

Catalogue no. 75-001-XIE



PERSPECTIVES

ON LABOUR AND INCOME

OCTOBER 2006

Vol. 7, No. 10

■ EARNINGS INSTABILITY

■ TRAINING THROUGH
THE AGES



Statistics Canada
Statistique Canada

Canada

At Your Service...

How to obtain more information

Specific inquiries about this product and related statistics or services should be directed to: *Perspectives on Labour and Income*, 9 A-6 Jean Talon, 170 Tunney's Pasture Driveway, Statistics Canada, Ottawa, Ontario, K1A 0T6 (telephone: (613) 951-4628; e-mail: perspectives@statcan.ca).

For information on the wide range of data available from Statistics Canada, you can contact us by calling one of our toll-free numbers. You can also contact us by e-mail or by visiting our website at www.statcan.ca.

National inquiries line	1 800 263-1136
National telecommunications device for the hearing impaired	1 800 363-7629
Depository Services Program inquiries	1 800 700-1033
Fax line for Depository Services Program	1 800 889-9734
E-mail inquiries	infostats@statcan.ca
Website	www.statcan.ca

Information to access the product

This product, catalogue no. 75-001-XIE, is available for free in electronic format. To obtain a single issue, visit our website at www.statcan.ca and select Our Products and Services.

Standards of service to the public

Statistics Canada is committed to serving its clients in a prompt, reliable and courteous manner and in the official language of their choice. To this end, the agency has developed standards of service that its employees observe in serving its clients. To obtain a copy of these service standards, please contact Statistics Canada toll free at 1 800 263-1136. The service standards are also published on www.statca.ca under About Statistics Canada > Providing services to Canadians.

Perspectives on Labour and Income

(Catalogue no. 75-001-XIE; aussi disponible en français: *L'emploi et le revenu en perspective*, n° 75-001-XIF au catalogue) is published monthly by authority of the Minister responsible for Statistics Canada. ©Minister of Industry 2006. ISSN: 1492-496X.

All rights reserved. The content of this electronic publication may be reproduced, in whole or in part, and by any means, without further permission from Statistics Canada, subject to the following conditions: that it be done solely for the purposes of private study, research, criticism, review or newspaper summary, and/or for non-commercial purposes; and that Statistics Canada be fully acknowledged as follows: Source (or "Adapted from", if appropriate): Statistics Canada, year of publication, name of product, catalogue number, volume and issue numbers, reference period and page(s).

Otherwise, no part of this publication may be reproduced, stored in a retrieval system or transmitted in any form, by any means—electronic, mechanical or photocopy—or for any purposes without prior written permission of Licensing Services, Client Services Division, 100 Tunney's Pasture Driveway, Statistics Canada, Ottawa, Ontario, K1A 0T6.

Symbols

The following standard symbols are used in Statistics Canada publications:

.	not available for any reference period
-	not available for a specific reference period
...	not applicable
p	preliminary
r	revised
x	confidential
E	use with caution
F	too unreliable to be published

Highlights

In this issue

■ Earnings instability

- Earnings instability varies considerably and is much higher among families in the bottom third of the employment income scale than among those in the top third.
- Government transfers provide a substantial offset for income losses and thus reduce income volatility. The progressive nature of income taxes further reduces volatility by restricting both income gains and income losses.
- Social assistance appears to be the single most important factor in reducing income instability among lone mothers in all age groups.
- Among unattached individuals with positive earnings in all six years of a considered period, Employment Insurance was far more important than social assistance in reducing instability.

■ Training through the ages

- In 2002, approximately 1 in 3 employees aged 25 to 64 participated in formal job-related training.
- Fewer older workers (aged 55 to 64) than younger workers (25 to 34) took training in 2002. They also spent less time doing it (60 hours versus 190). However, a greater number of older workers participated in 2002 than in 1997, increasing their hours as well.
- In general, workers with a university degree were more likely to take training than those with a high school diploma or less, as were those with a higher versus lower household income.
- Seven in 10 workers who engaged in job-related training received employer support of some type. The odds of receiving employer support were significantly lower for older employees and those with a university education. Odds were higher for full-time workers, the unionized, and workers with longer tenure.

Perspectives

PERSPECTIVES

ON LABOUR AND INCOME

THE COMPREHENSIVE JOURNAL

on labour and income
from Statistics Canada

Yes, I want PERSPECTIVES ON LABOUR AND INCOME
(Catalogue no. 75-001-XPE).

**Save
by extending your
subscription!**
Save 20%
by subscribing for 2 years!
Only \$100.80 (plus taxes)
Save 30%
by subscribing for 3 years!
Only \$132.30
(plus taxes)

Subscribe to *Perspectives on Labour and Income* today!

ORDER FORM	MAIL Statistics Canada Finance Division 100 Tunney's Pasture Driveway, 6th floor Ottawa, Ontario Canada K1A 0T6	PHONE 1 800 267-6677 Quote PF026100	FAX 1 877 287-436 (613) 951-0581	E-MAIL Infostats@statcan.ca	METHOD OF PAYMENT (Check only one)																			
	Name _____				Charge to my: <input type="checkbox"/> MasterCard <input type="checkbox"/> VISA <input type="checkbox"/> American Express																			
	Company _____ Department _____		Card Number _____ Expiry Date _____		Authorized Signature _____																			
	Address _____ City _____ Province _____		Cardholder (Please print) _____		<input type="checkbox"/> Payment Enclosed \$ _____																			
	Postal Code _____ Phone _____ Fax _____		Authorized Signature _____		_____																			
	E-Mail address _____				<table border="1"> <thead> <tr> <th>Subscription</th> <th>Price (CDN \$)</th> <th>Quantity</th> <th>Total CDN \$</th> </tr> </thead> <tbody> <tr> <td>1 year</td> <td>63.00</td> <td></td> <td></td> </tr> <tr> <td>2 years</td> <td>100.80</td> <td></td> <td></td> </tr> <tr> <td>3 years</td> <td>132.30</td> <td></td> <td></td> </tr> </tbody> </table>				Subscription	Price (CDN \$)	Quantity	Total CDN \$	1 year	63.00			2 years	100.80			3 years	132.30		
	Subscription	Price (CDN \$)	Quantity	Total CDN \$																				
	1 year	63.00																						
	2 years	100.80																						
	3 years	132.30																						
Catalogue No. 75-001-XPE	Title Perspectives on Labour and Income			Subtotal _____																				
No shipping charges for delivery in Canada. Outside Canada, please add shipping charges as indicated. Canadian clients add either 6% GST and applicable PST or HST (GST Registration No. R121491807). Clients outside Canada pay in Canadian dollars drawn on a Canadian bank or pay in equivalent US dollars, converted at the prevailing daily exchange rate, drawn on a US bank. Federal government departments must include with all orders their IS Organization Code _____ and IS Reference Code _____.				Applicable GST (6%) _____																				
Your personal information is protected by the Privacy Act. Statistics Canada will use your information only to complete this sales transaction, deliver your product(s), announce product updates and administer your account. From time to time, we may also offer you other Statistics Canada products and services or ask you to participate in our market research.				Applicable PST _____																				
If you do not wish to be contacted again for promotional purposes <input type="checkbox"/> and/or market research <input type="checkbox"/> , check as appropriate.				Applicable HST (N.S., N.B., N.L.) _____																				
				Shipping charges U.S. CDN \$24, other countries CDN \$40																				
				Grand Total _____																				

Earnings instability

René Morissette and Yuri Ostrovsky

A stable stream of earnings is key to supporting many aspects of life. A regular job allows young people to leave the parental home and contemplate starting a family. The accompanying access to credit can enable the purchase of a home or car. The planning horizon lengthens so that investment and savings are more likely to be included in the household budget. Any earnings instability can hinder these steps, as well as increase the anxiety and stress of individuals and family members.

Earnings shocks within families can be dampened by the presence of multiple earners. However, a significant minority of Canadians either remain unmarried or become divorced (or widowed), and many of them become lone parents. Lone parents and unattached individuals are potentially more vulnerable to the effects of income instability since they have fewer income-smoothing options. Almost a quarter of employed lone mothers (the vast majority of lone parents) had low weekly earnings in 2000 (Chung 2004).¹ Lone parents may be affected by inflexible work hours, long commutes, and, in some communities, the absence of daycare. These factors and the general strain of lone parenthood are likely to reduce the employment prospects of lone parents and make them more prone to earnings instability. More than half of low-paid lone parents live in low-income families, although the situation of lone mothers was better in 2000 than in 1980.²

Unattached individuals are also vulnerable to earnings instability, particularly those under 40 with low income. In 2000, 22% of men and 31% of women under 40 were low-paid workers. Over 80% of low-paid unattached women were also in the low-income category, compared with 14% of low-paid married women. The proportion of unattached low-paid men in low income was slightly lower (78%) (Chung 2004).

The authors are with the Business and Labour Market Analysis Division. René Morissette can be reached at 613-951-3608, Yuri Ostrovsky at 613-951-4229 or both at perspectives@statcan.ca.

Table 1 Earnings instability

	1984-1989	1994-1999	1999-2004	Change
Two-parent families				
				%
Husband aged				
25 to 29	0.17	0.19	0.19	11.8**
30 to 34	0.15	0.16	0.17	13.3**
35 to 39	0.15	0.15	0.15	0.0
40 to 44	0.15	0.15	0.15	0.0
45 to 49	0.17	0.17	0.16	-5.9
Lone parents				
Men				
25 to 29	0.25	0.32	0.25	0.0
30 to 34	0.19	0.25	0.27	42.1**
35 to 39	0.19	0.19	0.22	15.8
40 to 44	0.18	0.18	0.19	5.6
45 to 49	0.19	0.19	0.18	-5.3
Women				
25 to 29	0.31	0.35	0.39	25.8**
30 to 34	0.26	0.29	0.32	23.1**
35 to 39	0.24	0.25	0.26	8.3**
40 to 44	0.23	0.21	0.22	-4.3
45 to 49	0.22	0.19	0.21	-4.5
Unattached				
Men				
25 to 29	0.26	0.25	0.24	-7.7
30 to 34	0.23	0.21	0.21	-8.7
35 to 39	0.19	0.19	0.18	-5.3
40 to 44	0.18	0.18	0.17	-5.6
45 to 49	0.19	0.19	0.18	-5.3
Women				
25 to 29	0.21	0.22	0.21	0.0
30 to 34	0.16	0.17	0.18	12.5**
35 to 39	0.15	0.16	0.17	13.3**
40 to 44	0.15	0.15	0.16	6.7*
45 to 49	0.15	0.17	0.17	13.3**

* Difference between 1999-2004 and 1984-1989 is positive and significant at the 5% level.

** Difference between the 1999-2004 and 1984-1989 is positive and significant at the 1% level.

Source: Statistics Canada, Longitudinal Administrative Databank

These figures suggest that lone parents and unattached individuals are also likely to experience greater financial insecurity. This study compares lone parents and unattached individuals with two-parent families over

the past two decades. The role of government transfers and family benefits in reducing earnings instability is also examined.

Earnings instability

Earnings instability is measured by the short-term, up-and-down movements of an individual's or family's earnings around a longer-term average (Chart A). The analyses in this article describe annual variations around a six-year average adjusted for group-specific time trends (see *Data source and definitions*). All age ranges refer to the age of the individual (or husband for couples) at the beginning of each six-year period.

Two-parent families

The measure of earnings instability for two-parent families shows little indication of a widespread increase in instability in the past 20 years (Table 1). Among families with husbands aged 25 to 34, instability increased by about 12% to 13%, while for older couples, it either remained unchanged or fell slightly. (Among couples with husbands aged 45 to 49, it actually fell by about 6%.) Two-parent families had the lowest earnings instability, and this has remained virtually unchanged since the late 1980s.

