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- Graduates' earnings and the job skills–education match
- Pursuing further postsecondary education
- New hirings and permanent separations

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Note of appreciation

Acknowledgments

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Symbols

The following standard symbols are used in Statistics Canada
publications:

..   figures not available

...   figures not appropriate or not applicable

–   nil or zero

--   amount too small to be expressed

p   preliminary figures

e   estimate

r   revised figures

x   confidential to meet secrecy requirements of the *Statistics Act*

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.

This issue focusses on three facets of the transition from school to work:

- Ross Finnie examines postsecondary graduates in Canada throughout the 1980s and 1990s to determine the evolution of earnings in the early years in the labour market, the extent to which graduates use their acquired skills, and the correspondence of their educational qualifications to the job requirements.

- George Butlin assesses the effects of social–demographic variables (such as sex, age at graduation, and parents' level of education) and enrolment-related variables (including field of study, region of university attended, and size of student loan) on the likelihood of pursuing further postsecondary education beyond the bachelor's level.

- Martin Tabi explores the impact of education on the extent to which workers move into and out of jobs. His analysis examines level of education and the degree of movement into and out of jobs.

In the **Cumulative index** at the back of the report, we list by title all articles that have appeared in *EQR* since 1994. These articles have been grouped in 11 categories, including 'Education funding,' 'Technology and learning' and 'Accessibility.' The categories are based on education policy issues that were identified in the report *Strategic Plan (1997)*. Released in November 1997, one year after the creation of the Centre for Education Statistics, it reviews the Centre's statistical program and identifies objectives and priorities required to strengthen the program to better address information needs. *Strategic Plan (1997)* is available free of charge on the Internet at <http://www.statcan.ca/cgi-bin/downpub/freepub.cgi>.

Highlights

Graduates' earnings and the job skills–education match

- School-to-work transition is an extended process. Many outcomes change significantly from two to five years following graduation. Mean earnings grow substantially from two to five years following graduation. Earnings growth rates are generally higher at the college and bachelor's levels than among master's and PhD graduates.

- The job skills–education match and the correspondence of graduates' jobs to their educational qualifications show mixed patterns. Overall job satisfaction did not increase commensurately with the improvements in more objective outcomes such as earnings and the movement from temporary to permanent jobs.

- The job skills–education match is generally higher at the master's and PhD levels than among college and bachelor's graduates. There are no obvious patterns between men and women except that scores are somewhat higher for women than for men at the college level.

Pursuing further postsecondary education

- Nearly 60% of 1990 bachelor's graduates had taken or completed some further postsecondary education by 1995, five years after graduating. Over three-quarters of graduates who took further postsecondary education did so by 1992, within two years of graduation. Nearly a third of graduates who took further postsecondary education took master's or doctoral programs, while close to a quarter of students took programs at either the college/trade–vocational or bachelor's degree level.

- Graduates from fields of study that had a specific job associated with them—such as education; commerce, management and business; engineering; and health professions—had lower odds of participation in further postsecondary education than graduates from social science programs.

New hirings and permanent separations

- Among people 25 years of age and older without any education beyond a high school diploma, the hiring and separation rates were, on average for 1998 and 1999, 21%. For those holding a university degree, the average annual hiring rate was 17%, almost identical to the rate of separation (16%).

- Around 14% of workers 25 years of age or older had a master's degree or a PhD but this group accounted for only 3.7% of layoffs. At the other end of the scale, 36% of workers 25 years of age or older had a high school diploma or less but they comprise 44% of permanent layoffs.

- Around 35% of workers 25 years of age or older had a non-university postsecondary diploma or certificate. This group accounted for 35% of hirings, quits and layoffs. EQR

Articles

Graduates' earnings and the job skills–education match[1]

Introduction

Graduating from college or university and moving into the labour force is an important transition, yet it has not been widely studied by researchers. This article examines two key issues relating to the transition from school to the labour market: earnings, and the education–job skills match. How do earnings levels evolve over the early years in the labour market? To what extent do graduates use the skills they have acquired at school, and how do their qualifications relate to the prerequisites of the job?

This article presents some of the findings of a multifaceted empirical analysis of the school-to-work transition of postsecondary graduates in Canada in the 1980s and 1990s. These findings, based on the National Graduates Surveys, represent those who completed their studies in 1982, 1986 and 1990; each cohort of graduates was interviewed twice, two and five years following graduation.

The results of the analysis of these issues should be of interest to a variety of readers. Scholars in labour economics, education studies and related disciplines will be interested in what the results tell us about labour market outcomes in the early years of a career and how these results relate to individuals' schooling backgrounds. Policy makers should find this documentation of labour market outcomes in the years following graduation relevant to issues such as what interventions might be made at this important point in individuals' careers. As well, graduates who went through the transition may be interested in comparing their experiences to those of others, while current and future students should benefit from knowing what to expect when their time comes.

Earnings

Earnings levels

Table 1 and Graph 1a report the mean real earnings[2] of graduates two and five years after graduation. Not surprisingly, mean earnings increased substantially with educational level from college through

This article was adapted from the report "A dynamic analysis of the school-to-work transition of postsecondary graduates in Canada in the 1980s and 1990s," *by Ross Finnie (2000). The complete paper is available from the author. For related research, refer also to the Human Resources Development Canada website at* <http://www.hrdc-drhc.gc.ca/arb/publications/research>.

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master's levels. Men's mean earnings were slightly lower among PhD graduates than at the master's level (except in 1992), whereas women's were higher.

Women's mean earnings varied between 75% and 98% of men's earnings for a given education group in a given year. (The 'Women/men' rows in Table 1 contain the precise comparisons.) Interestingly, these differences generally vary inversely with the level of education: women's earnings were closest to men's among PhD graduates, were next nearest at the master's and bachelor's levels, and lagged furthest behind at the college level.

