 to 54	25 to 34	35 to 54
					%			
1984	54.2	69.3	46.7	45.7	..	..	..	..
1986	49.8	66.8	43.4	46.9	27.7	41.5	28.4	33.4
1987	48.6	67.1	41.9	46.5	27.1	40.7	28.1	33.8
1988	49.2	67.0	42.9	49.8	27.0	40.6	28.6	35.5
1989	50.2	68.0	43.7	50.1	26.2	39.9	28.2	36.1
1990	48.5	67.6	43.8	50.2	26.0	39.7	28.6	36.8
1991	..	..	..	..	25.5	39.2	28.7	37.6
1992	..	..	..	..	25.3	39.1	29.3	38.6
1993	46.6	68.2	46.3	52.3	24.8	39.1	29.0	39.0
1994	47.0	70.2	46.0	55.0	23.6	38.2	28.2	39.0
1995	42.6	67.6	40.9	52.9	22.7	37.5	27.4	38.9
1996	43.1	63.8	41.2	52.2	21.7	36.7	26.3	38.6
1997	42.0	63.0	41.0	51.9	21.1	35.9	25.2	37.6
1998	40.5	60.8	39.7	51.7	20.7	34.8	25.0	36.8
1999	43.2	64.1	42.0	53.1	19.7	33.0	24.7	35.8
2000	48.2	63.6	45.6	55.7	19.5	32.1	25.2	35.7
2001	48.2	62.8	44.8	55.6	19.5	31.5	25.4	35.6
2002	45.0	58.2	44.0	50.8	19.9	31.3	26.2	35.9
2003	45.1	60.3	45.5	54.9	21.1	32.8	28.3	38.1
2004	45.4	59.1	42.4	54.8	21.4	32.8	28.8	38.3

1 Main job held by paid workers in May (LMAS and SLID) or December (SUM).
2 Taxfilers with annual wages and salaries of at least $1,000 (1994 dollars).
Sources: Statistics Canada, Survey of Union Membership, 1984; Labour Market Activity Survey, 1986 to 1990; Survey of Labour and Income Dynamics, 1993 to 2004; Longitudinal Administrative Databank, 1986 to 2004

Declining RPP coverage for men

Trends since the mid-1980s
Over the 1984 to 2004 period, LMAS and SLID indicate that, between 1986 and 1997, the percentage of employees covered by an RPP fell significantly among young men (aged 25 to 34) and prime-aged men (35 to 54), dropped slightly among young women and rose among prime-aged women (Table 1). Similar qualitative patterns are found with LAD, based on the percentage of tax filers contributing to an RPP.[3]

Both SLID and LAD suggest that pension coverage of prime-aged men fell and that pension coverage of young women rose between 1997 and 2004. However, SLID paints a more optimistic picture for young men and prime-aged women. It suggests that RPP coverage rose slightly for these two groups, while LAD indicates it remained virtually unchanged.

The divergence appears to arise because the SLID question used to measure pension coverage was more inclusive in 2000 than in 1998. This would explain why pension coverage of women aged 35 to 54 rose fully 4 percentage points between 1998 and 2000 (using SLID) while the percentage of female tax filers contributing to an RPP fell by one percentage point (using LAD). Changes in SLID question wording appear to have generated other spurious changes in pension coverage. Among prime-aged men and women, pension coverage fell by roughly 5 percentage points between 2001 and 2002 and then rose between 2002 and 2003. In contrast, LAD indicates a fairly stable percentage between 2001 and 2003 (Table 2). The combined results suggest that analyzing trends in RPP coverage with SLID is problematic after 1998. The remainder of this paper relies on LAD or PPIC to make inferences on RPP coverage for the 1998 to 2004 period.

Nevertheless, it is clear that, between 1986 and 2004, RPP coverage fell for young men and prime-aged men, changed little for young women (falling between 1986 and 1997 and then rising between 1997 and 2004), and rose for prime-aged women.

Table 2   Taxfilers[1] with a positive pension adjustment

	Men			Women	
	25 to 34	35 to 54		25 to 34	35 to 54
	%				
1991	37.8	54.7		35.5	43.8
1996	32.9	51.5		33.4	46.0
2001	32.7	47.9		34.4	45.7
2002	32.3	46.6		34.6	45.2
2003	33.0	47.0		36.1	46.3
2004	32.7	46.3		36.2	46.2

1 Annual earnings of at least $1,000 (1994 dollars).
Source: Statistics Canada, Longitudinal Administrative Databank

Regardless of the measure used, the proportion of men with an RPP fell for the married and unmarried (Table 3). For instance, 34% of married men aged 35 to 54 contributed to an RPP in 2004, compared with 43% in 1986. In contrast, RPP coverage dropped slightly among unmarried women but rose substantially among the married. In 2004, 38% of married women aged 35 to 54 contributed to an RPP, up from 31% in 1986. As a result, the mid-1980s gap in pension coverage between the two (with unmarried women being covered by a pension plan much more often than married women in 1986) had completely disappeared by 2004.

The growth in the incidence of RPPs among prime-aged married women likely reflects both increased labour force participation and their RPP coverage. It suggests that focusing solely on the decline in the proportion of husbands with an RPP may lead one to overestimate the decline in the percentage of couples with at least one RPP.

Cross-cohort convergence for women
One important issue is whether the drop in RPP coverage of young men led to a downward shift in their age-coverage profile. In other words, has the decline in their RPP coverage upon entering the labour force been fully offset by relatively fast growth in coverage in subsequent years?

To investigate this question, four cohorts of young men and women, from 1986, 1990, 1996 and 2000 were examined to see what percentage contributed to an RPP between 1986 and 2004 (cohort aged 25 to 29 in 1986), 1990 and 2004 (the 1990 cohort), 1996 and 2004 (the 1996 cohort), and 2000 and 2004 (the 2000 cohort).

Table 3   Taxfilers[1] with an RPP, by age, sex and marital status

	Men				Women			
	25 to 34		35 to 54		25 to 34		35 to 54	
	Unmarried	Married[2]	Unmarried	Married[2]	Unmarried	Married[2]	Unmarried	Married[2]
Contributing to RPP					%			
1986	21.5	31.4	35.9	42.8	29.0	28.0	41.5	30.7
1991	20.8	28.7	33.9	40.5	28.0	29.1	42.4	36.0
1996	16.9	25.0	31.8	37.9	23.0	28.0	41.2	37.7
2001	16.3	21.9	27.9	32.5	23.0	26.9	36.4	35.3
2004	17.9	24.0	29.3	33.9	25.8	30.7	38.4	38.3
With positive pension adjustment								
1991	30.7	42.6	46.6	56.6	34.4	36.1	49.2	42.0
1996	26.2	37.4	44.4	53.3	29.7	35.3	48.7	45.0
2001	27.9	36.2	42.2	49.6	31.6	36.1	46.4	45.4
2004	28.0	36.2	41.4	47.7	32.7	38.3	46.5	46.1

1 Annual earnings of at least $1,000 (1994 dollars)
2 Includes common-law relationships
Source: Statistics Canada, Longitudinal Administrative Databank

Chart B   Pension coverage has declined for all new labour force entrants, and for men the gap persists
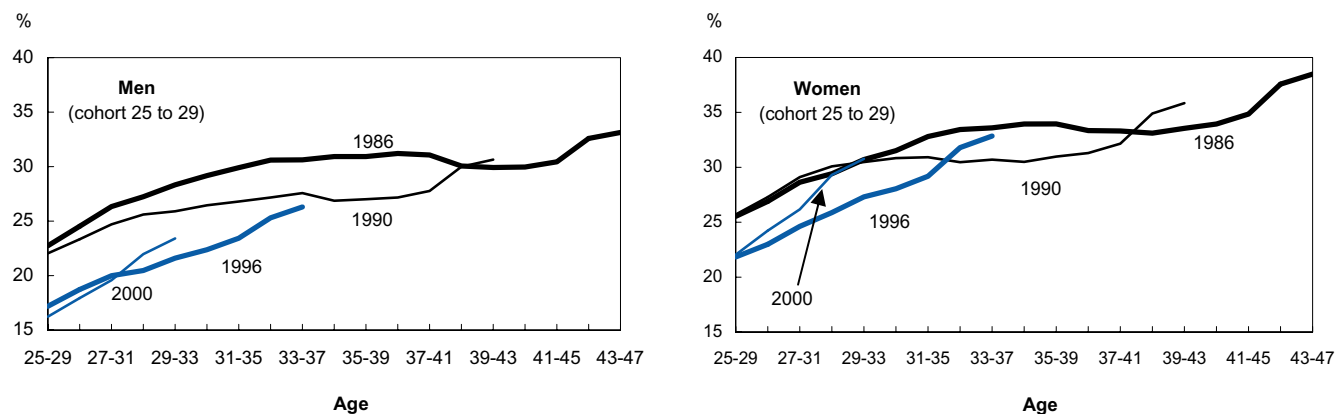
Source: Statistics Canada, Longitudinal Administrative Databank

The 1996 cohort of young men entered the labour market with a 5 percentage-point lower RPP coverage than the 1986 cohort (Chart B). Eight years later, a gap of about 4 percentage points was still observed. Thus, the decline in RPP coverage experienced by the 1996 cohort of young men at entry (compared with the 1986 cohort) was not fully offset by relatively fast growth in coverage in subsequent years. A different story emerges for young women. While fewer members of the 1996 cohort contributed to an RPP when they entered the labour market (compared with the 1986 cohort), the incidence of RPP contributions almost fully converged during the subsequent eight years. (Part of the convergence observed in the last few years may have reflected the fairly rapid growth in coverage observed for all cohorts between 2002 and 2004.)

Why did RPP coverage fall?