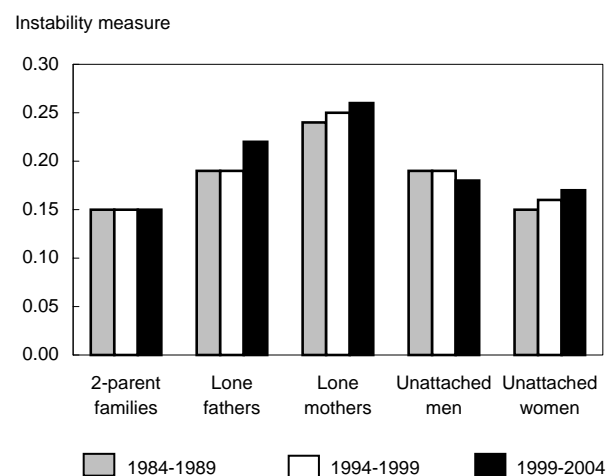
A small increase in earnings instability between 1984-1989 and 1999-2004 was evident for all age groups under 40 in the top third of earners (Table 2); however, virtually no change occurred for the bottom and middle thirds among families with husbands aged 35 and over, while a small increase was noted among younger families.

Chart A Earnings instability measures the deviation of actual annual earnings from a longer term average



Source: Hypothetical data, for illustration only

Chart B Lone mothers 35 to 39 had the highest earnings instability in all three time periods



Source: Statistics Canada, Longitudinal Administrative Databank

Lone parents

In general, earnings instability is greater among lone parents than among any other family category. The vast majority of lone parents (about 90%) are mothers, whose ability to smooth the flow of earnings is limited. Not surprisingly, the earnings instability of lone mothers is especially high, and it has grown in the past two decades (Chart B). Although changes in earnings instability differ considerably by age, the instability among young mothers (aged 25 to 34) rose by almost a quarter, with equal increases between the late 1980s and 1990s, and late 1990s and early 2000s. Unattached men and lone fathers experienced about the same level of earnings instability in the 1980s and 1990s. However, between the 1984-1989 and 1999-2004 periods, instability rose for lone fathers aged 30 to 34 but did not increase for unattached men.

The highest earnings instability is found among lone mothers aged 25 to 29 in the bottom third of earners. The average annual deviation from the mean earnings in this group was 58 log points during the 1999-2004 period, greater than in the 1980s and 1990s. In fact, the increase in instability between the 1984-1989 and 1999-2004 periods was higher than for any other age group in this earnings group (about 16%). In addition, for lone mothers younger than 35, instability increased in all earnings groups, including the top

Data source and definitions

The study uses a 10% version of Statistics Canada's **Longitudinal Administrative Databank** (LAD) based on tax data. LAD files provide detailed information about both individual and family income for those who filed an income tax return between 1982 and 2004 (the last year available at the time of writing). A 20% sample of all taxfilers is randomly selected, and individuals remain in the sample for as long as they appear on the T1 Family File (T1FF). Census families are formed from the personal data that filers provide on other family members. Filers are attached to their spouse (legal and common-law) by spouse's social insurance number, or by matching age, sex, address and marital status. LAD's panel nature, size, and richness of income data make it very attractive for studies of income inequality and instability. The most serious drawback is the limited range of demographic variables.

Three sets of lone parents and unattached individuals aged 25 to 49 were identified: those who filed tax returns each year from 1984 to 1989, 1994 to 1999, or 1999 to 2004. Only those whose family status did not change during their six years in the sample were considered. Similarly, two-parent families with husbands aged 25 to 49 whose family status did not change were identified. This allows a focus on earnings instability caused by labour market conditions as opposed to life events. Furthermore, families with self-employment income were excluded in order to measure instability associated with only paid employment.

All earnings, income and transfer figures were converted into year 2004 dollars using the consumer price index.

An important issue is whether families with zero earnings in one or more years should be excluded. Requiring positive earnings in all six years significantly reduces the size of the sample, particularly in the case of lone parents, but it has the advantage of allowing the use of log earnings. Assuming that families with zero earnings in one or more years do not differ in any systematic way is admittedly a strong assumption.

An alternative is to allow zero earnings in one or more years and analyze a model of earnings levels (as opposed to log earnings). To check the robustness of the main results, a broader sample allowing zero annual earnings in up to three years over a six-year period is considered.

In the analysis of the effect of the progressive income tax system and government transfers, a small percentage of families with non-positive market income is also dropped.

To investigate how earnings instability varies by age and earnings distribution, two-parent families, lone parents and unattached individuals are divided into five age groups (25 to 29, 30 to 34, 35 to 39, 40 to 44, and 45 to 49) and employment income thirds. Two-parent families are grouped based on the age of the husband. Employment income thirds are based on family earnings averaged over a six-year period.

One important aspect of earnings instability smoothing is the role of government transfers—in particular, Employment Insurance (EI) and social assistance. Unfortunately, the social assistance variable is available starting only in 1992. Moreover, EI underwent major changes in 1993 that

considerably reduced the number of people eligible for benefits. Hence, in analysis related to the role of different smoothing mechanisms (including government transfers), only the periods 1994 to 1999 and 1999 to 2004 are used.

The first step is to assume that log earnings are generated by a random effects model:

$$y_{it} = f(\text{age}_i) + e_i + u_{it}$$

where f is a quadratic function of age. The model assumes a common age-log earnings profile but allows for different intercepts e_i for each family (standard random effects model assumptions also apply). The last term in the model is associated with transitory earnings (see Gottschalk and Ostrovsky 2005). Estimating \hat{u}_{it} and computing $\text{Var}(\hat{u}_{it})$ provides a simple estimate of earnings instability on either an individual or family level. Another dispersion measure considered is the mean absolute deviation (MAD) from the mean:

MAD has a simple intuitive interpretation: the average deviation (in percentage terms) of actual earnings from expected earnings.

$$\overline{MAD}_i = \left(\frac{1}{N} \right) \sum_{i=1}^N \left[\left(\frac{1}{T} \right) \sum_{t=1}^T |\hat{u}_{it}| \right]$$

To check the robustness of the results, family earnings are also estimated: $y_{it}^* = f(\text{age}_i) + e_i^* + u_{it}^*$, where y_{it}^* is family earnings (as opposed to log earnings). The mean absolute deviation is then computed by

$$\overline{MAD}_i^* = \left(\frac{1}{N} \right) \sum_{i=1}^N \left[\left(\frac{1}{T \cdot \bar{y}_i} \right) \sum_{t=1}^T |\hat{u}_{it}^*| \right]$$

where \bar{y}_i^* is average family earnings over the six-year period. Note that \overline{MAD}_i^* has to be rescaled by \bar{y}_i^* to account for differences in earnings levels among families. (The results from the latter model are available from the authors.) While both \overline{MAD}_i and \overline{MAD}_i^* are calculated for the sample restricted to positive earnings, \overline{MAD}_i^* is also used to analyze the sample that includes zero earnings.

The analysis of instability and the effects of government transfers and the income tax system emphasizes not only the overall levels of instability but also the differences in instability between the bottom and top thirds of the earnings distribution. The instability in the top third of earners provides a reasonable benchmark for assessing how well families in the bottom third fare, and to what degree transfers and taxes mitigate their earnings instability. Relative earnings instability (or relative income instability) is defined as the ratio of the bottom third to the top third.

Relative instability is used in the analysis of the role of different factors affecting the earnings instability of lone parents and unattached individuals.³

Table 2 Earnings instability by employment income

	1984-1989			1994-1999			1999-2004		
	Bottom third	Top third	Ratio	Bottom third	Top third	Ratio	Bottom third	Top third	Ratio
Two-parent families									
Husband aged									
25 to 29	0.25	0.12	2.08	0.28	0.13	2.15	0.28	0.14	2.00**
30 to 34	0.23	0.11	2.09	0.25	0.11	2.27	0.25	0.13	1.92**
35 to 39	0.22	0.11	2.00	0.23	0.11	2.09	0.22	0.12	1.83**
40 to 44	0.22	0.11	2.00	0.23	0.10	2.30	0.21	0.11	1.91**
45 to 49	0.24	0.13	1.85	0.25	0.11	2.27	0.23	0.12	1.92**
Lone parents									
Men									
25 to 29	0.42	0.11	3.82	0.55	0.11	5.00	0.33	0.08	4.13**
30 to 34	0.34	0.11	3.09	0.40	0.12	3.33	0.47	0.13	3.62**
35 to 39	0.37	0.09	4.11	0.31	0.10	3.10	0.36	0.11	3.27**
40 to 44	0.31	0.11	2.82	0.30	0.09	3.33	0.30	0.12	2.50**
45 to 49	0.31	0.13	2.38	0.30	0.11	2.73	0.28	0.12	2.33**
Women									
25 to 29	0.50	0.13	3.85	0.52	0.17	3.06	0.58	0.21	2.76**
30 to 34	0.46	0.11	4.18	0.48	0.13	3.69	0.51	0.14	3.64**
35 to 39	0.41	0.12	3.42	0.43	0.10	4.30	0.43	0.12	3.58**
40 to 44	0.35	0.13	2.69	0.37	0.10	3.70	0.38	0.11	3.45**
45 to 49	0.32	0.16	2.00	0.31	0.11	2.82	0.35	0.12	2.92**
Unattached									
Men									
25 to 29	0.43	0.12	3.58	0.41	0.14	2.93	0.37	0.15	2.47**
30 to 34	0.40	0.09	4.44	0.36	0.10	3.60	0.34	0.12	2.83**
35 to 39	0.34	0.09	3.78	0.33	0.09	3.67	0.30	0.11	2.73**
40 to 44	0.33	0.08	4.13	0.32	0.09	3.56	0.28	0.10	2.80**
45 to 49	0.33	0.08	4.13	0.34	0.10	3.40	0.29	0.11	2.64**
Women									
25 to 29	0.36	0.10	3.60	0.35	0.12	2.92	0.32	0.12	2.67**
30 to 34	0.30	0.08	3.75	0.29	0.09	3.22	0.30	0.10	3.00**
35 to 39	0.28	0.07	4.00	0.29	0.08	3.63	0.29	0.09	3.22**
40 to 44	0.27	0.07	3.86	0.29	0.07	4.14	0.28	0.09	3.11**
45 to 49	0.29	0.06	4.83	0.31	0.08	3.88	0.30	0.08	3.75**

** The bottom to top differences in 1999-2004 are positive and significant at the 1% level. Source: Statistics Canada, Longitudinal Administrative Databank

third, where it rose by 60% for lone mothers aged 25 to 29. The picture is much different though for older lone mothers. For those 40 and older, the increase in instability occurred only in the bottom third, and the magnitude was much smaller. In the other two earnings groups, instability either dropped or remained unchanged.

One salient finding is that the earnings instability of lone mothers in the bottom third is in some cases more than double that of two-parent families. For instance, in the 35-to-39 age category in 1999-2004, earnings instability for two-parent families was 0.22, while for lone mothers it was 0.43 (Chart C). On the other hand, among the top third of earners, both groups reg-

istered the same (0.12). In the bottom third of the earnings distribution, earnings instability is clearly a much bigger issue for lone parents than for two-parent families.

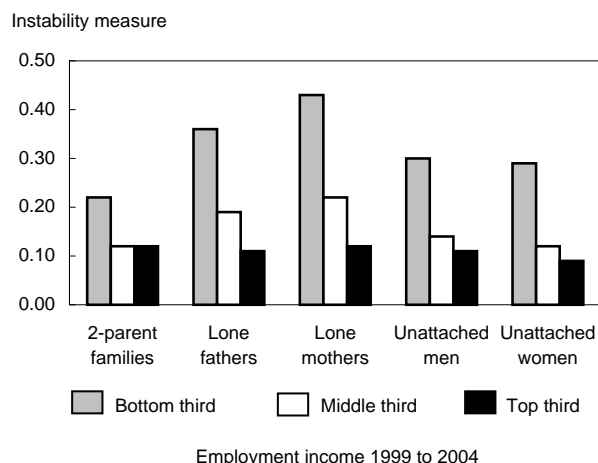
Not only is earnings instability among young lone parents much higher than for two-parent families, but the difference between top and bottom earners is also much larger. The relative instability ratio was close to two for young two-parent families in 1999-2004, compared with almost three for young lone mothers in 1999-2004 and almost four in 1984-1989. However, while in 1984-1989 relative earnings instability of lone mothers decreased with age, this was no longer true in 1999-2004.