On the other hand, women's relative earnings levels were higher in each succeeding cohort—for each education group at each of the interview dates. These gains reduced the earnings gap between the sexes by between 22% and 43% from the first to the third cohorts among college, bachelor's and master's graduates. The gap came close to disappearing at the PhD level.

Mean earnings generally grew substantially from two to five years following graduation, as can be seen in the 'Change' columns in Table 1. For men, this growth was greater (in percentage terms) among college and bachelor's

Table 1
Mean earnings[1] of graduates at two and five years after graduation, by sex and level of education

	First cohort (1982 graduates)			Second cohort (1986 graduates)			Third cohort (1990 graduates)		
	1984	1987	Change	1988	1991	Change	1992	1995	Change
	$		%	$		%	$		%
All									
Men	35,800	44,100	23	36,000	42,800	19	35,100	42,200	20
	(82)	(104)		(73)	(83)		(78)	(89)	
Women	29,300	33,200	13	30,700	34,400	12	31,400	34,800	11
	(60)	(67)		(56)	(59)		(64)	(62)	
Women/men (%)	82	75		85	80		89	82	
College									
Men	29,300	36,200	24	30,000	36,200	21	29,400	34,700	18
	(103)	(120)		(92)	(108)		(97)	(105)	
Women	24,100	27,100	12	25,600	28,000	9	26,000	28,200	8
	(71)	(73)		(75)	(65)		(87)	(72)	
Women/men (%)	82	75		85	77		88	81	
Bachelor's									
Men	36,800	46,400	26	37,200	44,400	19	35,100	43,200	23
	(111)	(156)		(100)	(115)		(102)	(123)	
Women	31,800	36,700	15	32,500	37,000	14	32,600	36,600	12
	(82)	(96)		(74)	(80)		(84)	(84)	
Women/men (%)	86	79		87	83		93	85	
Master's									
Men	51,100	56,400	10	49,700	54,600	10	49,000	55,500	13
	(286)	(306)		(280)	(296)		(297)	(307)	
Women	42,500	46,000	8	43,800	46,100	5	44,000	47,600	8
	(288)	(296)		(264)	(281)		(248)	(248)	
Women/men (%)	83	82		88	84		90	86	
PhD									
Men	50,000	56,100	12	48,400	54,100	12	49,700	55,000	11
	(723)	(799)		(635)	(626)		(608)	(544)	
Women	45,500	48,700	7	45,800	50,800	11	48,800	52,500	8
	(1,104)	(1,072)		(851)	(1,019)		(932)	(810)	
Women/men (%)	91	87		95	94		98	95	

Notes:
Samples exclude those who did not respond to the second interview, those who obtained a new diploma by the relevant interview, and those who worked part time because of school.
Standard errors are shown in parentheses.
1. In 1995 constant dollars.
***Source:** National Graduates Surveys.*

Graph 1a
Mean earnings (1995 constant dollars) of graduates at two and five years after graduation

College

Bachelor's

Master's

PhD

Note: *Samples exclude those who did not respond to the second interview, those who obtained a new diploma by the relevant interview, and those who worked part time because of school.*
Source: *National Graduates Surveys.*