Analysts have put forward a number of explanations to account for the decline in RPP coverage over the last two decades. First, increases in competition—from abroad or within industries—may have induced existing firms to cut labour costs by terminating some pension plans. New firms entering a market may also have avoided offering plans to maximize their chances of survival during their first few years of operation. Second, increases in employers' contributions to CPP/

QPP may have played a role (Frenken 1996). Third, any increase in administrative costs (like an increase in hourly fees for actuarial services in defined-benefit plans) may have reduced the incentive to provide RPPs and led firms either to move to group RRSPs or to offer no retirement plans at all. Fourth, legislative changes introduced during the 1980s and early 1990s regarding vesting, locking in and cost sharing may have increased the costs of providing pension plans. (Many pension experts also cite court decisions that forced sponsors to share fund surpluses with beneficiaries.) Fifth, holding employees' rates of contributions and rates of return in financial markets constant, increases in workers' life expectancy made defined-benefit plans more costly for employers. Sixth, in recent years, low long-term interest rates have also increased the costs of offering defined-benefit RPPs. Seventh, it has sometimes been argued that employers have responded to the (assumed) greater 'tastes for mobility' of today's workers by offering alternative non-wage benefits, like group RRSPs, rather than conventional defined-benefit RPPs.

Two additional explanations are possible for RPP coverage decline since the mid-1980s. Employment moved towards low-coverage industries, and unionized jobs (many of which offer RPPs) became relatively less important as Canada's unionization rate fell (Morissette and Drolet 2001). Using the 1986 LMAS

Data sources and definitions

Pension Plans in Canada (PPIC) data come from the federal and provincial pension supervisory authorities. All pension plans registered with these authorities are included in the database. While PPIC provides a wealth of information on each pension plan (for example, employee contribution formula, benefit formula, and indexing of defined benefits and defined contribution benefits), as well as on the sex and province of residence of RPP members, it lacks information on important worker and job characteristics such as age, education, occupation, union status and firm size. As a result, it cannot be used to calculate coverage rates for workers of, say, different ages.

The Survey of Union Membership of 1984 (SUM), the Labour Market Activity Surveys of 1986-1990 (LMAS), and the Survey of Labour and Income Dynamics of 1993-2004 (SLID) combine information on RPP coverage, worker attributes and job characteristics.

One limitation of these household surveys is that the questions used to measure pension coverage change somewhat over time, thereby making inferences about the evolution of RPP coverage difficult for some groups, especially after 1998.

The Longitudinal Administrative Databank (LAD) of Statistics Canada overcomes this limitation. It provides two consistent measures of RPP coverage throughout the 1986 to 2004 period. Along with the household surveys, LAD can provide pension coverage for different age-sex categories. However, because it is based on tax records, it cannot be used to analyze RPP coverage by education, occupation, union status or industry.

All these data sets can be used to document trends in RPP coverage at the individual level. However, PPIC, SUM and LMAS do not contain family identifiers, so they cannot be used to document trends at the family level. With its large sample size, LAD allows an examination of the evolution of pension coverage of couples, lone-parents and unattached individuals over the 1986 to 2004 period.

Between 1984 and 1998, SUM, LMAS and SLID measured pension plan coverage by asking employees:

"Are you covered by a pension plan connected with this job (do not count, CPP/QPP, deferred profit-sharing plans or personal savings plans for retirement)?"

In 1999, 2000 and 2001, the question in SLID was changed to:

"In your job with this employer, did you have an employer pension plan?"

Additional questions were asked to assess whether respondents contributed to their pension plans, participated in a group RRSP or had their employer contribute to their group RRSP.

In 2002, the SLID question was changed once more:

"In your job with this employer, did you have an employer pension plan *not* including a group RRSP?"

The additional questions regarding employees' contributions to their pension plans, participation in a group RRSP and employers' contributions to a group RRSP remained intact. Then, in 2003 and 2004, SLID went back to the wording used from 1999 to 2001. The questions regarding employees' contributions to their pension plans and employers' contributions to a group RRSP remained unchanged while the question regarding employees' participation in a group RRSP was modified.

These changes in wording may have affected the trends in pension coverage that one can derive from SLID. Because the third version explicitly excludes group RRSPs while the second does not do so, some respondents interviewed in 1999 to 2001 or 2003 to 2004 may have reported their participation in a group RRSP. If so, pension coverage, as measured in SLID, should artificially drop between 2001 and 2002 and then increase between 2002 and 2003. Indeed, this spurious U-shaped pattern is observed for men and women aged 35 to 54.

LAD provides the percentage of tax filers participating in a contributory RPP and the percentage of tax filers with a positive pension adjustment and thus, most likely an RPP.[1] The first measure, which covers roughly three-quarters of all RPP members, is available back to 1986. The second is available only back to 1991. These two measures allow a comparison of trends in pension coverage at the individual level with those derived from LMAS and SLID.

LAD contains information on individuals' contributions to both RPPs and to registered retirement savings plan (RRSPs).[2] Using these two variables, it is possible to assess whether retirement savings of individuals and families have grown since the mid-1980s. Since these two variables do not reflect employers' contributions to RPPs, they provide only a partial assessment of Canadians' preparedness for retirement. Employer contributions to RPPs are captured through the pension adjustment variable.

and 1997 SLID and performing Oaxaca-Blinder decompositions on age/sex-specific models show that these two factors can account for at least three-quarters of the decline in RPP coverage for men and young women between 1986 and 1997. More precisely, the decline in unionization can account for at least 40% of the decline in RPP coverage for these groups.

To provide additional evidence on the importance of inter-industry employment shifts and de-unionization in RPP coverage decline, microdata from the 1986 LMAS and 1997 SLID can be pooled to estimate individual-level regressions (where controls for industry or union status are added to a constant term and a binary indicator that equals 1 for 1997 data, 0 other-

wise) (Table 4). Models with no controls (including only a constant term and the aforementioned binary indicator) indicate that RPP coverage of men aged 25 to 54 fell by 5.3 percentage points during the 1986 to 1997 period. Adding a control for (2-digit) industry reduces this decline to 2.2 points while adding a control variable for union status reduces it even more to 1.5 percentage points. When both controls are added, the decline almost vanishes, suggesting—as did Morissette and Drolet 2001—that employment shifts toward low-coverage industries and de-unionization accounted for a large share of the drop in men's RPP coverage.[4] Similar qualitative conclusions hold when findings for men and women are combined.

Arguably, the decline in unionization occurred in conjunction with several potential confounders: increases in competition between firms, increases in workers' life expectancy, increases in employers' contributions to CPP/QPP and legislative changes. Since the individual-level regressions do not control for these potential confounders, they might overestimate the impact of de-unionization. One extreme view is that de-unionization might simply be a proxy for unmeasured factors that reduced RPP coverage uniformly in all industries. While increases in competition between firms might have differed across industries, it is reasonable to assume that increases in workers' life expectancy, increases in employers' contributions to CPP/QPP and legislative changes tended to affect RPP coverage to the same degree in all industries.

Under this assumption, the hypothesis that de-unionization is simply a proxy for unmeasured factors that

reduced RPP coverage uniformly in all industries can be tested using the following equation:

$$(1)\ Y_{jt} = a_j + \beta U_{jt} + \alpha_t + \varepsilon_{jt}$$

where a_j is an industry-specific fixed effect, Y_{jt} and U_{jt} denote the percentage of workers covered by an RPP and the percentage of unionized workers in industry j in year t, respectively, and ε_{jt} is an error term. The term α_t captures the influence of unmeasured factors that influence RPP coverage in an undifferentiated manner in all industries. First-differencing the equation leads to the following model:

$$(2)\ \Delta Y_j = \beta \Delta U_j + \alpha' + \Delta \varepsilon_j$$

where changes in industry-level RPP coverage over the 1986 to 1997 period, ΔY_j, are related to changes in the unionization rate in various industries, ΔU_j, and where $\alpha' \equiv \alpha \bullet 11$. If de-unionization is simply a proxy for unmeasured factors that reduced RPP coverage uniformly in all industries, then β should equal zero when estimating equation (2).

Conversely, if de-unionization reduced RPP coverage, industries that experienced declines in unionization should also have experienced declines in RPP coverage. Under this second scenario, β would be positive.

The numbers strongly support the notion that de-unionization tended to reduce RPP coverage. Whichever samples are used, equation (2) βs range between 0.39 and 0.75, suggesting that industries that experienced an extra 10 percentage-point decline in unionization also experienced at least an extra 4-point decline in RPP coverage. Furthermore, these estimates of the impact of de-unionization are very similar to those from individual-level regressions—between 0.35 and 0.51. Therefore, unless industries that experienced sharp declines in unionization also experienced strong increases in competition, the numbers suggest that de-unionization had a sizeable impact on workers' RPP coverage during the 1986 to 1997 period.

Table 4 Unionization and RPP coverage, 1986 to 1997

	Both sexes	Men	Women
		% point	
Individual-level regressions[1]			
No controls	-2.5	-5.3	1.3
Industry	0.0	-2.2	2.9
Union status	0.3	-1.5	2.7
β value	(0.48)	(0.44)	(0.51)
Industry and union status	1.5	-0.1	3.4
β value	(0.39)	(0.35)	(0.42)
Industry-level regressions[2]			
Weighted, β value	(0.56)	(0.39)	(0.75)
Unweighted, β value	(0.45)	(0.60)	(0.56)

1 Paid workers aged 25 to 54 and employed in their main job in December 1986 or December 1997.
2 The dependent variable is the change in the percentage of workers covered by an RPP in a given industry over the 1986 to 1997 period.
Note: In both regressions, the union status variable is statistically significant at the 5% level (two-tailed test).
Sources: Statistics Canada, Labour Market Activity Survey, 1986; Survey of Labour and Income Dynamics, 1997; authors' calculations

Chart C The influence of unionization on RPP coverage has waned
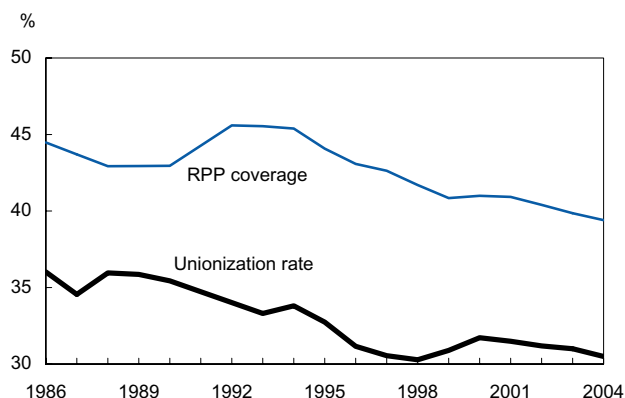
Sources: Statistics Canada, Pension Plan in Canada; Labour
Market Activity Survey, 1986 to 1990; Survey of
Labour and Income Dynamics, 1993 to 2004

The influence of unionization on RPP coverage is likely to have waned after 1997, since RPP coverage kept falling, even though the unionization rate changed very little between 1998 and 2004 (Chart C). In contrast, employment shifts toward low-coverage industries appear to have persisted. This can be seen by applying the 2004 distribution of employment by industry (4-digit NAICS codes) to the 1997 vector of industry-specific values of RPP coverage (obtained from SLID 1997): RPP coverage in the aggregate drops by roughly 1.5 percentage points from 1997 values.[5] Since PPIC

data suggest that RPP coverage fell by about 3 percentage points between 1998 and 2005 (Table 5), inter-industry employment shifts seem to have been an important contributor both during the 1986 to 1997 period and subsequently.