Unattached individuals

Like lone parents, unattached individuals are likely more affected financially by job loss than two-parent families, who can often rely on two incomes. On the other hand, unattached individuals may be more flexible than lone parents in choosing their place of work and work hours. Not surprisingly, the earnings instability of unattached women is lower than that of lone mothers but generally higher than that of two-parent families. While unattached men under 35 have somewhat higher earnings instability than unattached women in all three income groups, their instability dynamics have been quite different. Overall, earnings instability of men declined in the past two decades, albeit modestly, but rose for unattached women 30 or older.

Breaking the trends down by employment income shows that the overall decline in men's earnings instability reflects mostly lower earnings instability in the bottom third (for all age groups). In the

Chart C Earnings instability in the 35-to-39 age group was significantly greater in the lowest earnings group



Source: Statistics Canada, Longitudinal Administrative Databank

middle third, instability remained virtually unchanged, while rising for all age groups in the top third. Similarly, the increase in earnings instability among unattached women was by no means universal. For women 30 and over in the bottom third of earnings, it remained virtually unchanged, with most of the increase taking place in the middle and top thirds. As a result, relative earnings instability was lower in 1999-2004 than in 1984-1989 for unattached women in all age groups.

Overall, earnings instability dynamics in Canada in the past 20 years present a fairly complex picture with no indication of widespread increases. Earnings instability varies considerably by age group and income level in both direction and magnitude, and is lowest among two-parent families and highest among lone mothers, particularly young ones. For unattached men, it has declined in recent years but is still somewhat higher than unattached women.

Earnings instability varies considerably with employment income and is much higher among families in the bottom third of earners than the top third. The difference in magnitude varies for age and family category, but it is fair to say that for two-parent families, the bottom-to-top earnings instability ratio is generally smaller, mostly due to lower instability in the bottom third.

It is important to keep in mind that these results pertain to a sub-sample of families and individuals with positive earnings in all six years. Results for a broader sample that includes families with zero earnings in some years are discussed below.

Taxes, government transfers and income instability

Employment Insurance (EI) and social assistance partially compensate for earnings losses related to job loss. Combined with government transfers in the form of refundable tax credits and the Child Tax Benefit, they provide substantial compensation for income loss and thus reduce income volatility. The progressive income tax system further reduces income volatility by restricting the impact of income gains and losses. This section describes the incremental effects of the tax and transfer system on earnings and income instability.

Two-parent families

Differences in earnings instability between top and bottom income groups in the 1999-2004 period were little changed from 1994-1999 for two-parent families. In all age groups, instability was at least 90% larger in the bottom third than in the top third (Table 3). The differences in market income instability were slightly smaller, but they were still in the 73% to 83% range for all groups in 1999-2004.

EI reduces instability for all families in the bottom third. In fact, EI has the largest mitigating effect among the youngest couples (husbands aged 25 to 29). In contrast to other age groups, however, the effect of EI in this age group is also strong in the top income group. Hence, the bottom-to-top difference in instability for market income plus EI is higher for families in this age group than in any other.

The effect of social assistance appears to be somewhat stronger among young couples (25 to 34) than among older ones. However, social assistance substantially reduces both instability and the differences in instability between bottom and top incomes for *all* age groups. The effect of social assistance on relative instability is stronger because it has practically no effect on the two-parent families in the top third of incomes.

In contrast, the role of tax credits in reducing income instability seems to be small. The only group where tax credits play any role is young families (husbands aged 25 to 29).

Table 3 Income instability and the tax and transfer system for two-parent families

	1994-1999			1999-2004		
	Bottom third	Top third	Ratio	Bottom third	Top third	Ratio
25 to 29						
Earnings	0.27	0.12	2.25	0.27	0.14	1.93**
Market income	0.25	0.12	2.08	0.25	0.14	1.79**
+Employment Insurance	0.20	0.11	1.82	0.21	0.11	1.91**
+Social assistance	0.18	0.11	1.64	0.19	0.11	1.73**
+Tax credit	0.17	0.11	1.55	0.18	0.11	1.64**
+Family benefit	0.16	0.11	1.45	0.17	0.11	1.55**
Total income	0.15	0.11	1.36	0.16	0.11	1.45**
After tax	0.13	0.10	1.30	0.14	0.10	1.40**
Adjusted for family size	0.14	0.12	1.17	0.15	0.13	1.15**
30 to 34						
Earnings	0.24	0.11	2.18	0.24	0.12	2.00**
Market income	0.23	0.11	2.09	0.22	0.12	1.83**
+Employment Insurance	0.18	0.10	1.80	0.19	0.11	1.73**
+Social assistance	0.16	0.10	1.60	0.17	0.11	1.55**
+Tax credit	0.16	0.10	1.60	0.17	0.11	1.55**
+Family benefit	0.14	0.10	1.40	0.15	0.11	1.36**
Total income	0.14	0.10	1.40	0.14	0.11	1.27**
After tax	0.12	0.09	1.33	0.13	0.10	1.30**
Adjusted for family size	0.13	0.10	1.30	0.13	0.11	1.18**
35 to 39						
Earnings	0.23	0.10	2.30	0.22	0.11	2.00**
Market income	0.21	0.10	2.10	0.20	0.11	1.82**
+Employment Insurance	0.17	0.09	1.89	0.17	0.10	1.70**
+Social assistance	0.16	0.09	1.78	0.16	0.10	1.60**
+Tax credit	0.15	0.09	1.67	0.16	0.10	1.60**
+Family benefit	0.14	0.09	1.56	0.14	0.10	1.40**
Total income	0.13	0.09	1.44	0.13	0.10	1.30**
After tax	0.12	0.09	1.33	0.12	0.10	1.20**
Adjusted for family size	0.12	0.09	1.33	0.12	0.10	1.20**
40 to 44						
Earnings	0.22	0.10	2.20	0.21	0.11	1.91**
Market income	0.20	0.10	2.00	0.19	0.11	1.73**
+Employment Insurance	0.17	0.09	1.89	0.17	0.10	1.70**
+Social assistance	0.16	0.09	1.78	0.16	0.10	1.60**
+Tax credit	0.16	0.09	1.78	0.16	0.10	1.60**
+Family benefit	0.15	0.09	1.67	0.14	0.10	1.40**
Total income	0.14	0.09	1.56	0.14	0.10	1.40**
After tax	0.13	0.09	1.44	0.13	0.10	1.30**
Adjusted for family size	0.13	0.09	1.44	0.12	0.10	1.20**
45 to 49						
Earnings	0.24	0.11	2.18	0.23	0.11	2.09**
Market income	0.21	0.10	2.10	0.20	0.11	1.82**
+Employment Insurance	0.18	0.10	1.80	0.18	0.11	1.64**
+Social assistance	0.17	0.10	1.70	0.17	0.11	1.55**
+Tax credit	0.17	0.10	1.70	0.17	0.11	1.55**
+Family benefit	0.16	0.10	1.60	0.16	0.11	1.45**
Total income	0.15	0.10	1.50	0.15	0.11	1.36**
After tax	0.14	0.10	1.40	0.14	0.11	1.27**
Adjusted for family size	0.13	0.09	1.44	0.13	0.10	1.30**

** The bottom to top differences in 1999-2004 are positive and significant at the 1% level.
Source: Statistics Canada, Longitudinal Administrative Databank

During the 1999-2004 period, family benefits also lowered employment income instability, particularly among families in the 30-to-44 age range, the ones most likely to have small children. For them, family benefits had the largest effect on reducing the differences between bottom and top income groups by reducing relative instability about 20 log points. For the 35-to-39 and 40-to-44 age groups, the reduction in instability in the bottom third was also substantial.

For the bottom third of earners, instability of total income was 25% to 36% lower than the instability of market income.⁴ In other words, government transfers reduced market income instability for two-parent families by at least a quarter, and for those with husbands younger than 35 by more than a third. For all age groups, relative income instability was 1.45 or less, and for the 30-to-34 age group, as low as 1.27. EI, social assistance, and other government transfers reduced the ratio of the bottom to top earnings group from about 1.73-1.83 to 1.27-1.45 depending on age. For families in the bottom third, the total (before tax) income instability was 33% to 42% lower than earnings instability.

Finally, the tax system further reduced instability. The combined reduction after transfers and taxes compared with market income instability was 30% to 44%, and 38% to 48% compared with earnings instability.

In summary, government transfers, and to a smaller degree the income tax system, substantially reduce income instability for two-parent families in the bottom third of the earnings distribution.

Lone parents

Earnings instability in the 1999-2004 period was highest among young lone mothers ($MAD_i=0.39$) but declined with age by 18 log points (Table 1). It was particularly high among young lone mothers in the bottom income group, 19 log points higher than the average. The difference between the bottom and top third, however, was higher among older lone mothers, with the earnings instability of those aged 30 or more in the bottom third being more than three times higher than those in the top third.

The overall smoothing effect of transfers and taxes on the earnings instability of lone mothers is evident when comparing differences in market-income and after-tax income instability (Tables 4 and 5). The ratio of the bottom third to the top third drops from 2.6 to 1.7 for those 25 to 29, from 3.2 to 1.8 for those 35 to 39, and from 2.5 to 1.5 for those 45 to 49. Notably, for lone mothers aged 30 and older, the drop is mostly or (for those 35 or older) almost entirely due to the fall in instability in the bottom third.

In all age groups, social assistance appears to be the single most important factor in reducing income instability among lone mothers—much more than for two-parent families. In the youngest age group, for instance, it reduces instability in the bottom third by 32% (from 0.4 to 0.3). Since social assistance has little effect on lone mothers in the top third, this also results in the largest drop in differences between bottom and top thirds (23%). The impact of social assistance on instability is somewhat smaller for the 45-to-49 age group, although it is still larger than any other factor.

