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# Education Quarterly Review

2002, Vol. 8, no. 3

- Self-employment among postsecondary graduates
- Effects of education and income on postsecondary participation
- Teacher workload and stress



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# Table of contents

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<b>From the Editor-in-Chief</b>	4
<b>Highlights</b>	6
<b>Articles</b>	
Setting Up Shop: Self-employment among college and university graduates <i>by Ross Finnie, Christine Laporte and Maud-Catherine Rivard</i>	8
Postsecondary participation: the effects of parents' education and household income <i>by Tamara Knighton and Sheba Mirza</i>	25
Teacher workload and stress: A British Columbia perspective <i>by Charlie Naylor and Anne C. (Anny) Schaefer</i>	33
<b>Data availability announcements</b>	
Data releases	37
Current data	38
Advance statistics	41
<b>Education at a glance</b>	48
<b>In upcoming issues</b>	54
<b>Cumulative index</b>	55

From the

# Editor-in-Chief

## Mission

*Education Quarterly Review* analyses and reports on current issues and trends in education using information from a variety of statistical sources. It serves as a focal point for education statistics and provides a forum for communication with stakeholders and the public. Our goal is to present information and analysis that are relevant, authoritative, timely and accessible.

Considerable Canadian research has been conducted on the impact of a variety of conditions on child outcomes. The National Longitudinal Survey of Children and Youth (NLSCY) has become a powerful source of information available to researchers examining conditions under which children are at risk of negative outcomes. These conditions include family-related factors such as depression and stress, frequency of family moves requiring children to change schools, and family income. *Family Background, Family Income, Maternal Work and Child Development*, a report from the Applied Research Branch of Human Resources Development Canada (HRDC), used NLSCY data to conclude that in addition to family income, "... parents' human capital variables all have positive effects, whether they operate through education, income or child-parent relationships." In this issue of *EQR* family income is examined in terms of its impact on participation in postsecondary education. Ensuring that women and men get good schooling should have positive benefits for child behaviour and learning.

While postsecondary schooling is clearly linked to an increased likelihood of employment, the patterns of employment are changing. Non-standard types of work—non-permanent work, multiple jobs, part-time work and self-employment—are on the rise. For example, since the mid-1970s self-employment has grown as a share of total employment, as has the share of women among the self-employed (based on *Results from the Survey of Self-Employment in Canada*, Applied Research Branch, HRDC). Using data from the National Graduates Surveys, the second article in this issue of *EQR* looks at self-employment among postsecondary graduates. Findings suggest that while there is evidence of an upward trend in self-employment of college and university graduates, that trend may be weaker than expected.

Our third paper returns to a theme first addressed in the October 1994 issue of *EQR*. In that paper, analysis of Labour Force Survey data revealed that between the early 1980s and the early 1990s, the

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workload of teachers in elementary and secondary schools increased both nationally and in each province. However, differences were found in terms of age, sex and tenure. Then, in January 1996, we summarized the findings of research conducted in the mid-1990s by the Saskatchewan Teachers' Federation. Teachers' experiences and perceptions were measured using 7-day records within two periods of the school year. Now, in this issue, we are publishing the principal findings from surveys conducted by the British Columbia Teachers' Federation. Among other topics, that research examined teacher workload and negative health effects of stress.

In addition to these papers, please refer to the **Cumulative index** at the back of the report, where we list by title all articles that have appeared in *EQR* since 1994. These articles are grouped under 12 categories, including 'Enrolment,' 'Flows and transition' and 'Training.' These categories are based on education policy issues that were identified in the Centre for Education Statistics' *Strategic Plan*, which reviews the Centre's statistical program and identifies objectives and priorities required to strengthen the program to better address information needs. The *Strategic Plan* is available free of charge at [www.statcan.ca/cgi-bin/downpub/freepub.cgi](http://www.statcan.ca/cgi-bin/downpub/freepub.cgi) on the Internet.



# Highlights

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## Self-employment

- According to data from the National Graduates Surveys, rates of self-employment were relatively stable for college and university graduates who finished their programs in 1982, 1986 and 1990.
- For these individuals, self-employment rates two years after graduation, calculated by cohort and level of education, ranged from 6.5% to 7.8% for men, and from 3.2% to 5.2% for women. Five years after graduation, the rates had increased, ranging from 9.9% to 11.1% for men, and from 5.3% to 6.7% for women.
- The rates showed no discernible trend across these cohorts of graduates, including those who entered the labour market in the midst of the prolonged recession that characterized the first part of the 1990s. However, the incidence of self-employment for the most recent graduates (those who finished in 1995) had generally risen from previous levels, although unevenly, and not in all cases: by 1997, self-employment rates ranged from 6.9% to 12.0% for men, and from 5.2% to 13.3% for women.
- Self-employment rates were generally higher for male than for female graduates, as in the work force at large. However, the greater and more uniform increases for the 1995 cohort were among women. Furthermore, the gender pattern reverses at the PhD level: among 1995 doctoral graduates, for example, 13.3% of women were self-employed in 1997, almost double the percentage of their male counterparts (6.9%).
- In summary, the evidence supports the ‘pull’ rather than the ‘push’ hypothesis: individuals appear to be drawn toward self-employment by the opportunities this status offers rather than pushed into it by an absence of other options.

## Postsecondary participation

- Of all Canadians aged 18 to 21 in 1998 and no longer in high school, approximately 65% (67% of women and 63% of men) had enrolled in postsecondary education at some point during the previous five years. The highest level pursued by those who participated in postsecondary education was university for about 43%, college for 49%, and trade/vocational training for 9%. Women were more likely than men to attend both university (46% versus 40% of postsecondary participants) and college (50% versus 46%).



- Of young Canadians who were 18 to 21 years old and not in high school and whose parents' after-tax income fell in the highest quartile, almost three-quarters participated in postsecondary education, compared with just over half of those whose parents' income fell in the lowest quartile.
- Young Canadians whose parents had a higher level of education were significantly more likely to pursue postsecondary education, and more specifically university education, than were those whose parents had lower levels of education.
- Among young Canadians whose parents did not have postsecondary education, those with lower levels of household income were slightly, but not significantly, less likely to pursue postsecondary education themselves.

## Teacher workload

- Low salaries relative to other professionals and the high cost of living in British Columbia require many teachers to work during the summer. In 2000, about 7% of teachers spent part of the summer teaching summer school; 17% worked at a job other than teaching during the summer; 22% taught or did other paid work during part of the summer; and about 2% held another job and taught summer school.
- English teachers in secondary schools work more than 53 hours a week while school classes are in session, devote the majority of their work time to preparation and marking, which together account for more than 19 hours of an average teacher's work week—about two-thirds of reported non-contact time spent on the job—and report that workload levels have increased in recent years. EQR

# Articles

## Setting Up Shop: Self-employment among college and university graduates<sup>1</sup>

### Introduction

Labour markets have been changing in fundamental ways, including a shift toward more ‘non-standard’ types of work: more part-time, part-year, or other irregular work patterns; fewer permanent positions; more multiple job holding; and a rise in self-employment. For example, in 2000, 18.1% of the labour force was working part time, compared with 14.4% in 1980, and self-employed workers made up 16.2% of the total labour force, up from 12.6% two decades before. It is generally believed that these shifts have resulted more from a lack of traditional job opportunities than from improvements in non-standard jobs or a change in workers’ preferences.

This paper contributes to our understanding of these developments by documenting and analysing the patterns of self-employment among four recent cohorts of Canadian postsecondary (college and university) graduates in the first five years following graduation. The data used in the analysis come from the National Graduates Surveys (NGS).<sup>2</sup>

This is an interesting group to study in terms of self-employment. First, thanks to their positioning at the margin (entry point) of the labour market, they presumably reflect recent trends and portend those to come more than any study of a more general population of workers would reveal. Second, if new generations of younger workers are facing a general decline in labour market opportunities by being forced into more non-standard work, certain initiatives (preventative, remedial or compensatory) may be warranted to help them in this situation.

This paper begins with empirical documentation of the incidence of self-employment (levels, patterns and trends) among graduates, broken down by their level of education (college, bachelor’s, master’s and PhD), sex and year of graduation. It then analyses the outcomes of self-employed versus paid workers in order to address the issue of whether self-employment tends to be the preferred employment status option for those who enter it, the result of a lack of suitable ‘conventional’ employment opportunities, or a combination of the two.

Two conclusions can be drawn from the analysis. First, the incidence of self-employment was relatively stable for the first three cohorts of graduates covered in the analysis (those who completed

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their studies in 1982, 1986 and 1990): the overall rates ranged from 6.5% to 11.1% for men and from 3.2% to 6.7% for women. The rates tended to be higher—but only moderately so and only for some groups—among graduates of the most recent cohort (those who graduated in 1995). There is, therefore, some evidence of an upward trend in self-employment of postsecondary graduates, but of a much

more recent vintage and weaker force than might have been expected.

Second, the evidence supports the ‘pull’ rather than the ‘push’ hypothesis. That is, individuals appear to be drawn toward self-employment by the opportunities this status offers rather than pushed into it because of an absence of other options.

### Describing the survey and the data<sup>3</sup>

The National Graduates Surveys (NGS) databases employed in this research represent those who successfully completed postsecondary programs in 1982, 1986, 1990 and 1995. For each cohort, information was gathered during interviews carried out two and five years after graduation. (When this research was undertaken, only the first interview had been completed for the final set of graduates.)

These databases, developed by Statistics Canada in partnership with Human Resources Development Canada, are well suited to this analysis for a number of reasons. First, the NGS files are quite large; each survey includes approximately 30,000 college and university graduates. This facilitates detailed analysis of postgraduation experiences that general survey databases (such as the Survey of Consumer Finances, General Social Survey or Survey of Labour Income Dynamics) cannot provide, while the representative nature of the NGS databases allows the results to be generalized to the population of graduates at large.<sup>4</sup>

Second, the longitudinal element of the NGS, deriving from the two interviews—two and five years following graduation—conducted for each cohort, facilitates a dynamic tracking of the school-to-work transition. The resulting perspective is precisely situated as of these two points in

time, while also covering a relatively extended period after leaving school. The longitudinal element also permits a similarly dynamic analysis at the individual level in this case, allowing us to observe the various changes, which occur as individuals move from one job status to another.

Third, the availability of data for four different cohorts permits the more enduring patterns to be separated from those that have been shifting over what is generally thought to have been a period of important labour market changes, especially for younger workers, while also bringing the record up to date as much as possible.

Finally, the NGS files contain a good selection of measures of labour market outcomes—such as employment status, the job skills–education match, job satisfaction, and earnings—that allow for a multidimensional analysis of the school-to-work transition and early job market outcomes in the context of the job status of self-employment.

NGS response rates are generally quite high for a survey of this type, ranging from 74% to 85% for the first interview, with (except for one outlier) between 81% and 93% of these individuals captured a second time. Furthermore, these rates effectively represent lower bounds of the true response rates relevant to the underlying domain of interest.<sup>5</sup>

### Selecting the working samples

This analysis focuses on a relatively tightly defined group of graduates who were moving into the labour market after completing their studies. Excluded from the analysis were the following: graduates who obtained an additional degree subsequent to the one received in 1982, 1986, 1990 or 1995; part-time workers who cited school attendance as the reason why they were only partially involved in the labour market (although part-time workers who were not also students were included in the study, giving it a broad labour market base); a few individuals, such as family workers and volunteers, who were not self-employed or regular paid workers; and full-time

workers with unreasonably low earnings levels (under \$5,000 annually), to eliminate those with only marginal attachment to the labour force. Finally, a small number of individuals were dropped from specific calculations where the required information was missing.

For the tracking of outcomes as of two and five years following graduation, these criteria were applied to each individual’s record independently in each period. Where individual-level dynamics were analysed, individuals had to meet the criteria in both years.

## Findings

### The incidence of self-employment

Table 1 shows that for the first three cohorts, the self-employment rates for graduates at all levels taken together ranged from 6.5% to 7.8% for men, and from 3.2% to 5.2% for women two years after graduation. Five years out, the ranges were 9.9% to 11.1% for men and 5.3% to 6.7% for women. The rates thus rose uniformly from two to five years following graduation. This is an important and

telling dynamic, given that employment opportunities generally improved significantly over this three-year interval, as reflected in sharp declines in unemployment and movements from part-time work to full-time time positions along with substantial increases in earnings levels (Finnie 1999; Finnie 2001).

	1982 Cohort		1986 Cohort		1990 Cohort		1995 Cohort
	1984	1987	1988	1991	1992	1995	1997
	%						
<b>All</b>							
Men	6.7	9.9	6.7	10.0	6.5	11.1	7.8
Women	3.3	5.3	3.2	5.6	3.9	6.7	5.2
<b>College</b>							
Men	5.1	7.4	4.9	8.2	4.5	8.5	7.8
Women	2.4	3.5	2.1	3.6	2.7	5.2	5.2
<b>Bachelor's</b>							
Men	7.8	11.7	7.5	10.9	7.5	12.7	7.2
Women	3.7	6.5	3.5	6.2	4.2	7.2	5.7
<b>Master's</b>							
Men	6.7	8.9	8.3	11.4	6.9	9.8	12.0
Women	4.8	6.8	6.7	8.7	6.2	8.4	9.7
<b>PhD</b>							
Men	4.7	6.3	6.0	6.6	8.8	9.7	6.9
Women	6.5	5.9	13.2	14.2	9.0	11.6	13.3

*Note:* The samples exclude the following: those who had obtained a new diploma by the relevant interview; those who did not have a job; those who were working part time because of school; those with annual earnings lower than \$5,000 (in 1997 constant dollars); and those (such as family workers and volunteers) who were not regular paid workers.

*Source:* Statistics Canada, National Graduates Surveys.

At this aggregate level, then, the evidence supports the 'pull' rather than the 'push' hypothesis: individuals appear to be drawn toward self-employment when labour market conditions are good, not pushed into it when they are bad.

Rates are generally higher for male graduates than for female graduates, except at the PhD level, where the opposite holds for all interview years but one. This reversal at the highest level of education might reflect female graduates' attempts to circumvent any discriminatory employment opportunities, if setting out on their own allows them to be more fully remunerated. However, this notion can be challenged, given that the earnings gap between the sexes is generally the smallest at the doctoral level (Finnie 1999, Finnie 2001), suggesting that market discrimination is itself less important for such graduates. In

any event, the higher incidence of self-employment among women at the PhD level is consistent with (relatively) enhanced opportunities, rather than diminished ones.<sup>6</sup>

Apart from the 'PhD women' effect, there is no clear pattern in self-employment rates by level of study (college, bachelor's, master's and PhD).

The rates show no discernible pattern at all across the first three groups of graduates, including those who entered the labour market during the prolonged recession of the early 1990s. The incidence of self-employment subsequently increased for the most recent (1995) cohort for all male graduates taken together, but with quite mixed patterns by specific education level (higher rates at the college and master's levels; lower for bachelor's and PhD graduates). There were, however, greater and more

uniform increases among the most recent group of female graduates. This latter dynamic could be due to a number of factors, such as increased government support for entrepreneurship, different skills being learned at school, and a change in attitudes. The NGS data do not permit us to identify the precise causes.

### **Characteristics of the self-employed**

Portions of Table 2 show self-employment rates by selected demographic and labour market characteristics, as well as the distribution of the self-employed by these same variables for the four levels of postsecondary graduates included in the analysis.

By sex, the growing proportion of female graduates in general and their somewhat greater increase in self-employment over time combined to drive the female share of the total number of self-employed graduates to around 50% at each education level for the most recent (1995) cohort of graduates. Having about as many female as male self-employed postsecondary graduates represents a significant increase from earlier periods.<sup>7</sup>

Perhaps not unexpectedly, self-employment rates tend to be higher for older graduates. On the other hand, the overall shares of the self-employed tend to reflect the relative population shares of the different age groups by level of education. The ranks of the self-employed are, therefore, heavily dominated by younger graduates at the college and bachelor's levels, while there are greater numbers of older graduates among the self-employed at the master's and, especially, PhD levels.

There have been no shifts in the relative rates of self-employment by age over time. Such shifts might have been anticipated if the labour market had been turning against relatively younger (less experienced) workers and if these individuals had reacted by choosing self-employment. The patterns instead point to stability, with gradual evolution rather than significant change.

By field of study, rates of self-employment tend to be highest among health graduates (including doctors) at the three university levels, reflecting the employment status that is standard for these graduates. Applied science graduates are also characterized by relatively high rates in certain years for certain education groups, but this tendency is weaker and might reflect the random fluctuations that would be expected for these (and other) smaller groups of graduates. The majority of the self-employed are, in any event, in the social sciences and humanities and related (SSH) group, which generally dominates the population of graduates at all levels.

Along regional lines, Atlantic Canada is typically characterized by lower rates of self-employment than elsewhere in the country, while the higher-than-average jurisdictions tend to vary by year and education group—the Western provinces (Alberta, and British Columbia and the Northwest Territories) having the highest rates in some cases, Quebec and Ontario in others. It would be useful to probe this particular dimension of self-employment in greater detail, including the analysis of programs aimed at helping younger people establish their own businesses. But the results are again consistent with the greatest number of the self-employed being in that status by choice: rates are lowest in the Atlantic provinces where employment opportunities are generally the weakest in the country; if self-employment were an 'employment status of last resort,' one would expect higher, not lower, rates there.<sup>8</sup>

The patterns by occupation are perhaps not surprising, given that higher rates tend to be for the sales, service and recreation sector. This sector would be the natural domain of the self-employed, and would also reflect the health-related patterns driven by the medical professions noted above. It is difficult to attach significance to the patterns by industry.