Why did RPP coverage fall since the mid-1980s? This was likely in response to a wide variety of factors. Since the impact of some factors—for example, growing competition between firms and increases in workers' life expectancy—is difficult to quantify, a complete decomposition of the sources is virtually impossible. Nevertheless, evidence strongly suggests that both de-unionization and employment shifts toward low-coverage sectors played important roles. And, while the decline in RPP coverage since the mid-1980s likely reflects a wide variety of factors, the influence of some—such as, unionization and low long-term interest rates—has clearly changed over time.

Modest decline in family RPP coverage

The proportion of families with at least one RPP depends on the proportion of RPP holders among men and women of working age as well as the degree to which those with an RPP marry each other. The proportion of RPP holders in year t is given by the equation:

$$(3)\ RPP_t/POP_t = [RPP_t/L_t] * [L_t/LF_t] * [LF_t/POP_t]$$

where RPP_t, L_t, LF_t and POP_t all refer to individuals aged 15 and over and denote the number of RPP members, the number of employees (including incorporated self-employed individuals), the labour force and the working-age population, respectively.[6] Clearly,

Table 5 Individuals with an RPP[1]

	Men					Women			
	RPP/L	L/LF	LF/POP	RPP/POP		RPP/L	L/LF	LF/POP	RPP/POP
				%					
1978	52.9	83.0	77.6	34.1		36.0	83.5	46.5	14.0
1984	52.9	77.9	76.9	31.6		35.8	81.2	53.0	15.4
1988	49.3	81.6	76.8	30.9		34.8	83.6	56.5	16.4
1994	47.9	77.4	73.3	27.2		42.4	81.3	57.7	19.9
1998	43.2	79.4	72.2	24.8		39.9	81.8	57.8	18.9
2003	40.4	81.9	73.0	24.2		39.2	85.0	60.9	20.3
2005	39.2	82.5	73.2	23.7		39.1	85.7	62.0	20.8

1 Individuals 15 and over.
Sources: Statistics Canada, Labour Force Survey; Pension Plans in Canada

the proportion of RPP holders among individuals of working age depends on three factors: the RPP coverage of employees $[RPP_t/L_t]$, the proportion of employees among labour market participants $[L_t/LF_t]$, and the participation rate $[LF_t/POP_t]$. Thus, a decline in pension coverage of employees does not necessarily lead to a decrease in the proportion of individuals with an RPP. For instance, the proportion of women with an RPP could increase over time if increases in women's participation rates more than offset any decrease in their pension coverage.

The decline in men's RPP coverage between 1978 and 2005, combined with a slight decrease in their participation rates, led to a 10 percentage-point decline in the proportion of men with an RPP. In contrast, the percentage of women with an RPP rose, the result of a strong increase in labour market involvement and a slight increase in RPP coverage. In 2005, 21% of women of working age had an RPP, compared with only 14% in 1978. The growing incidence of RPPs among women almost fully offset the decline in the proportion of men with an RPP. As a result, the overall percentage of those with an RPP changed very little, from 24% in 1978 to 22% in 2005. Dividing RPP_t by the number of individuals aged 15 to 64 yields corresponding estimates of 27% and 26% for 1978 and

2005, respectively (data not shown). Taken together, these numbers suggest that the percentage of couples with at least one RPP may not have changed much over the last two decades.

About one half of young couples and almost two-thirds of prime-aged couples had at least one RPP in 2004 (Table 6). More importantly, couples did not experience a massive decline in pension coverage over the last two decades. While the percentage of couples with at least one RPP did fall, the drop was moderate—only 3 to 5 percentage points.

This was the case because the growth in the proportion of wives with an RPP helped mitigate a substantial decline in the proportion of husbands with an RPP. For instance, RPP membership among husbands aged 35 to 54 fell substantially, from 56.7% in 1991 to 47.7% in 2004. In contrast, participation in an RPP rose by over 5 percentage points among their wives. Part of the increase benefited couples in which both partners had an RPP (0.8 percentage point). The net result was that the proportion of prime-aged couples with at least one RPP fell less than 5 percentage points (from 66.5% to 61.9%), about half the 9-point decline for prime-aged husbands with an RPP. The growing proportion of wives with an RPP also constrained the decline in RPP coverage among young couples.[7]

Table 6   Couples[1] with RPPs

	Husband[2] 25 to 34				Husband[2] 35 to 54			
	None	Husband only	Wife only	Both	None	Husband only	Wife only	Both
Contributing to RPP				%				
1986	57.9	23.2	10.7	8.2	48.5	31.6	8.6	11.3
1991	58.8	19.9	12.5	8.9	47.9	26.4	11.5	14.2
1996	62.7	17.1	12.3	7.8	49.5	23.9	12.7	13.9
2001	64.6	14.7	13.1	7.5	53.5	20.0	14.0	12.5
2004	60.9	14.9	14.8	9.4	51.0	19.7	15.1	14.2
Positive pension adjustment								
1991	45.0	28.5	12.3	14.2	33.5	36.2	9.8	20.5
1996	49.7	24.6	12.9	12.8	35.5	32.4	11.4	20.7
2001	49.3	22.7	14.1	13.9	37.2	28.4	13.2	21.2
2004	48.4	21.4	15.3	14.9	38.1	26.4	14.2	21.3

1 Includes common-law relationships.
2 Husband has annual wages and salaries of at least $1,000 (1994 dollars).
Source: Statistics Canada, Longitudinal Administrative Databank

Table 7   Prime-aged couples with RPP, by   earnings[1]

	1991	1996	2001	2004
With positive pension adjustment		%		
Bottom 20%				
None	73.1	76.2	75.3	75.6
Husband	20.4	17.1	16.7	15.4
Wife	5.1	5.3	6.2	7.1
Both	1.4	1.3	1.8	1.9
Middle 20%				
None	23.3	24.3	26.6	27.9
Husband	49.1	45.0	37.7	34.7
Wife	11.7	14.0	16.0	17.3
Both	15.9	16.7	19.7	20.1
Top 20%				
None	16.7	18.2	21.9	22.4
Husband	26.1	23.7	22.2	21.1
Wife	10.0	11.9	14.4	15.3
Both	47.1	46.2	41.4	41.2

1 Husband has annual earnings of at least $1,000 (1994 dollars) and aged 35 to 54.
Source: Statistics Canada, Longitudinal Administrative Databank

While the proportion of couples with at least one RPP fell slightly, the fraction where both partners hold an RPP changed very little. Both in 1991 and 2004, about 15% of young couples and one-fifth of prime-aged couples held two RPPs.[8]

Trends similar across earnings levels

These averages potentially mask significant differences across segments of the earnings distribution. High-income couples have—as expected—much better RPP coverage than their lower-paid counterparts (Table 7). Throughout the 1991 to 2004 period, roughly 80% of prime-aged couples in the top fifth of the earnings distribution had at least one RPP and at least 40% of them had two RPPs. In contrast, only one-quarter of their counterparts in the bottom fifth had at least one RPP and very few (2% at most) held two RPPs. Did the percentage of couples with at least one RPP fall more among couples at the lower end than among those in the upper end? No—between 1991 and 2004, the proportion of prime-aged couples with at least one RPP fell by roughly 3, 5 and 6 percentage points in the bottom, middle and top fifths, respectively.

Meanwhile, the proportion with two RPPs fell by 6 points at the top but rose by 4 points in the middle. Hence, participation in RPPs became more polarized among 'middle-class' couples, as they became more likely not only to have no RPPs but also to have two.

Uneven growth in retirement savings

While pension coverage provides useful information on an important component of workers' total compensation and of families' retirement packages, it is silent on the extent to which Canadian families prepare themselves for retirement. One way to address this issue is to examine how contributions to tax-assisted retirement savings programs have evolved over time.[9]

On average, Canadian couples appear to be better prepared for retirement now than two decades ago: average retirement savings of couples grew during the 1986 to 2004 period. Combined, RPP and RRSP contributions grew from $2,000 in 1986 to $3,300 in 2004 among young couples (Table 8). Likewise, prime-aged couples saw their RPP and RRSP contributions rise from $3,900 in 1986 to $5,400 in 2004. For both young and prime-aged couples, most of the increase in total contributions came from an increase in husbands' RRSP contributions. In both cases, husbands' RPP contributions fell, on average. However, that drop was more than offset by husbands' and wives' growing RRSP contributions. Summing pension adjustments and RRSP contributions also implies that retirement savings of two-parent families grew over the 1991 to 2004 period. However, with this broader measure, more than half of the increase in retirement savings can be attributed to wives' growing pension adjustments and RRSP contributions.

The increase in total contributions differed markedly across segments of the earnings distribution. Young and prime-aged couples in the top fifth of their earnings distributions enjoyed increases in combined RRSP and RPP contributions of $3,500 and $4,000, respectively, between 1986 and 2004 (Table 9).[10] Those in the middle fifth also experienced significant growth. In contrast, their counterparts at the bottom saw the sum of their RRSP and RPP contributions stagnate, although some increase was observed during the second half of the 1990s among prime-aged couples.[11] Similar qualitative conclusions can be drawn from the sum of pension adjustments and RRSP contributions.