Table 4 Income instability and the tax and transfer system for lone mothers

	1994-1999			1999-2004		
	Bottom third	Top third	Ratio	Bottom third	Top third	Ratio
25 to 29						
Earnings	0.52	0.17	3.06	0.58	0.21	2.76**
Market income	0.47	0.17	2.76	0.52	0.20	2.60**
+Employment Insurance	0.41	0.14	2.93	0.44	0.17	2.59**
+Social assistance	0.20	0.12	1.67	0.30	0.15	2.00**
+Tax credit	0.19	0.12	1.58	0.27	0.14	1.93**
+Family benefit	0.16	0.11	1.45	0.20	0.13	1.54**
Total income	0.16	0.11	1.45	0.20	0.13	1.54**
After tax	0.16	0.10	1.60	0.19	0.11	1.73**
Adjusted for family size	0.16	0.10	1.60	0.19	0.11	1.73**
30 to 34						
Earnings	0.48	0.13	3.69	0.51	0.14	3.64**
Market income	0.41	0.12	3.42	0.45	0.14	3.21**
+Employment Insurance	0.35	0.11	3.18	0.38	0.12	3.17**
+Social assistance	0.21	0.10	2.10	0.26	0.12	2.17**
+Tax credit	0.20	0.10	2.00	0.24	0.11	2.18**
+Family benefit	0.17	0.10	1.70	0.18	0.11	1.64**
Total income	0.17	0.09	1.89	0.17	0.10	1.70**
After tax	0.16	0.08	2.00	0.17	0.09	1.89**
Adjusted for family size	0.16	0.08	2.00	0.17	0.09	1.89**
35 to 39						
Earnings	0.43	0.10	4.30	0.43	0.12	3.58**
Market income	0.36	0.10	3.60	0.38	0.12	3.17**
+Employment Insurance	0.30	0.10	3.00	0.32	0.11	2.91**
+Social assistance	0.20	0.10	2.00	0.25	0.11	2.27**
+Tax credit	0.19	0.09	2.11	0.23	0.11	2.09**
+Family benefit	0.17	0.09	1.89	0.18	0.10	1.80**
Total income	0.16	0.09	1.78	0.17	0.10	1.70**
After tax	0.15	0.08	1.88	0.16	0.09	1.78**
Adjusted for family size	0.15	0.08	1.88	0.16	0.09	1.78**
40 to 44						
Earnings	0.37	0.10	3.70	0.38	0.11	3.45**
Market income	0.31	0.10	3.10	0.33	0.11	3.00**
+Employment Insurance	0.25	0.10	2.50	0.29	0.11	2.64**
+Social assistance	0.18	0.10	1.80	0.22	0.11	2.00**
+Tax credit	0.17	0.09	1.89	0.21	0.11	1.91**
+Family benefit	0.16	0.09	1.78	0.17	0.11	1.55**
Total income	0.15	0.09	1.67	0.16	0.11	1.45**
After tax	0.14	0.09	1.56	0.16	0.10	1.60**
Adjusted for family size	0.14	0.08	1.75	0.15	0.10	1.50**
45 to 49						
Earnings	0.31	0.11	2.82	0.35	0.11	3.18**
Market income	0.26	0.11	2.36	0.30	0.12	2.50**
+Employment Insurance	0.22	0.11	2.00	0.26	0.11	2.36**
+Social assistance	0.18	0.11	1.64	0.21	0.11	1.91**
+Tax credit	0.17	0.11	1.55	0.20	0.11	1.82**
+Family benefit	0.16	0.11	1.45	0.17	0.11	1.55**
Total income	0.15	0.11	1.36	0.17	0.11	1.55 *
After tax	0.14	0.10	1.40	0.16	0.11	1.45 *
Adjusted for family size	0.14	0.09	1.56	0.15	0.10	1.50**

* The bottom to top differences in 1999-2004 are positive and significant at the 5% level.

** The bottom to top differences in 1999-2004 are positive and significant at the 1% level.

Source: Statistics Canada, Longitudinal Administrative Databank

Table 5 Income instability and the tax and transfer system for lone fathers

	1994-1999			1999-2004		
	Bottom third	Top third	Ratio	Bottom third	Top third	Ratio
25 to 29						
Earnings	0.55	0.11	5.00	0.33	0.08	4.13**
Market income	0.52	0.11	4.73	0.33	0.08	4.13**
+Employment Insurance	0.41	0.10	4.10	0.28	0.08	3.50**
+Social assistance	0.22	0.10	2.20	0.22	0.08	2.75**
+Tax credit	0.21	0.09	2.33	0.21	0.07	3.00**
+Family benefit	0.19	0.09	2.11	0.18	0.07	2.57**
Total income	0.19	0.09	2.11	0.18	0.07	2.57**
After tax	0.17	0.07	2.43	0.17	0.06	2.83**
Adjusted for family size	0.17	0.08	2.13	0.17	0.06	2.83**
30 to 34						
Earnings	0.40	0.12	3.33	0.47	0.13	3.62**
Market income	0.39	0.12	3.25	0.46	0.13	3.54**
+Employment Insurance	0.33	0.09	3.67	0.40	0.11	3.64**
+Social assistance	0.23	0.09	2.56	0.30	0.11	2.73**
+Tax credit	0.22	0.09	2.44	0.27	0.11	2.45**
+Family benefit	0.19	0.09	2.11	0.22	0.11	2.00**
Total income	0.18	0.09	2.00	0.21	0.11	1.91**
After tax	0.17	0.07	2.43	0.20	0.10	2.00**
Adjusted for family size	0.17	0.07	2.43	0.20	0.10	2.00**
35 to 39						
Earnings	0.31	0.10	3.10	0.36	0.11	3.27**
Market income	0.29	0.10	2.90	0.32	0.12	2.67**
+Employment Insurance	0.24	0.09	2.67	0.26	0.11	2.36**
+Social assistance	0.20	0.09	2.22	0.22	0.11	2.00**
+Tax credit	0.19	0.09	2.11	0.20	0.11	1.82**
+Family benefit	0.16	0.09	1.78	0.17	0.11	1.55**
Total income	0.15	0.09	1.67	0.15	0.11	1.36**
After tax	0.13	0.08	1.63	0.14	0.10	1.40**
Adjusted for family size	0.13	0.08	1.63	0.14	0.10	1.40**
40 to 44						
Earnings	0.30	0.09	3.33	0.30	0.12	2.50**
Market income	0.27	0.09	3.00	0.29	0.12	2.42**
+Employment Insurance	0.21	0.09	2.33	0.24	0.11	2.18**
+Social assistance	0.19	0.09	2.11	0.22	0.11	2.00**
+Tax credit	0.18	0.09	2.00	0.21	0.11	1.91**
+Family benefit	0.17	0.09	1.89	0.18	0.11	1.64**
Total income	0.16	0.08	2.00	0.15	0.11	1.36**
After tax	0.14	0.08	1.75	0.14	0.10	1.40**
Adjusted for family size	0.14	0.08	1.75	0.14	0.10	1.40**
45 to 49						
Earnings	0.30	0.10	3.00	0.28	0.12	2.33**
Market income	0.24	0.10	2.40	0.24	0.12	2.00**
+Employment Insurance	0.20	0.10	2.00	0.20	0.11	1.82**
+Social assistance	0.17	0.10	1.70	0.18	0.11	1.64**
+Tax credit	0.17	0.10	1.70	0.17	0.11	1.55**
+Family benefit	0.16	0.10	1.60	0.16	0.11	1.45**
Total income	0.15	0.09	1.67	0.14	0.11	1.27**
After tax	0.14	0.10	1.40	0.13	0.11	1.18**
Adjusted for family size	0.13	0.09	1.44	0.13	0.10	1.30**

** The bottom to top differences in 1999-2004 are positive and significant at the 1% level.
Source: Statistics Canada, Longitudinal Administrative Databank

EI also lowers income instability. In all age groups, it is the second most important factor mitigating instability among lone mothers in the bottom income group. Overall, the reduction in instability (relative to market income) caused by EI and social assistance in the bottom third varies between 32% and 48%. For the youngest lone mothers, social assistance lowers the relative instability ratio from 2.6 (market income) to 2.0, which accounts for about two-thirds of the reduction from market to after-tax income. For older age groups, the effect is similar.

Tax credits and especially family benefits also play an important role in reducing instability in the bottom third. Their inclusion reduces instability for low-income lone mothers by 20% to 36%. All government transfers put together bring down the bottom-third to top-third ratios to levels that for some age groups (25 to 34 and 40 to 44) are lower than the after-tax ratios.

The impact of the progressive tax system is twofold. On the one hand, in all age groups, the instability of after-tax income in the bottom third is lower than the instability of the total income, although the reduction is 6% at most, and in some age groups, close to zero. On the other hand, in some age groups, the tax system has a larger effect in the top third, so the difference between bottom and top thirds is actually larger for after-tax income than before-tax income.

Unattached individuals

Considerable differences are apparent in the income instability of unattached men and women across age groups (Tables 6 and 7). In the

Table 6 Income instability and the tax and transfer system for unattached women

	1994-1999			1999-2004		
	Bottom third	Top third	Ratio	Bottom third	Top third	Ratio
25 to 29						
Earnings	0.35	0.12	2.92	0.32	0.12	2.67**
Market income	0.33	0.12	2.75	0.29	0.12	2.42**
+Employment Insurance	0.27	0.11	2.45	0.25	0.12	2.08**
+Social assistance	0.24	0.11	2.18	0.24	0.12	2.00**
+Tax credit	0.23	0.11	2.09	0.23	0.12	1.92**
Total income	0.23	0.11	2.09	0.22	0.12	1.83**
After tax	0.20	0.10	2.00	0.20	0.11	1.82**
30 to 34						
Earnings	0.29	0.09	3.22	0.29	0.10	2.90**
Market income	0.27	0.09	3.00	0.27	0.10	2.70**
+Employment Insurance	0.21	0.09	2.33	0.23	0.10	2.30**
+Social assistance	0.19	0.09	2.11	0.21	0.10	2.10**
+Tax credit	0.19	0.09	2.11	0.20	0.10	2.00**
Total income	0.18	0.09	2.00	0.19	0.10	1.90**
After tax	0.16	0.08	2.00	0.17	0.09	1.89**
35 to 39						
Earnings	0.29	0.08	3.63	0.29	0.09	3.22**
Market income	0.26	0.08	3.25	0.27	0.09	3.00**
+Employment Insurance	0.21	0.08	2.63	0.23	0.09	2.56**
+Social assistance	0.19	0.08	2.38	0.21	0.09	2.33**
+Tax credit	0.18	0.08	2.25	0.19	0.09	2.11**
Total income	0.17	0.08	2.13	0.18	0.09	2.00**
After tax	0.15	0.07	2.14	0.17	0.08	2.13**
40 to 44						
Earnings	0.29	0.07	4.14	0.28	0.09	3.11**
Market income	0.27	0.07	3.86	0.25	0.09	2.78**
+Employment Insurance	0.20	0.07	2.86	0.20	0.08	2.50**
+Social assistance	0.19	0.07	2.71	0.19	0.08	2.38**
+Tax credit	0.18	0.07	2.57	0.18	0.08	2.25**
Total income	0.17	0.06	2.83	0.17	0.08	2.13**
After tax	0.16	0.06	2.67	0.15	0.08	1.88**
45 to 49						
Earnings	0.30	0.08	3.75	0.30	0.08	3.75**
Market income	0.26	0.07	3.71	0.26	0.08	3.25**
+Employment Insurance	0.21	0.07	3.00	0.22	0.08	2.75**
+Social assistance	0.18	0.07	2.57	0.19	0.08	2.38**
+Tax credit	0.17	0.07	2.43	0.18	0.08	2.25**
Total income	0.16	0.07	2.29	0.17	0.08	2.13**
After tax	0.15	0.06	2.50	0.15	0.08	1.88**

** The bottom to top differences in 1999-2004 are positive and significant at the 1% level. Source: Statistics Canada, Longitudinal Administrative Databank

bottom third, the earnings instability of unattached persons under 35 (measured by MAD_i in 1999-2004) is higher for men than for women. However, in all age

groups, the relative (bottom to top) instability of men's earnings is lower than the relative instability of women's earnings, which is particularly high among women aged 45 to 49.

The most striking difference between unattached individuals and lone parents is that for the former, EI is a far more important factor in reducing instability than social assistance. Compared with market-income instability, the inclusion of EI reduces instability in the bottom third by 17% to 24% among unattached men and 13% to 20% among unattached women. EI also substantially reduces relative instability among both men and women in all age groups. Social assistance does not appear to play a major role among younger unattached individuals. While the reduction in instability it brings about is roughly constant among low-income unattached men of all ages (10%), the rate varies considerably with age among low-income unattached women (4% to 9% for all age groups except 45 to 49 where it peaks at 13%).

EI and social assistance together reduce the relative instability of market income between 20% and 30% for unattached men⁵ and between 15% and 27% for unattached women. This is a major component of the overall reduction in relative instability generated by all transfers and the tax system. The overall reduction in relative instability (going from market to after-tax income) ranges from 27% to 38% for unattached men, and 25% to 42% for unattached women. Hence, EI and social assistance account for 65% to 75% of the overall effect for men and about 50% for women.