Table 2

**Rate and distribution of self-employed workers for selected characteristics, by level of education – College graduates**

Category	1982 Cohort				1986 Cohort				1990 Cohort				1995 Cohort	
	1984		1987		1988		1991		1992		1995		1997	
	Rate of SE <sup>1</sup>	Dist. of SE <sup>2</sup>	Rate of SE	Dist. of SE	Rate of SE	Dist. of SE	Rate of SE	Dist. of SE	Rate of SE	Dist. of SE	Rate of SE	Dist. of SE	Rate of SE	Dist. of SE
	%													
<b>Sex</b>														
Men	5.1	61	7.4	61	4.9	65	8.1	65	4.5	53	8.5	53	7.8	53
Women	2.4	39	3.5	39	2.1	35	3.6	35	2.7	47	5.2	47	5.2	47
<b>Age</b>														
Younger than 27	2.6	60	3.8	51	2.9	67	4.6	44	2.8	54	5.3	35	5.5	51
27 to 29	6.4	13	7.0	23	4.6	12	6.7	28	3.7	11	6.7	24	7.3	15
30 to 34	10.1	14	9.0	13	2.8	5	6.2	12	5.9	15	7.9	17	6.5	10
35 and older	9.4	13	10.2	13	6.2	16	7.5	15	4.9	20	8.2	24	8.4	24
<b>Field of study</b>														
Pure science	3.0	20	4.5	20	2.9	18	4.2	15	3.1	17	7.3	22	5.6	20
Applied science	3.1	21	4.2	20	3.0	24	6.4	31	3.1	20	6.0	20	4.7	17
Engineering	6.0	10	11.6	11	6.4	10	12.9	11	8.3	10	13.4	9	13.0	10
Computer sci.	0.5	1	0.8	1	1.7	2	1.0	1	2.1	2	3.7	2	1.3	1
Health	2.7	10	3.2	7	2.9	13	4.7	12	2.1	11	5.4	15	4.7	15
SSH <sup>3</sup>	5.0	40	7.3	40	3.7	33	5.8	30	4.1	38	6.6	32	9.0	37
<b>Region</b>														
Atlantic	1.8	2	2.6	2	0.8	1	2.6	2	2.2	3	3.3	3	3.6	3
Quebec	2.2	16	3.0	15	2.6	20	4.1	18	2.2	17	4.1	19	4.0	13
Ontario	4.0	50	5.7	53	3.7	52	6.4	54	3.5	36	5.9	38	7.1	53
Prairies	3.9	6	4.0	4	2.6	4	3.9	3	3.4	5	6.6	5	3.5	3
Alberta	5.5	17	6.1	13	3.8	13	6.6	14	4.7	16	9.3	19	7.2	14
B.C. and N.W.T.	4.9	8	8.7	11	5.1	11	7.0	10	6.9	22	8.4	16	7.1	14
<b>Occupation</b>														
Manager	2.6	8	5.1	15	5.5	19	6.0	16	5.7	20	8.7	19	5.5	12
Applied Sc.	1.6	5	1.4	3	1.6	6	4.1	9	2.5	8	4.8	8	5.6	9
Teaching, Soc. work and Religion	1.6	3	1.6	2	1.7	4	2.3	4	1.0	3	2.1	3	5.6	8
Health and Diagnosis	2.0	11	2.9	10	2.2	13	2.5	8	1.1	7	0.8	3	4.3	9
Sales, Serv. and Recreation	9.0	42	12.3	38	7.0	32	12.3	32	6.8	33	15.5	39	10.7	40
Clerk and Production	3.1	31	4.8	32	2.6	26	5.6	30	3.4	29	6.5	28	4.6	22
<b>Industry</b>														
Primary	11.0	14	21.4	15	11.9	13	23.4	15	11.4	11	19.6	11	13.2	9
Manufacturing	1.1	5	2.8	9	1.5	7	2.8	8	2.0	7	5.0	10	1.8	4
Trade	3.7	15	6.5	17	3.5	13	7.3	15	3.9	13	10.4	17	6.5	15
Business Serv.	5.0	23	7.3	24	3.9	20	8.4	28	6.9	34	10.0	27	10.3	30
Health/Social Serv.	1.7	21	1.7	15	1.6	21	2.2	19	1.0	13	12.0	9	4.0	21
Personnel Serv.	9.6	23	15.3	20	10.7	25	11.7	15	8.0	22	20.2	27	9.8	21

**Notes:**

1. Rate of self-employment for each subcategory. The number of self-employed individuals in each subcategory is expressed as a percentage of the total number of individuals in the subcategory.
2. Distribution of self-employed individuals in each category. The number of self-employed individuals in each subcategory is expressed as a percentage of the total number of self-employed individuals in the category.
3. Social sciences and humanities and related.

**Source:** Statistics Canada, National Graduates Surveys.





Table 2 – Continued

**Rate and distribution of self-employed workers for selected characteristics, by level of education – Bachelor's graduates**

Category	1982 Cohort				1986 Cohort				1990 Cohort				1995 Cohort	
	1984		1987		1988		1991		1992		1995		1997	
	Rate of SE <sup>1</sup>	Dist. of SE <sup>2</sup>	Rate of SE	Dist. of SE	Rate of SE	Dist. of SE	Rate of SE	Dist. of SE	Rate of SE	Dist. of SE	Rate of SE	Dist. of SE	Rate of SE	Dist. of SE
	%													
<b>Sex</b>														
Men	7.8	67	11.7	61	7.5	64	10.9	59	7.5	59	12.7	58	7.2	47
Women	3.7	33	6.5	39	3.5	36	6.2	41	4.2	41	7.2	42	5.7	53
<b>Age</b>														
Younger than 27	4.3	45	6.1	14	4.0	43	5.0	9	4.5	9	7.2	7	5.3	44
27 to 29	10.2	31	8.5	46	8.6	24	8.8	49	7.8	49	8.1	42	7.6	23
30 to 34	9.3	16	15.4	26	7.4	14	12.4	25	7.3	25	13.4	31	9.0	15
35 and older	3.8	9	7.8	14	5.5	19	6.4	17	6.6	17	10.4	20	6.1	17
<b>Field of study</b>														
Pure science	3.1	2	4.3	2	1.9	1	4.4	2	4.6	2	3.6	1	6.4	3
Applied science	9.3	8	13.5	7	8.6	7	10.1	6	6.7	6	13.8	7	6.6	5
Engineering	2.4	4	4.4	4	3.4	6	4.6	5	4.3	5	6.7	5	5.2	6
Computer sci.	3.1	1	4.3	1	3.4	3	7.8	4	3.4	4	6.1	2	7.3	3
Health	15.4	24	23.6	22	10.9	19	21.1	21	10.7	21	20.1	17	6.8	9
SSH <sup>3</sup>	4.9	61	7.8	63	4.9	64	7.4	62	5.3	62	8.9	68	6.3	74
<b>Region</b>														
Atlantic	5.9	8	8.4	8	2.8	4	5.2	4	3.7	5	5.2	4	4.5	5
Quebec	5.9	31	8.6	28	5.7	40	8.3	35	5.4	24	8.6	22	6.6	34
Ontario	5.4	33	8.8	38	4.9	35	8.4	37	5.2	40	8.8	40	6.0	37
Prairies	6.5	9	8.6	8	4.7	7	8.9	8	4.3	7	8.0	6	5.7	7
Alberta	5.7	10	8.6	10	4.3	6	8.3	8	4.9	10	11.7	13	5.2	7
B.C. and N.W.T.	7.5	9	10.9	9	6.3	8	10.2	9	7.9	15	13.6	15	7.3	10
<b>Occupation</b>														
Manager	3.5	11	5.3	13	5.6	22	7.3	21	5.2	21	7.4	19	5.1	18
Applied Sc.	2.5	6	4.8	6	3.2	8	4.4	7	2.7	7	6.5	7	6.6	11
Teaching, Soc. work and Religion	4.1	22	7.0	28	2.8	16	4.1	16	2.5	16	5.8	21	4.3	19
Health and Diagnosis	13.9	25	24.3	24	9.6	20	19.1	24	10.4	24	21.0	20	7.8	11
Sales, Serv. and Recreation	10.5	21	14.3	19	9.9	21	20.0	25	13.3	25	18.4	23	11.6	26
Clerk and Production	6.0	14	9.0	10	5.3	14	6.8	8	5.3	8	9.6	9	5.8	13
<b>Industry</b>														
Primary	12.9	8	20.3	6	13.6	6	21.1	5	14.9	5	25.8	6	11.2	4
Manufacturing	1.7	3	1.2	1	2.1	4	3.6	4	2.3	4	3.8	4	4.2	6
Trade	7.5	12	10.0	9	6.4	9	12.1	10	6.8	10	10.2	8	6.3	9
Business Serv.	9.6	32	19.8	41	8.3	35	14.9	38	8.2	38	17.6	41	10.1	40
Health/Social Serv.	4.0	35	5.2	30	2.5	24	4.8	31	3.0	31	4.9	28	3.6	27
Personnel Serv.	8.7	10	16.1	12	17.6	21	18.3	12	13.4	12	21.8	14	11.3	15

**Notes:**

1. Rate of self-employment for each subcategory. The number of self-employed individuals in each subcategory is expressed as a percentage of the total number of individuals in the subcategory.
2. Distribution of self-employed individuals in each category. The number of self-employed individuals in each subcategory is expressed as a percentage of the total number of self-employed individuals in the category.
3. Social sciences and humanities and related.

**Source:** Statistics Canada, National Graduates Surveys.



Table 2 – Continued

**Rate and distribution of self-employed workers for selected characteristics, by level of education – Masters' graduates**

Category	1982 Cohort				1986 Cohort				1990 Cohort				1995 Cohort	
	1984		1987		1988		1991		1992		1995		1997	
	Rate of SE <sup>1</sup>	Dist. of SE <sup>2</sup>	Rate of SE	Dist. of SE	Rate of SE	Dist. of SE	Rate of SE	Dist. of SE	Rate of SE	Dist. of SE	Rate of SE	Dist. of SE	Rate of SE	Dist. of SE
	%													
<b>Sex</b>														
Men	6.7	66	8.9	66	8.3	60	11.4	62	6.9	54	9.8	55	12.0	52
Women	4.8	34	6.8	34	6.7	40	8.7	38	6.2	46	8.4	45	9.7	48
<b>Age</b>														
Younger than 27	6.0	9	5.1	0	6.4	10	10.2	1	2.3	3	–	0	6.5	6
27 to 29	5.7	23	6.8	13	5.1	15	7.5	10	5.7	21	4.0	4	8.7	20
30 to 34	6.2	31	7.9	35	10.0	34	11.4	39	6.5	25	9.5	37	11.2	25
35 and older	5.8	37	8.6	51	7.6	40	10.0	50	7.9	51	9.8	59	12.7	49
<b>Field of study</b>														
Pure science	2.0	1	2.8	1	5.3	2	5.4	2	4.9	3	6.3	2	4.4	1
Applied science	10.5	6	6.8	3	5.7	2	10.0	3	5.9	4	8.1	4	14.0	5
Engineering	5.1	6	6.5	5	4.2	5	5.9	5	5.2	6	7.5	6	7.3	7
Computer sci.	5.6	1	5.6	1	7.2	2	5.6	1	1.5	0	8.6	2	7.3	1
Health	13.4	16	22.6	19	17.8	20	25.1	23	11.6	10	16.1	10	16.9	14
SSH <sup>3</sup>	5.3	71	7.2	71	6.9	70	9.1	66	6.6	78	9.0	77	10.8	72
<b>Region</b>														
Atlantic	2.1	3	4.3	4	4.7	4	6.7	5	2.7	3	3.0	3	7.3	5
Quebec	7.9	41	9.4	37	10.2	41	11.3	33	6.3	28	7.4	25	13.2	36
Ontario	4.4	31	5.5	32	5.6	31	8.4	34	4.1	25	7.7	35	10.0	35
Prairies	5.2	5	6.8	5	3.3	2	5.9	3	6.7	7	8.2	6	8.6	5
Alberta	6.9	10	7.0	8	9.4	10	15.5	14	13.4	18	17.3	18	10.3	7
B.C. and N.W.T.	7.0	10	12.3	13	8.9	10	15.5	12	10.8	19	10.1	14	12.3	12
<b>Occupation</b>														
Manager	4.5	21	6.9	27	7.1	27	7.3	23	5.3	24	7.1	26	7.4	21
Applied Sc.	4.9	11	6.7	10	5.5	11	8.1	12	6.2	16	9.5	15	9.7	15
Teaching, Soc. work and Religion	3.4	26	4.2	22	4.4	23	6.0	22	4.3	26	5.7	23	8.4	26
Health and Diagnosis	15.4	16	25.2	20	23.7	22	33.5	27	16.1	13	26.0	14	21.1	15
Sales, Serv. and Recreation	24.2	22	25.7	18	18.1	13	28.2	12	21.5	18	29.2	18	28.0	19
Clerk and Production	7.3	5	9.9	4	8.4	4	11.4	4	5.8	3	9.3	3	10.2	4
<b>Industry</b>														
Primary	6.3	2	6.6	1	15.0	3	12.4	2	8.8	2	11.3	2	9.1	1
Manufacturing	3.7	5	4.9	4	5.5	5	5.2	4	3.7	4	5.4	4	4.4	3
Trade	19.4	10	18.9	6	7.4	3	16.0	5	15.5	5	19.9	5	13.5	3
Business Serv.	13.7	34	23.3	39	16.8	38	23.4	38	15.2	46	21.6	46	18.2	40
Health/Social Serv.	3.4	38	4.5	38	4.9	41	7.2	46	3.5	33	4.8	33	7.7	41
Personnel Serv.	18.2	11	25.4	11	15.6	9	18.0	6	15.3	10	21.9	10	23.6	11

**Notes:**

– Too few observations to report.

1. Rate of self-employment for each subcategory. The number of self-employed individuals in each subcategory is expressed as a percentage of the total number of individuals in the subcategory.

2. Distribution of self-employed individuals in each category. The number of self-employed individuals in each subcategory is expressed as a percentage of the total number of self-employed individuals in the category.

3. Social sciences and humanities and related.

**Source:** Statistics Canada, National Graduates Surveys.





Table 2 – Concluded

**Rate and distribution of self-employed workers for selected characteristics, by level of education – PhD graduates**

Category	1982 Cohort				1986 Cohort				1990 Cohort				1995 Cohort	
	1984		1987		1988		1991		1992		1995		1997	
	Rate of SE <sup>1</sup>	Dist. of SE <sup>2</sup>	Rate of SE	Dist. of SE	Rate of SE	Dist. of SE	Rate of SE	Dist. of SE	Rate of SE	Dist. of SE	Rate of SE	Dist. of SE	Rate of SE	Dist. of SE
	%													
<b>Sex</b>														
Men	4.7	65	6.3	73	6.0	48	6.6	48	8.8	65	9.7	61	6.9	50
Women	6.5	35	5.9	27	13.2	52	14.2	52	9.0	35	11.6	39	13.3	50
<b>Age</b>														
Younger than 27	–	–	–	0	70.0	34	–	0	–	7	–	0	7.7	4
27 to 29	0	–	–	0	8.0	7	68.9	35	23.4	25	–	6	14.6	4
30 to 34	2.5	20	1.6	8	5.1	23	6.1	15	4.7	19	11.2	26	6.0	23
35 and older	8.1	80	8.3	92	5.9	35	6.2	50	8.2	49	9.4	68	10.6	69
<b>Field of study</b>														
Pure science	0.1	2	1.7	4	3.2	5	5.9	8	16.4	5	3.6	5	5.3	9
Applied science	2.4	6	0	0	4.5	5	2.5	2	22.0	7	4.4	5	12.7	17
Engineering	5.1	10	5.7	9	6.6	7	7.0	7	21.0	8	7.7	10	4.0	7
Computer sci.	–	–	–	0	–	–	–	–	–	2	–	1	–	4
Health	4.1	5	12.7	13	34.8	39	35.1	36	33.3	39	34.9	32	8.7	9
SSH <sup>3</sup>	7.1	76	8.0	74	6.3	44	7.2	47	7.6	39	10.2	46	10.9	54
<b>Region</b>														
Atlantic	–	–	–	–	1.8	1	1.4	1	7.5	5	6.4	5	2.0	1
Quebec	1.9	8	3.7	14	21.7	55	22.6	55	5.1	15	4.6	12	11.7	31
Ontario	5.2	49	6.9	64	4.4	25	5.3	26	10.3	44	12.1	49	7.5	34
Prairies	10.7	14	7.7	10	2.8	2	2.5	2	5.3	3	4.7	3	11.2	8
Alberta	7.0	19	3.1	6	8.2	8	7.7	8	14.2	17	14.2	16	8.7	11
B.C. and N.W.T.	7.9	10	4.5	6	9.3	9	7.6	8	14.6	16	14.1	16	10.6	15
<b>Occupation</b>														
Manager	13.6	27	13.5	34	7.6	7	5.9	7	9.1	9	10.0	12	16.0	18
Applied Sc. Teaching, Soc.	2.8	12	3.0	9	4.7	11	5.2	10	6.6	17	6.4	14	8.4	23
work and Religion	3.8	43	3.5	34	4.9	36	5.2	35	4.2	27	6.2	33	4.7	29
Health and Diagnosis	3.1	2	–	7	46.8	39	55.1	38	49.2	40	50.7	34	27.3	18
Sales, Serv. and Recreation	26.8	9	–	14	–	1	–	5	–	5	–	7	43.4	11
Clerk and Production	16.7	6	–	3	–	6	–	4	–	1	–	1	–	1
<b>Industry</b>														
Primary	–	–	–	0	–	2	–	–	–	1	–	1	–	6
Manufacturing	–	12	–	6	0	0	0	–	4.4	2	7.3	4	2.4	2
Trade	–	6	–	0	–	1	–	1	–	1	–	0	–	1
Business Serv.	20.2	38	26.6	42	32.1	34	34.2	37	21.3	25	20.5	21	24.0	42
Health/Social Serv.	2.4	38	3.7	49	6.1	60	6.6	57	7.3	67	9.1	69	5.4	43
Personnel Serv.	13.2	6	9.5	3	13.8	3	14.5	4	20.1	3	32.1	4	28.6	6

**Notes:**

– Too few observations to report.

1. Rate of self-employment for each subcategory. The number of self-employed individuals in each subcategory is expressed as a percentage of the total number of individuals in the subcategory.

2. Distribution of self-employed individuals in each category. The number of self-employed individuals in each subcategory is expressed as a percentage of the total number of self-employed individuals in the category.

3. Social sciences and humanities and related.

**Source:** Statistics Canada, National Graduates Surveys.

## Earnings

One important way to evaluate self-employment status relative to regular paid positions is to compare earnings levels. This is done on a cross-sectional basis by sex and level of education in Table 3a. The earnings measure (in constant 1997 dollars) available in the first six NGS databases (1984 through 1995) represents what the individual reported he or she would earn on an annual basis were the current job (at the time of the interview) to last the whole year, regardless of the *actual* work pattern (i.e., number of weeks worked). For the final interview (1997), however, individuals were asked to report their rate of pay in the manner they preferred (hourly, daily, weekly, etc.), along with the usual hours of work, from which an annual measure was constructed. While the two measures are conceptually similar and might be expected to give comparable amounts, in practice and empirically the distributions of earnings vary. This means that direct comparisons of the earlier periods with the last one should be made with caution.

The earnings measure is somewhat ambiguous with respect to self-employed workers because no instructions were provided as to how gross versus net amounts should be reported. The potential tax advantages available to the self-employed further complicate the issue. Since self-employment, which can involve periods of non-working between contracts, tends to be more volatile than paid work, an earnings projection over the entire year for those

currently working might well overestimate self-employment earnings relative to paid work.

The results, however, are interesting. They show that the earnings levels of the self-employed are generally, although not uniformly, higher than those of regular paid workers, and in many cases the differences are quite large. This finding holds at all education levels, and for male bachelor's graduates with doctors and lawyers (who tend to be self-employed and have higher earnings) both included and excluded. The findings do not generally hold as uniformly among women, especially for the bachelor's graduates when the doctors and lawyers are omitted.

Table 3b shows similar advantages for the self-employed with respect to the earnings patterns according to individuals' job status at the two interviews. As indicated, changing from a paid job to self-employment ('Paid-Self' in Table 3b) typically results in an increase in earnings: that is, earnings growth (in the 'Mean difference' columns) tends to be greater for these individuals than for those who make the reverse switch or remain in paid work over both periods.

Thus, despite the caveats associated with the earnings measure, the findings generally go against the notion that self-employment is a disadvantaged job status—and generally indicate the reverse. Furthermore, there is no evidence that there has been any sort of deterioration in the situation of the self-employed over time.