Graph 1b
Earnings profiles (1995 constant dollars)
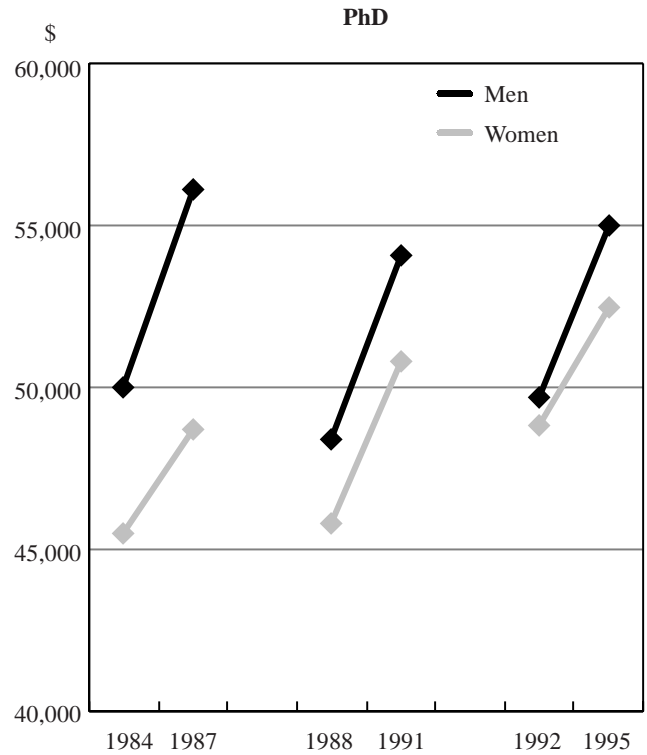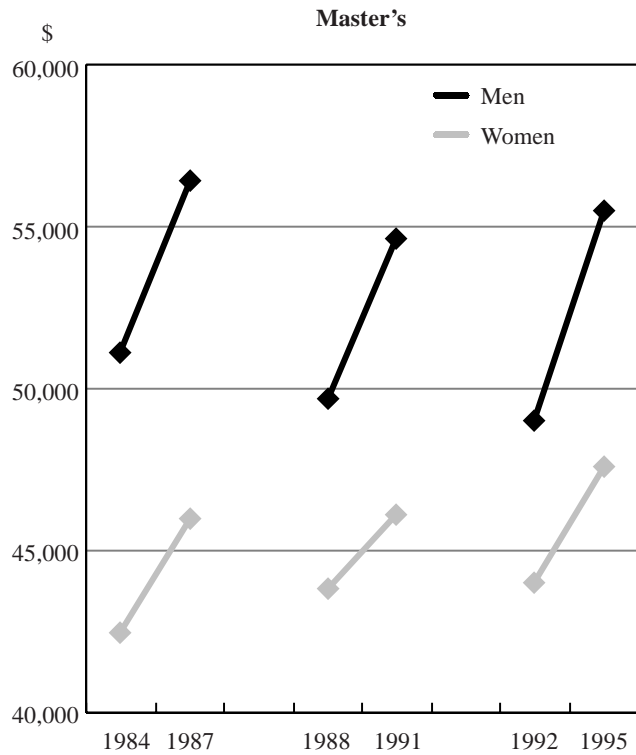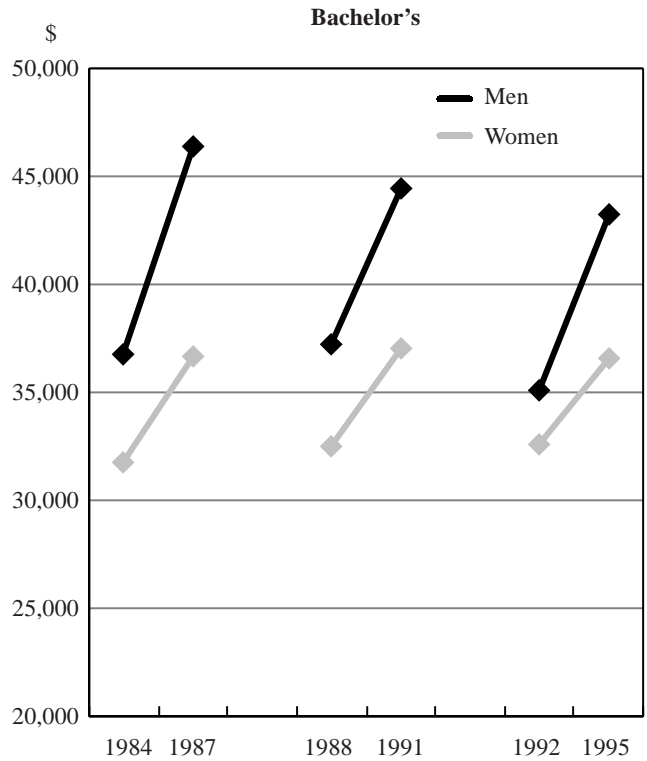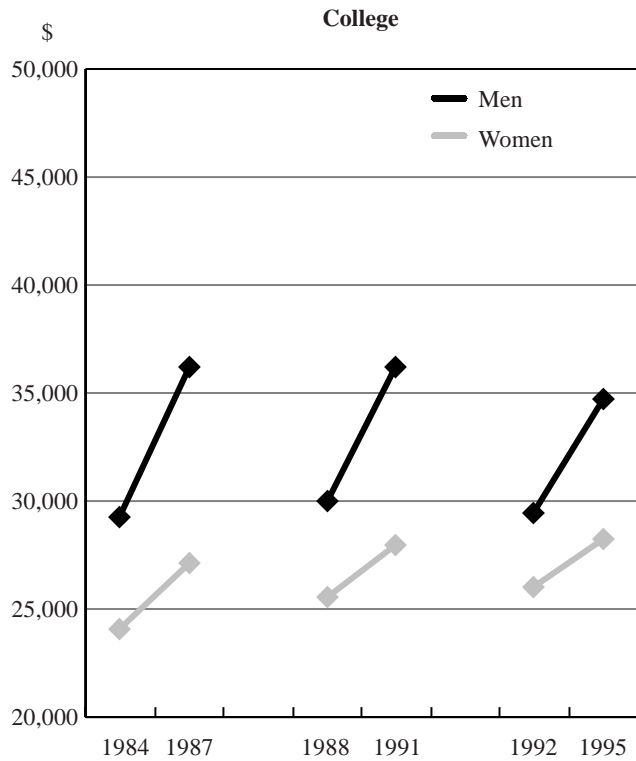
Note: *Samples exclude those who did not respond to the second interview, those who obtained a new diploma by the relevant interview, and those who worked part time because of school.*
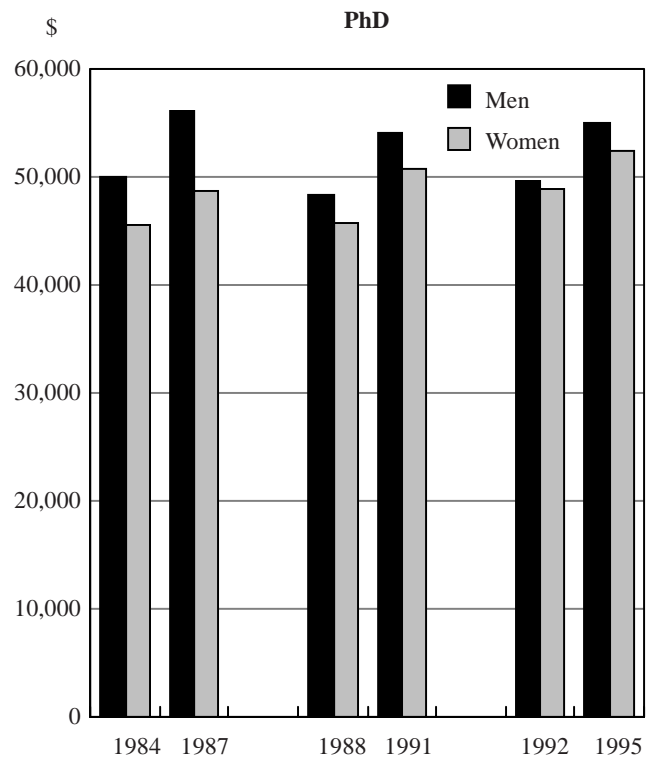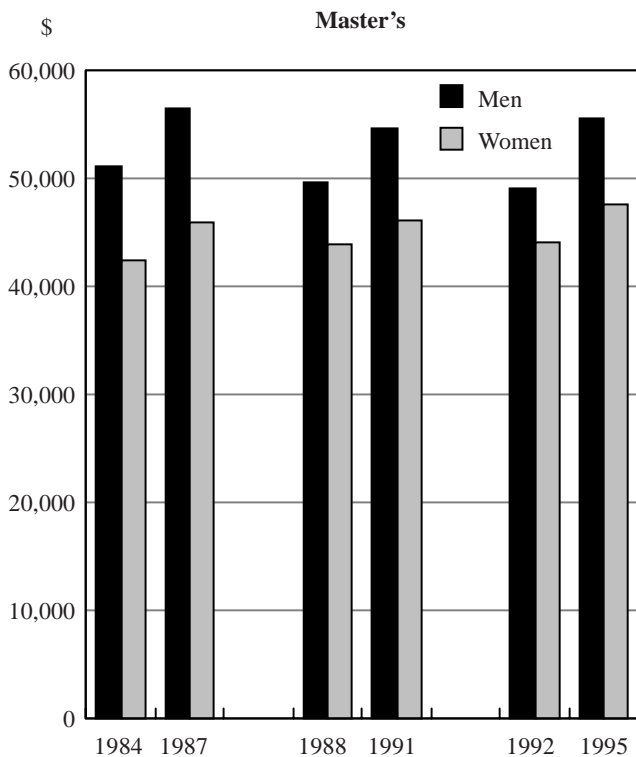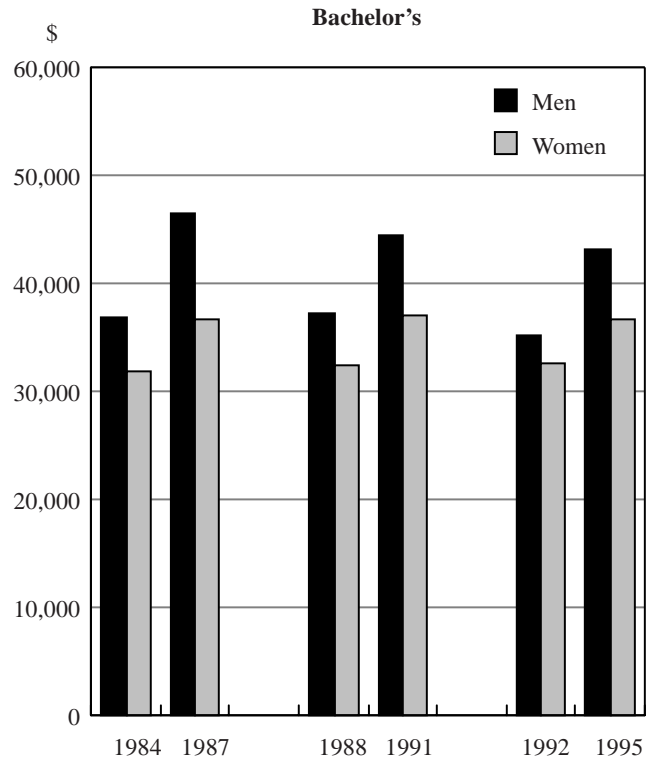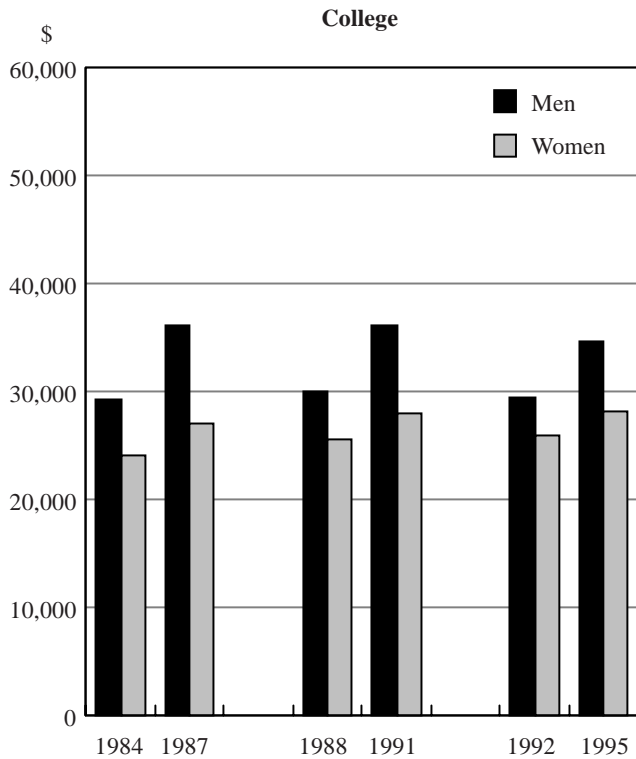**Source:** *National Graduates Surveys.*