As with lone parents, the tax system reduces income instability in both bottom and top income thirds, so the impact on relative instability of unattached individuals is small, particularly for men. The effect is somewhat greater for older

Table 7 Income instability and the tax and transfer system for unattached men

	1994-1999			1999-2004		
	Bottom third	Top third	Ratio	Bottom third	Top third	Ratio
25 to 29						
Earnings	0.41	0.14	2.93	0.37	0.15	2.47**
Market income	0.39	0.14	2.79	0.35	0.15	2.33**
+Employment Insurance	0.30	0.13	2.31	0.29	0.14	2.07**
+Social assistance	0.26	0.13	2.00	0.26	0.14	1.86**
+Tax credit	0.25	0.13	1.92	0.25	0.14	1.79**
Total income	0.24	0.13	1.85	0.24	0.14	1.71**
After tax	0.22	0.11	2.00	0.22	0.13	1.69**
30 to 34						
Earnings	0.35	0.10	3.50	0.34	0.12	2.83**
Market income	0.33	0.10	3.30	0.32	0.12	2.67**
+Employment Insurance	0.25	0.10	2.50	0.26	0.11	2.36**
+Social assistance	0.21	0.10	2.10	0.23	0.11	2.09**
+Tax credit	0.21	0.10	2.10	0.22	0.11	2.00**
Total income	0.20	0.10	2.00	0.21	0.11	1.91**
After tax	0.17	0.09	1.89	0.19	0.10	1.90**
35 to 39						
Earnings	0.33	0.09	3.67	0.30	0.11	2.73**
Market income	0.31	0.09	3.44	0.29	0.11	2.64**
+Employment Insurance	0.23	0.09	2.56	0.22	0.10	2.20**
+Social assistance	0.20	0.09	2.22	0.20	0.10	2.00**
+Tax credit	0.19	0.09	2.11	0.19	0.10	1.90**
Total income	0.19	0.09	2.11	0.18	0.10	1.80**
After tax	0.17	0.08	2.13	0.16	0.09	1.78**
40 to 44						
Earnings	0.32	0.09	3.56	0.28	0.10	2.80**
Market income	0.30	0.09	3.33	0.27	0.10	2.70**
+Employment Insurance	0.22	0.09	2.44	0.21	0.10	2.10**
+Social assistance	0.19	0.09	2.11	0.19	0.10	1.90**
+Tax credit	0.18	0.09	2.00	0.18	0.10	1.80**
Total income	0.18	0.09	2.00	0.17	0.10	1.70**
After tax	0.16	0.08	2.00	0.15	0.09	1.67**
45 to 49						
Earnings	0.33	0.10	3.30	0.29	0.11	2.64**
Market income	0.28	0.09	3.11	0.25	0.10	2.50**
+Employment Insurance	0.22	0.09	2.44	0.20	0.10	2.00**
+Social assistance	0.19	0.09	2.11	0.18	0.10	1.80**
+Tax credit	0.19	0.09	2.11	0.17	0.10	1.70**
Total income	0.18	0.09	2.00	0.16	0.10	1.60**
After tax	0.16	0.08	2.00	0.15	0.09	1.67**

** The bottom to top differences in 1999-2004 are positive and significant at the 1% level.
Source: Statistics Canada, Longitudinal Administrative Databank

unattached women where relative instability is reduced by about 25 percentage points.

While the tax and transfer system considerably reduces the differences in instability in market income

between the bottom third and the top third, it generally does so to a greater extent among two-parent families and lone mothers than among unattached individuals. For instance, among two-parent fami-

lies with husbands aged 30 to 34, the difference in MAD_i for market income amounted to 10 log points (0.22 versus 0.12) in 1999-2004 (Table 3). Taxes and transfers reduced that difference by 70% to 3 log points (from 0.13 to 0.10). For lone mothers aged 30 to 34, the reduction was 74% (Table 4), but only 53% for unattached women the same age (Table 6).

Robustness checks

The main sample includes only families with positive earnings in all six years they were in the sample. The model assumes that the expected value of log earnings (or log income) is a linear function of an age polynomial. The main conclusions hold even if real earnings are used as the dependent variable.

The main question is whether the results can be generalized for a broader sample that includes those with zero annual family earnings.⁶ The inclusion of zeros precludes the use of a log earnings model; the distribution of real earnings is not normal but the second model still produces consistent estimates as long as residuals are uncorrelated with age.

The main conclusions regarding recent trends in instability still hold. No widespread increase in earnings instability is evident in the past two decades. Most of the increases are observed among lone mothers 30 to 39 and unattached women. The earnings instability of lone mothers 40 and older, however, fell in both samples. This is an important confirmation of the main results since lone mothers probably have the highest fraction of families with zero annual earnings.

The broader sample model confirms that social assistance is by far the most important single factor

reducing relative (bottom third to top third) earnings instability among lone mothers. The federal Child Tax Benefit program and provincial family benefits also appear to play an important role. The tax system, on the other hand, reduces instability in absolute terms but often leads to higher relative instability.

For unattached individuals, the broader sample confirms that both EI and social assistance account for most of the reduction in relative instability. The broad sample shows a greater role for social assistance than the main sample—hardly surprising given that those with zero earnings are likely to depend more on social assistance than those who have positive earnings during the whole six-year period.

Summary

This study analyzed trends in the earnings instability of lone parents and unattached individuals in the past two decades. It also examined the extent to which government transfers and the income-tax system reduce the differences in instability among lone parents and unattached individuals in different segments of the earnings distribution, and compared them with two-parent families.

As in a previous study (Morissette and Ostrovsky 2005), no strong evidence of a widespread increase in earnings instability in the past two decades was found. For example, while the earnings instability of younger couples (husbands aged 25 to 34) in the main sample increased, instability did not change for couples with husbands aged 35 to 44 and has dropped for older couples. Similarly, the earnings instability of unattached men dropped in all age groups, while that of unattached women rose in all but the youngest.

Lone mothers in the bottom third of the earnings distribution have the highest earnings instability; for those aged 30 to 34, it is twice that of two-parent families with husbands aged 30 to 34. As well, employment and earnings increases for young lone mothers have not kept pace with their older counterparts or married mothers (Myles, Picot and Myers 2006).

As for the role of government transfers and the tax system in smoothing employment income instability, the former play a particularly important role in reducing income instability. However, EI is more important for unattached individuals, while social assistance is especially important for lone mothers. And,

although income taxes reduce instability in absolute terms, they do not necessarily reduce the gap between earnings instability in the bottom and top third income groups.

Finally, it can be argued that a trade-off exists between stability and earnings; that is, some workers may accept greater instability for greater short-term compensation. For example, seasonal workers may be relatively well-compensated for short periods of work. Nevertheless, this study demonstrates that year-to-year instability is consistently higher in the lowest third of earners, regardless of population group. Thus long-term earnings instability is concentrated among those with low earnings, hindering their financial security and social inclusion.

Perspectives

Notes

1 Less than \$375 weekly or less than \$10 per hour assuming a 37.5 hour workweek.

2 The low-income cut-off is the level at which a family spends 20 percentage points more of its before-tax, after-transfer income on basic necessities than the average family.

3 Formula for tests:

$$P(\hat{R} \geq 1) = 1 - P\left(z \geq \frac{\hat{R} - 1}{\sqrt{\hat{V}(\hat{R})}}\right), \text{ where}$$

$$\hat{V}(\hat{R}) \approx \frac{1}{\hat{\theta}_2^2} \left[\hat{V}(\hat{\theta}_1) + \hat{R}^2 \hat{V}(\hat{\theta}_2) \right],$$

$$\hat{R} = \frac{\hat{\theta}_1}{\hat{\theta}_2} \text{ and } \hat{\theta}_1, \hat{\theta}_2 \text{ are independent.}$$

4 For instance, for the 35-to-39 age group, \overline{MAD}_i dropped from 0.2 for market income to 0.13 for total income. Hence, the drop is $[(0.2 - 0.13)/0.2] * 100\% = 35\%$.

5 For instance, for unattached men 35-to-39, the inclusion of EI and social assistance reduces relative instability from 2.64 to 2.00 or by $[(2.64 - 2.00)/2.64] * 100\% = 24\%$.

6 A very small number of families reported single-digit annual earnings in some years. Annual earnings were set to zero if the amount in 2004 dollars was less than 20. Otherwise families who reported zero earnings in some years and positive but in fact zero earnings in other years (more than three) would have remained in the sample.

■ **References**

Beach, Charles M, Ross Finnie and David Gray. 2003. "Earnings variability and earnings instability of women and men in Canada: How do the 1990s compare to the 1980s?" *Canadian Public Policy*. Vol. 29. Supplement. p. S41–S63.

Chung, Lucy. 2004. "Low-paid workers: How many live in low-income families?" *Perspectives on Labour and Income*. Vol. 5, no. 10. Statistics Canada Catalogue no. 11-010-XIE.

<http://www.statcan.ca/english/freepub/75-001-XIE/11004/high-1.htm> (accessed September 25, 2006).

Gottschalk, Peter and Robert Moffitt. 1994. "The growth of earnings instability in the U.S. Labor Market." *Brookings Papers on Economic Activity*. Vol. 1994, no. 2. p. 217–272.

Morissette, René and Yuri Ostrovsky. 2005. "The instability of family earnings and family income in Canada, 1986 to 1991 and 1996 to 2001." *Canadian Public Policy*. Vol. 31, no. 3. p. 273–302.

Myles, John F., Feng Hou, Garnett Picot and Karen Myers. 2006. *Why Did Employment and Earnings Rise Among Lone Mothers During the 1980s and 1990s?* Statistics Canada Catalogue no. 11F0019MIE2006282. Ottawa. Analytical Studies Branch Research Paper Series, no. 282. 29 p.

<http://www.statcan.ca/english/research/11F0019MIE/11F0019MIE2006282.pdf> (accessed September 25, 2006).

Training through the ages

Cathy Underhill

Lifelong learning is increasingly regarded as important to the health of the Canadian economy (Bélanger and Tuijnman 1997). Workplace developments such as rapid technological change, higher educational requirements, an increased emphasis on skill-based knowledge, and greater dependence on computers have led to a need for training entry-level workers as well as retraining older ones.

At the same time, Canada's population continues to age as the baby boomers move towards retirement (the oldest turn 60 in 2006). With the median age of retirement at 61 in 2005, the possibility of their impending exit from the labour force increases concerns for the supply of skilled labour. Facilitating later life learning could extend the contribution of older workers beyond the traditional age of retirement (Morissette, Schellenberg and Silver 2004).

At the workplace level, training is influenced by the degree of employer support given to employees: paying for training (directly or through reimbursement), allowing flexible hours, providing the course or program, or providing transportation to and from the training site.

In 2002, approximately 1 in 3 adults aged 25 to 64—five million people (Table 1)—participated in formal job-related training (see *Data source and definitions*). Using the 2003 Adult Education and Training Survey (AETS), this article compares the job-related training rate of older workers (55 to 64) with that of younger workers (25 to 34). Personal and job-related characteristics associated with training are examined for both groups, as are employer support, self-directed learning, barriers faced by older and younger employees, and the objectives and outcomes of training.

Cathy Underhill is with the Science, Innovation and Electronic Information Division. She can be reached at 613-951-6023 or perspectives@statcan.ca.

Table 1 Job-related training, 2002

	Workers		Trainees		Job-related training
	'000	%	'000	%	%
25 to 64	13,913	100.0	4,794	100.0	34.5
25 to 34	3,734	26.8	1,531	31.9	41.0
35 to 44	4,443	31.9	1,529	31.9	34.4
45 to 54	3,887	27.9	1,310	27.3	33.7
55 to 64	1,849	13.3	424	8.9	22.9

Source: Statistics Canada, Adult Education and Training Survey, 2003

Logistic regression was used to determine the degree to which selected personal and job-related factors were related to the likelihood of participation in job-related training (see *Logistic regression*).¹ Models were run separately for employees aged 25 to 34 and 55 to 64. The factors selected were sex, education, household income, province, occupation, firm size, industry, employee or self-employed, sector (private versus public), and work schedule (full-time versus part-time). Most of the independent variables were selected on the basis of previous research on job-related training behaviour.