Table 8   Average RPP and RRSP contributions and pension adjustment of couples[1]

| | Husband 25 to 34 | | | | Husband 35 to 54 | | | |
| | Husband | | Wife | | Husband | | Wife | |
	RPP/PA	RRSP	RPP/PA	RRSP	RPP/PA	RRSP	RPP/PA	RRSP
RPP and RRSP contributions				$				
1986	600	800	300	300	1,200	1,700	400	600
1991	600	1,000	300	400	1,100	2,000	500	800
1996	500	2,000	300	900	1,000	3,300	500	1,400
2001	400	1,900	300	900	800	2,900	500	1,300
2004	500	1,600	400	800	1,000	2,600	600	1,200
RRSP contributions and pension adjustment[2]								
1991	1,600	1,000	700	400	3,100	2,000	1,000	800
1996	1,400	2,000	700	900	2,900	3,300	1,100	1,400
2001	1,500	1,900	900	900	3,000	2,900	1,400	1,300
2004	1,600	1,600	1,000	800	3,000	2,600	1,500	1,200

1 Husband has annual earnings of at least $1,000 (1994 dollars).
2 In 2002 dollars.
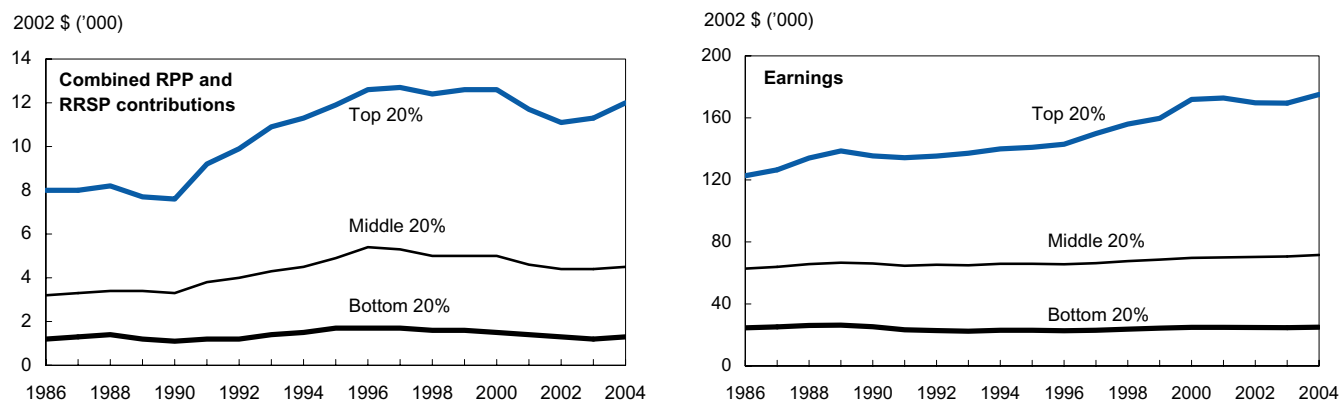Source: Statistics Canada, Longitudinal Administrative Databank

Table 9   Pension contributions of couples by earnings[1]

| | Husband 25 to 34 | | | Husband 35 to 54 | | |
	Bottom 20%	Middle 20%	Top 20%	Bottom 20%	Middle 20%	Top 20%
Combined RRSP and RPP			$			
1986	400	1,600	4,600	1,200	3,200	8,000
1991	400	1,800	5,400	1,200	3,800	9,200
1996	600	3,000	8,800	1,700	5,400	12,600
2001	500	2,600	8,600	1,400	4,600	11,700
2004	400	2,400	8,100	1,300	4,500	12,000
Combined RRSP and pension adjustment						
1991	500	3,000	8,900	1,500	6,000	14,600
1996	700	4,000	12,100	2,000	7,600	18,200
2001	600	3,900	12,600	1,800	7,400	18,100
2004	600	3,800	12,100	1,600	7,200	18,000

1 Husband has annual earnings of at least $1,000 (1994 dollars).
Source: Statistics Canada, Longitudinal Administrative Databank

Hence the distribution of retirement savings became more unequal. In 1986, combined RRSP and RPP contributions made by couples at the top were at least $4,200 (or at least 6.7 times) greater, on average, than those made by their counterparts at the bottom. By 2004, combined contributions by the former were at least $7,700 (or at least 9.2 times) greater, on average, than those by the latter. Similar patterns are observed from 1991 to 2004 with the broader measure of retirement savings. Part of this increase in inequality in retirement savings is no doubt associated with the growth in family earnings inequality that took place between 1986 and 2004 (Chart D). Prime-aged couples in the top fifth saw their average earn-

Chart D The increase in retirement savings inequality mirrored the increase in earnings inequality

2002 $ ('000)

Combined RPP and RRSP contributions

Top 20%

Middle 20%

Bottom 20%

2002 $ ('000)

Earnings

Top 20%

Middle 20%

Bottom 20%

Source: Statistics Canada, Longitudinal Administrative Databank

ings rise from $122,700 (in 2002 dollars) to $175,100. In contrast, their counterparts at the bottom experienced virtually no growth in employment income ($24,600 in 1986 and $25,000 in 2004).[12]

Among prime-aged couples, retirement savings of women remain below those of men, reflecting in part their lower participation rates (Table 10). However, as a result of their growing labour market participation, retirement savings have generally increased more among women than men over the 1991 to 2004 period. For instance, among prime-aged couples in the top fifth, women's retirement savings rose by $1,900. In the middle fifth, women's savings rose by $900. In contrast, men's retirement savings increased by $1,300 and $300. As a result, wives' share of savings increased.

Summary

Since the late 1970s, the proportion of employees covered by RPPs fell as employers moved away from defined-benefit plans to a greater extent than they increased the supply of defined-contribution RPPs. While increases in competition between firms, increases in workers' life expectancy, increases in employer contributions to CPP/QPP and EI, legislative changes in the 1980s, and low long-term interest rates in recent years may all have contributed, employment shifts toward low-coverage industries and de-unionization

Table 10 Pension adjustment and RRSP contributions of husbands and wives, by earnings, prime-aged couples[1]

	1991	1996	2001	2004
Bottom 20%		$		
Husband				
PA	400	300	400	400
RRSP	800	1,200	900	800
Wife				
PA	100	100	100	100
RRSP	200	400	400	300
Middle 20%				
Husband				
PA	3,000	2,900	2,900	2,900
RRSP	1,800	2,900	2,500	2,200
Wife				
PA	600	800	1,100	1,200
RRSP	600	1,000	1,000	900
Top 20%				
Husband				
PA	6,100	5,800	5,600	5,600
RRSP	3,800	6,200	5,900	5,600
Wife				
PA	2,900	3,000	3,400	3,700
RRSP	1,900	3,200	3,200	3,000

1 Husband has annual earnings of at least $1,000 (1994 dollars).
Source: Statistics Canada, Longitudinal Administrative Databank

Appendix

The following table replicates Table 5 but redefines RPP_t as the number of RPP members in defined-benefit plans. The percentage of men with a defined-benefit RPP fell from 32% in 1978 to 19% in 2005, the percentage of women with a defined-benefit RPP

rose from 13% to 17% during that period, and the percentage of individuals with a defined-benefit RPP fell from 22% to 18%. Using the number of individuals aged 15 to 64 as a denominator, the percentage of individuals with a defined-benefit RPP falls from 25% to 21%.

Individuals with a defined-benefit RPP[1]

	Men					Women			
	RPP/L	L/LF	LF/POP	RPP/POP		RPP/L	L/LF	LF/POP	RPP/POP
					%				
1978	48.9	83.0	77.6	31.5		34.5	83.5	46.5	13.4
1984	48.9	77.9	76.9	29.2		33.7	81.2	53.0	14.5
1988	44.9	81.6	76.8	28.1		32.0	83.6	56.5	15.1
1994	42.3	77.4	73.3	24.0		38.3	81.3	57.7	17.9
1998	36.5	79.4	72.2	20.9		35.1	81.8	57.8	16.6
2003	32.5	81.9	73.0	19.4		33.1	85.0	60.9	17.1
2005	30.9	82.5	73.2	18.7		32.7	85.7	62.0	17.4

1 Individuals aged 15 and over.
Sources: Statistics Canada, Labour Force Survey; Pension Plans in Canada

appear to have been key factors underlying the decline in RPP coverage between the mid-1980s and the late 1990s.

While sharp declines in RPP coverage of men and slight declines in their overall labour force participation caused a substantial decrease in the proportion holding RPPs, the substantial growth in women's labour force participation and, to a lesser extent, the slight increase in their aggregate coverage rate, almost fully offset these trends. The net result was that the overall percentage of RPP holders among individuals of working age changed very little between 1978 and 2005. In both years, roughly one quarter of Canadians aged 15 to 64 had an RPP.

Abstracting from potential substitution effects between men and women of different ages and skills, the growing labour market involvement of wives had a positive impact on families' RPP coverage. Specifically, because wives of prime-aged husbands increased both their labour force participation and their RPP coverage, the proportion of prime-aged couples with at least one RPP fell much less than the proportion of prime-aged husbands with RPPs. As a result, Canadian cou-

ples experienced only a moderate (rather than a substantial) decline in RPP coverage over the past two decades.

On average, Canadian families are better prepared for retirement today than their counterparts were in the past. However, this scenario does not apply universally. Two-parent families located in the bottom 20% of the earnings distribution are not better prepared for retirement now than in the past. However, those located in the top 20% appear better prepared. Canadian families' contributions toward retirement, which were fairly unequal in the mid-1980s, have become even more unequal over the last two decades. To a large extent, the growth in inequality in retirement savings seems to reflect the large increase in family earnings inequality over the last two decades. This increase in family earnings inequality is in turn driven by a widening dispersion of the permanent component of family earnings, rather than by factors that are transitory in nature (Morissette and Ostrovsky 2005).

Several caveats should be noted. First, this study has examined the evolution of retirement preparedness since the mid-1980s, not the degree to which current retirement savings are adequate to maintain living

standards once retirement age is reached. Second, preparedness for retirement was measured using two different rubrics—the first measure used the sum of contributions to registered pension plans (RPPs) and registered retirement savings plans (RRSPs); the second used the pension adjustment variable, thus implicitly adding employer RPP contributions. However, neither the move from defined-benefit RPPs to defined-contribution RPPs (and its implications in terms of economic security for Canadian workers) nor the increased longevity of seniors was taken into account. These two factors will clearly influence families' living standards after retirement.

Recent research has shown that the maturation of the Canada and Quebec Pension Plans led to a substantial reduction in income inequality among the elderly between the early 1980s and the mid-1990s (Myles 2000). Part of this reduction in inequality may be lost in coming years, since growing inequality in contributions toward retirement among families could, in the absence of offsetting factors, make the distribution of family income among seniors more unequal.