graduates than at the master's and PhD levels, giving graduates at the more advanced educational levels higher but flatter (less growth) postgraduation earnings profiles— an interesting finding. Women at the bachelor's level also experienced steeper earnings profiles than did female master's and PhD graduates, but this was not true for female college graduates. These patterns can be seen in Graph 1b, which plots earnings profiles constructed with the two data points obtained from the two interviews for each cohort.

Men's mean earnings rose more than women's from two to five years following graduation for every set of graduates; the differences in most cases were greater at the college and bachelor's levels than at the more advanced levels. Furthermore, while we should be cautious in identifying trends across just three cohorts of data, the male advantages in terms of relative earnings growth rates were greater for the most recent set of graduates than for the first group at all educational levels below the PhD.

Thus, while the starting levels of female graduates' earnings profiles shifted up towards the males' profiles with each succeeding cohort, the rate of the upward shift in earnings remained relatively stable. This finding has important implications for the earnings gap in the longer term—that is, in more of a life-cycle perspective—although any extrapolations beyond the five-year horizon provided by National Graduate Surveys (NGS) data should, of course, be made very cautiously.

With respect to the cross-cohort trends in earnings levels by education–sex group (Table 1 and graphs 1a and 1b), male graduates' mean earnings ranged from essentially stable to distinctly lower for the later graduates relative to the earlier ones (comparing the 1982 and 1990 cohorts at each of the interview dates); the greatest change was a decline of 7% for bachelor's graduates as of five years after graduation.[3] For women, on the other hand, mean earnings were almost uniformly higher in each succeeding cohort, especially at the college and PhD levels, where the increases approached 8%.[4] These are, of course, the trends that underlie the above-mentioned narrowing of the earnings gap between the sexes.