Table 3a  
Mean earnings,<sup>1</sup> by status, sex and level of education

Level of education	1982 Cohort				1986 Cohort				1990 Cohort				1995 Cohort	
	1984		1987		1988		1991		1992		1995		1997	
	P <sup>2</sup>	SE <sup>3</sup>	P	SE	P	SE	P	SE	P	SE	P	SE	P	SE
\$ constant 1997														
<b>All</b>														
Men	36,600 (72)	54,000 (748)	43,700 (80)	68,900 (711)	36,600 (68)	57,400 (744)	43,000 (66)	60,600 (597)	36,300 (71)	47,200 (626)	43,000 (78)	53,900 (534)	31,300 (76)	34,200 (439)
Women	31,200 (58)	34,000 (659)	35,300 (59)	50,600 (854)	32,400 (57)	45,500 (1,011)	36,900 (53)	48,200 (751)	33,300 (60)	45,300 (822)	37,400 (59)	44,300 (608)	26,300 (59)	29,000 (450)
<b>College</b>														
Men	30,200 (90)	41,100 (1,268)	36,940 (103)	50,300 (1,089)	30,700 (87)	46,100 (1,160)	36,900 (82)	49,300 (1,098)	30,600 (90)	31,000 (878)	36,500 (100)	35,200 (647)	26,300 (103)	28,200 (651)
Women	25,700 (69)	28,200 (946)	28,800 (67)	44,700 (1,676)	26,900 (77)	27,900 (1,109)	30,200 (66)	31,600 (894)	27,900 (88)	34,600 (1,686)	30,600 (75)	29,200 (628)	20,600 (72)	19,300 (512)
<b>Bachelor's (including physicians and lawyers)</b>														
Men	37,300 (92)	57,000 (936)	45,000 (106)	74,700 (920)	37,500 (89)	59,400 (1,005)	44,000 (86)	61,900 (761)	36,100 (88)	48,200 (753)	43,100 (97)	57,900 (679)	31,900 (100)	33,300 (509)
Women	33,700 (77)	34,100 (810)	38,300 (76)	52,900 (1,058)	34,200 (72)	50,600 (1,416)	39,500 (65)	51,600 (966)	34,200 (73)	45,900 (1,000)	39,000 (73)	47,300 (785)	27,500 (75)	28,600 (487)
<b>Bachelor's (excluding physicians and lawyers)</b>														
Men	37,000 (92)	42,800 (751)	44,500 (106)	55,100 (975)	36,900 (85)	47,900 (978)	43,200 (82)	44,800 (650)	35,500 (87)	42,000 (731)	42,200 (90)	49,500 (658)	31,900 (100)	33,300 (509)
Women	33,500 (78)	28,400 (669)	37,900 (75)	35,700 (817)	33,800 (71)	39,000 (1,218)	39,100 (64)	37,200 (821)	34,000 (74)	35,000 (824)	38,400 (67)	36,000 (585)	27,500 (75)	28,600 (487)
<b>Master's</b>														
Men	52,300 (244)	65,600 (2,575)	57,700 (264)	78,600 (2,216)	51,400 (262)	71,800 (2,980)	55,900 (262)	76,600 (1,683)	51,300 (271)	65,500 (2,320)	57,700 (297)	65,100 (1,859)	46,300 (337)	55,300 (1,955)
Women	45,900 (265)	46,100 (2,727)	49,700 (277)	48,900 (2,595)	46,500 (253)	53,700 (2,941)	49,800 (244)	57,800 (2,497)	47,200 (216)	55,300 (2,422)	51,500 (228)	59,700 (2,197)	41,400 (282)	53,800 (2,277)
<b>PhD</b>														
Men	51,200 (612)	–	56,800 (693)	–	49,600 (588)	–	55,000 (598)	74,200 (4,586)	49,300 (494)	68,200 (3,823)	56,500 (476)	74,200 (3,905)	43,500 (572)	43,300 (3,247)
Women	48,300 (951)	–	50,900 (872)	–	47,400 (817)	58,000 (4,026)	52,900 (851)	64,400 (4,702)	49,500 (822)	68,100 (5,407)	54,600 (717)	–	42,800 (855)	59,100 (4,091)

**Notes:**

– Too few observations to report.

Parentheses indicate standard errors.

1. Details on the earnings measure are provided in the Appendix.

2. Paid workers. Sample includes individuals working full time for reasonable earnings (see text for further details).

3. Self-employed workers.

Source: Statistics Canada, National Graduates Surveys.



Table 3b  
Change in earnings from first to second interview, by status and level of education

	1982 Cohort			1986 Cohort			1990 Cohort		
	1984	1987	Mean difference	1988	1991	Mean difference	1992	1995	Mean difference
\$ constant 1997									
<b>College</b>									
Paid–Paid <sup>1</sup>	27,900	32,900	5,300	28,700	33,600	5,100	29,600	33,700	4,000
Self–Self <sup>1</sup>	43,000	56,900	12,600	44,200	57,300	14,000	38,800	35,300	(6,000)
Self–Paid <sup>1</sup>	29,100	31,000	0	29,200	31,500	0	25,300	30,400	6,400
Paid–Self <sup>1</sup>	27,100	39,600	12,300	30,900	38,100	7,900	26,500	32,800	5,900
<b>Bachelor's</b>									
Paid–Paid	36,500	42,300	6,400	36,200	41,900	6,400	36,100	41,000	5,600
Self–Self	36,300	59,200	20,200	50,400	51,400	6,300	40,000	50,700	14,100
Self–Paid	38,800	40,600	2,900	36,300	40,700	8,300	40,900	38,000	(5,500)
Paid–Self	33,300	43,100	11,600	34,200	44,200	10,400	36,800	46,200	12,600
<b>Master's</b>									
Paid–Paid	50,800	55,700	5,100	49,600	54,800	6,900	50,600	56,100	5,300
Self–Self	64,300	73,800	8,800	74,700	73,200	2,900	65,300	73,700	13,300
Self–Paid	55,400	45,700	0	59,800	56,600	(1,800)	61,800	56,700	(1,600)
Paid–Self	54,700	76,000	21,000	57,400	72,300	13,100	48,400	56,600	5,400
<b>PhD</b>									
Paid–Paid	51,400	56,300	4,800	49,600	55,300	6,000	50,600	56,300	5,800
Self–Self	–	–	–	–	70,000	–	77,000	76,000	2,200
Self–Paid	–	–	–	–	–	–	–	–	–
Paid–Self	–	–	–	–	–	–	50,100	–	–

**Note:**

– Too few observations to report.

1. Indicates status (self-employed or paid) at the first and second interviews, respectively.

Source: Statistics Canada, National Graduates Surveys.

### Job skills–education match

The job skills–education match measure is represented by an index of the extent to which the skills learned during the education program were being used in the current job (see the Appendix).<sup>9</sup>

While the differences in the indices between paid and self-employed workers are generally not large, more than twice as many of the more significant cases (with a difference of at least three points) favour self-employed

over paid workers. Again, there is no clear shift in this pattern over time. Furthermore, the results in Table 4b (analogous to Table 3b in the case of earnings) show an advantage for those who move to self-employment from a regular paid position in the majority of cases that are reported. In summary, the findings suggest that, on average, self-employment offers at least as many (and maybe more) opportunities for individuals to employ the talents they learned in their postsecondary educational programs as regular paid positions.

Table 4a  
Job skills–education match, by status, sex and level of education

	1982 Cohort				1986 Cohort				1990 Cohort				1995 Cohort	
	1984		1987		1988		1991		1992		1995		1997	
	P <sup>1</sup>	SE <sup>2</sup>	P	SE	P	SE	P	SE	P	SE	P	SE	P	SE
	index <sup>3</sup>													
<b>All</b>														
Men	81	N/A	86	88	84	85 <sup>a</sup>	87	87	71	72	70	73	65	N/A
Women	84	N/A	87	90	86	86 <sup>a</sup>	87	85 <sup>a</sup>	74	80	73	76	66	N/A
<b>College</b>														
Men	77	N/A	82	80 <sup>a</sup>	83	80	86	85	70	73 <sup>a</sup>	69	70	65	N/A
Women	86	N/A	88	86 <sup>a</sup>	88	84	88	85	77	80 <sup>a</sup>	75	72	67	N/A
<b>Bachelor's</b>														
Men	82	N/A	86	90	83	86	86	86	69	71	69	74	64	N/A
Women	82	N/A	86	91	84	85	85	84	71	78	71	78	63	N/A
<b>Master's</b>														
Men	90	N/A	92	94 <sup>a</sup>	91	93 <sup>a</sup>	93	92 <sup>a</sup>	78	74 <sup>a</sup>	77	76 <sup>a</sup>	73	N/A
Women	90	N/A	93	92 <sup>a</sup>	92	95 <sup>a</sup>	94	94 <sup>a</sup>	81	81 <sup>a</sup>	80	78 <sup>a</sup>	77	N/A
<b>PhD</b>														
Men	–	N/A	98	–	96	90	97	95 <sup>b</sup>	90	90 <sup>b</sup>	89	82 <sup>b</sup>	84	N/A
Women	–	N/A	98	–	95	100 <sup>c</sup>	97	100	90	94 <sup>a</sup>	89	90 <sup>b</sup>	86 <sup>a</sup>	N/A

**Notes:**

– Too few observations to report.

N/A Self-employed workers were not asked about job skills–education match during this period.

1. Paid workers.

2. Self-employed workers.

3. A detailed description of how the job skills–education match index was constructed is provided in the Appendix.

The figures here represent the mean value of these scores. The indices with no letter superscript have standard errors below 1;

a indicates standard errors between 1 and 2; b indicates standard errors between 2 and 3; c indicates standard errors greater than 3.

Source: Statistics Canada, National Graduates Surveys.



Table 4b  
**Change in job skills–education match from first to second interview, by status and level of education**

	1982 Cohort			1986 Cohort			1990 Cohort		
	1984	1987	Mean difference <sup>1</sup>	1988	1991	Mean difference	1992	1995	Mean difference
	index <sup>2</sup>								
<b>College</b>									
Paid–Paid <sup>3</sup>	84	87	3	87	88	1	77	74	-3
Self–Self <sup>3</sup>	–	–	–	87 <sup>b</sup>	89 <sup>b</sup>	2 <sup>b</sup>	80 <sup>c</sup>	79 <sup>b</sup>	-1 <sup>b</sup>
Self–Paid <sup>3</sup>	–	–	–	80 <sup>c</sup>	71 <sup>c</sup>	-9 <sup>c</sup>	75 <sup>c</sup>	64 <sup>c</sup>	-11 <sup>c</sup>
Paid–Self <sup>3</sup>	76 <sup>c</sup>	81 <sup>c</sup>	4 <sup>c</sup>	86 <sup>b</sup>	87 <sup>b</sup>	0 <sup>b</sup>	67 <sup>b</sup>	66 <sup>b</sup>	-1 <sup>c</sup>
<b>Bachelor's</b>									
Paid–Paid	84	87	3	86	87	1	73	71	-1
Self–Self	–	–	–	87 <sup>b</sup>	89 <sup>b</sup>	2 <sup>b</sup>	78 <sup>b</sup>	78 <sup>b</sup>	0 <sup>b</sup>
Self–Paid	–	–	–	83 <sup>c</sup>	87 <sup>c</sup>	4 <sup>c</sup>	72 <sup>c</sup>	67 <sup>c</sup>	-5 <sup>c</sup>
Paid–Self	83 <sup>b</sup>	93 <sup>a</sup>	10 <sup>b</sup>	80 <sup>b</sup>	84 <sup>b</sup>	4 <sup>b</sup>	73 <sup>a</sup>	75 <sup>a</sup>	2 <sup>b</sup>
<b>Master's</b>									
Paid–Paid	87	94	3	92	94	2	81	79	-2
Self–Self	–	–	–	95 <sup>b</sup>	94 <sup>a</sup>	-1 <sup>b</sup>	80 <sup>b</sup>	81 <sup>a</sup>	1 <sup>a</sup>
Self–Paid	–	–	–	91 <sup>c</sup>	88 <sup>c</sup>	-3 <sup>c</sup>	80 <sup>c</sup>	76 <sup>c</sup>	-3 <sup>c</sup>
Paid–Self	87 <sup>c</sup>	88 <sup>c</sup>	1 <sup>c</sup>	88 <sup>b</sup>	92 <sup>b</sup>	4 <sup>b</sup>	69 <sup>b</sup>	76 <sup>b</sup>	7 <sup>b</sup>
<b>PhD</b>									
Paid–Paid	95	99	3 <sup>a</sup>	95	97	2	90	90	0
Self–Self	–	–	–	100	100	0	93 <sup>a</sup>	91 <sup>b</sup>	-2 <sup>a</sup>
Self–Paid	–	–	–	–	–	–	85 <sup>c</sup>	83 <sup>c</sup>	-2 <sup>c</sup>
Paid–Self	–	–	–	–	–	–	88 <sup>c</sup>	78 <sup>c</sup>	-10 <sup>c</sup>

**Notes:**

– Too few observations to report.

1. The mean difference between the job skills–education match index levels of the first and second interviews.

2. A detailed description of how the job skills–education match index was constructed is provided in the Appendix.

The figures here represent the mean value of these scores. The indices with no letter superscript have standard errors below 1;

a indicates standard errors between 1 and 2; b indicates standard errors between 2 and 3; c indicates standard errors greater than 3.

3. Indicates status (self-employed or paid) at the first and second interviews, respectively.

**Source:** Statistics Canada, National Graduates Surveys.

## Overall job satisfaction

The NGS databases contain information on the individuals' overall evaluation of the current job. The index used here, similar to that constructed for the job skills–education match, is based on individuals' responses to a direct question in

this regard (as described in the Appendix). This information is subjective, but it is useful as an indicator of the overall quality of the jobs held by self-employed versus regular paid employees.



Table 5a  
Job satisfaction, by status, sex and level of education

	1982 Cohort				1986 Cohort				1990 Cohort				1995 Cohort	
	1984		1987		1988		1991		1992		1995		1997	
	P <sup>1</sup>	SE <sup>2</sup>	P	SE	P	SE	P	SE	P	SE	P	SE	P	SE
	index <sup>3</sup>													
<b>All</b>														
Men	77	N/A	80	88	78	86	80	85	80	86	80	81	78	N/A
Women	77	N/A	78	86	77	85	87	85 <sup>a</sup>	79	86	79	84	77	N/A
<b>College</b>														
Men	74	N/A	78	84	77	88	79	85	79	86	78	82	77	N/A
Women	78	N/A	77	84	78	82	78	83	80	87	78	86	77	N/A
<b>Bachelor's</b>														
Men	78	N/A	80	89	78	85	80	85	79	85	78	80	79	N/A
Women	77	N/A	79	86	77	84	80	85	78	86	80	83	76	N/A
<b>Master's</b>														
Men	81	N/A	82	90	82	86	84	86	83	86 <sup>a</sup>	83	84	80	N/A
Women	81	N/A	81	89 <sup>a</sup>	81	90	82	88 <sup>a</sup>	83	86 <sup>a</sup>	82	82	79	N/A
<b>PhD</b>														
Men	82	N/A	84	–	84	90	85	86 <sup>b</sup>	85	88 <sup>a</sup>	85	83 <sup>b</sup>	82	N/A
Women	85	N/A	85	–	83	92	83 <sup>a</sup>	84 <sup>b</sup>	86	95 <sup>a</sup>	85	87 <sup>b</sup>	81	N/A

### Notes:

– Too few observations to report.

N/A Self-employed workers were not asked about job satisfaction during this period.

1. Paid workers.

2. Self-employed workers.

3. A detailed description of how the job satisfaction index was constructed is provided in the Appendix.

The figures here represent the mean value of these scores. The indices with no letter superscript have standard errors below 1;

a indicates standard errors between 1 and 2; b indicates standard errors between 2 and 3; c indicates standard errors greater than 3.

Source: Statistics Canada, National Graduates Surveys.

The results shown in Table 5a suggest that job satisfaction has generally been greater among the self-employed than among regular paid employees. This pattern holds at all levels and equally for male and female graduates. As for trends over time, the advantage of the self-employed is not as great in the 1995 data.<sup>10</sup> There may have been a further shift in this regard in recent years; only later surveys

will be able to cast additional light on this issue. The ‘mover-stayer’ results shown in Table 5b indicate that self-employment tends to lead to greater job satisfaction: individuals moving into such positions typically show substantial increases in their overall job satisfaction relative to those who remain in paid positions both periods.



Table 5b  
Change in job satisfaction from first to second interview, by status and level of education

	1982 Cohort			1986 Cohort			1990 Cohort		
	1984	1987	Mean difference <sup>1</sup>	1988	1991	Mean difference	1992	1995	Mean difference
	index <sup>2</sup>								
<b>College</b>									
Paid–Paid	78	78	0	78	79	0	81	78	-3
Self–Self	–	–	–	89 <sup>a</sup>	86 <sup>a</sup>	-3 <sup>b</sup>	90 <sup>a</sup>	84 <sup>a</sup>	-6 <sup>a</sup>
Self–Paid	–	–	–	80 <sup>b</sup>	74 <sup>c</sup>	-6 <sup>c</sup>	79 <sup>c</sup>	77 <sup>b</sup>	-1 <sup>c</sup>
Paid–Self	71 <sup>b</sup>	82 <sup>a</sup>	11 <sup>b</sup>	76 <sup>a</sup>	86 <sup>a</sup>	9 <sup>a</sup>	76 <sup>b</sup>	84 <sup>a</sup>	9 <sup>b</sup>
<b>Bachelor’s</b>									
Paid–Paid	78	80	2	78	80	2	81	80	-1
Self–Self	–	–	–	86 <sup>a</sup>	85 <sup>a</sup>	0 <sup>a</sup>	89 <sup>a</sup>	84 <sup>a</sup>	-5 <sup>a</sup>
Self–Paid	–	–	–	82 <sup>b</sup>	83 <sup>b</sup>	1 <sup>b</sup>	80 <sup>b</sup>	83 <sup>b</sup>	2 <sup>c</sup>
Paid–Self	73 <sup>b</sup>	90 <sup>a</sup>	17 <sup>b</sup>	80 <sup>a</sup>	85 <sup>a</sup>	5 <sup>a</sup>	76 <sup>a</sup>	83 <sup>a</sup>	7 <sup>a</sup>
<b>Master’s</b>									
Paid–Paid	82	82	0	82	83	1	84	83	-2
Self–Self	–	–	–	89 <sup>b</sup>	85 <sup>a</sup>	-3 <sup>a</sup>	88 <sup>a</sup>	84 <sup>a</sup>	-3 <sup>a</sup>
Self–Paid	–	–	–	87 <sup>b</sup>	83 <sup>b</sup>	-4 <sup>c</sup>	83 <sup>b</sup>	79 <sup>c</sup>	-4 <sup>c</sup>
Paid–Self	74	90 <sup>a</sup>	19 <sup>c</sup>	79 <sup>b</sup>	89 <sup>a</sup>	10 <sup>b</sup>	75 <sup>b</sup>	82 <sup>a</sup>	7 <sup>b</sup>
<b>PhD</b>									
Paid–Paid	84 <sup>c</sup>	85	0 <sup>a</sup>	85	85	0	87	85	-2
Self–Self	–	–	–	92 <sup>b</sup>	88 <sup>b</sup>	-5 <sup>b</sup>	95 <sup>a</sup>	87 <sup>b</sup>	-7 <sup>a</sup>
Self–Paid	–	–	–	–	–	–	84 <sup>c</sup>	81 <sup>c</sup>	-2 <sup>c</sup>
Paid–Self	–	–	–	–	–	–	75 <sup>c</sup>	80 <sup>c</sup>	5 <sup>c</sup>

**Notes:**

– Too few observations to report.