Older women more likely than older men to engage in job-related training

Overall, women had slightly higher rates of job-related training than men in 2002. Even after holding other personal and job-related factors constant, the rate for women aged 55 to 64 was significantly higher (1.4 times) than for men the same age. In the 25-to-34 age group, men and women were equally likely to participate in training (Table 2).

Data source and definitions

The 2003 **Adult Education and Training Survey** was conducted in February and March 2003 by Statistics Canada in partnership with Human Resources Development Canada. Some 34,000 adults aged 25 and over were asked about their training and education activities in 2002, including the number and duration of training activities, the type of training, and the involvement of the employer.

This article focuses primarily on two age groups: 25 to 34 and 55 to 64. Respondents were classified as working if they were employed or self-employed at some point during the 2002 reference year.

Participants are working individuals who participated in at least one formal job-related training activity during 2002.

Formal job-related training refers to courses or programs related to a current or future job. These had to follow a structured plan and lead to some form of recognition, certification, diploma or degree.

Employer support consists of one or more of the following: providing the training, paying for the training (either directly or by reimbursing the employee), allowing a flexible work schedule to accommodate training, or providing transportation to and from the training location.

A **program** is a series of courses leading to a degree, diploma or certificate, whereas **courses** include seminars, workshops and conferences as well as courses not part of a credit program.

Courses and programs were classified using the **Classification of Instructional Programs, Canada** (CIP Canada 2000), based on field of study. *Health, recreation and fitness* includes health professions and related clinical sciences; dental, medical and veterinary residency programs; and parks, recreation, leisure and fitness studies. *Personal improvement and leisure* includes basic skills, citizenship activities, health-related knowledge and skills, interpersonal and social skills, leisure and recreational activities, and personal awareness and self-improvement.

Self-directed learning or informal job-related training does not lead to formal qualification or certification, and generally does not rely on structured guidelines. It must, however, be undertaken by the participant with the intention of developing job-related skills or knowledge. Respondents were asked if they had done any of: seeking advice from someone knowledgeable, using the Internet or other software, observing someone performing a task, consulting books or manuals, or teaching themselves different ways of doing certain tasks. In contrast to formal job-related training, respondents were asked if they had engaged in any of these activities over the preceding four-week period, whereas formal job-related training questions referred to the entire year.

Managerial and professional occupations include not only senior management occupations; managers in retail trade, food and accommodation services; and other managers, but also professional occupations in business and finance; financial, secretarial and administrative occupations; natural and applied sciences and related occupations; professional occupations in health; nurse supervisors and registered nurses; occupations in the social sciences, government services and religion; teachers and professors; and occupations in art, culture, recreation and sport.

Goods-producing industries comprise agriculture; forestry, fishing, mining, oil and gas; utilities; construction; and manufacturing. **Service** industries comprise trade; transportation; finance, insurance, real estate, and leasing; professional, scientific, and technical services; education; health care and social assistance; information, culture and recreation; accommodation and food services; and public administration.

Given the complex nature of the survey design, bootstrap procedures were used to derive the variances for odds ratios and percentages.

The highly educated get more training

Adult education, and in particular job-related training, appears to be accessed primarily by those who are already well-educated (SC–HRDC 2001).² In all age groups, higher levels of education corresponded with greater participation in formal job-related training.³ For example, 55 to 64 year-olds with a university degree participated at nearly three times the rate of those with a high school diploma or less (37% versus 13%). This makes sense in that individuals with low initial levels of education are more likely to be employed in low-paying jobs, where investment in training is likely minimal. However, 55 to 64 year-olds with a university education still took less job-related training in 2002 than their younger counterparts aged 25 to

Logistic regression

A logistic regression model is used to investigate the relationship between a discrete outcome and a set of explanatory variables. It allows the effect of one factor to be examined, while holding all others constant.

In this paper, logistic regression models were used to isolate the effect of various personal and job-related factors on the likelihood of participation in, and the likelihood of employer support for, job-related training.

Young adults (25 to 34) and older adults (55 to 64) were modelled separately for likelihood of job-related training. One model was used for all 25 to 64 year-old employees who had engaged in job-related training to examine employer support.

Responses of 'don't know/refused' were excluded.

Table 2 Factors associated with job-related training for both older and younger workers

	Job-related training			Odds ratios	
	25-64	25-34	55-64	25-34	55-64
		%			
Men (ref)	32.3	38.3	21.1	1.0	1.0
Women	37.0	44.1	25.3	1.0	1.4*
Education					
High school diploma or less	17.8	20.2	12.5	0.4**	0.5**
Postsecondary non-university (ref)	38.0	42.9	26.5	1.0	1.0
University	51.3	57.2	36.7	1.5**	1.2
Household income					
Less than \$30,000	24.1	35.7	12.9	1.0	0.6*
\$30,000 to \$59,999 (ref)	31.2	38.7	22.4	1.0	1.0
\$60,000 and over	45.0	51.4	33.7	1.4**	1.4
Province					
Newfoundland and Labrador	28.8	29.1	F	0.6*	F
Prince Edward Island	30.6	32.2	F	0.7	F
Nova Scotia	37.4	43.9	25.4	1.1	1.0
New Brunswick	34.4	43.2	F	1.2	F
Quebec	31.6	41.2	19.2	1.0	0.6*
Ontario	34.3	40.1	21.4	0.9	0.6*
Manitoba	38.4	48.0	26.9	1.5*	0.9
Saskatchewan	37.2	45.0	23.1	1.4	0.7
Alberta (ref)	34.6	38.7	27.7	1.0	1.0
British Columbia	38.6	43.4	29.0	1.2	0.9
Occupation					
Managerial, professional	46.2	53.2	32.0	1.3*	1.2
Clerical, sales, service (ref)	29.2	35.4	20.1	1.0	1.0
Blue-collar	22.5	28.3	14.1	1.0	1.2
Firm size					
Less than 20	24.9	29.8	13.2 ^E	0.6**	0.7
20 to 99	32.0	33.5	26.4	0.7*	1.3
100 to 500 (ref)	37.1	45.2	26.0	1.0	1.0
Over 500	43.6	48.6	34.0	1.0	1.5*
Industry					
Goods-producing (ref)	25.1	31.8	14.1	1.0	1.0
Service-producing	38.1	43.9	27.0	1.1	1.7*
Self-employed					
Yes (ref)	28.6	33.5	20.2	1.0	1.0
No	35.9	42.2	24.1	1.6**	1.0
Sector					
Private (ref)	28.1	35.6	17.2	1.0	1.0
Public	50.1	54.8	39.0	1.4**	1.6**
Work schedule					
Full-time	36.4	41.5	26.2	1.0	1.8**
Part-time (ref)	31.3	37.5	20.5	1.0	1.0

* Significantly different from reference group at the 5% level.

** Significantly different from reference group at the 1% level.

Note: Odds relative to reference group (ref).

Source: Statistics Canada, Adult Education and Training Survey, 2003

34 (37% versus 57%). One possibility is that older employees may be choosing to forgo training for personal reasons. Being close to retirement, for example, may cause them to be less interested in training related to career advancement.

With various personal and job-related characteristics held constant, lower levels of education were significantly associated with decreased odds of job-related training for both age groups. Those with a high school diploma or less were half as likely to participate as those with some postsecondary non-university education. However, a different story was evident for those with university education. Among those 25 to 34, the odds of taking training increased significantly, whereas for those aged 55 to 64, they did not.

Higher household income associated with higher rates of job-related training

As with education, higher household income generally tends to be associated with higher rates of job-related training.⁴ Training, especially when not supported by an employer, involves costs, either directly for tuition or books, or indirectly in forgone earnings. Higher income may therefore enable some workers to participate in training. When other characteristics are held constant, a higher household income significantly increased the odds of participation for both age groups. Conversely, the odds were significantly decreased for older but not younger employees with lower household income, relative to the reference group (medium income). Income appears to be related to job-related training only after a certain point for younger employees. They may

view training as a means of achieving a higher income, whereas this is unlikely to be a motivation for older employees given their proximity to retirement. The link between training and income likely goes in both directions; that is, while training may lead to higher incomes, higher incomes also allow employees to take advantage of training opportunities.

Although the training participation rates of 55 to 64 year-olds increased with income, their rates were consistently lower than all other age groups. For example, while the rate was around 50% for the three younger age groups earning \$60,000 or more, it was only 34% for those 55 to 64 (Chart A).

Provincial differences in job-related training

Province of residence was significantly related to job-related training for both younger and older employees. Among younger ones, those in Newfoundland and Labrador were less likely than those in Alberta (reference group) to engage in training (.06), while those in Manitoba were 1.5 times more likely. As for older workers, those in Quebec and Ontario were less likely than those in Alberta to take training. The differences for older workers may be partly explained by differences in median retirement age. During the period 2000 to 2004, the median in Alberta was 63.7 compared with 61.4 and 59.9 in Ontario and Quebec respectively. Alberta's higher median retirement age suggests that older workers there may have a longer-term perspective on job-related training.

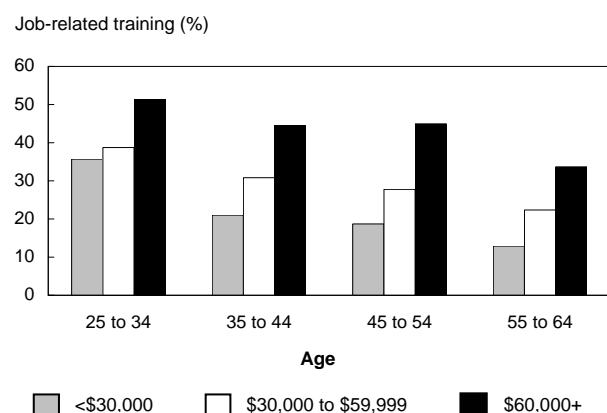
Job characteristics affect the likelihood of training

For both younger and older workers, being in the public sector as opposed to the private sector significantly increased the odds of job-related training (1.4 and 1.6 times respectively).

Occupation was significantly related to being involved in training for younger employees, but not for older ones. Employees aged 25 to 34 in a professional or managerial occupation were 1.3 times more likely to take training than those in clerical, sales or service occupations.

Firm size was also clearly a factor. Smaller companies may have difficulty sparing resources for training when meeting the bottom line is a priority (Leckie et al. 2001). On the other hand, large firms (more than 500 employees) are more likely to be in a position to pro-

Chart A Higher household income levels not as much related to job-related training for older employees as for younger ones.



Source: Statistics Canada, Adult Education and Training Survey, 2003

vide support. Being employed in a smaller firm (less than 20, or 20 to 99 employees) significantly lowered the odds of job-related training (0.6 and 0.7 respectively) for younger workers relative to a medium-sized firm; however, no relationship was apparent for older workers. On the other hand, employment in a larger firm (more than 500 employees) significantly increased the odds of job-related training for older workers, but made no difference for younger workers.

Industry was a significant factor for older employees, along with work schedule. Employment in a service industry rather than a goods-producing one significantly increased their likelihood of participation, while not being significantly related for younger workers. Similarly, working full time rather than part time increased the odds of participation for older employees, but had no effect for 25 to 34 year-olds. Self-employment, on the other hand, had no effect for older workers but significantly affected the likelihood of participation for younger workers.

Perhaps surprisingly, union membership was not a significant factor in job-related training. A previous study found that unions had only weak direct effects on training incidence and funding. However, unions may exert positive indirect effects by encouraging employer funding of training, which could then lead to increased job stability (Gilbert 2003).