In terms of the growth in earnings from two to five years following graduation, the cross-cohort patterns vary: at the college and bachelor's levels, both men's and women's earnings grew somewhat less for the graduates of the most recent cohort, whereas growth rates were relatively stable across cohorts at the master's and PhD levels—even distinctly higher for the most recent group of male master's graduates. Any significant change in growth rates could, of course, build over time and accumulate into sizable differences in lifetime earnings— but any such longer-range extrapolations made with these limited data should be very carefully hedged.

Earnings patterns and composition effects

Throughout these cross-cohort comparisons, readers should keep in mind that there were substantial increases in postsecondary enrolment rates over the period in question, and that these shifts might have affected earnings levels and other outcomes through the associated composition effects. If, for example, the extra enrolment came from individuals who generally had below-average 'ability' (broadly defined) relative to other graduates and to the average graduates of earlier cohorts, we could expect earnings levels to drop in the later cohorts; in this case, the decrease would not be due to a change in the structure of earnings or the labour market conditions faced by graduates.

For these reasons, the relative earnings levels of the later cohorts reported here might well be lower than they would be if these composition effects were controlled for. In short, the structure of men's earnings (that is, the expected earnings of a graduate with a given set of characteristics, including ability) might not have deteriorated as much as the data in the tables and graphs indicate, while female graduates' earnings might have improved even more than what is shown.

Table 2
Median percentage change in individual earnings from two to five years following graduation, by sex and level of education

|	First cohort (1982 graduates)	Second cohort (1986 graduates)	Third cohort (1990 graduates)
	% change		
All			
Men	18	18	16
Women	13	15	11
College			
Men	23	20	16
Women	15	15	10
Bachelor's			
Men	19	19	17
Women	13	15	12
Master's			
Men	8	10	10
Women	8	8	7
PhD			
Men	11	11	9
Women	7	10	8

Note:
Samples exclude those who did not respond to the second interview, those who obtained a new diploma by the relevant interview, and those who worked part time because of school.
Source: National Graduates Surveys.

Graph 2
Median percentage change in individual earnings from two to five years following graduation

College

%

Bachelor's

%

Master's

%

PhD

%
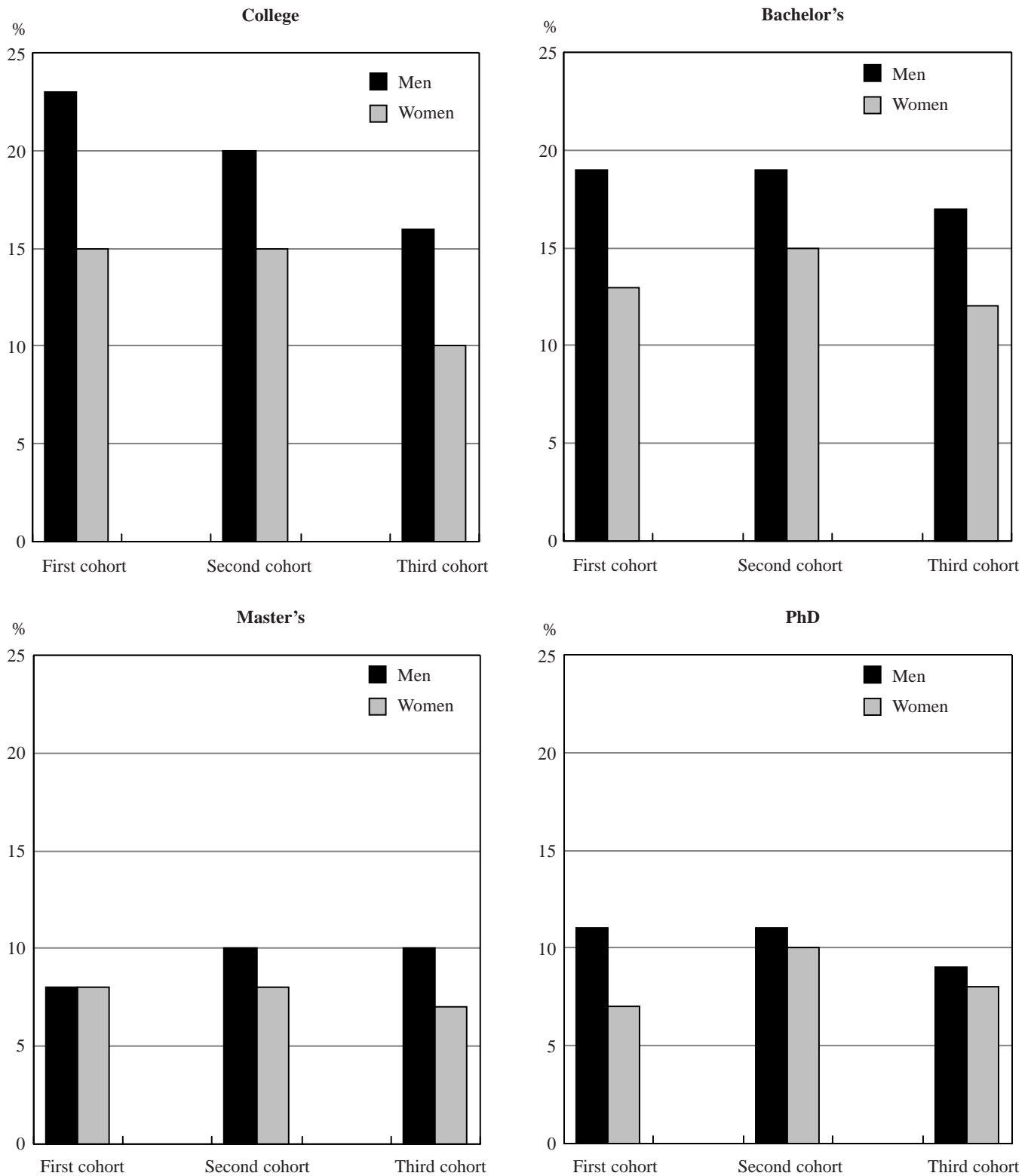
Note: *Samples exclude those who did not respond to the second interview, those who obtained a new diploma by the relevant interview, and those who worked part time because of school.*
Source: *National Graduates Surveys.*