1. The mean difference between the job satisfaction index levels of the first and second interviews.

2. A detailed description of how the job satisfaction index was constructed is provided in the Appendix.

The figures here represent the mean value of these scores. The indices with no letter superscript have standard errors below 1;

a indicates standard errors between 1 and 2; b indicates standard errors between 2 and 3; c indicates standard errors greater than 3.

**Source:** Statistics Canada, National Graduates Surveys.



## Conclusion

The research reported here uses the National Graduates Surveys to investigate the self-employment phenomenon among recent Canadian postsecondary graduates. The first important finding is that self-employment rates were relatively constant across the first three sets of graduates (who finished their programs in 1982, 1986 and 1990), varying from 6.5% to 11.1% for men, and from 3.2% to 6.7% for women. In the most recent cohort (1995 graduates), these tended to be somewhat higher for some (but not all) groups defined by sex and level of education. Therefore, there is some evidence of an upward trend, but one that is smaller and more recent than might have been expected.

The second major finding is that the evidence regarding employment rates, job satisfaction and the job skills–education match suggests that self-employment status appears to be associated more with enhanced labour market outcomes than with limited availability of regular paid positions.

It could even be suggested that ‘setting up shop’ should be encouraged among young postsecondary graduates. Before doing so, however, it would be desirable to have further research conducted to help us better understand the self-employment status of these labour market starters. The results reported here are but a start in this direction.

## Appendix

### Construction of the variables used in the analysis

**Earnings:** The first three cohorts (1982, 1986 and 1990 graduates) were asked the following question: “Working your usual number of hours, approximately what would be your annual earnings before taxes and deductions at that job?” Based on their answers to this question, values were converted into 1997 constant dollars and capped at \$147,702, the lowest cap employed across the various interviews. For the fourth cohort (1997 interview), the measure was based on three questions that asked the individual to i) identify the easiest way to report his or her earnings (yearly, monthly, weekly, hourly, or on some other basis); ii) give the actual before-tax earnings on the indicated basis; and iii) report the usual number of hours of work at the job (the average of the last four weeks if it varies). These answers were used to construct annual totals (1997 dollars, capped). The measure was then constructed in a consistent fashion across the first six interviews, but was not directly comparable between these and the last period because of the changed construction of the variable in that year.

**The job skills–education match:** The first three cohorts (1982, 1986 and 1990 graduates) were asked the following

question: “Do you use any of the skills acquired through the education program in your job?” To reduce the associated categorical responses to simple scalar indices, for the 1982 and 1986 cohorts the available responses of ‘no’ and ‘yes’ were assigned values of 0 and 100, respectively; for the 1990 cohort, the values of 0 (‘not at all’), 33 1/3 (‘very little’), 66 2/3 (‘to some extent’) and 100 (‘to a great extent’) were assigned. The fourth cohort (1995 graduates) was asked the following question: “How closely is your current (main) job related to your degree, certificate, diploma?” Values of 0 (‘not related at all’), 50 (‘somewhat related’) and 100 (‘closely related’) were assigned to the responses. Tables 4a and 4b report the mean value of these scores, with higher values indicating a closer job skills–education match. Given these constructions, the measure should be consistent across the first four periods (the two interviews for each of the first two cohorts), consistent again for the next two periods (the third cohort), but not consistent between these two different sets. Unfortunately, no such question was asked of the self-employed among the 1982 graduates in 1984 or the 1995 graduates in 1997.

**Overall job satisfaction:** All graduates were asked the following question: “Considering all aspects of your job, how satisfied are you with it?” The response options were similar in all years: these were ‘very satisfied,’ ‘satisfied,’ ‘dissatisfied’ and ‘very dissatisfied’ for the second and third cohorts (1986 and 1990 graduates) in both interviews; for the first cohort (1982 graduates) in the second interview, the last two options differed very slightly—‘not satisfied’ and ‘not at all satisfied.’ The responses were assigned values from 0 to 100 in the same manner as the job skills–education match variable described above. Tables 5a and 5b report the mean values of these scores, with higher values indicating greater job satisfaction. Again, the relevant question was not asked of the self-employed among the 1982 graduates in 1984 or 1995 graduates in 1997. ECR

## Notes

1. This research was supported by the Workplace, Skills and Productivity Division of the Applied Research Branch of Human Resources Development Canada. This paper was adapted from Finnie, Laporte and Rivard (2002). A related paper is currently being revised for resubmission to the journal *Relations industrielles / Industrial Relations*. A Social Sciences and Humanities Research Council grant provided assistance for earlier work with the National Graduates Surveys databases. The authors would like to thank Yves Gingras, Jeffrey Bowlby and Gilles Bérubé from the Applied Research Branch and three anonymous referees for very helpful comments.

2. In the National Graduates Surveys, a self-employed worker is defined as “a person who works directly for himself or herself. The self-employed may or may not have a business, a farm or a professional practice.”
3. See Finnie, Laporte and Rivard (2002) for further details.
4. The NGS databases are based on a stratified sampling scheme (by province, level of education and field of study). All results reported below reflect the appropriate sample weights.
5. See Finnie 1999 and Finnie 2001.
6. Pure ‘age effects’ are probably also operating as well; self-employment is generally more common among older, more established workers.
7. See Finnie and Wannell (1999) for a general analysis of labour market outcomes of graduates by sex.
8. Throughout this discussion, it should be kept in mind that relative to those with lower levels of education, postsecondary graduates are generally a privileged group in terms of employment opportunities (Finnie 1999), and that the ‘push–pull’ effects discussed here might operate differently for individuals with less education.
9. The relevant question was not asked of the self-employed in 1984 or 1997.
10. The desired comparisons cannot be made for 1997 because data are available for only one interview.

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## Postsecondary participation: the effects of parents' education and household income

### Introduction

The economic, societal and individual benefits of postsecondary education are well established. A large pool of research has shown that many factors influence the pursuit of postsecondary education. These include individual background characteristics, academic achievement and school-related factors as well as cultural and social determinants (Butlin 1999; De Broucker and Lavallée 1998; Lavallée, Pereboom and Grignon 2002; NCES 1997). In particular, household income and parents' educational attainment have remained strong, persistent factors relating to postsecondary access. Canadian studies completed to date (Statistics Canada 2002; De Broucker and Lavallée 1998; Lavallée et al. 2002) have examined these two factors independently but not together. The purpose of this paper is to examine both the independent and combined effects of household income and parents' education on postsecondary participation.

Household income plays an important role in the ability to access postsecondary education: constraints on economic resources can impede educational progress. The cost of tuition, books and living accommodations can affect the decision to enrol in postsecondary education. Indeed, in a survey conducted in 2000, approximately two out of three young Canadians aged 18 to 20 who faced barriers in pursuing their education reported financial barriers, whether or not they actually enrolled in postsecondary education (Bowlby and McMullen 2002).

Parents can also play an important motivating role in their children's postsecondary participation. Parents with more education tend to share in their children's intellectual pursuits and pass down skills and beliefs that are conducive to achievement (De Broucker and Underwood 1998). They also get more involved in their children's education, have higher expectations for academic success, and have greater familiarity with schools and teachers and with the postsecondary education process and experience. The high value parents place on education can thus be transmitted when they actively provide their children with an environment that encourages educational attainment.

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Canadian studies completed to date have examined the impacts of household income and parents' educational attainment separately. Recent research has indicated that among young Canadians aged 18 to 21 whose parents earn after-tax income in the highest quartile of income distribution, 70% participate in postsecondary education, compared with

56% of those whose parents' income is in the lowest quartile (Statistics Canada 2002; Lavallée 2002). Our paper picks up from this previous research and examines, both separately and together, the effects of parents' education and household income on postsecondary participation.

## Methodology

In this paper, we examine access to postsecondary education using data from the first wave of the Survey of Labour and Income Dynamics (SLID), an annual longitudinal survey that provides information on demographic characteristics, labour market characteristics, education and income. SLID followed its first wave of respondents, a sample of some 31,000 Canadians aged 15 years and older, from 1993 to 1998.

### *Sample*

The sample for this study comprised SLID respondents who were 18 to 21 years old in 1998 and no longer in high school. From a total of 1,889 SLID respondents aged 18 to 21 in 1998, we excluded 231 because they were still enrolled in high school and thus had not yet had the opportunity to begin postsecondary studies. It should be noted that 88 (almost 40%) of these excluded respondents were from Ontario, the only province requiring students to complete a fifth year of high school (Grade 13) in order to be eligible for university. We dropped a further 18 respondents from the sample because data about their education status were missing. The final sample of 1,640 respondents corresponds to a weighted population of 1,389,507.

In this study we were particularly interested in examining the combined effects of parents' education and household income on postsecondary participation.

### *Parents' education*

We defined three levels of parents' education: high school diploma or less, college diploma, and university degree (including bachelor's, master's and PhD). We defined parents' education as the highest level of education completed by the respondent's parents. We used the educational attainment of both parents to derive the highest level of parents' education. Thus if both parents (or the lone parent) had a high school diploma or less, we coded parents' education as 'high school diploma or less.' If at least one parent had a college diploma (but none had a university degree), we coded it as 'college diploma.' And if at least one parent had a university degree (regardless of the education status of the other parent), we coded it as 'university degree.' For 1,029 of the respondents, we derived this variable from information on the respondents' records; for the 611 respondents whose records did not contain this information, we derived it directly from the parents' records.

### *Household income*

We defined household income as the annual after-tax family income at the time the respondent was 16 years of age and living with his or her parents. We excluded from the income analysis nine respondents who were not living with their parents when they participated in the survey. We derived household income quartiles in order to be consistent with previous research on postsecondary participation using SLID data (Lavallée et al. 2002; Statistics Canada 2002). We defined the income quartiles in terms of 1998 constant dollars: less than \$33,000 for the lowest quartile; \$33,000 to less than \$50,000 for the lower-middle quartile; \$50,000 to less than \$67,000 for the upper-middle quartile; and \$67,000 and more for the highest quartile.

### *Postsecondary participation*

SLID had followed respondents who were aged 18 to 21 in 1998 from 1993, when they were 13 to 16, and thus had captured any transition from high school to postsecondary education. We defined postsecondary participation as respondents' enrolment in a university, community college, institute of applied arts and technology, CEGEP, or trade/vocational school at any time during their participation in the survey from 1993 to 1998. We defined college participation as enrolment in a community college, institute of applied arts and technology, or CEGEP during the same period. We did not examine trade/vocational school on its own because the sample size for this category was too small. We did not include business/commercial schools in the definition of postsecondary education. For students who were involved in more than one type of postsecondary education, we examined only the highest level.

### *Analysis*

The analysis includes participation rates for college, university and both together, by household income quartile and highest level of parents' educational attainment. We conducted tests of significance using the chi-square statistic. We used logistic regression for tables 1 and 2. The text box on logistic regression provides more information on this procedure.

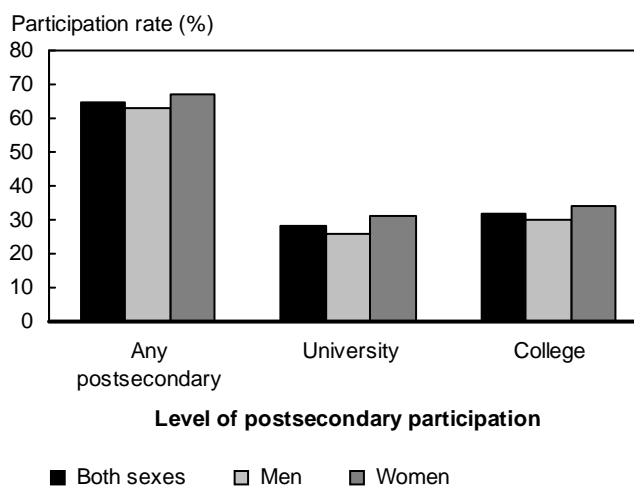


## Findings

### Most young adults in Canada participate in postsecondary education

Of all Canadians aged 18 to 21 in 1998 and no longer in high school, approximately 65% (67% of women and 63% of men) had enrolled in postsecondary education at some point during the previous five years (Graph 1). The highest level pursued by those who participated in postsecondary education was university for about 43%, college for 49%, and trade/vocational training for 9%. Women were more likely than men to attend both university (46% versus 40% of postsecondary participants) and college (50% versus 46%).

Graph 1  
Postsecondary participation rates for Canadians aged 18 to 21 and no longer in high school, by sex, 1998



Source: Analysis using Statistics Canada's Survey of Labour and Income Dynamics, 1993 to 1998

## Education status in 1998

Even though we restricted the analysis in this paper to those who were no longer in high school, we examined the education status of all Canadians aged 18 to 21 in 1998. Table 1 shows the following breakdown: approximately 13% were enrolled in high school (and thus excluded from our analysis); some 18% had graduated from high school but did not pursue

postsecondary studies; almost 12% had left high school before graduating; a further 47% were enrolled in a postsecondary institution (including university); almost 7% had attended a postsecondary institution but had left without graduating; and 3% had graduated from a postsecondary institution.



Table 1  
Distribution of Canadians aged 18 to 21, by highest level and status of education, 1998

Highest level of education	Education status in 1998		
	Currently enrolled	Not currently enrolled	
		Graduate	Leaver
	% of all Canadians aged 18 to 21		
High school	12.6	17.8	11.5
University	20.8		
Other postsecondary <sup>2</sup>	25.9	3.2 <sup>1</sup>	6.9 <sup>1</sup>
<b>All levels<sup>3</sup></b>	<b>59.3</b>	<b>21.0</b>	<b>18.5</b>

**Notes:**

1. Because of high sampling variability, it was not possible to present separate values at the university and other postsecondary levels for graduates and leavers who were not currently enrolled.

2. Includes community colleges, institutes of applied arts and technology, CEGEPs and trade/vocational institutes.

3. Education status was unknown for 1.3% of respondents. Values do not add up to 100% because of rounding.

Source: Analysis using Statistics Canada's Survey of Labour and Income Dynamics, 1993 to 1998.

### Postsecondary participation increases with household income

Postsecondary participation, particularly at the university level, increases with parents' income (Graph 2). Of young Canadians who were 18 to 21 years old and not in high school and whose parents' after-tax income fell in the highest quartile, almost three-quarters participated in postsecondary education, compared with just over half of those whose parents' income fell in the lowest quartile. This difference is more pronounced for university participation: young Canadians with parents in the highest income quartile were more than twice as likely as those with parents in the lowest quartile (39% versus 17%)<sup>1</sup> to choose university over college.

In contrast, household income was not associated with college participation—almost one-third of respondents enrolled in college, regardless of their parents' income. It is noteworthy, however, that college is the more prevalent route for those in the two lowest income quartiles, whereas university is more prevalent for those in the highest quartile. Almost twice as many young Canadians whose parents were in the lowest quartile pursued college as pursued university (30% versus 17%). Conversely, those in the highest quartile were more likely to pursue university than college only (39% versus 31%).

### Postsecondary participation varies considerably with parents' education

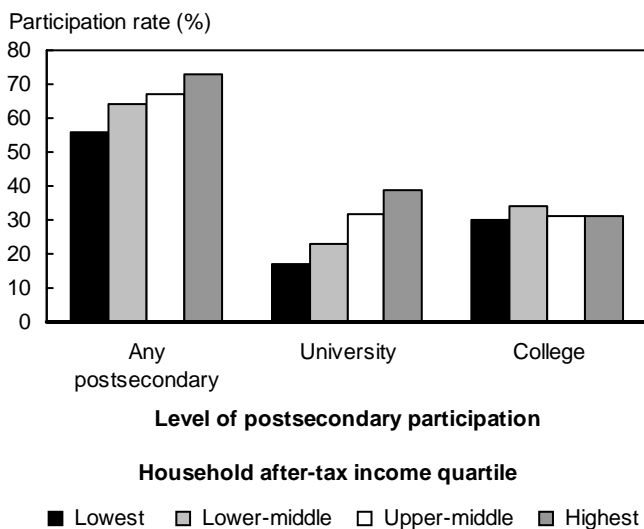
Young Canadians whose parents had a higher level of education were significantly more likely to pursue postsecondary education, and more specifically university education, than were those whose parents had lower levels of education (Graph 3). Approximately 88% of young adults who were no longer in high school and who had university-educated parents pursued postsecondary education, compared with 68% who had college-educated parents and 52% whose parents had a high school diploma or less.

The type of postsecondary education pursued was also strongly associated with parents' educational attainment. Young adults whose parents were university-educated were almost three times more likely to pursue university studies than were those whose parents had a high school diploma or less (49% versus 17%).

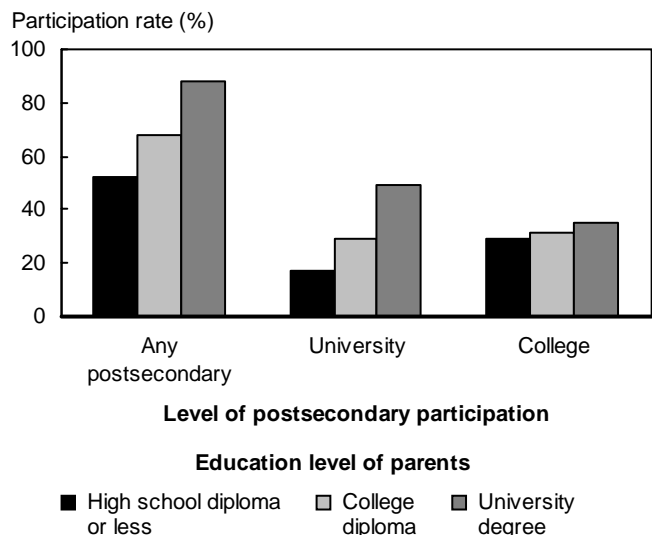
There were no significant differences in college participation rates by level of parents' education. However, those whose parents had a high school diploma or less were significantly more likely to go to college than to university (29% versus 17%).

Conversely, young adults with university-educated parents were more likely to enrol in university than in college (49% versus 35%). The type of postsecondary education pursued by those with college-educated parents was almost equally split between college (31%) and university (29%).