■ *Perspectives* ■

■ Notes

1   The pension adjustment is the sum of credits for the year, if any, from deferred profit-sharing plans or benefit provisions of RPPs. Membership in deferred profit-sharing plans is very small compared with membership in RPPs: in 1993, the former represented only 7% of the latter (Frenken 1995). As a result, changes in the percentage of tax filers with positive pension adjustment should reflect mainly changes in the percentage of tax filers who are members of RPPs.

2   Information on individuals' contributions to RRSPs is available back to 1982 while individuals' contributions to RPPs are available back to 1986.

3   The percentages shown with LAD are smaller than those shown with the LMAS and SLID for two reasons. First, the denominator used (the number of tax filers with annual earnings of at least $1,000 in 1994 constant dollars, in LAD, versus the number of workers employed in May in their main job in the LMAS and SLID) is bigger in LAD than it is in the LMAS or SLID. Second, tax filers contributing to an RPP are only a subset of all RPP members.

4   Apart from industry and union status, Morissette and Drolet (2001) include controls for occupation, province, age and part-time status in their analysis.

5   Among employees for whom industries of employment are known (96% of the employees in the cross-sectional sample drawn from SLID 1997), aggregate RPP coverage in SLID drops from 46.3% to 44.7% with this standardization.

6   Ideally, one would like to define equation (3) for individuals aged 15 to 64. This is not possible since the Pension Plans in Canada database provides no information on age.

7   The percentage of young couples with at least one RPP fell by 3.4 percentage points between 1991 and 2004, less than the 6.4-point decline in the proportion of young married men with an RPP.

8   The percentage of prime-aged couples where both partners contribute to an RPP rose from 11% in 1986 to 14% in 2004.

9   RRSP contributions include contributions to group RRSPs in addition to individual RRSPs. Tax data do not distinguish the former from the latter.

10 The growth in husbands' RRSP contributions was the main factor underlying the increase in total contributions made by couples in the top fifth. The second most important factor was the growth in wives' RRSP contributions. For instance, among prime-aged couples, husbands' RRSP contributions increased by $2,400 between 1986 and 2004 while wives' RRSP contributions grew $1,500. In contrast, in the bottom fifth, husbands' RRSP contributions remained unchanged while wives' RRSP contributions grew a modest $200.

11 One potential explanation for the stagnation of retirement savings of families in the lowest levels of the earnings distribution is that some may have few incentives to save for retirement, given the current structure of the transfer programs targeted for seniors (for more details see Shillington 1999). Alternatively, the stagnation of their family earnings may also have constrained their retirement savings (Chart D).

12 Retirement savings rates changed very little among families in the bottom or top fifths. Among families in the middle fifth, rates rose slightly, from 5.1% in 1986 to 6.3% in 2004.

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Depression at work

Heather Gilmour and Scott B. Patten

Worldwide, depression is the leading cause of chronic disability (Ustun, Yuso-Mateos, Chatterji et al. 2004). It can affect many aspects of life, including work. In fact, the impact of depression on job performance has been estimated to be greater than that of many other long-term ailments, such as arthritis, hypertension, back problems and diabetes (Kessler, Greenberg, Mickelson et al. 2001).

Although the various disabilities associated with depression may seriously impede an individual's ability to find and keep a new job,[1] many people who have recently had a major depressive episode (depression) are in the workforce. In 2002, the majority (71%) of 25- to 64-year-old Canadians who reported having experienced a major depressive episode in the previous 12 months were employed; however, symptoms associated with this condition may have hampered their ability to perform their jobs.

Indeed, depression among the employed has been linked with both absenteeism and diminished productivity (known as 'presenteeism'). In Canada, the cost of productivity losses in the form of short-term disability days due to depression was estimated at $2.6 billion in 1998 (Stephens and Joubert 2001).[2]

This article is based on results from the 2002 Canadian Community Health Survey (CCHS), cycle 1.2: Mental Health and Well-being, and the 1994/1995 to 2002/2003 National Population Health Surveys (NPHS) (see *Data sources and methodology*). The prevalence of a major depressive episode among employed Canadians aged 25 to 64 is first studied according to selected job, health and sociodemographic characteristics (see *Definitions*). The impact of depression on work impairment is then assessed via associations with reduced work activities, mental health disability days and work absences, using multivariate logistic regression models.

In this study, work impairment covers both absenteeism (absent from work one or more days the previous week) and presenteeism (reduced work activities). A third measure of impairment (at least one mental health disability day in the previous two weeks) combines elements of both, in that it represents days spent mostly or entirely in bed (absenteeism), as well as days respondents had to cut down on activities or expend extra effort to perform them (see *Work impairment*).

Almost half a million workers live with depression

An estimated 489,000 Canadians aged 25 to 64 who were employed at the time of their 2002 CCHS interview (3.7% of workers) had experienced a major depressive episode in the previous 12 months (Table 1). Moreover, an additional million workers (8% of the workforce) had experienced depression some time in their lives, although not in the past year (data not shown).

The occurrence of depression in the workforce was twice as prevalent among women as men (5.1% vs. 2.6%)[3] and was much more common among persons who were divorced, separated or widowed (7.5%)—as opposed to those married or in a common-law relationship (3.0%). Workers who lived in lower-income households were also more likely to suffer from depression than those living in higher-income households (4.7% vs. 3.4%). Persons with chronic health conditions lasting at least 6 months—such as arthritis, diabetes or cancer—were almost twice as likely as those without these ailments to have been depressed.[4] Differences by age and education were not significant.

Previous research has shown that work stress is linked to depression and other psychological disorders (Wang 2005 and Shields 2006). Data from the 2002 CCHS

Heather Gilmour is with the Health Information and Research Division, she can be reached at 613-951-2114; Dr. Scott B. Patten is with the Departments of Community Health Sciences and Psychiatry at the University of Calgary, he can be reached at 403-220-8752 or both at perspectives@statcan.ca.

support this finding. Indeed, workers who reported high levels of work stress were more likely to have reported depression in the last 12 months than workers who had lower levels of work stress (6.0% vs. 2.5%). In addition, workers reporting anxiety disorders in the past 12 months, or alcohol or drug dependency, were much more likely to have suffered a major depressive episode during that period than those who did not have these problems (20.0% vs. 2.9% for anxiety disorders).

Depression was also associated with several job-related characteristics, including occupation and shift work. Sales and service workers and those in white-collar jobs were more likely than blue-collar workers to have faced depression in 2002 (Table 1).[5] Regular evening and night shift workers were more likely to report a major depressive episode than those working a regular day schedule (5.6% vs. 3.5%).[6]

The prevalence of depression was relatively low among workers who spent more than 40 hours a week on the job (2.6%), compared with those who worked less than 30 hours (5.7%). This discrepancy may, in part, reflect the impact of mental health on hours worked—at the time of the survey, many recently or currently depressed individuals may not have been capable of working full-time.

Depression interferes with work

CCHS respondents who reported a major depressive episode in the previous year were asked to what degree, on a scale of 1 to 10, the illness had interfered with various aspects of their lives during the period the symptoms had been

Table 1 Prevalence of major depressive episode in previous 12 months among employed 25 to 64 year-olds

	'000	%
Total	**489.0**	**3.7**
Sex		
Men (ref)	184.6	2.6
Women	304.3	5.1 *
Age		
25 to 44	317.2	4.1
45 to 64 (ref)	171.8	3.2
Occupation		
White-collar	264.6	3.9 *
Sales or service	107.9	4.6 *
Blue-collar (ref)	77.6	2.5
Weekly work hours		
1 to 29	90.5	5.7 *
30 to 40 (ref)	273.5	4.1
Over 40	124.3	2.6 *
Work schedule		
Regular day (ref)	331.7	3.5
Regular evening or night	48.1^E	5.6^{E*}
Irregular or rotating shift	109.2	4.0
High self-perceived work stress		
Yes	260.5	6.0 *
No (ref)	216.6	2.5
Marital status		
Married or common-law (ref)	292.7	3.0
Divorced, separated or widowed	98.8	7.5 *
Single (never married)	96.5	5.0 *
Education		
High school graduation or less (ref)	151.5	3.5
Some postsecondary	35.5^E	4.2^E
Postsecondary certificate, diploma or degree	296.4	3.8
Household income		
Lowest, lower-middle or middle	114.6	4.7 *
Upper-middle or highest (ref)	344.1	3.4
Chronic condition		
Yes	328.2	4.9 *
No (ref)	159.8	2.5
Body Mass Index category		
Underweight or normal (ref)	241.0	4.0
Overweight	162.3	3.5
Obese	77.5	3.4
Anxiety disorder in past 12 months		
Yes	108.3	20.0 *
No (ref)	357.4	2.9
Anxiety disorder in lifetime, but not in past 12 months		
Yes	46.4	5.0 *
No (ref)	311.0	2.7
Alcohol or drug dependence in past 12 months		
Yes	28.7^E	9.3 *
No (ref)	458.6	3.6

* Significantly different from the reference group (ref) at less than the 0.05 level.
Source: Statistics Canada, Canadian Community Health Survey, cycle 1.2; Mental Health and Well-being, 2002

Definitions

In the CCHS, respondents were initially asked if they had experienced several days or longer when most of the day they had felt sad, empty or depressed; or very discouraged about how things were going on in their lives; or they had lost interest in most things they usually enjoyed—like work, hobbies and personal relationships. Those responding in the affirmative to at least one scenario were asked more specific questions to determine if they had a lifetime history of major depression, and if they had experienced a major depressive episode in the previous 12 months.

In the NPHS, the criteria were simpler and respondents were asked only a subset of questions.

An overall score was calculated for each respondent, and the results transformed into a probability estimate of a diagnosis of major depression in the previous 12 months. An individual was considered to have experienced a major depressive episode if the probability of a correct diagnosis was 90% or greater. A complete listing of the specific questions for both surveys can be found in the original study (Gilmour and Patten 2007). In this analysis, CCHS estimates of a major depressive episode exclude persons reporting a lifetime episode of mania; these people are included in NPHS estimates, however.

Respondents were **employed** if they had worked the week before their interview, or had a job or business from which they had been temporarily absent, for reasons such as illness, vacation or family responsibilities. Both employees and the self-employed were surveyed.