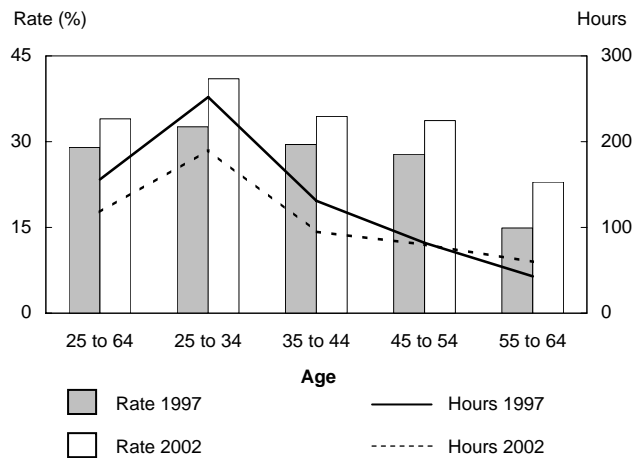
Older adults spend less time in training

Formal job-related training can take the form of either individual courses or full programs of study leading to a degree, diploma or certificate. Courses are not necessarily undertaken for credit reasons and can include seminars, workshops or conferences. The majority of employed adults engaged in job-related training in 2002 took courses as opposed to programs (76% versus 15%). Less than 10% took both.

Overall, participants averaged 118 hours of job-related training in 2002, compared with 156 hours in 1997 (Chart B).⁵ This drop is attributable mainly to trainees aged 25 to 44, as the intensity of training for those aged 55 to 64 increased by nearly 40%, from 43 to 60 hours. Major differences were apparent by age. Compared with 55 to 64 year-old trainees, those 25 to 34 spend triple the time in job-related training in 2002 (190 versus 60 hours). This makes sense given that older employees have had longer to accumulate not only general work skills but also job-specific skills. In addition, many older employees may be winding down before retirement.

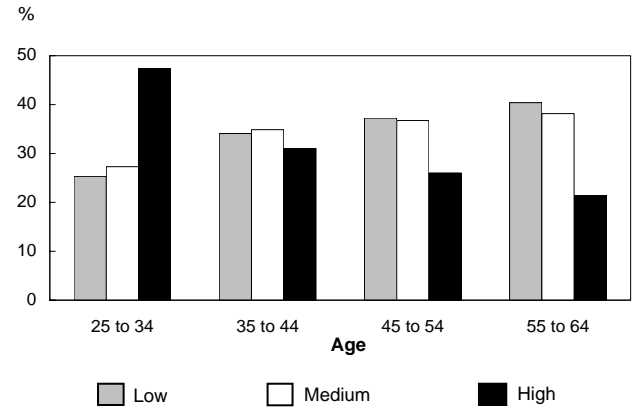
Another approach to training intensity is to divide training hours into three roughly equal categories: high, medium, and low (Chart C).⁶ Less than one-quarter of

Chart B Older participants increased both their rate and hours of training, younger ones only their rate



Source: Statistics Canada, Adult Education and Training Survey, 2003

Chart C A greater proportion of younger workers are in the high-intensity training category



Source: Statistics Canada, Adult Education and Training Survey, 2003

55 to 64 year-olds (21%) were in the high-intensity category (more than 11 days) in 2002, compared with nearly half (47%) of younger participants.

Types of training differed for older and younger adults

The participation rates of older and younger adults varied depending on the type of training (Table 3). For all age groups, the most common was in business, management, and public administration and related fields (close to 30%). Older workers were more likely than younger ones to take training in math, computer, and information sciences (19% versus 13%), perhaps indicating more of a need to upgrade computer skills. Older workers also trained more often in health, recreation and fitness (22% versus 15%). On the other hand, a larger proportion of younger participants reported being involved in job-related personal improvement and leisure training (17% versus 11%).

Improving performance main motivator for all ages

Individuals may have multiple objectives for taking job-related training. The primary motivation for the vast majority was to do their job better (Chart D). This was particularly so for older workers (84% compared with 71% for younger employees). Different

Table 3 Participation rate in training activities

	25 to 34	35 to 44	45 to 54	55 to 64
	%			
Business, management and public administration	30.4	27.4	32.0	29.6
Mathematics, computer and information sciences	16.0	12.7	15.5	18.5
Health, recreation and fitness	15.5	14.9	13.6	22.3
Personal improvement and leisure	15.4	16.6	16.2	11.0
Architecture and engineering	14.2	14.9	15.0	14.6

Note: Participants could report more than one type of training activity.
Source: Statistics Canada, Adult Education and Training Survey, 2003

objectives highlight different career stages. For example, the second most common motivation for older participants was to avoid losing their job (14%), whereas for younger ones, it was to help them find or change jobs (33%). Although increasing income was the third most cited objective for both, it was much more important for 25 to 34 year-olds—nearly 3 in 10 compared with 1 in 10 aged 55 to 64.

To a large degree, stated training objectives and outcomes corresponded, particularly for older participants. For example, 91% of 55 to 64 year-olds who wanted to do their job better achieved this objective, compared with 86% of those aged 25 to 34. For older participants, training seems to have a slightly bigger payoff in terms of financial objectives and job stability. For example, more than half of 55 to 64 year-olds who wanted to increase their income felt satisfied, compared with 40% of those aged 25 to 34. For those whose objective was to keep their job, 79% of older workers were successful compared with 68% of younger ones.

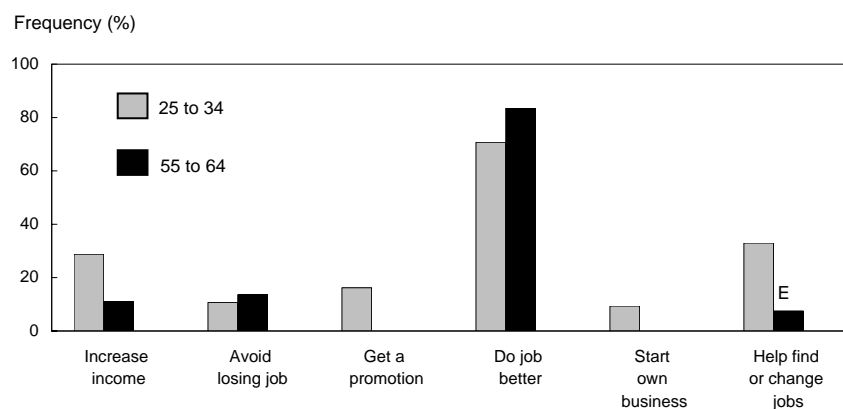
Employer support higher for job-related courses than for programs

Seven in 10 employed adults who took job-related training in 2002 received employer support of some type (see *Data source and definitions*). Full programs require a greater investment on the part of

the employer than individual courses and may affect the degree of support. A course can be completed within a relatively short time frame, while a program generally takes longer and costs more. In addition, the cost of replacing an employee absent from their job is much lower for a course than for a program. In fact, employer support was much greater for courses (76%) than for programs (47%). However, support was significantly lower for 55 to 64 year-old employees in job-related courses (68%) than for those aged 25 to 34 (78%).

In order to determine the degree to which selected factors were related to employer support, a logistic regression model was run for 25 to 64 year-old employees with job-related training in 2002. The final model used age, education, household income, occupation, job tenure, union membership, and work schedule (full-time or part-time).

Chart D Doing a better job was the key motivator for all participants regardless of age



Source: Statistics Canada, Adult Education and Training Survey, 2003

Table 4 Factors associated with employer-supported training

	Employer-support	Odds ratios
	%	
Age		
25 to 34	69.9	1.0
35 to 44 (ref)	74.7	1.0
45 to 54	72.6	0.7*
55 to 64	68.0	0.7
Education		
High school or less	72.3	1.2
Postsecondary non-university (ref)	72.6	1.0
University	71.0	0.7**
Household income		
Less than \$30,000	52.3	0.6**
\$30,000 to \$59,999 (ref)	72.3	1.0
\$60,000 and over	78.3	1.4**
Occupation		
Managerial, professional	75.4	1.3
Clerical, sales, service (ref)	67.6	1.0
Blue-collar	69.4	0.9
Job tenure		
One year or less	55.3	0.5**
1 to less than 5 years (ref)	75.9	1.0
5 to less than 20 years	76.6	0.9
20 years and over	80.8	1.1
Union coverage		
Union	85.7	3.8**
Non-union (ref)	81.0	1.0
Work schedule		
Full-time	76.8	2.7**
Part-time (ref)	55.9	1.0

* Significantly different from reference group at the 5% level.

** Significantly different from reference group at the 1% level.

Note: Odds relative to reference group (ref).

Source: Statistics Canada, Adult Education and Training Survey, 2003

Older employees and the university educated less likely to receive employer support for training

Relative to the reference group (35 to 44), the odds of receiving employer support for job-related training were significantly lower (0.7) for older employees (45 to 54 and 55 to 64), whereas younger employees (25 to 34) were equally likely to receive support (Table 4).

Those with a university education were significantly less likely to receive support (0.7) than those with some postsecondary, non-university education.

Low household income reduced odds of employer support, high income increased them

Employees with the lowest income (less than \$30,000) reported the lowest employer support for training. Household income affected the odds in two ways: Low income (less than \$30,000) relative to medium income (\$30,000 to \$59,999) reduced the odds by almost half (0.6). On the other hand, high income (\$60,000 or more) increased the odds nearly 1.5 times.

Job status and union membership associated with employer support

Longer job tenure was generally associated with higher rates of employer support for training. Employees with one year or less were only half as likely to receive support as those who had been employed for longer (more than one year but less than five).

Work schedule also clearly made a difference. Employers tended to favour full-time employees when it came to providing support for training. Their odds of employer support were more than two and a half times those working part time. The difference is hardly surprising. For one thing, a part-time employee obviously has less time to devote to on-the-job training. Employers may also be concerned about retaining part-timers and consequently be reluctant to invest in training.

For union members, the likelihood of receiving employer support for training was 3.8 times higher than for non-union members. This lends credence to the idea that unions may have indirect effects on training incidence by encouraging employer support (Gilbert 2003).

Training barriers similar for older and younger workers

Barriers to job-related training can be situational (too busy), institutional (tuition costs or inconvenient scheduling), or attitudinal (personal views about learning) (Cross 1981). The 2003 AETS dealt only with situational and institutional barriers.

Among trainees who did not take additional needed or wanted training in 2002, the training rates were similar for the three youngest age groups (46% to 48%) (Chart E). Although the training rate was higher among

55 to 64 year-olds with unmet training needs (36%) than for all 55 to 64 year-old trainees (23%), it still lagged behind other age groups. Older participants do not seem to feel unfairly treated with respect to job-related training opportunities. Indeed, a higher proportion of 25 to 34 year-old participants felt they had unmet training needs (27% versus 19%).

Among those who needed or wanted more training but did not receive it, expense was the most common reason given, being an issue for one-third of 55 to 64 year-olds and close to half of younger participants. The second was being too busy at work, cited by roughly one-third of both the youngest and oldest groups. These two barriers were also the most important in 1997.⁷ Equally important (and the third most common) for both older and younger participants was conflict with work schedule, with more than one-third of each age group giving this reason.