Graph 2  
**Postsecondary participation rates for Canadians aged 18 to 21 and no longer in high school, by household income, 1998**



Graph 3  
**Postsecondary participation rates for Canadians aged 18 to 21 and no longer in high school, by parents' education, 1998**



Source: Analysis using Statistics Canada's Survey of Labour and Income Dynamics, 1993 to 1998

### Parents' education appears to be a stronger influence than family income in students' pursuit of postsecondary studies

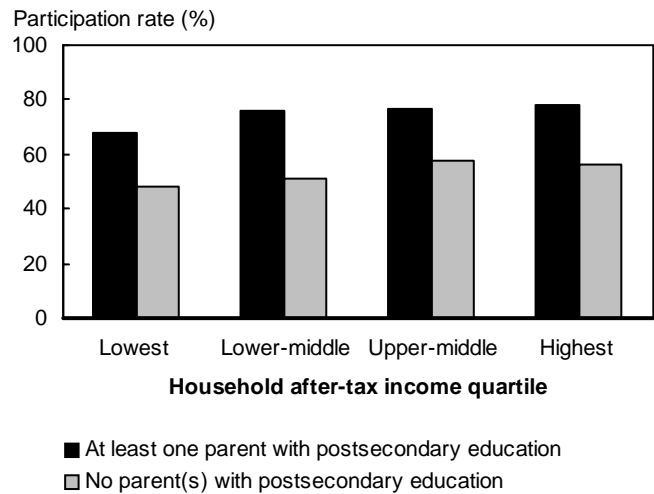
Graph 4 shows postsecondary participation rates of young Canadians when parents' education and household income are considered together. Among those with postsecondary-educated parents in the lowest income quartile, 68% participated in postsecondary education. This was well below the participation rates for those with postsecondary-educated parents in the next three quartiles (76%, 77% and 78%, respectively). Among young Canadians whose parents did not have postsecondary education, those with lower levels of household income were slightly, but not significantly, less likely to pursue postsecondary education themselves.

Within income quartiles, the postsecondary participation rates show dramatic differences when parents' educational attainment is considered. For example, in the lowest quartile, 68% of young adults with postsecondary-educated parents participated, compared with 48% whose parents had a high school diploma or less. In all the quartiles, postsecondary participation was statistically higher for those whose parents had postsecondary education than for those whose parents did not (Graph 4).

Of particular interest is the finding that young adults whose parents had postsecondary education (college or university) and fell in the lowest income quartile were more likely to participate in postsecondary studies themselves,



Graph 4  
Postsecondary participation rates for Canadians aged 18 to 21 and no longer in high school, by household income and parents' education, 1998



Source: Analysis using Statistics Canada's Survey of Labour and Income Dynamics, 1993 to 1998

compared with those whose parents were in higher income quartiles but without postsecondary education. For example, 68% of those whose parents fell in the lowest income quartile and had postsecondary education participated, versus 56% of those whose parents were in the highest income quartile but had no postsecondary education.

## Logistic regression

We used logistic regression to examine the relative impact of both household income and parents' education on postsecondary participation.

For this analysis, we converted each income quartile and level of parents' education into a dichotomous variable to indicate the presence or absence of the associated response category. For parents' educational attainment, we selected those with a high school diploma or less as the reference group, with which we compared all other levels of parents' education. For household income quartile, we selected the lowest quartile as the reference group and compared all other quartiles with this category. We tested the interaction effects between household income quartile and parents' educational attainment but did not find them to be significant. Therefore, we did not include them in the models.

The results of a logistic regression are a measure known as the 'odds ratio' for each explanatory variable being considered. In comparison with the reference group, odds ratios greater than 1.0 indicate an increase in the likelihood of occurrence, whereas odds ratios smaller than 1.0 indicate a decrease. The larger the value of the odds ratio is, the stronger the effect.

We included region in the logistic regression models in order to control for regional differences in education systems. For example, after completing 11 years of elementary and secondary schooling, students in Quebec must obtain a diploma from a CEGEP (*collège d'enseignement général et professionnel*) in order to continue to the university level. In addition to general programs that lead to university admission, CEGEPs also offer college-level programs.

**Together, household income and parents' education remain strong determinants of postsecondary participation**

Controlling for regional differences in education systems, Table 2 presents the results of a logistic regression modeling the likelihood of participating in postsecondary education versus not participating. Model 1 examines the effect of only household income; Model 2 examines the effect of only parents' education; Model 3 includes the combined effects of both.

	Model 1 (Income only <sup>1</sup> )	Model 2 (Education only <sup>1</sup> )	Model 3 (Both income and education <sup>1</sup> )
	odds ratio		
<b>After-tax household income quartile</b>			
Lowest <sup>2</sup>	1.0		1.0
Lower-middle	1.7		1.5**
Upper-middle	1.9		1.7**
Highest	2.8		1.9
<b>Parents' educational attainment</b>			
High school or less <sup>2</sup>		1.0	1.0
College		1.9	1.8
University		5.9	5.2
<b>Region</b>			
Quebec	2.9	2.1	2.5
Atlantic	1.3 <sup>NS</sup>	1.0 <sup>NS</sup>	1.2 <sup>NS</sup>
Ontario <sup>2</sup>	1.0	1.0	1.0
Prairies	0.7**	0.6**	0.6**
British Columbia	1.9 <sup>NS</sup>	0.8 <sup>NS</sup>	0.9 <sup>NS</sup>
<b>Model statistics</b>			
Model chi square	120 (df=7) <sup>1</sup>	196 (df=6) <sup>1</sup>	214 (df=9) <sup>1</sup>
Goodness-of-fit chi square : model 3 versus 1			94 (df=2) <sup>3</sup>
Goodness-of-fit chi square : model 3 versus 2			18 (df=3) <sup>3</sup>
% correct predictions	64.5	64.5	69.7
Log likelihood	-990	-952	-943

**Notes:**  
 For the models presented above, the odds ratios reported are significant at  $p=0.0001$  unless otherwise noted.  
 \*\* Difference from reference group at  $0.005 < p <= 0.01$ .  
<sup>NS</sup> Difference from reference group not statistically significant.  
 1. The global logistic regression model is significant at  $p < 0.0001$ .  
 2. Reference group.  
 3. The goodness-of-fit chi-square is significant at  $p < 0.0001$ .  
**Source:** Analysis using Statistics Canada's Survey of Labour and Income Dynamics, 1993 to 1998.

When we examined the effect of household income alone (Model 1), those whose parents who fell in the highest quartile of after-tax income were more likely (odds ratio=2.8) to participate in postsecondary education than were those whose parents fell in the lowest quartile (odds ratio=1.0). Model 3 shows that the effect of household income is reduced but still present when we also take parents' education into account: those in the highest income quartile were more likely to pursue postsecondary education (odds ratio=1.9) than were those in the lowest quartile (odds ratio=1.0).

When we examined the effect of parents' education alone (Model 2), young adults with university-educated parents were much more likely to participate in postsecondary education (odds ratio=5.9) than were those whose parents had a high school diploma or less (odds ratio=1.0). When we also considered household income (Model 3), the effect of parents' education was somewhat reduced but still very strong: young adult Canadians whose parents had a university education remained much more likely to participate (odds ratio=5) than were those whose parents had a high school diploma or less (odds ratio=1.0).

**Parents' education is a strong determinant in the choice between college and university studies**

Controlling for regional differences in education systems, Table 3 presents logistic regression results that model the likelihood of participating in university versus college among those who pursued postsecondary education. Respondents who did not enrol in college or university were excluded from this analysis. Model 1 examines household income, Model 2 looks at parents' education, and Model 3 includes both.

For those who pursued postsecondary education, their parents' education was an important determinant in the choice between university and college studies. When we examined household income alone, it appeared to be significantly related to this choice (Model 1). However, when the effects of both parents' education and household income were considered (Model 3), income was no longer significantly related to the type of participation in postsecondary education.<sup>2</sup> When we examined parents' education alone, it showed a strong effect on the choice between college and university (Model 2). This effect remained strong when we also considered household income (Model 3). Postsecondary participants whose parents had a university education were more likely (odds ratio=3.3) than were those whose parents had a high school diploma or less (odds ratio=1.0) to choose university over college. These findings are in line with previous Canadian research examining the role of parents' education in participation in postsecondary education (Guppy and Pendakur, 1989).





Table 3  
**Odds ratios from logistic regression model of university versus college participation of Canadians aged 18 to 21 who pursued postsecondary studies, by household income and parents' education, 1998**

	Model 1 (Income only <sup>1</sup> )	Model 2 (Education only <sup>1</sup> )	Model 3 (Both income and education <sup>1</sup> )
	odds ratio		
<b>After-tax household income quartile</b>			
Lowest <sup>2</sup>	1.0		1.0
Lower-middle	0.9 <sup>NS</sup>		0.9 <sup>NS</sup>
Upper-middle	1.6*		1.4 <sup>NS</sup>
Highest	1.6*		1.2 <sup>NS</sup>
<b>Parents' educational attainment</b>			
High school or less <sup>2</sup>		1.0	1.0
College		1.7**	1.7**
University		3.3	3.2
<b>Region</b>			
Quebec	0.2	0.1	0.1
Atlantic	1.6 <sup>NS</sup>	1.4 <sup>NS</sup>	1.5 <sup>NS</sup>
Ontario <sup>2</sup>	1.0	1.0	1.0
Prairies	1.1 <sup>NS</sup>	0.9 <sup>NS</sup>	1 <sup>NS</sup>
British Columbia	0.5**	0.5**	0.5**
<b>Model statistics</b>			
Model chi square	175 (df=7) <sup>1</sup>	205 (df=6) <sup>1</sup>	212 (df=9) <sup>1</sup>
Goodness-of-fit chi square : model 3 versus 1			38 (df=2) <sup>3</sup>
Goodness-of-fit chi square : model 3 versus 2			6 (df=3) <sup>3</sup>
% correct predictions	68.7	70.1	73.2
Log likelihood	-578	-562	-599

**Notes:**

For the models presented above, the odds ratios reported are significant at  $p=0.0001$  unless otherwise noted.

\* Difference with reference group at  $0.01 < p <= 0.05$ .

\*\* Difference with reference group at  $0.005 < p <= 0.01$ .

<sup>NS</sup> Difference with reference group not statistically significant.

1. The global logistic regression model is significant at  $p < 0.0001$ .

2. Reference group.

3. The goodness-of-fit chi-square is significant at  $p < 0.0001$ .

**Source:** Analysis using Statistics Canada's Survey of Labour and Income Dynamics, 1993 to 1998.

## Summary

These results demonstrate a combined effect of both parents' education and household income on postsecondary participation. Considered jointly, parents' education and household income remained strong determinants of postsecondary participation when we controlled for regional differences in the structure of education systems. In addition, parents' education had a strong effect on whether postsecondary participants pursued university rather than college. Further examination of the reasons for differences in postsecondary participation for those without university- or college-educated parents may hold promise for broadening these individuals' access to postsecondary education.


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## Notes

1. These results are similar but not identical to the data on family income and postsecondary education reported in Statistics Canada (2001 and 2002). These differences can be attributed to the fact that our study excludes respondents who were still in high school.
2. A chi-square goodness-of-fit test based on the difference in the log likelihood between Model 2 and Model 3 indicated that there was no significant enhancement to predicting university versus college participation by adding income as a determinant.

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## Teacher workload and stress: A British Columbia perspective

### Introduction

This article summarizes four reports produced by British Columbia Teachers' Federation (BCTF) Research staff about teacher workload and stress (Naylor 2001b; Naylor and Malcolmson 2001; Schaefer 2001a,b). These reports are available on the BCTF website at [www.bctf.ca/education/worklife/](http://www.bctf.ca/education/worklife/). Other related reports posted on this website include a consideration of the international literature on teacher workload and stress (Naylor 2001).

Readers may also refer to two earlier EQR articles on teacher workload: Schembari (1994) used data from Statistics Canada's Labour Force Survey; Gallén, Karlenzig and Tamney (1996) compiled data from a 'diary' approach in which teachers recorded their work-related activities over a two-week period.

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## Demographic information

The data used in this article, and in the original reports on which this article is based, were obtained from two surveys on teacher workload and stress. These surveys were administered by the British Columbia Teachers' Federation (BCTF) in the spring of 2001.

*The English Teaching Workload Survey Questionnaire* was distributed to secondary teachers of English across the province through their schools. Responses about workload came back from 737 teachers.

*The BCTF Worklife of Teachers Survey Series, 1: Workload and Stress* explored elementary and secondary teachers' perceptions of workload and stress issues. It was sent to teachers randomly selected from BCTF's province-wide membership database. The total sample of 644 respondents reflects the general population of teachers in British Columbia fairly accurately, with some exceptions.

- Female teachers are slightly overrepresented, as are teachers 55 and older, while those 45 to 54 years of age are somewhat underrepresented.
- Teachers with fewer than 10 years of experience were also somewhat underrepresented in the sample, and those with 20 or more years of experience were overrepresented. This may be because new teachers, who generally spend more time on activities such as preparation and marking, may not have had time to complete the survey.
- About 61% of survey respondents had at least some responsibility at the elementary level, compared with 59% of all educators in British Columbia. The sample appears to reflect the population well on this parameter.
- Of contract teachers sampled, 18% work part time, compared with 23.5% of all educators. British Columbia has a higher proportion of part-time teachers than any other province. More than half (55.5%) of the teachers working part time have chosen to do so. Approximately 1 in 5 (21.1%) works part time involuntarily and would prefer a larger assignment; 9.4% work part time because of workload, and another 6.3% do so because of illness/disability or accommodation/rehabilitative employment.<sup>1</sup>
- The average teacher on call (non-contract teacher) who replied to the survey had worked 63.6 days from the beginning of September 2000 to the end of March 2001.
- Just over three-quarters (77%) of the teachers in the sample worked primarily as classroom teachers; 17% were learning specialists, such as counsellors, teacher-librarians and English as a second language (ESL) teachers; 2% were itinerant teachers; and 4% fit into other categories. These proportions are consistent with staffing data collected by the Ministry of Education.
- Three-quarters of elementary teachers and one-eighth of secondary teachers reported that their main area of responsibility as a teacher was teaching their students the majority of their subjects. The next most common areas of responsibility for elementary teachers were learning assistance, music/drama/fine arts, ESL, and French immersion/*Programme-cadre de français*; for secondary teachers, alternative education was next.

1. These are programs for BCTF members receiving disability payments. Accommodation employment means a return to teaching on a reduced assignment basis. Rehabilitative employment means work other than teaching.

## Findings

### Secondary English teachers

In analysing the results of the English Teaching Workload Survey Questionnaire, Naylor and Malcolmson (2001) found that secondary English teachers

- work more than 53 hours a week while school classes are in session;
- devote the majority of their work time to preparation and marking, which together account for more than 19 hours of an average teacher's work week—about two-thirds of reported non-contact time spent on the job;
- report that workload levels have increased in recent years;
- consider school organization to play a major role in determining teacher perceptions of workload, with semester-based schools showing the highest levels of dissatisfaction in areas such as organization of preparation time;
- report high and increasing numbers of ESL students and students with special needs in their classes. Often they teach more than twice as many students as the Ministry of Education has identified as needing ESL or special education, without the extra support they need;

- report that they adjust their teaching methods to cope with workload pressures. Such adjustments are driven by workload-coping requirements rather than by pedagogical factors; and
- report widespread symptoms of stress and varying abilities to cope with stress. Both age and sex appear to be relevant variables in how stress and coping ability are perceived, with female and younger teachers reporting the worst impacts and lesser coping ability.

The authors argue that steps should be taken to reduce secondary English teachers' workload. They suggest that failure to address the issues of workload and stress may increase attrition among secondary English teachers, as many respondents signalled an intention to seek other assignments, to work part time, or to leave teaching altogether.

### Workload and stress

Qualitative data from the BCTF Worklife of Teachers Survey Series, 1: Workload and Stress indicate that B.C. teachers have a heavy workload and that many suffer from stress induced by a variety of causes, including

- a large volume of work;
- a wide range of workload duties that have changed over time;
- changing class composition;
- seasonal pressures, with intense periods of work in addition to regular loads;
- extensive curriculum changes; and
- a wide range of expectations from government, employers, school administrators and parents.

Such stress can have serious consequences. Teachers who try to cope by reducing the time for which they are paid often end up working extra time without pay. Those who continue to work while they are sick can experience health breakdown and problems within their family. Those who cannot deal with the stress take stress leave or consider leaving teaching entirely. Teachers identified four factors—time, resources, support and respect—as essential for a manageable workload, but they felt these factors were lacking.

The findings from these data (Naylor 2001b; Schaefer 2001a,b) closely match the findings in the international literature on teacher workload and stress (Dinham and Scott 2000; Drago et al. 1999; Naylor 2001a).

### Summer holidays 2000

Teachers were asked to report the number of weeks of the nine-week summer vacation in 2000 that they had spent in each of the following activities:

- taking holidays;
- teaching summer school;
- working in employment other than teaching summer school;
- taking education courses;
- volunteering;
- preparing for the upcoming school year; and
- engaging in other activities.

While teachers technically had nine weeks' vacation during the summer of 2000, not all of this time was taken as traditional holidays. One-quarter of B.C. teachers took two weeks of holidays or less that summer. More than one-third of teachers took three weeks of holidays or less. On average, teachers used about 58% of their summer vacation as holidays. Younger teachers took less time off in the summer than did older teachers. Teachers with fewer than 10 years of teaching experience took the shortest holidays.

Low salaries relative to other professionals and the high cost of living in British Columbia require many teachers to work during the summer. About 7% of teachers spent part of the summer teaching summer school; 17% (one in every six teachers) worked at a job other than teaching during the summer; 22% (more than one in five teachers) taught or did other paid work during part of the summer; and about 2% held another job and taught summer school.

One in six (16%) teachers spent part of the summer of 2000 in the classroom, learning new pedagogy and content for the upcoming school year. At least one in eight teachers (13%) spent some time volunteering during the summer months. Nearly three-quarters (74%) of all teachers spent at least one week of their summer vacation preparing for the upcoming school year; the proportion was 80% for full-time teachers. New teachers were more than twice as likely as those with 20 to 24 years of experience to spend three to four weeks of their summer holidays preparing for the upcoming school year.

Other summer activities reported by teachers included handling family responsibilities, maintaining wellness and/or recovering from stress and illness, and looking after their home. Although causality cannot be demonstrated, the study shows a relationship between not taking adequate time off in the summer and certain negative health effects.

- More than 85% of teachers reported that their work resulted in fatigue. Of those who took no summer holidays, almost 95% reported feeling fatigued, compared with 77% of those who took the full nine weeks of summer vacation.
- Of those who took no holidays, 83% reported that their work life resulted in less time with family or friends, compared with only 49% of those who took nine weeks' holidays.

- Similarly, 78% of those who took no summer holidays reported that work pressures resulted in less time for their own personal interests or hobbies, compared with 50% of those who took nine weeks' holidays.
- More than one-third (37%) of teachers reported some health problems related to their work life. Teachers who took only minimal holidays (three weeks or less) were more likely than those who took seven to nine weeks' holidays to report work-related health problems (45% versus 31%). These results can be interpreted in light of mounting evidence that prolonged stress—especially when caused by isolation and a sense of lack of control—can result in wear and tear on the body. Possible consequences include heart disease, a weakened immune system, insulin resistance (potential for diabetes), and cancer.