CCHS **occupation** data were collapsed into three broad categories: white-collar (management; professionals; technologists, technicians and persons in technical occupations; and administrative, financial and clerical occupations), sales or service, and blue-collar (trades, transport and equipment operators; farming, forestry, fishing and mining; and processing, manufacturing and utilities). Occupations from the NPHS were categorized as white-collar (administrative and professional), sales or service, and blue-collar.

Weekly work hours is the number of hours *usually* worked at a job or business, including paid or unpaid extra hours.

Work schedules were: regular day schedule; regular evening or night shift; and rotating or irregular shift (split, 'on call', irregular and other work schedules).

Weekly work hours and schedules were based on the main job (i.e. the job involving the most weekly hours).

Household income ranges were based on the number of people in the household and their combined income from all sources in the preceding 12 months.

Chronic health conditions in the CCHS are long-term conditions that lasted or were expected to last six months or more and were diagnosed by a health care professional: asthma; arthritis and rheumatism; back problems (other than fibromyalgia and arthritis); high blood pressure; migraine headaches; chronic bronchitis, emphysema and COPD (chronic obstructive pulmonary disease); diabetes; epilepsy; heart disease; cancer; stomach and intestinal ulcers; the effects of a stroke; bowel disorders (e.g. Crohns disease, colitis); Alzheimers disease and other dementia; cataracts; glaucoma; and thyroid conditions.

The NPHS considered: asthma; arthritis and rheumatism; back problems (other than arthritis); high blood pressure; migraine headaches; chronic bronchitis and emphysema; diabetes; epilepsy; heart disease; cancer; stomach and intestinal ulcers, the effects of a stroke; Alzheimers disease and other dementia; and glaucoma.

Body Mass Index (BMI) was calculated by dividing weight in kilograms by height in metres squared. Three categories were used: underweight/normal (BMI less than 25), overweight (25 to 29), and obese (30 and over).

Respondents were considered to have had an **anxiety disorder** in the past 12 months if they met the diagnostic criteria for panic disorder, or agoraphobia or social anxiety disorder during that period.
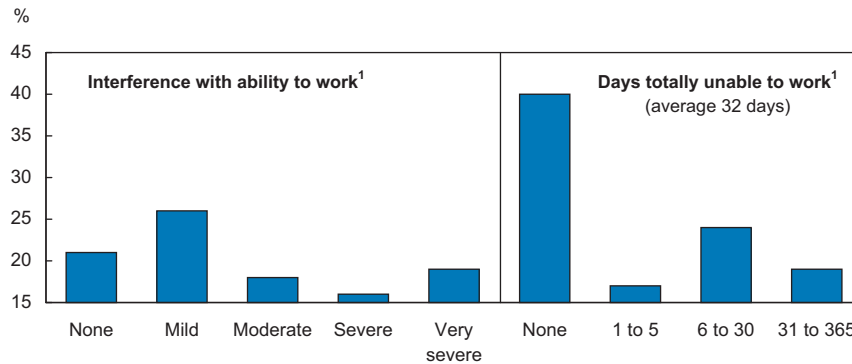
Alcohol or drug dependence in the past 12 months refers to respondents who met the criteria for dependence on alcohol or illicit drugs.

The **daily smoker** variable was available from NPHS respondents only.

Household size and income

Income range	People in household	Total household income
		$
Lowest	1 to 4	Under 10,000
	5 or more	Under 15,000
Lower-middle	1 or 2	10,000 to 14,999
	3 or 4	10,000 to 19,999
	5 or more	15,000 to 29,999
Middle	1 or 2	15,000 to 29,999
	3 or 4	20,000 to 39,999
	5 or more	30,000 to 59,999
Upper-middle	1 or 2	30,000 to 59,999
	3 or 4	40,000 to 79,999
	5 or more	60,000 to 79,999
Highest	1 or 2	60,000 or more
	3 or more	80,000 or more

Chart A   Most workers experiencing depression reported some impact on their job performance

%

Interference with ability to work[1]

Days totally unable to work[1]
(average 32 days)

None   Mild   Moderate   Severe   Very severe   None   1 to 5   6 to 30   31 to 365

1 In the past 12 months.
Source: Statistics Canada, Canadian Community Health Survey, cycle 1.2; Mental Health and Well-being, 2002

most severe. They were also asked how many days depressive symptoms had rendered them totally unable to work or carry out normal activities.

Most workers (8 in 10) who had experienced depression in the 12 months prior to their interviews reported that their symptoms had interfered with their ability to work to some degree (Chart A). For example, one in five had experienced very severe interference with their ability to perform their jobs, and an additional one-third had experienced moderate to severe interference. On average, workers with major depression had been totally unable to work or carry out normal activities for 32 days in the course of the previous year.

The marked degree to which depression interferes with the ability to function at work is not surprising, since symptoms can include a loss of energy, disinterest in the job and a diminished ability to focus on tasks, combined with feel-

ings of discouragement or hopelessness. Many elements crucial to competent job performance can be affected by such symptoms, for instance, time management, concentration, teamwork and overall output (Burton, Pransky, Conti et al. 2004).

Nonetheless, one in five workers who experienced depression in the previous year reported no interference at work. Even more (40%) never had a day when they had been totally unable to work or carry out normal activities. In the case of these workers, symptoms may have been relatively mild or not the kind to get in the way of work, or perhaps the impact of their depression had been greater in other aspects of their lives, such as their ability to carry out family responsibilities.[7] In fact, consistent with earlier research (Kessler, Berglund, Demler et al. 2003), mean interference scores (i.e. the degree to which depression was impeding various activities) were significantly higher in the realms of

respondents' social lives and home responsibilities than those of work (Chart B).

## Many aspects to work impairment

Workers who had experienced major depression were more likely than those with no history of the illness to report

- reduced work activities due to a long-term physical or mental condition or health problem
- at least one mental health disability day in the previous two weeks
- absence from work one or more days the previous week (see *Work impairment*).

Compared with workers declaring no history of major depression, those who had suffered an episode in the previous 12 months were about three times more likely (29% versus 10%) to report reduced work activities as a result of a long-term health condition (Chart C). Respondents who had not experienced depression in the previous year but had a lifetime history were also at increased risk of curtailing work activities (16%). In some cases, these workers may have intentionally cut back on their activities to reduce work stress and/or minimize the risk of another episode. They could also have been experiencing sub-clinical depression,[8] which has been linked to functional impairment (Martin, Blum, Beach et al. 1996).

Depression was also strongly associated with mental health disability days: 13% of workers who had experienced depression in the previous year reported at least one day in the two weeks preceding the interview when they had stayed in bed, cut down on normal activities or taken extra effort in carrying out

Chart B Depression affected non-work activities more significantly

Mean score

Sphere of activity
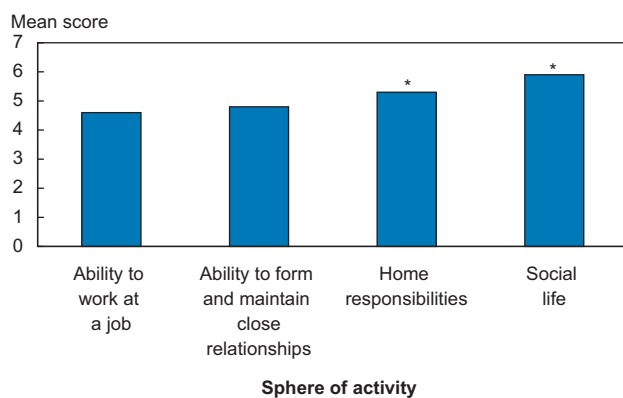
* Significantly different from the Ability to work at a job score at less than the 0.05 level.
Note: Scores range from 0 (no interference) to 10 (very severe interference); for more details, see *Work impairment*.
Source: Statistics Canada, Canadian Community Health Survey, cycle 1.2; Mental Health and Well-being, 2002

cant, multivariate models that controlled for these factors and other possible confounders (e.g. respondents' sociodemographic and job characteristics), were carried out (see *Data sources and methodology*). When the effects of these factors were taken into account, the associations between depression and work impairment continued to persist. Indeed, workers who had experienced a major depressive episode in the previous year had twice the odds of reporting reduced work activities and recent work absences, and six times the odds of having taken one or more mental health disability days in the previous two weeks, compared with those who had no history of depression (Table 2).

Job characteristics may interact with the nature and severity of work impairment

The association between depression and work impairment may be particularly strong for people in certain occupations and employment situations. Consequently, the models for work impairment were rerun with interaction terms between depression and occupation, working hours and work schedule.

daily activities because of emotional or mental health, or the use of alcohol or drugs. By contrast, only 1% of workers without a history of depression reported one or more mental health disability days.

Work absences were far more common among people who had experienced depression during the previous year than among those with no history of depression: 16% of workers with depression reported having been absent at least one day the previous week, compared with 7% of respondents who had never experienced depression.
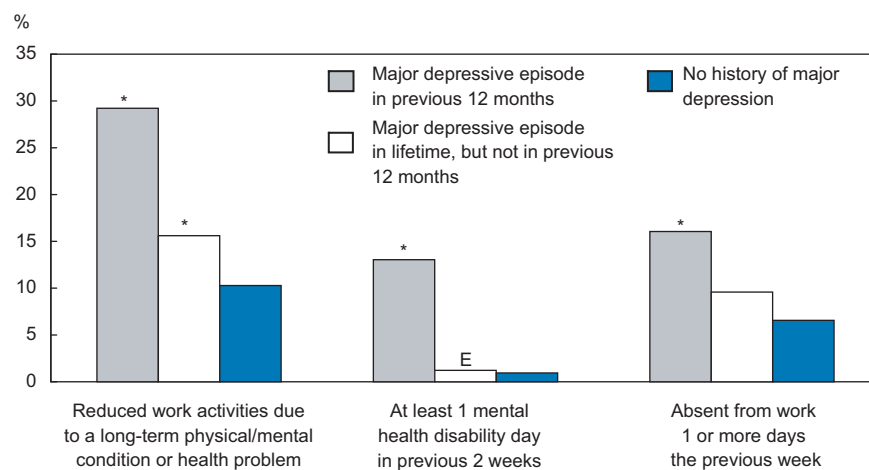
Depression often co-exists with other psychiatric illnesses, substance abuse or physical illnesses or conditions that can impede an individual's ability to work. To determine whether the associations between depression and work impairment were statistically signifi-

Chart C Work impairment much higher among depression sufferers

%

* Significantly different from the estimate No history of major depression at less than the 0.05 level.
Source: Statistics Canada, Canadian Community Health Survey, cycle 1.2; Mental Health and Well-being, 2002

The 2002 **Canadian Community Health Survey (Cycle 1.2): Mental Health and Well-being** (CCHS) was conducted over May to December 2002, and covered people aged 15 and older living in private households in the 10 provinces. Residents of institutions, members of the regular Armed Forces and civilian residents of military bases were excluded, as were people living on Indian reserves and in certain remote areas.