Table 3

Distribution of changes in individuals' earnings from two to five years following graduation, by sex and level of education

| | Type of change | | | | | |
	Large decline (>10%)	Small decline (0–10%)	Small increase (0–10%)	Medium increase (10–50%)	Large increase (>50%)	Total
	% of education–sex group					
	First cohort (1982 graduates)					
All						
Men	8	10	16	48	18	100
Women	14	13	17	41	16	100
College						
Men	9	8	14	47	22	100
Women	15	9	16	44	15	100
Bachelor's						
Men	9	9	15	50	18	100
Women	13	14	17	39	17	100
Master's						
Men	8	19	26	38	9	100
Women	10	18	25	38	9	100
PhD						
Men	9	12	27	43	9	100
Women	13	14	30	35	9	100
	Second cohort (1986 graduates)					
All						
Men	10	9	17	47	17	100
Women	14	12	18	42	15	100
College						
Men	10	8	15	48	19	100
Women	16	10	16	43	14	100
Bachelor's						
Men	9	9	16	47	18	100
Women	13	12	18	42	16	100
Master's						
Men	10	16	22	42	9	100
Women	17	15	23	36	10	100
PhD						
Men	8	14	26	41	11	100
Women	14	14	20	37	14	100
	Third cohort (1990 graduates)					
All						
Men	9	12	19	44	16	100
Women	12	13	23	40	12	100
College						
Men	11	10	19	44	16	100
Women	15	14	23	39	10	100
Bachelor's						
Men	9	11	17	46	18	100
Women	11	12	23	41	14	100
Master's						
Men	8	17	26	39	10	100
Women	11	19	29	35	7	100
PhD						
Men	7	15	31	36	10	100
Women	9	15	32	32	12	100

Notes:

Figures may not add up to 100% because of rounding.

Samples exclude those who did not respond to the second interview, those who had obtained a new diploma by either interview, and those who worked part time because of school.

***Source:** National Graduates Surveys.*

Earnings dynamics at the individual level

Using mean earnings we looked at the aggregate level changes. By looking at the changes in earnings over the early years in the labour market at the individual level, we again fully exploit the longitudinal aspect of the NGS data. Table 1 shows the distribution of graduates with respect to the percentage changes in their mean earnings levels from two to five years following graduation; Table 2 and Graph 2 show the median values of these changes for each cohort. When looking at these numbers, readers should keep in mind that for individuals at relatively low earnings levels (including most part-timers), moderate changes in dollar terms can translate into rather large changes in percentage terms.

The detailed distributions shown in Table 3 show the volatility of earnings in the postgraduation years. For example, although more than half of all graduates had either medium (10% to 50%) or large (greater than 50%) pay increases, significant numbers also had smaller gains, small declines and even large declines.

Medians reported in Table 2 and Graph 2 are provided for each education–sex group. (See, for example, the median figures from Table 2 as compared to the percentages in the 'Change' columns in Table 1). However, one significant difference can be seen among male bachelor's graduates of the first and third cohorts, where the smaller median change rates indicate that earnings growth was more concentrated among a reduced number of high-growth individuals (thus pulling up the mean relative to the median). The only other significant difference was for female college graduates of the second cohort, for whom the higher median figure indicates that earnings growth was particularly widespread. Other comparisons between the aggregate-level means and individual-level medians all fall within three percentage points, indicating a general robustness of these findings.

It is not surprising that most of the earlier discussions concerning earnings growth based on the aggregate-level means carry through to the individual-level medians. For later and earlier cohorts, men's earnings growth was generally greater than women's, especially at the college and bachelor's levels. With the medians, on the other hand, the male–female differences were generally somewhat narrower (the gap actually closed at the master's level for the 1982 cohort), suggesting that female graduates' earnings growth tended to be more widespread than men's.[5] We also see confirmation of the previous patterns of growth rates being generally higher at the college and bachelor's levels than among master's and PhD graduates, and generally lower for the most recent cohort in the case of college and bachelor's graduates, but not at the master's and PhD levels.

The job skills–education match

The job skills–education match scores were, not surprisingly, generally higher at the master's and PhD levels than among college and bachelor's graduates, whereas there were no obvious patterns between men and women except that the scores were somewhat higher for women than men at the college level.

The skill-use index[6]

From the responses included in the NGS databases, we constructed an index showing the degree to which graduates use the skills developed during their educational program in their current job; higher values indicated a closer match between job skills and education (Table 4 and Graph 3). The results can be directly compared across interview years for a given cohort and between the first two cohorts. However, because of a change in the ordering of response options given in the NGS questionnaires, results cannot be compared between the first and last cohorts.

With respect to the dynamic element, however, there were no dramatic increases in the index scores from two to five years following graduation: in some cases the scores were higher, but in many other cases the reverse was true, and the magnitudes of the changes were nowhere very great. It is difficult to know how to interpret these results, especially given their underlying subjective nature. For example, it is possible that by five years after finishing their programs, graduates had difficulty telling what part of their current skill set was developed during their formal schooling, what part was gained on the job, and what was a combination of the two. It is also possible that some graduates were using skills that, while different from those they gained at school, could never have been developed except by building upon that more fundamental base.

For these reasons and others, the evolution of the job skills–education match scores over the early years in the labour market should not be used as the only measure of graduates' skill-use patterns. Other, more explicit questions—probably tailored to each discipline or occupation—would likely be required to get at this interesting and important dynamic in a more meaningful way.