EOR

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# announcements

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## Data releases

*In the section “Data releases” we provide the titles of data released by the Centre for Education Statistics since the publication of the previous issue of Education Quarterly Review. Details on each release can be accessed free-of-charge from Statistics Canada’s website [www.statcan.ca](http://www.statcan.ca). Click on “The Daily” and “Previous issues”.*

- Full-time enrolment in trade/vocational and preparatory training 1998-1999 (released April 3, 2002)
- Education price index 2000 (released April 5, 2002)
- Part-time university faculty 1990-1991 to 1997-1998 (released May 8, 2002)

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Data series	Most recent data	
	Final <sup>1</sup>	Preliminary or estimate <sup>2</sup>
<b>A. Elementary/secondary</b>		
Enrolment in public schools	1998–1999	1999–2000 <sup>e</sup> 2000–2001 <sup>e</sup> 2001–2002 <sup>e</sup>
Enrolment in private schools	1998–1999	1999–2000 <sup>e</sup>
Enrolment in minority and second language education programs	1998–1999	
Secondary school graduation	1998–1999	
Educators in public schools	1998–1999	1999–2000 <sup>e</sup> 2000–2001 <sup>e</sup> 2001–2002 <sup>e</sup>
Educators in private schools	1997–1998	1998–1999 <sup>e</sup> 1999–2000 <sup>e</sup>
Elementary/secondary school characteristics	1998–1999	1999–2000 <sup>e</sup>
Financial statistics of school boards	1998	
Financial statistics of private academic schools	1997–1998	1998–1999 <sup>e</sup> 1999–2000 <sup>e</sup> 2000–2001 <sup>e</sup>
Federal government expenditures on elementary/secondary education	1998–1999	1999–2000 <sup>P</sup> 2000–2001 <sup>e</sup>
Consolidated expenditures on elementary/secondary education	1998–1999	1999–2000 <sup>P</sup> 2000–2001 <sup>e</sup>
Education Price Index	2000	
<b>B. Postsecondary</b>		
University enrolments	1999–2000	discontinued
University degrees granted	1998	discontinued
University continuing education enrolment	1996–1997	discontinued
Educators in universities	1999–2000	
Salaries and salary scales of full-time teaching staff at Canadian universities	1999–2000	
Tuition and living accommodation costs at Canadian universities	2001–2002	
University finance	1999–2000	2000–2001 <sup>e</sup>
College finance	1999–2000	2000–2001 <sup>e</sup>
Federal government expenditures on postsecondary education	1999–2000	2000–2001 <sup>e</sup>
Consolidated expenditures on postsecondary education	1999–2000	2000–2001 <sup>e</sup>
Community colleges and related institutions: enrolment and graduates	1998–1999	1999–2001 <sup>e</sup>
Trade/vocational enrolment	1998–1999	1999–2000 <sup>e</sup>
College/trade teaching staff	1997–1998	1998–1999 <sup>P</sup> 1999–2000 <sup>P</sup>
International student participation in Canadian universities	1998–1999	

*See notes at end of this table.*





## Current data (concluded)

### Data series

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#### C. Publications<sup>3</sup>

*Education in Canada* (2000)

*South of the Border: Graduates from the class of '95 who moved to the United States* (1999)

*After High School, the First Years* (1996)

*Participation in postsecondary education and family income* (1998)

*A report on adult education and training in Canada: Learning a living* (1998)

*International student participation in Canadian education* (1993–1995)

*Education Price Index – methodological report*

*Handbook of education terminology: elementary and secondary level* (1994)

*Guide to data on elementary secondary education in Canada* (1995)

*A Guide to Statistics Canada Information and Data Sources on Adult Education and Training* (1996)

*A Statistical Portrait of Elementary and Secondary Education in Canada – Third edition* (1996)

*A Statistical Portrait of Education at the University Level in Canada – First edition* (1996)

*The Class of '90: A compendium of findings* (1996)

*The Class of '90 Revisited* (1997)

*The Class of '95: Report of the 1997 National Survey of 1995 Graduates* (1999)

*Education indicators in Canada: Report of the Pan-Canadian Indicators Program* (1999)

*Education at a Glance: OECD Indicators* (2000)

*In Pursuit of Equity in Education: Using International Indicators to Compare Equity Policies* (2001)

*Literacy, Economy and Society* (1995)

*Literacy Skills for the Knowledge Society* (1997)

*Literacy in the Information Age* (2000)

*International Adult Literacy Survey Monograph Series*

*Benchmarking Adult Literacy in North America: An International Comparative Study* (2001)

*Measuring up: The performance of Canada's youth in reading, mathematics and science* (2000)

*Growing Up in Canada: National Longitudinal Survey of Children and Youth* (1996)

*Children and youth at risk: Symposium report*

*At a crossroads: First results for the 18- to 20-year-old cohort of the Youth in Transition Survey* (2000)

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#### Notes:

1. Indicates the most recent calendar year (e.g., 1993) or academic/fiscal year (e.g., 1993–1994) for which final data are available for all provinces and territories.
2. Indicates the most recent calendar year (e.g., 1995) or academic/fiscal year (e.g., 1996–1997) for which any data are available. The data may be preliminary (e.g., 1995<sup>p</sup>), estimated (e.g., 1995<sup>e</sup>) or partial (e.g., data not available for all provinces and territories).
3. The year indicated in parentheses denotes the year of publication. Some of these publications are prepared in co-operation with other departments or organizations. For information on acquiring copies of these reports, please contact Client Services, Culture, Tourism and the Centre for Education Statistics. Telephone: (613) 951-7608, toll free 1 800 307-3382; Fax: (613) 951-9040 or E-mail: educationstats@statcan.ca.

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## Advance statistics

*This section summarizes data on institutions, teachers, enrolment, degrees and finance at all levels of education in Canada. Unless otherwise indicated, actual figures are given for 1999–2000, preliminary figures for 2000–2001 and estimates for 2001–2002. Financial statistics are shown in current dollars for 1998–1999 to 2000–2001. For further information, please contact Client Services, Culture, Tourism and the Centre for Education Statistics, at (613) 951-7608, toll-free 1 800 307-3382, or by fax at (613) 951-9040.*

### **Enrolment**

- In the fall of 2001, an estimated 520,000 children enrolled in the pre-elementary level, down 1,800 from the fall of 2000. Enrolment in grades 1 to 12 was expected to be 4.9 million, down about 2,400 from the previous year.

### **Teachers**

- The number of full-time elementary and secondary teachers reached 305,700 in 2001–2002, up 1,500 from the previous year.

### **Finance**

- In 2000–2001, total education expenditures were expected to reach \$66.5 billion, a decrease of 1.8% over 1999–2000.
- In 2000–2001, about 82% of the education bill was paid by the three levels of government; the remainder through fees and other private sources.
- The elementary and secondary level was expected to account for approximately 60% of total education spending in 2000–2001. The postsecondary and vocational training levels will made up about 27% and 13%, respectively. EOR



Table 1  
Institutions, enrolments and teachers, 1999–2000 to 2001–2002

	Institutions			Enrolments					Full-time teachers		
	Elementary/ secondary <sup>e,1</sup>	Community colleges <sup>2</sup>	Universities	Pre- elementary <sup>e,1</sup>	Elementary/ secondary <sup>e,1</sup>	Full-time post- secondary community college <sup>3,4</sup>	Full-time university <sup>e,4</sup>	Part-time university <sup>e,4</sup>	Elementary/ secondary <sup>e,1</sup>	Post- secondary community colleges <sup>5</sup>	Universities <sup>6</sup>
	number										
<b>Canada</b>											
1999–2000	15,623	199	75	517,091	4,862,775	404,983	590,663	257,508	301,757	27,832	33,801
2000–2001 <sup>e</sup>	15,604	..	..	522,034	4,867,273	404,440	..	..	304,232	..	..
2001–2002 <sup>e</sup>	15,570	..	..	520,270	4,864,882	..	..	..	305,725	..	..
<b>Newfoundland and Labrador</b>											
1999–2000	353	2	1	5,692	88,875	6,023	12,994	2,783	6,195	836	857
2000–2001 <sup>e</sup>	334	..	..	5,380	85,727	6,041	..	..	5,983	..	..
2001–2002 <sup>e</sup>	314	..	..	5,046	82,656	..	..	..	5,761	..	..
<b>Prince Edward Island</b>											
1999–2000	72	2	..	49	24,391	1,918	2,549	500	1,396	73	189
2000–2001 <sup>e</sup>	72	..	..	1,698	24,380	1,930	..	..	1,408	..	..
2001–2002 <sup>e</sup>	72	..	..	1,811	24,327	..	..	..	1,421	..	..
<b>Nova Scotia</b>											
1999–2000	510	5	12	11,701	150,460	7,099	29,087	7,500	9,473	616	1,963
2000–2001 <sup>e</sup>	509	..	..	11,533	149,736	7,085	..	..	9,516	..	..
2001–2002 <sup>e</sup>	511	..	..	11,267	149,111	..	..	..	9,626	..	..
<b>New Brunswick</b>											
1999–2000	374	5	5	8,989	119,995	5,248	18,037	4,100	7,394	920	1,109
2000–2001 <sup>e</sup>	364	..	..	8,865	118,348	5,275	..	..	7,313	..	..
2001–2002 <sup>e</sup>	354	..	..	8,690	116,713	..	..	..	7,237	..	..
<b>Quebec</b>											
1999–2000	2,996	89	7	95,109	1,027,079	164,904	136,330	100,001	69,542	11,217	8,005
2000–2001 <sup>e</sup>	2,990	..	..	94,816	1,024,434	164,648	..	..	70,347	..	..
2001–2002 <sup>e</sup>	2,976	..	..	93,326	1,022,209	..	..	..	71,183	..	..
<b>Ontario</b>											
1999–2000	5,458	40	21	270,500	1,862,767	142,715	237,112	75,070	116,541	6,839	12,486
2000–2001 <sup>e</sup>	5,438	..	..	274,791	1,858,949	142,482	..	..	116,447	..	..
2001–2002 <sup>e</sup>	5,414	..	..	275,685	1,848,807	..	..	..	116,012	..	..
<b>Manitoba</b>											
1999–2000	862	6	6	17,586	205,411	4,223	20,866	9,831	12,495	715	1,471
2000–2001 <sup>e</sup>	864	..	..	17,078	206,392	4,212	..	..	12,473	..	..
2001–2002 <sup>e</sup>	869	..	..	16,457	207,368	..	..	..	12,504	..	..
<b>Saskatchewan</b>											
1999–2000	894	4	4	15,716	193,600	2,768	23,937	7,515	11,646	884	1,397
2000–2001 <sup>e</sup>	886	..	..	15,453	193,322	2,781	..	..	11,810	..	..
2001–2002 <sup>e</sup>	877	..	..	15,135	192,920	..	..	..	11,988	..	..
<b>Alberta</b>											
1999–2000	1,879	19	..	41,154	530,871	32,201	55,533	26,019	30,919	3,171	3,124
2000–2001 <sup>e</sup>	1,889	..	10	41,743	536,120	32,150	..	..	32,256	..	..
2001–2002 <sup>e</sup>	1,895	..	..	42,523	541,596	..	..	..	32,834	..	..
<b>British Columbia</b>											
1999–2000	2,103	24	8	48,618	636,215	37,342	54,218	24,189	34,385	2,347	3,200
2000–2001 <sup>e</sup>	2,134	..	..	48,669	646,160	37,288	..	..	34,895	..	..
2001–2002 <sup>e</sup>	2,162	..	..	48,342	655,100	..	..	..	35,360	..	..
<b>Yukon</b>											
1999–2000	28	1	..	454	5,843	265	..	..	417	84	..
2000–2001 <sup>e</sup>	28	..	..	456	5,961	271	..	..	415	..	..
2001–2002 <sup>e</sup>	27	..	..	442	6,039	..	..	..	413	..	..
<b>Northwest Territories</b>											
1999–2000	50	1	..	822	9,358	110	..	..	736	83	..
2000–2001 <sup>e</sup>	52	..	..	838	9,607	98	..	..	745	..	..
2001–2002 <sup>e</sup>	53	..	..	826	9,782	..	..	..	760	..	..
<b>Nunavut</b>											
1999–2000	42	1	..	673	7,657	167	..	..	602	47	..
2000–2001 <sup>e</sup>	42	..	..	686	7,860	179	..	..	609	..	..
2001–2002 <sup>e</sup>	44	..	..	691	7,944	..	..	..	611	..	..
<b>Department of National Defence, Overseas</b>											
1999–2000 <sup>e</sup>	2	..	..	28	253	..	..	..	16	..	..
2000–2001 <sup>e</sup>	2	..	..	28	277	..	..	..	15	..	..
2001–2002 <sup>e</sup>	2	..	..	29	310	..	..	..	15	..	..

**Notes:**

.. Figures not available.

... Not applicable

1. These data are estimates and include public, private, federal and overseas schools and schools for the visually and hearing impaired.

2. The number of institutions does not include campuses, which previously had been reported in Education Quarterly Review for some of the provinces.

3. Includes postsecondary enrolments in community colleges, CEGEPS, nursing and hospital schools and other related institutions. Part-time enrolment is available on request.

4. Regular fall session only.

5. Includes community college teachers at the trade level.

6. Includes only those with 12-month terms of appointment.



Table 2  
Degrees, by level and sex of recipient, 1998 to 2000

	Bachelor's and first professional degrees			Master's degrees			Earned doctorates		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
	number								
<b>Canada</b>									
1998	51,268	73,593	124,861	10,514	11,512	22,026	2,540	1,436	3,976
1999 <sup>e</sup>	51,803	75,321	127,124	11,254	11,954	23,208	2,427	1,551	3,978
2000	..	..	..	..	..	..	..	..	..
<b>Newfoundland and Labrador</b>									
1998	926	1,281	2,207	134	155	289	21	8	29
1999 <sup>e</sup>	923	1,388	2,311	156	197	353	39	8	47
2000	..	..	..	..	..	..	..	..	..
<b>Prince Edward Island</b>									
1998	122	263	385	1	2	3	0	0	0
1999 <sup>e</sup>	122	263	385	1	2	3	0	0	0
2000	..	..	..	..	..	..	..	..	..
<b>Nova Scotia</b>									
1998	2,440	3,639	6,079	398	496	894	54	33	87
1999 <sup>e</sup>	2,680	3,755	6,435	554	591	1,145	62	34	96
2000	..	..	..	..	..	..	..	..	..
<b>New Brunswick</b>									
1998	1,380	1,930	3,310	166	200	366	19	8	27
1999 <sup>e</sup>	1,413	1,931	3,344	168	198	366	19	8	27
2000	..	..	..	..	..	..	..	..	..
<b>Quebec</b>									
1998	11,409	16,021	27,430	3,256	3,513	6,769	759	413	1,172
1999 <sup>e</sup>	11,560	16,633	28,193	3,327	3,532	6,859	717	453	1,170
2000	..	..	..	..	..	..	..	..	..
<b>Ontario</b>									
1998	21,859	32,171	54,030	4,277	4,568	8,845	981	566	1,547
1999 <sup>e</sup>	21,510	32,115	53,625	4,600	4,690	9,290	897	674	1,571
2000	..	..	..	..	..	..	..	..	..
<b>Manitoba</b>									
1998	2,021	2,752	4,773	241	286	527	72	35	107
1999 <sup>e</sup>	1,928	2,865	4,613	238	272	510	55	34	89
2000	..	..	..	..	..	..	..	..	..
<b>Saskatchewan</b>									
1998	1,667	2,316	3,983	266	241	507	64	25	89
1999 <sup>e</sup>	1,706	2,501	4,207	259	227	486	68	21	89
2000	..	..	..	..	..	..	..	..	..
<b>Alberta</b>									
1998	4,495	6,276	10,771	704	874	1,578	254	165	419
1999 <sup>e</sup>	4,677	6,593	11,270	770	937	1,707	255	134	389
2000	..	..	..	..	..	..	..	..	..
<b>British Columbia</b>									
1998	4,949	6,944	11,893	1,071	1,177	2,248	316	183	499
1999 <sup>e</sup>	5,284	7,457	12,741	1,181	1,308	2,489	315	185	500
2000	..	..	..	..	..	..	..	..	..
<b>Yukon</b>									
1998	..	..	..	..	..	..	..	..	..
1999 <sup>e</sup>	..	..	..	..	..	..	..	..	..
2000	..	..	..	..	..	..	..	..	..
<b>Northwest Territories</b>									
1998	..	..	..	..	..	..	..	..	..
1999 <sup>e</sup>	..	..	..	..	..	..	..	..	..
2000	..	..	..	..	..	..	..	..	..
<b>Nunavut</b>									
1998	..	..	..	..	..	..	..	..	..
1999 <sup>e</sup>	..	..	..	..	..	..	..	..	..
2000	..	..	..	..	..	..	..	..	..

## Notes:

.. Figures not available.

... Not applicable



Table 3  
Expenditures on education, by direct source of funds, 1998–1999 to 2000–2001

	Total	Local governments	Provincial and territorial governments	Federal government <sup>1</sup>	Non-governmental (private) sources
	\$ thousands				
<b>Canada</b>					
1998–1999	65,300,452	10,834,529	36,447,218	6,839,269	11,179,436
1999–2000 <sup>P</sup>	67,748,838	10,799,990	39,554,877	5,567,624	11,826,347
2000–2001 <sup>c</sup>	66,500,212	10,709,356	38,418,850	5,568,454	11,803,552
<b>Newfoundland and Labrador</b>					
1998–1999	1,215,165	582	761,671	300,917	151,995
1999–2000 <sup>P</sup>	1,116,421	96	807,046	149,065	160,214
2000–2001 <sup>c</sup>	1,192,210	0	789,608	223,966	178,636
<b>Prince Edward Island</b>					
1998–1999	274,864	0	183,426	51,319	40,119
1999–2000 <sup>P</sup>	267,798	0	187,693	31,314	48,791
2000–2001 <sup>c</sup>	257,795	0	183,648	31,720	42,427
<b>Nova Scotia</b>					
1998–1999	1,910,441	144,184	1,132,739	284,863	348,655
1999–2000 <sup>P</sup>	1,963,564	147,637	1,244,087	172,380	399,460
2000–2001 <sup>c</sup>	1,869,183	150,063	1,129,113	208,881	381,126
<b>New Brunswick</b>					
1998–1999	1,523,168	63	1,084,512	236,613	201,980
1999–2000 <sup>P</sup>	1,602,442	33	1,256,321	136,891	209,197
2000–2001 <sup>c</sup>	1,528,970	63	1,148,645	160,087	220,175
<b>Quebec</b>					
1998–1999	15,107,328	1,016,013	10,320,482	1,578,463	2,192,370
1999–2000 <sup>P</sup>	15,953,742	1,023,753	11,017,882	1,264,480	2,647,627
2000–2001 <sup>c</sup>	15,977,119	1,034,226	11,301,396	1,256,526	2,384,971
<b>Ontario</b>					
1998–1999	24,737,853	5,955,004	12,490,267	1,837,351	4,455,231
1999–2000 <sup>P</sup>	25,429,775	5,825,349	13,634,061	1,536,515	4,433,850
2000–2001 <sup>c</sup>	24,494,516	5,698,689	12,430,159	1,587,701	4,777,967
<b>Manitoba</b>					
1998–1999	2,595,970	578,906	1,227,233	417,368	372,463
1999–2000 <sup>P</sup>	2,746,232	602,092	1,361,385	405,432	377,323
2000–2001 <sup>c</sup>	2,712,025	610,508	1,334,966	383,472	383,079
<b>Saskatchewan</b>					
1998–1999	2,285,918	566,314	1,009,639	427,040	282,925
1999–2000 <sup>P</sup>	2,419,198	597,316	1,108,972	426,275	286,635
2000–2001 <sup>c</sup>	2,364,346	600,171	1,115,506	385,072	263,597
<b>Alberta</b>					
1998–1999	6,598,331	1,290,282	3,275,722	588,543	1,443,784
1999–2000 <sup>P</sup>	6,918,473	1,301,936	3,515,051	573,038	1,528,448
2000–2001 <sup>c</sup>	6,868,587	1,297,925	3,647,320	516,634	1,406,708
<b>British Columbia</b>					
1998–1999	8,339,710	1,271,895	4,587,467	816,383	1,663,965
1999–2000 <sup>P</sup>	8,702,285	1,291,416	5,034,406	663,731	1,712,732
2000–2001 <sup>c</sup>	8,664,273	1,307,273	4,919,096	697,031	1,740,873
<b>Yukon</b>					
1998–1999	108,120	350	93,296	5,930	8,544
1999–2000 <sup>P</sup>	122,013	372	100,676	14,481	6,484
2000–2001 <sup>c</sup>	115,511	272	102,931	4,631	7,677

See notes at end of table.