One person from each sampled household was randomly selected to be interviewed and proxy responses were not accepted. The resulting sample comprised 36,984 individuals aged 15 or older.

The **National Population Health Survey** (NPHS) has collected information about the health of Canadians every two years since 1994/1995. The reference period in the survey is the previous twelve months. To deal with seasonal variation, collection takes place in June, August, November and March. The survey covers residents of households and institutions in all provinces and territories, excluding Indian reserves, Armed Forces bases, and some remote areas.

In 1994/1995, a sub-sample was selected from the 10 provinces to create a longitudinal panel of 17,626 persons. This study used the panel's 5th cycle, (2002/2003).

Multivariate logistic regression models examined associations between a major depressive episode in the preceding year (or at some earlier period, or not at all) and work impairment. The models were re-run to include interaction terms between depression and various job characteristics.

Separate regressions were run on working respondents who had experienced depression in the previous 12 months to determine if various coping behaviours, as well as low co-worker, supervisor and emotional social support, were associated with work impairment.

Because of small sample sizes, the models were run for men and women combined. Interactions between sex and depression were not significant in any of the models.

Factors associated with reduced work activities and at least one disability day due to illness or injury in the previous two weeks were examined longitudinally. Four cohorts of observations were used for the analysis of reduced work activities (1994/1995 to 2000/2001 baseline years), and two cohorts (1994/1995 and 1996/1997 baseline years) for the analysis of at least one disability day in the previous two weeks. Workers aged 25 to 64 not reporting reduced work activities in baseline years were selected for the first model; those not reporting a disability day in the previous two weeks were selected for the second model.

Multivariate logistic regressions were carried out to examine workers baseline year characteristics in relation to reports of work impairment two years later. Some CCHS variables used in the cross-sectional models were not available on the NPHS's longitudinal file or were available for some cycles only.

All estimates and analyses were based on weighted data reflecting the age and sex distribution of the household population aged 15 and older in 2002 in the 10 provinces. To account for survey design effects, standard errors and coefficients of variation were estimated using the bootstrap technique (Yeo, Mantel and Liu 1999).

The interaction between depression and white-collar occupations was positive for reduced work activities. Although white-collar workers were generally less likely than blue-collar workers to reduce their work activities (Table 2), white-collar workers who had suffered a recent episode of depression had almost three times the odds of reducing their activities at work (data not shown). This difference may indicate that depression has a greater impact on activities that are more common in white-collar jobs compared with other occupations.

An association between depression and reduced work activities also emerged for people who regularly worked evening or night shifts, as opposed to those working regular daytime schedules.[9] A previous study showed relationships between evening shifts and psycho-social problems, chronic health conditions, sleep problems, and distress (Shields 2002). It may be that depressive symptoms compound the impact of other health problems that are associated with shift work, thereby resulting in greater work impairment.

Work impairment is associated with particular coping mechanisms and the absence of social support

In numerous studies, various types of coping behaviours and available support have been associated with the risk of depression and other mental illnesses (Park, Wilson and Lee 2004, Ramage-Morin 2004, and Wilkins 2004). However, few studies have examined whether these factors are also related to the job performance of workers with mental disorders.

CCHS results show that workers who had experienced a recent depressive episode often used coping mechanisms that differed from those of other workers (Chart D). For example, workers who had suffered a major

Table 2 Depression and selected characteristics related to work impairment outcomes, employed 25 to 64 year-olds

	Reduced work due to long-term physical/mental problem	At least 1 mental health disability day in previous 2 weeks	Absent from work 1 or more days in previous week
		Adjusted odds ratio	
Major depressive episode			
In past 12 months	2.4*	6.2*	2.3*
In lifetime but not in past 12 months	1.3*	0.9	1.4
No history of major depression (ref)	1.0	1.0	1.0
Sex			
Men	1.1	0.8	0.6*
Women (ref)	1.0	1.0	1.0
Age			
25 to 44	1.2	0.8	0.9
45 to 64 (ref)	1.0	1.0	1.0
Occupation			
White-collar	0.7*	1.0	1.0
Sales or service	1.0	1.1	0.7*
Blue-collar (ref)	1.0	1.0	1.0
Weekly work hours			
1 to 29	1.2	1.1	0.9
30 to 40 (ref)	1.0	1.0	1.0
Over 40	1.0	0.5*	0.8*
Work schedule			
Regular day (ref)	1.0	1.0	1.0
Regular evening or night	1.0	1.7	1.2
Irregular or rotating shift	1.2	1.5	1.2
High self-perceived work stress			
Yes	1.4*	1.8*	1.2
No (ref)	1.0	1.0	1.0
Marital status			
Married or common-law (ref)	1.0	1.0	1.0
Divorced, separated or widowed	1.0	1.2	1.1
Single (never married)	1.1	1.7*	0.7*
Education			
High school graduation or less (ref)	1.0	1.0	1.0
Some postsecondary	1.1	0.8	1.0
Postsecondary certificate, diploma or degree	0.9	0.9	1.0
Household income[1]			
Lowest, lower-middle or middle	1.1	1.0	0.9
Upper-middle or highest (ref)	1.0	1.0	1.0
Existing chronic condition[2]	4.7*	1.9*	1.1
Body Mass Index category[1]			
Underweight or normal (ref)	1.0	1.0	1.0
Overweight	1.2	1.4	1.2
Obese	1.5*	0.9	1.0
Anxiety disorder in previous 12 months[2]	2.2*	5.9*	1.0
Alcohol or drug dependence in previous 12 months[2]	1.4	3.8*	0.9

1 To maximize sample size, the models include a missing values category (odds ratios are not shown for these).
2 The reference group is the absence of the particular characteristic.
* Significantly different from the reference group (ref) at less than the 0.05 level.
Note: Some odds ratios with lower/upper confidence interval limits of 1.0 were statistically significant before rounding.
Source: Statistics Canada, Canadian Community Health Survey, cycle 1.2; Mental Health and Well-being, 2002

depressive episode were significantly more likely to report that they coped with stress by avoiding people (66% vs. 33% of non-depressed workers), using negative means of tension reduction (e.g. drinking alcohol or smoking more than usual—82% vs. 53%), blaming themselves (74% vs. 50%), or wishing the situation would go away (91% vs. 76%). Moreover, when dealing with stress, those with depression were less inclined to talk to others (76% compared with 83% for those without depression) or try looking on the bright side (88% vs. 95%).

Depressed workers were also more likely to report low levels of co-worker support (47% vs. 32%), low supervisor support (24% vs. 17%) and low emotional social support (24% vs. 12%).

A multivariate model was used to adjust for sex, age, occupation, work hours, schedules, self-perceived work stress, marital status, education, income, chronic conditions, weight, and anxiety disorder or alcohol/drug dependence in the past 12 months. Coping behaviours and support variables were then entered individually. For the all workers group, the model also adjusted for depression.

Among employed respondents in general, most of the coping and support variables examined (7 out of 11—Table 3) were associated with having taken at least one mental health disability day in the previous two weeks, or having reduced work activities. When workers reporting a depressive episode were considered, only two variables were significant: trying to look on the bright side and low co-worker support.

'Trying to look on the bright side' reduced the odds of workers with depression taking at least one mental health disability day in the two weeks preceding their interviews. However, it is possible that the coping strategies assessed by the CCHS were influenced by the nature and extent of depressive symptoms. For example, because depressed people often have a negative perspective, the association with 'looking on the bright side'

may reflect workers with mild, rather than moderate or severe, depression.

Low co-worker support increased the odds of depressed workers being absent from work one or more days the previous week. But because this analysis is cross-sectional, the direction of the association cannot be ascertained. It is not clear whether low co-worker support influenced work absence or vice versa.

Chart D   Depression sufferers more likely to use negative coping behaviours
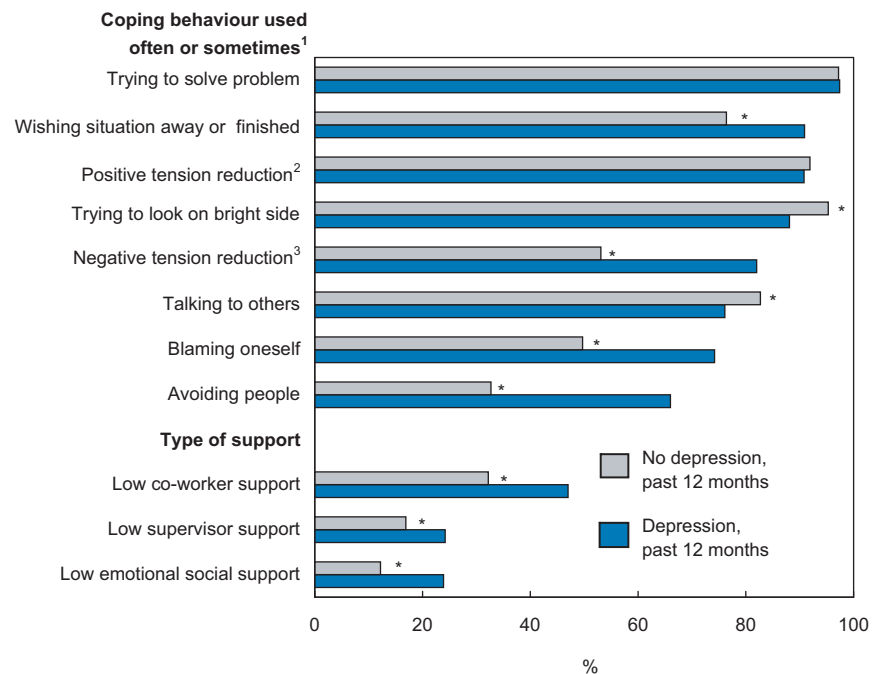
1 Respondents were not considered to use a particular coping behaviour when they reported doing it rarely or never.
2 Jogging or other exercise, praying or seeking spiritual help, doing something enjoyable.
3 Sleeping more than usual, eating more or less than usual, smoking more cigarettes than usual, drinking alcohol, using drugs or medication.
* Significantly different from the corresponding estimate for persons reporting a major depressive episode in the past 12 months at less than the 0.05 level.
Source: Statistics Canada, Canadian Community Health Survey, cycle 1.2; Mental Health and Well-being, 2002