Educational prerequisites and graduates' qualifications

Another measure of skill matches is represented in the comparisons of graduates' educational backgrounds with the prerequisites (diploma or degree) of the jobs they have

Graph 3
Index of the job skills–education match
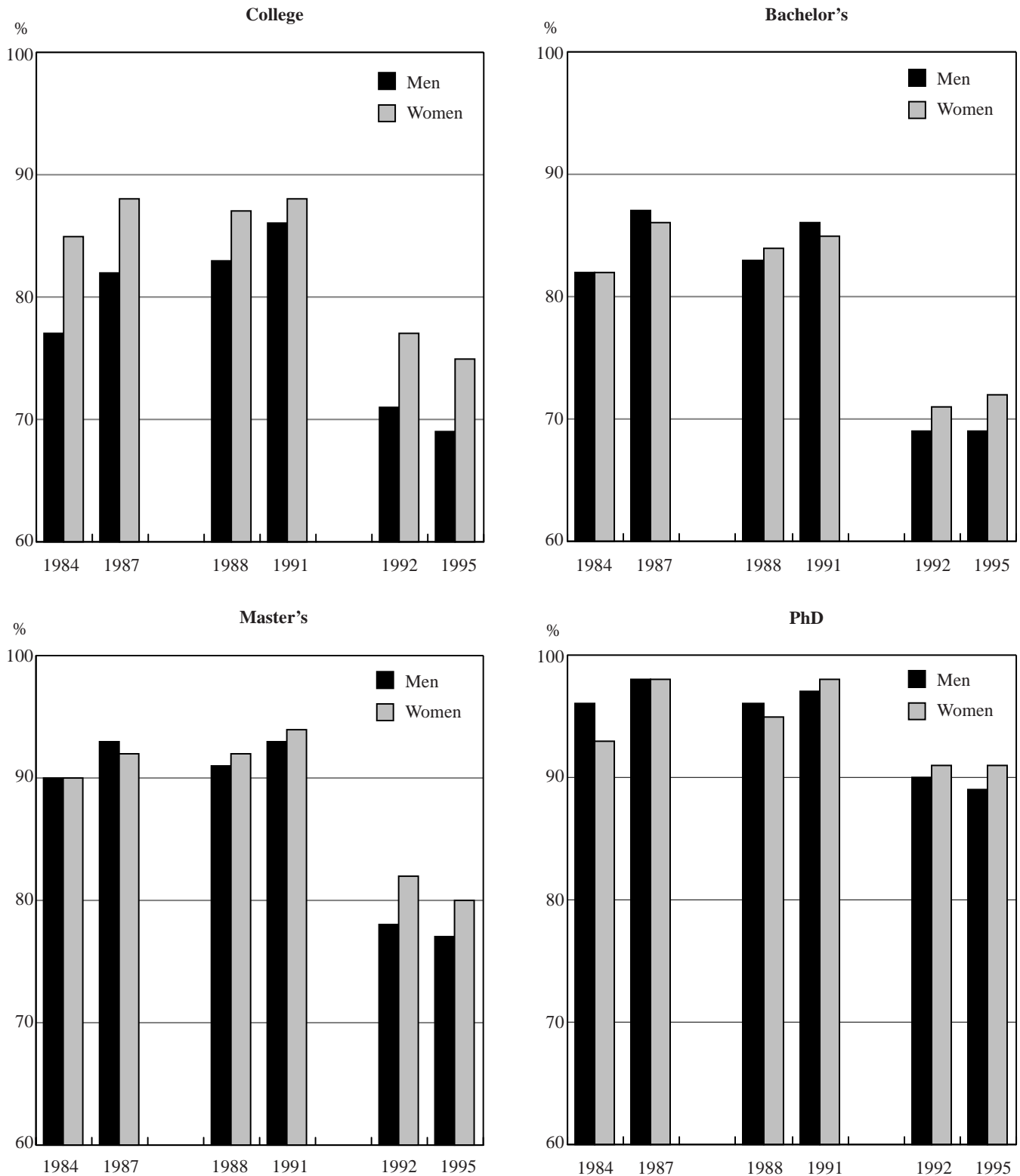
College

Bachelor's

Master's

PhD

Note: *Samples exclude those who did not respond to the second interview, those who obtained a new diploma by the relevant interview, and those who worked part time because of school.*
Source: *National Graduates Surveys.*

Table 4
Index of the job skills–education match, by sex and level of education

	First cohort (1982 graduates)			Second cohort (1986 graduates)			Third cohort (1990 graduates)	
	1984	1987		1988	1991		1992	1995
				%				
All								
Men	81	86		84	87		71	70
Women	84	87		86	87		74	74
College								
Men	77	82		83	86		71	69
Women	85	88		87	88		77	75
Bachelor's								
Men	82	87		83	86		69	69
Women	82	86		84	85		71	72
Master's								
Men	90	93		91	93		78	77
Women	90	92		92	94		82	80
PhD								
Men	96	98		96	97		90	89
Women	93[a]	98		95[a]	98		91	91

Notes:
Samples exclude those who did not respond to the second interview, those who obtained a new diploma by the relevant interview, and those who worked part time because of school.
The means with no letter superscript have standard errors below 1, while those with an 'a' superscript have standard errors between 1 and 2.
***Source:** National Graduates Surveys.*

been entering. We constructed these measures to tell us something about several interesting and important issues with respect to school, work and the general functioning of the economy, with a variety of policy implications. These issues include the consequences of the educational decisions that graduates have been making, the performance of the educational system in producing the graduates required in the labour market, and the efficiency of the labour market in matching graduates to jobs.

Table 5 shows the distribution within each cohort, by education level and interview, of three categories of graduates: those with a higher level of education than was required at the starting date the job; those with the same level; and those with a lower level. Our study focuses on the first of these, principally because of the inherently interesting nature of overqualification, but also because underqualification is so rare. Graph 4 shows the overqualification rates.