Table 3  
Expenditures on education, by direct source of funds, 1998–1999 to 2000–2001 (concluded)

	Total	Local governments	Provincial and territorial governments	Federal government <sup>1</sup>	Non-governmental (private) sources
	\$ thousands				
<b>Northwest Territories</b>					
1998–1999	309,547	10,936	280,764	2,373	15,474
1999–2000 <sup>P</sup>	199,885	9,125	164,186	15,263	11,311
2000–2001 <sup>c</sup>	206,653	9,266	184,690	1,101	11,596
<b>Nunavut</b>					
1998–1999	..	..	..	..	..
1999–2000 <sup>P</sup>	143,101	865	123,111	15,891	3,234
2000–2001 <sup>c</sup>	123,424	900	119,321	16	3,187
<b>Other<sup>2</sup></b>					
1998–1999	294,037	0	0	292,106	1,931
1999–2000 <sup>P</sup>	163,909	0	0	162,868	1,041
2000–2001 <sup>c</sup>	125,600	0	12,451	111,616	1,533

**Notes:**

.. Figures not available.

1. Excludes federal contributions to provincial governments for Official Languages in Education programs and for postsecondary education under Established Program Financing.

2. Includes Canada's spending on education in foreign countries and undistributed expenditures.





Table 4  
Expenditures on education, by level, 1998–1999 to 2000–2001

	Total	Elementary– secondary <sup>1</sup>	Postsecondary <sup>2</sup>			Trade level <sup>3</sup>
			Community college	University	Subtotal	
\$ thousands						
<b>Canada</b>						
1998–1999	65,300,452	38,709,438	4,781,655	12,863,165	17,644,820	8,946,194
1999–2000 <sup>P</sup>	67,748,838	39,309,437	5,498,494	14,549,042	20,047,536	8,391,865
2000–2001 <sup>c</sup>	66,500,212	39,738,845	4,923,230	13,168,272	18,091,502	8,669,865
<b>Newfoundland and Labrador</b>						
1998–1999	1,215,165	569,239	30,452	247,572	278,024	367,902
1999–2000 <sup>P</sup>	1,116,421	569,311	34,235	271,663	305,898	241,212
2000–2001 <sup>c</sup>	1,192,210	568,378	50,595	272,164	322,759	301,073
<b>Prince Edward Island</b>						
1998–1999	274,864	143,294	21,716	48,744	70,460	61,110
1999–2000 <sup>P</sup>	267,798	142,300	20,983	57,766	78,749	46,749
2000–2001 <sup>c</sup>	257,795	144,889	19,688	51,098	70,786	42,120
<b>Nova Scotia</b>						
1998–1999	1,910,441	1,026,623	90,995	521,282	612,277	271,541
1999–2000 <sup>P</sup>	1,963,564	1,079,602	102,730	605,836	708,566	175,396
2000–2001 <sup>c</sup>	1,869,183	1,011,208	81,395	563,341	644,736	213,239
<b>New Brunswick</b>						
1998–1999	1,523,168	866,406	77,993	321,430	399,423	257,339
1999–2000 <sup>P</sup>	1,602,442	885,933	63,873	340,660	404,533	311,976
2000–2001 <sup>c</sup>	1,528,970	855,157	65,074	354,980	420,054	253,759
<b>Quebec</b>						
1998–1999	15,107,328	7,749,354	1,991,201	3,180,805	5,172,006	2,185,968
1999–2000 <sup>P</sup>	15,953,742	8,530,324	2,019,952	3,516,820	5,536,772	1,886,646
2000–2001 <sup>c</sup>	15,977,119	8,713,307	1,968,014	3,022,225	4,990,239	2,273,573
<b>Ontario</b>						
1998–1999	24,737,853	16,191,410	1,349,956	4,727,377	6,077,333	2,469,110
1999–2000 <sup>P</sup>	25,429,775	15,772,989	1,923,195	5,364,152	7,287,347	2,369,439
2000–2001 <sup>c</sup>	24,494,516	15,670,548	1,467,435	4,956,734	6,424,169	2,399,799
<b>Manitoba</b>						
1998–1999	2,595,970	1,690,032	105,007	499,351	604,358	301,580
1999–2000 <sup>P</sup>	2,746,232	1,751,163	135,546	540,347	675,893	319,176
2000–2001 <sup>c</sup>	2,712,025	1,780,009	108,748	544,340	653,088	278,928
<b>Saskatchewan</b>						
1998–1999	2,285,918	1,371,354	61,101	512,092	573,193	341,371
1999–2000 <sup>P</sup>	2,419,198	1,383,442	61,210	591,744	652,954	382,802
2000–2001 <sup>c</sup>	2,364,346	1,409,097	63,438	554,220	617,658	337,591
<b>Alberta</b>						
1998–1999	6,598,331	3,870,968	439,840	1,148,808	1,588,648	1,138,715
1999–2000 <sup>P</sup>	6,918,473	3,891,437	550,141	1,379,784	1,929,925	1,097,111
2000–2001 <sup>c</sup>	6,868,587	4,075,526	458,859	1,199,017	1,657,876	1,135,185
<b>British Columbia</b>						
1998–1999	8,339,710	4,897,088	562,143	1,570,486	2,132,629	1,309,993
1999–2000 <sup>P</sup>	8,702,285	4,994,429	521,520	1,790,889	2,312,409	1,395,447
2000–2001 <sup>c</sup>	8,664,273	5,183,503	571,491	1,650,153	2,221,644	1,259,126
<b>Yukon</b>						
1998–1999	108,120	76,779	6,767	3,711	10,478	20,863
1999–2000 <sup>P</sup>	122,013	80,401	7,565	3,673	11,238	30,374
2000–2001 <sup>c</sup>	115,511	88,195	7,223	..	7,223	20,093

See notes at end of table.



Table 4  
Expenditures on education, by level, 1998–1999 to 2000–2001 (concluded)

	Total	Elementary– secondary <sup>1</sup>	Postsecondary <sup>2</sup>			Trade level <sup>3</sup>
			Community college	University	Subtotal	
\$ thousands						
<b>Northwest Territories</b>						
1998–1999	309,547	208,959	41,078	4,370	45,448	55,140
1999–2000 <sup>P</sup>	199,885	118,166	33,789	4,854	38,643	43,076
2000–2001 <sup>c</sup>	206,653	111,982	48,359	..	48,359	46,312
<b>Nunavut</b>						
1998–1999	..	..	..	..	..	..
1999–2000 <sup>P</sup>	143,101	85,416	20,540	845	21,385	36,300
2000–2001 <sup>c</sup>	123,424	103,518	0	0	0	19,906
<b>Other<sup>4</sup></b>						
1998–1999	294,037	47,932	3,406	77,137	80,543	165,562
1999–2000 <sup>P</sup>	163,909	24,524	3,215	80,009	83,224	56,161
2000–2001 <sup>c</sup>	125,600	23,528	12,911	0	12,911	89,161

**Notes:**

.. Figures not available.

- Includes public and private schools. Public includes: (i) federal schools and schools for the visually and hearing impaired; (ii) provincial and federal department spending on elementary-secondary education; (iii) academic education in federal penitentiaries and provincial reform schools; and (iv) departmental administration.
- Expenditures on postsecondary education include: (i) operating and capital expenditures of universities, community colleges and similar institutions, and postsecondary programs in nursing schools; (ii) student aid, scholarships and bursaries; and (iii) direct expenditures by federal and provincial governments.
- Expenditures on vocational training include: (i) training sponsored by Human Resources Development Canada; (ii) federal expenditures on language courses; (iii) vocational training in federal penitentiaries and provincial reformatory schools; (iv) various training courses set by federal and provincial authorities; and (v) private trade schools, art schools, music schools, etc.
- Includes Canada's spending on education in foreign countries and undistributed expenditures.

# Education at a glance

*This section provides a series of social, economic and education indicators for Canada and the provinces/territories. Included are key statistics on the characteristics of the student and staff populations, educational attainment, public expenditures on education, labour force employed in education, and educational outcomes.*

Table 1 Education indicators, Canada, 1986 to 2001													
Indicator <sup>1</sup>	1986	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	
thousands													
<b>Social context</b>													
Population aged 0–3	1,475.0	1,573.4	1,601.7	1,610.6	1,596.1	1,595.1	1,578.6	1,560.7	1,550.7	1,453.9	1,390.6	1,366.8	
Population aged 4–17	5,204.7	5,395.4	5,437.7	5,484.7	5,536.4	5,620.7	5,691.4	5,754.0	5,795.7	5,725.6	5,723.7	5,723.2	
Population aged 18–24	3,286.3	2,886.1	2,869.2	2,869.6	2,852.0	2,823.4	2,816.8	2,833.0	2,865.4	2,895.9	2,921.2	2,948.7	
Total population	26,203.8	28,120.1	28,542.2	28,940.6	29,248.1	29,562.5	29,963.7	30,358.5	30,747.0	30,553.8	30,769.6	31,081.9	
Youth immigration <sup>f</sup>	25.9	61.2	61.2	73.1	68.3	65.9	66.3	70.4	61.2	..	..	..	
%													
Lone-parent families	18.8	15.3	14.4	14.8	14.9	15.1	14.8	14.9	15.4	15.7	..	..	
<b>Economic context</b>													
GDP: Real annual percentage change	3.1	-1.8	-0.6	2.2	4.1	2.3	1.5	..	..	..	..	..	
CPI: Annual percentage change	4.2	5.6	1.5	1.8	0.2	2.2	1.7	1.7	1.0	1.9	..	..	
Employment rate	59.6	59.7	58.4	58.0	58.4	58.8	58.5	59.0	59.7	60.6	..	..	
Unemployment rate	9.7	10.3	11.2	11.4	10.4	9.4	9.7	9.1	8.3	7.6	6.8	7.2	
Student employment rate	34.4	38.0	35.1	34.0	34.2	33.3	34.8	32.5 <sup>2</sup>	..	..	..	..	
Families below low income cut-offs:													
Two-parent families	10.9	10.8	10.6	12.2	11.5	12.8	11.8	12.0	..	..	..	..	
Lone-parent families	52.5	55.4	52.3	55.0	53.0	53.0	56.8	51.1	..	..	..	..	
thousands													
<b>Enrolments</b>													
Elementary/secondary schools	4,938.0	5,218.2	5,284.1	5,327.8	5,362.8	5,430.8 <sup>r</sup>	5,414.6	5,386.3	5,369.7 <sup>r</sup>	5,379.9 <sup>e</sup>	5,389.3 <sup>e</sup>	5,385.2 <sup>e</sup>	
%													
Percentage in private schools	4.6	4.7	4.9	5.0	5.1	5.1	5.2	5.3	5.3 <sup>e</sup>	..	..	..	
thousands													
College/trade/vocational, full-time <sup>3</sup>	238.1	275.9	266.7	306.5	298.8	269.1	261.4	250.0	240.1	..	..	..	
College/postsecondary, full-time	321.5	349.1	364.6	369.2 <sup>r</sup>	380.0 <sup>r</sup>	391.3 <sup>r</sup>	397.3 <sup>r</sup>	398.6	403.5 <sup>r</sup>	407.0 <sup>e</sup>	..	..	
College/postsecondary, part-time <sup>4</sup>	96.4 <sup>e</sup>	125.7 <sup>e</sup>	106.6 <sup>e</sup>	98.4	90.8	87.7	87.1	91.6	91.4	91.4 <sup>e</sup>	..	..	

See notes at end of this table.



**Table 1**  
**Education indicators, Canada, 1986 to 2001 (concluded)**

Indicator <sup>1</sup>	1986	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	thousands											
Full-time university	475.4	554.0	569.5	574.3	575.7	573.2	573.6	573.1 <sup>r</sup>	580.4	590.7 <sup>e</sup>	..	..
Part-time university	287.5	313.3	316.2	300.3	283.3	273.2	256.1	249.7	246.0	257.5 <sup>e</sup>	..	..
Adult education and training	..	5,504	..	5,842	..	..	..	6,069	..	..	..	..
	%											
Participation rate	..	27	..	28	..	..	..	26	..	..	..	..
<b>Graduates</b>	thousands											
Secondary schools <sup>5</sup>	..	260.7	272.9	281.4	280.4	301.7 <sup>r</sup>	304.5 <sup>r</sup>	307.8 <sup>r</sup>	310.6	316.8	..	..
College/trade/vocational <sup>6</sup>	145.0	159.7	158.8	163.9	151.1	144.2	141.5 <sup>e</sup>	138.7 <sup>e</sup>	..	..	..	..
College/postsecondary	82.4	83.8	85.9	92.5	95.3	97.2	101.0	105.0	113.1	..	..	..
University/Bachelor's	101.7	114.8	120.7	123.2	126.5	127.3	128.0	125.8	124.9	127.1 <sup>e</sup>	..	..
University/Master's	15.9	18.0	19.4	20.8	21.3	21.4	21.6	21.3	22.0	23.2 <sup>e</sup>	..	..
University/Doctorate	2.2	2.9	3.1	3.4 <sup>e</sup>	3.6	3.7	3.9	4.0	4.0	4.0 <sup>e</sup>	..	..
<b>Full-time educators</b>	ratio											
Elementary/secondary schools	269.9	302.6	301.8	295.4	295.7	298.7	294.4	296.9 <sup>r</sup>	300.3	301.8 <sup>e</sup>	304.2	305.7
College/postsecondary/trade/vocational	30.6 <sup>7</sup>	31.7 <sup>7</sup>	31.8 <sup>7</sup>	32.2 <sup>7</sup>	31.0 <sup>7</sup>	30.9 <sup>7</sup>	31.5	31.0	32.1 <sup>e</sup>	..	..	..
University	35.4	36.8	37.3	36.9	36.4	36.0	34.6	33.7	33.8 <sup>e</sup>	..	..	..
	ratio											
Elementary/secondary pupil-educator ratio	16.5	15.5	15.7 <sup>e</sup>	16.1 <sup>e</sup>	16.1 <sup>e</sup>	16.1 <sup>e</sup>	16.1 <sup>e</sup>	16.3 <sup>e</sup>	16.4 <sup>e</sup>	15.9 <sup>e</sup>	..	..
<b>Education expenditures</b>	\$ millions											
Elementary/secondary	22,968.0	33,444.9	34,774.5	35,582.3	35,936.0	36,425.3	36,804.8	37,163.6	38,709.4	39,309.4 <sup>p</sup>	39,738.9 <sup>e</sup>	..
Vocational	3,275.1	4,573.8	5,380.9	5,631.2	6,559.0	6,185.2	5,301.8	7,953.4	8,946.2	8,391.9 <sup>p</sup>	8,669.9 <sup>e</sup>	..
College	2,999.0	3,870.7	4,075.3	4,105.9	4,207.1	4,531.8	4,477.9	4,689.5	4,781.7	5,498.5 <sup>p</sup>	4,923.2 <sup>e</sup>	..
University	7,368.7	11,254.8	11,569.8	11,736.8	11,857.9	11,802.0	11,600.7	12,220.3	12,863.2	14,549.0 <sup>p</sup>	13,168.3 <sup>e</sup>	..
Total education expenditures	36,610.8	53,144.2	55,800.5	57,056.2	58,560.0	58,944.3	58,185.2	62,026.7	65,300.4	67,748.9 <sup>p</sup>	66,500.2 <sup>e</sup>	..
	%											
As a percentage of GDP	7.3	7.9	8.0 <sup>r</sup>	7.9 <sup>r</sup>	7.7 <sup>r</sup>	7.3 <sup>r</sup>	7.0 <sup>r</sup>	7.1 <sup>r</sup>	7.1 <sup>r</sup>	..	..	..

**Notes:**

.. Figures not available.

<sup>r</sup> Revised figures.<sup>e</sup> Estimated figures.

1. See 'Definitions' following Table 2.

2. The figure is for April 1997.

3. The enrolments have all been reported as full-time based on a 'full-day' program, even though the duration of the programs varies from 1 to 48 weeks.

4. Excludes enrolments in continuing education courses, which had previously been included.

5. Source: Canadian Education Statistics Council. (Excludes adults for Quebec, Ontario and Alberta equivalencies.)

6. The majority of trade and vocational programs, unlike graduate diploma programs which are generally two or three years' duration, are short programs or single courses that may require only several weeks. A person successfully completing these short-duration programs or courses is considered a completer, not a graduate. These completers do not include persons in part-time programs.

7. Figures have been revised to include a complete count of staff in trade programs.



Table 2  
Education indicators, provinces and territories

Indicator <sup>1</sup>	Canada	Newfound- land and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario
	%						
<b>Social and economic context</b>							
Educational attainment, <sup>2</sup> 2001:							
Less than secondary diploma	24.4	35.7	30.9	27.4	30.6	31.4	21.5
Graduated from high school	19.6	15.0	15.3	13.6	19.4	15.7	21.7
Some postsecondary	7.0	4.8	6.4	7.1	5.2	5.6	6.8
Postsecondary certificate, diploma or university degree	48.9	44.6	47.4	51.9	44.8	47.2	50.0
Labour force participation rates by educational attainment, 2001:							
Total	66.3	58.7	67.5	62.1	61.8	63.8	67.6
Less than secondary diploma	38.8	33.7	46.4	35.2	37.0	37.0	39.0
Graduated from high school	69.1	60.8	77.0	66.4	69.0	70.9	68.3
Some postsecondary	69.9	64.2	74.1	65.1	65.3	67.5	71.1
Postsecondary certificate, diploma or university degree	78.3	77.4	77.4	74.7	75.3	78.8	79.2
Unemployment rate, 2001	6.1	14.5	10.9	8.1	10.0	7.8	5.1
<b>Costs</b>							
Public and private expenditures on education as a percentage of GDP, 1994–1995	7.0	9.9	7.6	7.6	7.4	7.6	6.8
Public expenditures on education as a percentage of total public expenditures, 1994–1995	13.6	16.9	10.8	9.7	11.2	13.8	14.2
Elementary/secondary pupil–educator ratio, 1998–1999	15.9 <sup>e</sup>	14.5	16.6	16.5	16.9	14.4	16.4
<b>Educational outcomes</b>							
Secondary school graduation rates, 1999	76.7	79.5	81.3	80.4	84.8	84.2 <sup>3,4</sup>	77.3 <sup>5</sup>
University graduation rate, 1998–1999	35.0	32.2	21.8	53.5	33.7	41.7	36.8
Unemployment rate by level of educational attainment, 2001							
Less than secondary diploma	10.1	27.6	20.0	11.7	19.6	13.0	6.9
Graduated from high school	5.8	14.3	13.1	8.1	9.6	7.5	5.2
Some postsecondary	6.7	14.4	11.6	8.7	9.2	9.5	5.6
Postsecondary certificate, diploma or university degree	5.1	10.0	6.6	7.1	7.0	6.1	4.7

See notes at end of this table.