Conclusion

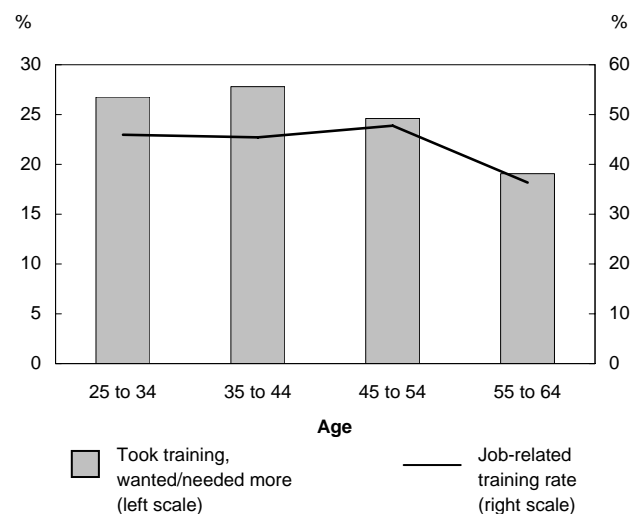
In 2002, fewer older workers (55 to 64) than younger workers (25 to 34) engaged in formal job-related training. One possible explanation for the lower rate among older workers may be found in the ‘return-to-investment’ hypothesis, which originated in an economic context in the 1960s. According to the theory, education and training can be considered an investment in human capital (Becker 1962), so training at a later age may not yield the same degree of return as at an earlier age—simply because of the shorter period over which the return can be realized.

Another reason may be that older employees simply lack the confidence to initiate or engage in training opportunities because of negative attitudes or stereotypes towards older workers and their ability to learn new skills (Maurer 2001). Another possibility, however, is that older workers do not see the value in investing time in training, given that they may soon be leaving the labour market.

Nevertheless, more older employees took part in job-related training than in 1997, and in addition, they did more of it. Older trainees increased their training hours by nearly 40% between 1997 and 2002 (Peters 2004).

Higher levels of education appear to predispose employees to engage in job-related training. This educational advantage may be due in part to the types of jobs held by employees, which are primarily a product of their education. For example, an investigation

Chart E Job-related training rate relatively stable across ages among those who wanted or needed more training



Source: Statistics Canada, Adult Education and Training Survey, 2003

of the job mobility of low-wage workers found that those with a university education were more likely to have higher paid employment after five years than those with high school education or less (Janz 2004). A greater proportion of older adults may well be involved in job-related training in the future, since the baby-boom generation has generally higher levels of education than previous generations.

For both younger and older employees, higher levels of household income, being employed in the public sector, and working for larger firms increased training rates. In addition, occupation made a difference for younger workers: Professionals and managers had a greater likelihood of job-related training. Being a woman, working full time, and working in a service industry increased the likelihood of job-related training for older workers.

For most participants, improving job performance was the main objective for taking training. In addition, both younger and older participants hoped to increase their income. However, older participants were more concerned about holding on to their jobs, whereas younger trainees were looking to find or change jobs.

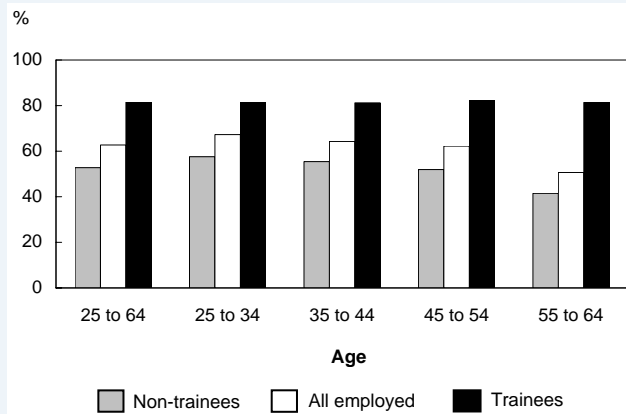
Self-directed learning rates highest among those taking formal job-related training

Formal courses or programs are not the only ways of learning. Another option is self-directed or informal training, which can take different forms (see *Data source and definitions*). Workers were asked about five self-directed activities: seeking advice from someone; using the Internet or computer software; observing someone perform a task; consulting books, manuals or other documents; and self-teaching via different methods.

Nearly two-thirds (63%) of all adult employees engaged in some form of self-directed learning in 2002 (Chart). As with formal training, self-directed learning tended to be less common for older workers, being cited by just over half of those aged 55 to 64 compared with two-thirds of those 25 to 34. Training participants had substantially higher rates of self-directed learning than non-participants across all age groups (82% versus 53% overall). Among non-participants, those aged 55 to 64 had a lower rate (42%) than those aged 25 to 34 (58%).

More than two-thirds of training participants consulted books or manuals, or self-taught using different methods. Older trainees were less likely than those aged 25 to 34 to observe someone perform a task (35% versus 45%). Learning by seeking advice was also less common for older participants (38% versus 51%). Older and younger participants were equally likely to use the Internet, con-

Self-directed rates by age



Source: Statistics Canada, Adult Education and Training Survey, 2003

sult books and manuals, and self-teach. However, those 55 to 64 reported lower levels of engagement in all types of self-directed learning.

The majority of both younger and older participants who desired to improve job performance achieved their goal.

Nearly three-quarters of those who engaged in job-related training in 2002 received employer support (72%). With the growing importance of lifelong learning, employer support may be an important incentive, particularly for older employees. However, older employees appear to have been at a disadvantage compared with younger employees. Whether this was due to negative attitudes on the part of the employer or reluctance on the part of older employees to engage in training is difficult to say. For example, a significantly higher proportion of 25 to 34 year-old participants reported unmet training needs than their counterparts aged 55 to 64. This seems to indicate that older participants have been satisfied with their training opportunities.

Education, household income, job tenure, work schedule and union membership also influenced employer support. Employees with a university education were less likely to receive support than those with only some postsecondary (non-university) education. Lower household income was also associated with a reduced

likelihood of employer support. On the other hand, employees with longer tenure tended to be more likely to receive support for training, as were full-time employees, and those who were union members.

Clearly, training opportunities are not equally distributed. Those who are younger and more highly educated, for example, tend to participate in job-related training at a higher rate. However, those who are educationally disadvantaged likely stand to gain more when they are given the opportunity for training. Indeed, although the least educated are less likely to participate in training, they are the most likely to benefit (Myers and Myles 2005).⁸

Perspectives

■ **Notes**

1 Variables not significantly associated with the likelihood of engaging in job-related training, such as marital status and union membership, were dropped.

2 These results correspond with findings from other surveys. For example, the 2001 Workplace and Employee Survey found a similar link between level of education and engagement in training, either in the classroom or on the job (Leckie et al. 2001).

3 The relationship between education and training has been established elsewhere. For example, see OECD (2003), de Broucker (1997), Tuijnman and Boudard (2001), Statistics Canada (2001).

4 Household income was used rather than individual earnings since it can be argued that the decision to participate in training can be a household decision for couples. In addition, an earlier model with earnings showed similar results, with the exception of some small differences: a reversal of the pattern of significance by province and also by sector, which was not a significant factor for 55 to 64 year-olds with earnings in the model. Household income was divided into three categories: low (less than \$30,000), medium (\$30,000 to \$59,999), and high (\$60,000 or more).

5 Data comparability between 1997 and 2002 may be affected by differences in the way respondents were asked to report job-related training activities. For more information, see Peters (2004).

6 Those in the lowest category took between 1 and 20 hours of training (up to 3 days); those in the medium category, between 21 and 65 hours (3 to 11 days); and those in the highest category, in excess of 65 hours (11 to 260 days), based on a 6-hour training day.

7 Sussman (2002) included both training participants and non-participants, but excluded full-time students. The current study, however, includes participants but excludes non-participants, and includes full-time students who were employed at some point during 2002. In addition, the question that asked about job-related training in 1997 focused on needs rather than both needs and wants as in 2002.

8 This finding was based on self-reported positive outcomes of training.

■ References

Becker, Gary S. 1962. "Investment in human capital: A theoretical analysis." *Journal of Political Economy*. Vol. 70, no. 5, Part 2, p. 9–49.

Bélanger, Paul and Albert Tuijnman. 1997. "The 'silent explosion' of adult learning." In *New Patterns of Adult Learning: A Six-country Comparative Study*. Paul Bélanger and Albert Tuijnman (eds). New York. Elsevier Science Ltd. p. 1–16.

de Broucker, Patrice. 1997. "Job-related education and training: Who has access?" *Education Quarterly Review*. Vol. 4, no. 1. Statistics Canada Catalogue no. 81-003-XIB. p. 7, 10–31.
<http://www.statcan.ca/english/freepub/81-003-XIB/0019781-003-XIB.pdf> (accessed September 26, 2006).

Cross, K. Patricia. 1981. "Why adults participate — and why not." Ch. 4. In *Adults as Learners*. San Francisco/London. Jossey-Bass. p. 81–108.

Gilbert, Lucie. 2003. "Unions and training: A study based on the Adult Education and Training Survey." *Education Quarterly Review*. Vol. 9, no. 1. Statistics Canada Catalogue no. 81-003-XIE. p. 19–33.
<http://www.statcan.ca/english/freepub/81-003-XIE/0010281-003-XIE.pdf> (accessed September 27, 2006).

Janz, Teresa. 2004. *Low-paid Employment and Moving Up: A Closer Look at Full-time, Full-year Workers*. Statistics Canada Catalogue no. 75-F0002-MIE2004009. Ottawa. Income Research Paper series, no. 9. 23 p.
<http://www.statcan.ca/english/research/75F0002MIE/75F0002MIE2004009.pdf> (accessed September 27, 2006).

Leckie, Norm, André Léonard, Julie Turcotte and David Wallace. 2001. *Employer and Employee Perspectives on Human Resource Practices*. Statistics Canada Catalogue no. 71-584-MIE2001001. Ottawa. The Evolving Workplace Series, no. 1. 75 p.
<http://www.statcan.ca/english/freepub/71-584-MIE/71-584-MIE2001001.pdf> (accessed September 27, 2006).

Maurer, Todd J. 2001. "Career-relevant learning and development, worker age, and beliefs about self-efficacy for development." *Journal of Management*. Vol. 27, p. 123–140.

Morissette, René, Grant Schellenberg and Cynthia Silver. 2004. "Retaining older workers." *Perspectives on Labour and Income*. Vol. 5, no. 10. October. Statistics Canada Catalogue no. 75-001-XIE.
<http://www.statcan.ca/english/freepub/75-001-XIE/11004/high-2.htm> (accessed September 27, 2006).

Myers, Karen and John Myles. 2005. *Self-assessed Returns to Adult Education: Life-long Learning and the Educationally Disadvantaged*. Research report W/35. Ottawa. Canadian Policy Research Networks Inc. 40 p.

Organisation for Economic Co-operation and Development (OECD). 2003. *Beyond Rhetoric: Adult Learning Policies and Practices*. Paris. OECD. 253 p.

Peters, Valerie. 2004. *Working and Training: First Results of the 2003 Adult Education and Training Survey*. Statistics Canada Catalogue no. 81-595-MIE2004015. Statistics Canada and Human Resources and Skills Development Canada. Ottawa. Culture, Tourism and the Centre for Education Statistics Research Papers series, no. 15. 60 p.
<http://www.statcan.ca/english/research/81-595-MIE/81-595-MIE2004015.pdf> (accessed September 27, 2006).

Statistics Canada and Human Resources Development Canada (SC–HRDC). 2001. *A Report on Adult Education and Training in Canada: Learning a living*. Statistics Canada Catalogue no. 81-586-XIE. Ottawa. 98 p.
<http://www.statcan.ca/english/freepub/81-586-XIE/81-586-XIE1998001.pdf> (accessed September 27, 2006).

Sussman, Deborah. 2002. “Barriers to job-related training.” *Perspectives on Labour and Income*. Vol. 3, no. 3 (March). Statistics Canada Catalogue no. 75-001-XIE.
<http://www.statcan.ca/english/freepub/75-001-XIE/0030275-001-XIE.html> (accessed September 27, 2006).

Tuijnman, Albert and Emmanuel Boudard. 2001. *Adult Education Participation in North America: International Perspectives*. Statistics Canada Catalogue no. 89-574-XIE. Ottawa. 79 p.
<http://www.statcan.ca/english/freepub/89-574-XIE/89-574-XIE1998001.pdf> (accessed September 27, 2006).