Table 3 Coping behaviours and support related to work impairment outcomes, employed 25 to 64 year-olds

	Reduced work due to long-term physical/ mental problem		At least 1 mental health disability day in previous 2 weeks		Absent from work 1 or more days in previous week	
	All workers	Depression in past 12 months	All workers	Depression in past 12 months	All workers	Depression in past 12 months
Coping behaviour used often or sometimes[1]			Adjusted odds ratio			
Trying to solve problem	0.8	0.9	0.7	0.8	1.0	…
Wishing situation away or finished	1.3*	0.6	2.1*	0.6	0.9	0.8
Positive tension reduction[2]	0.9	0.5	1.1	2.1	0.7	0.4
Trying to look on bright side	0.9	0.7	0.5*	0.3*	0.9	1.4
Negative tension reduction[3]	1.4*	0.8	3.1*	2.6	1.2	1.2
Talking to others	0.8*	1.0	0.7*	0.6	0.9	1.6
Blaming oneself	1.1	1.7	1.3	1.3	1.1	1.4
Avoiding people	1.1	1.0	1.4	0.7	1.1	1.3
Type of support						
Low co-worker support	1.1	1.1	1.7*	0.8	1.1	1.9*
Low supervisor support	1.0	1.3	1.7*	1.1	1.3	1.1
Low emotional social support	1.5*	1.5	1.9*	1.7	0.7	1.1

1 As opposed to rarely or never (the reference group).
2 Jogging or other exercise, praying or seeking spiritual help, doing something enjoyable.
3 Sleeping more than usual, eating more or less than usual, smoking more cigarettes than usual, drinking alcohol, using drugs or medication.
* Significantly different from the reference (ref) group at less than the 0.05 level.
Note: Some odds ratios with lower/upper confidence interval limits of 1.0 were statistically significant before rounding.
Source: Statistics Canada, Canadian Community Health Survey, cycle 1.2; Mental Health and Well-being, 2002

Long-term consequences of depression

With cross-sectional data, it is not possible to determine whether depression leads to work impairment, or if workers who are limited in what they can do on the job are more likely to experience depression. Longitudinal data from the National Population Health Survey (NPHS) were used to shed light on the temporal sequence of these events.

For example, it is possible to examine whether workers who had experienced depression were more likely to suffer work impairments two years down the road. The longitudinal multivariate analysis shows that there are greater odds of work impairment two years later for individuals experiencing depression. Indeed, for workers who experienced depression the odds of having to reduce work activities two years later as a result of a long-term physical or mental condition were 1.4

times higher than for those who had not experienced a major depressive episode (Table 4). In addition, looking at work absences due to disability days taken shows that workers who were depressed had 1.8 times the odds of having these types of absences two years later, suggesting that the effects of depression on job performance can be long lasting. Other variables, however, were also indicative of work impairment. For example, workers who had chronic conditions, or were obese, also had higher odds of reducing their work activities or taking at least one disability day.

Conclusion

In 2002, nearly half a million employed Canadians aged 25 to 64, almost 4% of the workforce, reported the occurrence of a major depressive episode in the previous 12 months. An additional million workers had

Table 4 Depression and selected characteristics related to new cases[1] of work impairment 2 years later, employed 25 to 64 year-olds

	Reduced work due to long-term physical/mental problem	At least 1 disability day in previous 2 weeks due to illness or injury
	Adjusted odds ratio	
Major depressive episode in previous 12 months[2]	1.4*	1.8*
Sex		
Men	0.9	0.7*
Women (ref)	1.0	1.0
Age		
25 to 44	0.8	1.0
45 to 64 (ref)	1.0	1.0
Occupation		
White-collar	0.8	1.2
Sales or service	0.8*	1.0
Blue-collar (ref)	1.0	1.0
Weekly work hours		
1 to 29	1.2	0.9
30 to 40 (ref)	1.0	1.0
Over 40	1.0	0.8*
Work schedule		
Regular day (ref)	1.0	1.0
Regular evening or night	1.3	1.2
Irregular or rotating shift	1.1	1.2
Marital status		
Married or common-law (ref)	1.0	1.0
Divorced, separated or widowed	1.2	1.4*
Single (never married)	1.3*	1.2
Education[3]		
High school graduation or less (ref)	1.0	1.0
Some postsecondary	0.7*	1.0
Postsecondary certificate, diploma or degree	0.7*	1.0
Household income[3]		
Lowest, lower-middle or middle	1.1	0.9
Upper-middle or highest (ref)	1.0	1.0
Chronic condition[2]	2.7*	1.8*
Body Mass Index category[3]		
Underweight or normal (ref)	1.0	1.0
Overweight	1.1	1.1
Obese	1.3*	1.4*
Low emotional social support[2]	1.2	0.9
Daily smoker[2]	1.4*	1.2

1 New cases were reported by respondents who had not declared work impairment two years earlier.
2 The reference group is the absence of the particular characteristic.
3 To maximize sample size, the models include a missing values category (odds ratios are not shown for these).
* Significantly different from the reference group (ref) at less than the 0.05 level.
Note: Some odds ratios with lower/upper confidence interval limits of 1.0 were statistically significant before rounding.
Source: Statistics Canada, National Population Health Survey, 1994-1995 to 2002-2003

experienced depression during some other period in their lives. The incidence of depression for women in the labour force was almost two times that of working men, and depression was less prevalent for workers who were married or in common-law relationships.

Consistent with similar research,[10] this study shows that depression is associated with both work absences and lost productivity in the form of reduced work activities. The analysis also reveals that depression has associations with work impairment that persist when the effects of workers' occupations, health conditions and sociodemographic characteristics are taken into account. There is also evidence that the effects of depression on job performance can be long lasting.

This analysis highlights the importance of white-collar occupations and night/evening shift work schedules in the link between depression and work impairment. As well, depressed workers dealing with stress often use coping mechanisms that may not be beneficial and differ from those favoured by other workers. Nevertheless, coping by trying to 'look on the bright side,' and the availability of co-worker support, may buffer the impact of depression on job performance.

Perspectives

■ Notes

1 See Lerner, Adler, Chang et al. 2004a; Marcotte and Wilcox-Gok 2001; and Virtanen, Kivimaki, Elovainio et al. 2005.

Work impairment

CCHS respondents reporting a major depressive episode in the preceding 12 months were asked more specific questions about the period lasting 1 month or longer, when their depression was most severe. They rated, on a scale of 0 (no interference) to 10 (very severe interference), how much their depression had interfered with:
- ability to work at a job
- home responsibilities
- ability to form and maintain close relationships with other people
- social life.

Odds ratios for **reduced work activities** were based on responses of often or sometimes (as opposed to never) to the CCHS question: "Does a long-term physical condition or mental condition or health problem reduce the amount or the kind of activity you can do: ... at work?" The NPHS question was similar, but responses were categorized as yes or no.

Respondents who had stayed in bed because of illness or injury (including nights spent as a patient in a hospital) during the previous two weeks were asked the number of days they did so.

Excluding days spent in bed, respondents were then asked if they had cut down on normal activities because of illness or injury; or, if it had taken extra effort to perform up to their usual level at work or when engaged in other daily activities. For both, the number of days was recorded. For any positive responses, persons were asked if this was due to emotional or mental health or use of alcohol or drugs.

CCHS respondents were considered to have experienced at least one mental health disability day in the previous 2 weeks if they reported spending at least one day during that period: in bed (most or all of the day) or having to cut down on normal activities (most or all of the day) or needing to expend extra effort to perform daily activities—because of their emotional or mental health, or their use of alcohol or drugs.

The equivalent NPHS-derived variable was compiled somewhat differently. Respondents were considered to have spent at least one disability day in the previous 2 weeks due to illness or injury if they had stayed in bed all or most of the day or cut down on normal activities as a result. The NPHS did not probe emotional or mental ill-health, or the use of alcohol or drugs.

2 This estimate combines the costs for people who suffered depression and distress at the same time, with the costs for those who suffered depression in isolation.

3 This pattern is also seen in the general population. For more information on gender differences in depression, see De Marco (2000), Noble (2005), Kuehner (2003), and Kessler, Berglund, Demler et al. (2003).

4 Other studies (for example, Kessler, Berglund, Demler et al. 2003, and Verhaak, Heijmans, Peters et al. 2005) have also associated depression with physical and mental comorbidity.

5 This finding is supported by other studies that have found differences in the prevalence of depression by occupation (De Marco 2000, Dewa and Lin 2000, and Wilhelm, Kovess, Rios-Seidel et al. 2004).

6 This association is consistent with earlier research that revealed a link between mental health and shift work (Shields 2002).

7 The 'days totally unable to work' variable likely underestimates the impact of depression on job performance, since this measure does not capture days when respondents went to work but could not fully carry out their duties. In other studies, mental disorders were found to be more strongly

associated with days during which workers had to expend extra effort or cut back on work activities rather than complete days of work loss. Moreover, the former accounted for a greater proportion of the total economic costs of mental disorders borne by employers (Dewa and Lin 2000, Lim, Sanderson and Andrews 2000, and Stewart, Ricci, Chee et al. 2003).

8 Depressive symptoms are present but do not meet the diagnostic criteria for a major depressive episode.

9 This was evidenced by an odds ratio of 2.88, with a 95% confidence interval of 1.04 to 7.95 (data not shown).

10 See Lerner, Adler, Chang et al. 2004a, De Marco 2000, Lim, Sanderson and Andrews 2000, Stewart, Ricci, Chee et al. 2003, Kouzis and Eaton 1994, Lerner, Adler, Chang et al. 2004b, and Wang, Beck, Berglund et al. 2003.

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