Table 2  
Education indicators, provinces and territories (concluded)

Indicator <sup>1</sup>	Manitoba	Saskatchewan	Alberta	British Columbia	Yukon	Northwest Territories
	%					
<b>Social and economic context</b>						
Educational attainment, <sup>2</sup> 2001:						
Less than secondary diploma	27.8	28.6	19.3	18.5	..	..
Graduated from high school	21.0	20.6	19.2	22.5	..	..
Some postsecondary	6.6	7.0	9.1	9.8	..	..
Postsecondary certificate, diploma or university degree	44.6	43.9	52.3	49.2	..	..
Labour force participation rates by educational attainment, 2001:						
Total	67.2	66.0	72.7	64.8	..	..
Less than secondary diploma	42.1	40.3	47.1	38.2	..	..
Graduated from high school	74.0	74.5	75.5	63.8	..	..
Some postsecondary	75.7	73.0	75.0	66.9	..	..
Postsecondary certificate, diploma or university degree	78.5	77.7	80.8	74.7	..	..
Unemployment rate, 2001	3.9	4.5	3.6	6.6	..	..
<b>Costs</b>						
Public and private expenditures on education as a percentage of GDP, 1994–1995	7.8	7.4	5.4	6.5	11.3	16.6
Public expenditures on education as a percentage of total public expenditures, 1994–1995	12.9	13.8	13.2	12.2	10.4	12.0
Elementary/secondary pupil–educator ratio, 1998–1999	15.6	16.2	16.8	16.9	12.7	13.5 <sup>e</sup>
<b>Educational outcomes</b>						
Secondary school graduation rates, 1999	74.3	75.0	63.3	73.4	60.4	40.1 <sup>6</sup>
University graduation rate, 1998–1999	31.5	33.1	25.2	24.6	..	..
Unemployment rate by level of educational attainment, 2001						
Less than secondary diploma	6.3	7.7	5.2	11.5	..	..
Graduated from high school	3.2	3.9	3.4	6.5	..	..
Some postsecondary	4.2	6.4	4.1	7.3	..	..
Postsecondary certificate, diploma or university degree	3.4	3.5	3.2	5.5	..	..

**Notes:**

.. Figures not available.

<sup>r</sup> Revised figures.

1. See 'Definitions' following Table 2.

2. Parts may not add up to 100% due to rounding.

3. Starting in 1995, Quebec graduate data for regular day programs include individuals over the age of 20 who graduated from regular day programs.

4. Excludes "Formation professionnelle."

5. Excludes night school and correspondence courses for Ontario adults.

6. Includes graduates from Nunavut.

## Definitions

### Education indicators, Canada

**Table 1.**

Year references are as follows: (1) *population* refers to July of the given year; (2) *enrolment* and *staff* refer to the academic year beginning in September of the given year; (3) *graduates* refers to number of persons graduating in the spring or summer of the given year; (4) *expenditures* refers to the fiscal year beginning in April of the given year.

**1. Youth immigration**

The number of persons aged 0 to 19 who are, or have been, landed immigrants in Canada. A landed immigrant is a person who is not a Canadian citizen by birth, but who has been granted the right to live in Canada permanently by Canadian immigration authorities.

**2. Lone-parent families**

The number of lone-parent families expressed as a percentage of the total number of families with children. A lone parent refers to a mother or a father, with no spouse or common-law partner present, living in a dwelling with one or more never-married sons and/or daughters. Sources: Statistics Canada, 1971 to 1986: *Lone-parent families in Canada*, Catalogue no. 89-522-XPE; 1991 to present: Small Area and Administrative Data Division.

**3. Gross domestic product**

The unduplicated value of production originating within the boundaries of Canada, regardless of the ownership of the factors of production. GDP can be calculated three ways: as total incomes earned in current production; as total final sales of current production; or as total net values added in current production. It can be valued either at factor cost or at market prices. Source: Statistics Canada, Industry, Measures and Analysis Division.

**4. Consumer Price Index**

The Consumer Price Index (CPI) is an indicator of changes in consumer prices. It is defined as a measure of price change obtained by comparing, over time, the cost of a specific basket of commodities. Figures are annual averages.

**5. Employment rate**

The number of persons employed expressed as a percentage of the population 15 years of age and over, excluding institutional residents. Figures are annual averages.

**6. Unemployment rate**

The number of unemployed persons expressed as a percentage of the labour force.

**7. Student employment rate**

The number of persons aged 15 to 24 attending school on a full-time basis who were employed during the calendar year (excluding May through August), expressed as a percentage of the total number of full-time students 15 to 24 years of age.

**8. Families below low income cut-offs**

Low income cut-offs are a relative measure of the income adequacy of families. A family that earns less than one-half of the median adjusted family unit income is considered to be in difficult circumstances. The set of low income cut-offs is adjusted for the size of the area of residence and for family size. Source: Statistics Canada, *Low Income Persons, 1980 to 1995*, December 1996, Catalogue no. 13-569-XPB/XIB.

**9. Adult education participation rate**

The number of persons 17 years of age or over participating in adult education or training activities, expressed as a percentage of the total population 17 years of age or over. Excludes regular full-time students who are completing their initial schooling.

**10. Elementary/secondary pupil-educator ratio**

Full-time equivalent enrolment (enrolment in grades 1 to 12 [including Ontario Academic Credits] and ungraded programs, pre-elementary enrolment in provinces where attendance is full time, and half of the pre-elementary enrolment in other provinces) divided by the full-time equivalent number of educators.

**11. Education expenditures**

Includes expenditures of governments and of all institutions providing elementary/secondary and postsecondary education, and vocational training programs offered by public and private trade/vocational schools and community colleges.



**Education indicators, provinces and territories****Table 2.**

The methodologies used to derive the indicators in Table 2 may differ from those used in other statistical tables of this section.

**12. Educational attainment and labour force participation rates**

Refers to the population aged 25 and over. Source: Statistics Canada, Labour Statistics Division.

**13. Secondary school graduation rate**

Source: Statistics Canada, 2001, Centre for Education Statistics, *Education in Canada 2000*, Catalogue no. 81-229-XPB.

**14. University graduation rate**

Number of degrees awarded at the undergraduate level, as a percentage of the population aged 22.

**15. Unemployment rate by level of educational attainment**

The number unemployed with a given level of education expressed as a percentage of the labour force with the same education for the population aged 25 and over. Upper secondary includes the final grade of secondary school.

EOR

The following articles are scheduled to appear in upcoming issues of *Education Quarterly Review*:

### **Information technology and learning: Do youth have access?**

Using data from the Programme for International Student Assessment, this article examines issues relating to access and use of information and communications technology (ICT). Issues include the extent to which Canadian youth have access to and use ICT, how access to and use of ICT by Canadian youth compares with that of children in other OECD countries, and the relationship of ICT access and use to student's sex, province lived in, school attended, socio-economic status and whether the child was born in Canada.

### **Opportunity costs of a master's degree**

The immediate cost for Canadian students studying in a master's degree program for one full year at a Canadian university is estimated by province, field of study and sex. Data taken from the National Graduates Survey are supplemented by information on tuition and incidental fees, books, room and board, and student's lost income over the study period.

### **School performance of children of immigrants**

This study uses data from Statistics Canada's National Longitudinal Survey of Children and Youth to analyse the performance of children of immigrants in the Canadian school system, using the children of Canadian-born parents as a comparison group. The analysis helps to identify children at risk and to evaluate the past performance of Canadian immigration policy in selecting immigrants whose families will succeed in Canada.

**EQR**

This index lists, by major subject area, the analytical articles published in *Education Quarterly Review*. Included are descriptions of education and education-related surveys conducted by Statistics Canada, provincial governments and institutions.

## Enrolment

Increases in university enrolment: Increased access or increased retention?

*Vol. 1, No. 1 (April 1994)*

Enrolment changes in trade/vocational and preparatory programs, 1983–84 to 1990–91

*Vol. 1, No. 1 (April 1994)*

Two decades of change: College postsecondary enrolments, 1971 to 1991

*Vol. 1, No. 2 (July 1994)*

University enrolment trends

*Vol. 2, No. 1 (March 1995)*

International students in Canada

*Vol. 3, No. 3 (October 1996)*

## Graduates

Predicting school leavers and graduates

*Vol. 1, No. 2 (July 1994)*

Attitudes of Bachelor's Graduates towards their Programs

*Vol. 1, No. 2 (July 1994)*

Male-female earnings gap among postsecondary graduates

*Vol. 2, No. 1 (March 1995)*

College and related institutions postsecondary enrolment and graduates survey

*Vol. 2, No. 4 (January 1996)*

Employment prospects for high school graduates

*Vol. 3, No. 1 (May 1996)*

Graduation rates and times to completion for doctoral programs in Canada

*Vol. 3, No. 2 (July 1996)*

Relationship between postsecondary graduates' education and employment

*Vol. 3, No. 2 (July 1996)*

Science and technology careers in Canada: Analysis of recent university graduates

*Vol. 4, No. 3 (February 1998)*

The class of '90 revisited: 1995 follow-up of 1990 graduates

*Vol. 4, No. 4 (May 1998)*

Who are the disappearing youth? An analysis of non-respondents to the School Leavers Follow-up Survey, 1995

*Vol. 6, No. 4 (August 2000)*

Determinants of university and community college leaving

*Vol. 6, No. 4 (August 2000)*

Overqualified? Recent graduates and the needs of their employers

*Vol. 7, No. 1 (November 2000)*

Holding their own: Employment and earnings of postsecondary graduates

*Vol. 7, No. 1 (November 2000)*

Graduates' earnings and the job skills-education match

*Vol. 7, No. 2 (February 2001)*

Bachelor's graduates who pursue further postsecondary education

*Vol. 7, No. 2 (February 2001)*

School-to-work transition: A focus on arts and culture graduates

*Vol. 7, No. 3 (May 2001)*

## Teachers

Part-time university teachers: A growing group

*Vol. 1, No. 3 (October 1994)*

Teacher workload in elementary and secondary schools

*Vol. 1, No. 3 (October 1994)*

Employment income of elementary and secondary teachers and other selected occupations

*Vol. 2, No. 2 (June 1995)*

Renewal, costs and university faculty demographics

*Vol. 2, No. 3 (September 1995)*

Teacher workload and work life in Saskatchewan

*Vol. 2, No. 4 (January 1996)*

Are we headed toward a teacher surplus or a teacher shortage?

*Vol. 4, No. 1 (May 1997)*

Status of women faculty in Canadian universities

*Vol. 5, No. 2 (December 1998)*

Teacher workload and stress: A British Columbia perspective

*Vol. 8, No. 3 (June 2002)*

## Finance

Education Price Index: Selected inputs, elementary and secondary level

*Vol. 1, No. 3 (October 1994)*

Does Canada invest enough in education? An insight into the cost structure of education in Canada

*Vol. 1, No. 4 (April 1994)*

School transportation costs

*Vol. 2, No. 4 (January 1996)*

Federal participation in Canadian education

*Vol. 3, No. 1 (May 1996)*

Funding public school systems: A 25-year review

*Vol. 4, No. 2 (September 1997)*

## Flows and transition

Intergenerational change in the education of Canadians

*Vol. 2, No. 2 (June 1995)*

Educational outcome measures of knowledge, skills and values

*Vol. 3, No. 1 (May 1996)*

Interprovincial university student flow patterns

*Vol. 3, No. 3 (October 1996)*

Varied pathways: The undergraduate experience in Ontario

*Vol. 4, No. 3 (February 1998)*

Intergenerational education mobility: An international comparison

*Vol. 5, No. 2 (December 1998)*

Education: The treasure within

*Vol. 6, No. 1 (October 1999)*

Brain drain and brain gain: The migration of knowledge workers from and to Canada

*Vol. 6, No. 3 (May 2000)*

Pathways to the United States: Graduates from the class of '95

*Vol. 6, No. 3 (May 2000)*

100 years of education

*Vol. 7, No. 3 (May 2001)*

The school-to-work transition: What motivates graduates to change jobs?

*Vol. 7, No. 4 (September 2001)*

## Accessibility

The increase in tuition fees: How to make ends meet?

*Vol. 1, No. 1 (April 1994)*

University enrolment and tuition fees

*Vol. 1, No. 4 (December 1994)*

- Financial assistance to postsecondary students  
*Vol. 2, No. 1 (March 1995)*
- Student borrowing for postsecondary education  
*Vol. 3, No. 2 (July 1996)*
- Job-related education and training—who has access?  
*Vol. 4, No. 1 (May 1997)*
- Financing universities: Why are students paying more?  
*Vol. 4, No. 2 (September 1997)*
- Determinants of postsecondary participation  
*Vol. 5, No. 3 (March 1999)*
- Student debt from 1990–91 to 1995–96: An analysis of Canada Student Loans data  
*Vol. 5, No. 4 (July 1999)*
- University education: Recent trends in participation, accessibility and returns  
*Vol. 6, No. 4 (August 2000)*
- Women in engineering: The missing link in the Canadian knowledge economy  
*Vol. 7, No. 3 (May 2001)*
- Postsecondary participation: The effects of parents' education and household income  
*Vol. 8, No. 3 (June 2002)*

## Achievement and literacy

- Computer literacy—a growing requirement  
*Vol. 3, No. 3 (October 1996)*
- Educational attainment—a key to autonomy and authority in the workplace  
*Vol. 4, No. 1 (May 1997)*
- Third International Mathematics and Science Study: Canada report, Grade 8  
*Vol. 4, No. 3 (February 1998)*
- Getting ahead in life: Does your parents' education count?  
*Vol. 5, No. 1 (August 1998)*
- A profile of NLSCY schools  
*Vol. 5, No. 4 (July 1999)*
- Parents and schools: The involvement, participation, and expectations of parents in the education of their children  
*Vol. 5, No. 4 (July 1999)*
- Academic achievement in early adolescence: Do school attitudes make a difference?  
*Vol. 6, No. 1 (October 1999)*
- How do families affect children's success in school?  
*Vol. 6, No. 1 (October 1999)*
- Neighbourhood affluence and school readiness  
*Vol. 6, No. 1 (October 1999)*
- Diversity in the classroom: Characteristics of elementary students receiving special education  
*Vol. 6, No. 2 (March 2000)*

- Children's school experiences in the NLSCY  
*Vol. 6, No. 2 (March 2000)*
- Parental involvement and children's academic achievement in the National Longitudinal Survey of Children and Youth, 1994–95  
*Vol. 6, No. 2 (March 2000)*
- From home to school: How Canadian children cope  
*Vol. 6, No. 2 (March 2000)*
- Third International Mathematics and Science Study: Canada report  
*Vol. 7, No. 4 (September 2001)*
- Factors affecting Grade 3 student performance in Ontario: A multilevel analysis  
*Vol. 7, No. 4 (September 2001)*
- Determinants of science and technology skills: Overview of the study  
*Vol. 8, No. 1 (December 2001)*
- Science and technology skills: Participation and performance in elementary and secondary school  
*Vol. 8, No. 1 (December 2001)*
- Science and technology skills: Participation and performance in university and beyond  
*Vol. 8, No. 1 (December 2001)*

## Labour market

- Returning to school full time  
*Vol. 1, No. 2 (July 1994)*
- Trends in education employment  
*Vol. 1, No. 3 (October 1994)*
- Earnings and labour force status of 1990 graduates  
*Vol. 2, No. 3 (September 1995)*
- Worker bees: Education and employment benefits of co-op programs  
*Vol. 2, No. 4 (January 1996)*
- Youth combining school and work  
*Vol. 2, No. 4 (January 1996)*
- Labour market dynamics in the teaching profession  
*Vol. 3, No. 4 (January 1997)*
- Youth employment: A lesson on its decline  
*Vol. 5, No. 3 (March 1999)*
- New hirings and permanent separations  
*Vol. 7, No. 2 (February 2001)*
- Liberal arts degrees and the labour market  
*Vol. 8, No. 2 (March 2002)*
- Setting Up Shop: Self employment among college and university graduates  
*Vol. 8, No. 3 (June 2002)*

## Training

- Occupational training among unemployed persons  
*Vol. 1, No. 1 (April 1994)*
- An overview of trade/vocational and preparatory training in Canada  
*Vol. 1, No. 1 (April 1994)*
- Women in registered apprenticeship training programs  
*Vol. 1, No. 4 (December 1994)*
- Survey of private training schools in Canada, 1992  
*Vol. 2, No. 3 (September 1995)*
- Socio-economic changes in the population and participation in job-related training  
*Vol. 7, No. 4 (September 2001)*
- Learning computer skills  
*Vol. 8, No. 2 (March 2002)*
- Adult training in Canada: Snapshots from the nineties  
*Vol. 8, No. 2 (March 2002)*

## Private, distance and home schooling

- Private elementary and secondary schools  
*Vol. 1, No. 1 (April 1994)*
- Distance learning—an idea whose time has come  
*Vol. 2, No. 3 (September 1995)*
- Proprietary schools in Canada  
*Vol. 3, No. 1 (May 1996)*
- A profile of home schooling in Canada  
*Vol. 4, No. 4 (May 1998)*
- Distance education: Reducing barriers  
*Vol. 5, No. 1 (August 1998)*

## Indicators

- Education indicators, interprovincial and international comparisons  
*Vol. 1, No. 2 (July 1994)*
- The search for education indicators  
*Vol. 1, No. 4 (December 1994)*
- Participation in pre-elementary and elementary and secondary education in Canada: A look at the indicators  
*Vol. 2, No. 3 (September 1995)*

## Surveys and data sources

- An overview of elementary/secondary education data sources  
*Vol. 1, No. 2 (July 1994)*
- Adult Education and Training Survey: An overview  
*Vol. 1, No. 3 (October 1994)*
- Handbook of Education Terminology: Elementary and Secondary Levels  
*Vol. 1, No. 4 (December 1994)*
- Adult education: A practical definition  
*Vol. 2, No. 1 (March 1995)*
- College and Related Institutions Educational Staff Survey  
*Vol. 2, No. 1 (March 1995)*
- Survey of labour and income dynamics: An overview  
*Vol. 2, No. 2 (June 1995)*
- Tracing respondents: The example of the School Leavers Follow-up Survey  
*Vol. 2, No. 2 (June 1995)*
- The education component of the National Longitudinal Survey of Children and Youth  
*Vol. 3, No. 2 (July 1996)*
- International survey on adult literacy  
*Vol. 3, No. 4 (January 1997)*
- After high school ... Initial results of the School Leavers Follow-up Survey, 1995  
*Vol. 3, No. 4 (January 1997)*
- The National Longitudinal Survey of Children and Youth, 1994–95: Initial results from the school component  
*Vol. 4, No. 2 (September 1997)*