Among graduates of all educational levels taken together—with variation by sex, cohort and interview—35% to 41% were overqualified for their jobs in terms of the required levels of education. Interestingly, master's graduates have generally had the highest rates of overqualification and bachelor's and PhD graduates the lowest, with college graduates in the middle.

These results could reflect a certain ambiguity surrounding the correspondence between the formal educational prerequisites and the true requirements of many jobs. In the case of master's graduates, for example, it might often be the case that only a bachelor's degree is officially required, but that a master's degree is needed to compete successfully for the position. Hence, while the high overqualification among master's graduates is certainly worth noting, the results should be interpreted with caution, especially with respect to any temptation to conclude that we have been producing too many master's graduates. A similar reasoning might, furthermore, apply at the college level, where graduates have often found themselves in jobs where the postsecondary diploma, although not formally required, has been instrumental in actually obtaining the position.

Overqualification has been somewhat more common among men than women at the college and master's levels; the opposite has been the case at the bachelor's and PhD levels.

A significant level of ambiguity also applies to the dynamics of the qualification measure, especially since the underlying questions ask about the qualifications required when "first hired." It is therefore difficult to interpret the findings that overqualification rates have tended to increase in the years following graduation at the college

Graph 4
Percentage of workers overqualified
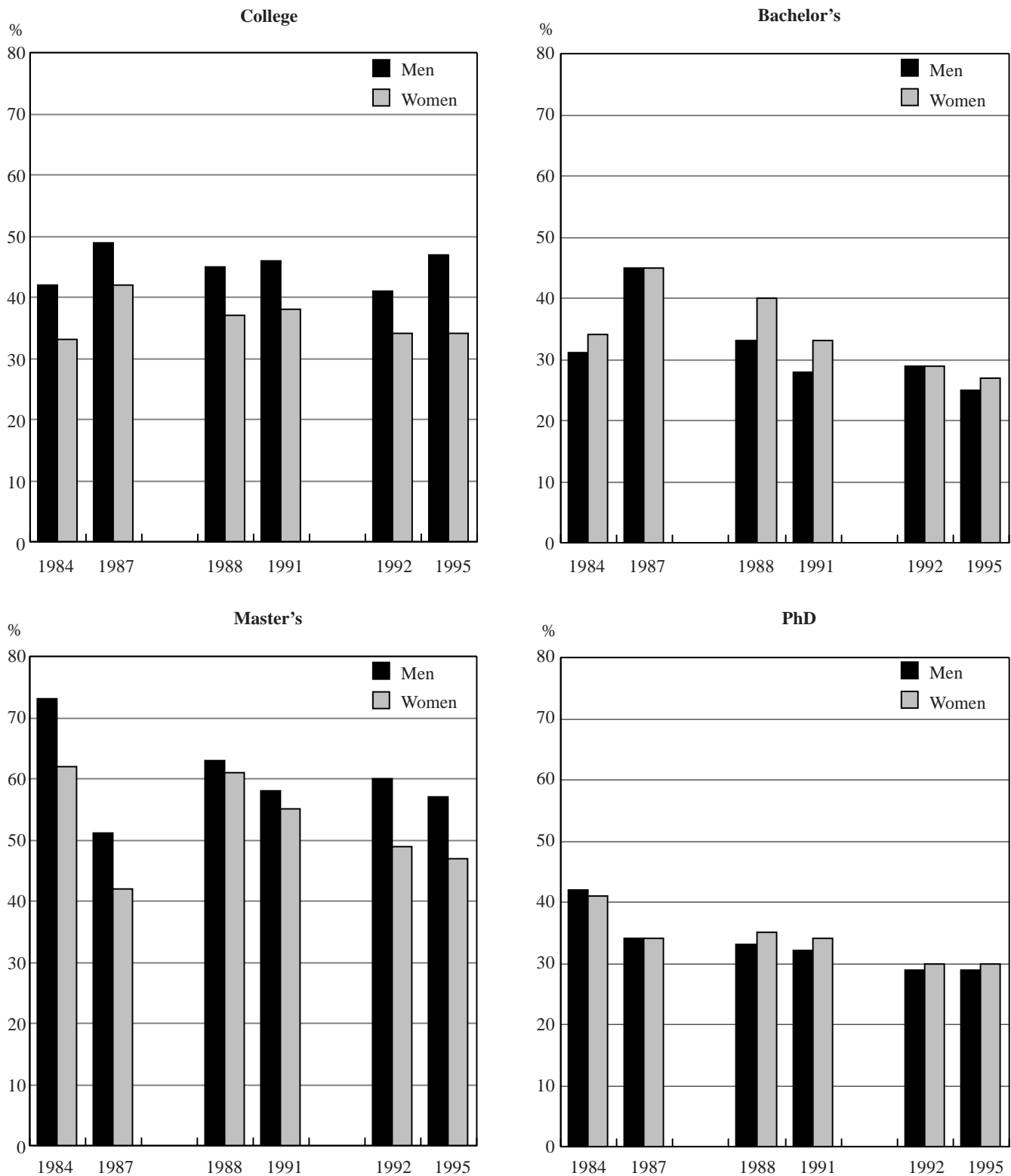
College

%

Bachelor's

%

Master's

%

PhD

%

Note: Samples exclude those who did not respond to the second interview, those who obtained a new diploma by the relevant interview, and those who worked part time because of school.
Source: National Graduates Surveys.

Table 5

Graduates' education level compared with prerequisites for the job, two and five years after graduation, by sex

	First interview			Second interview		
	Over	Even	Under	Over	Even	Under
			% of education–sex group			
			First cohort (1982 graduates)			
All						
Men	40	59	2	40	56	4
Women	35	62	2	36	60	4
College						
Men	42	55	2	48	48	4
Women	33	63	4	41	54	5
Bachelor's						
Men	31	67	2	29	67	4
Women	34	64	1	29	66	4
Master's						
Men	73	26	1	64	34	2
Women	62	37	1	54	44	2
PhD						
Men	42	58	0	39	61	0
Women	41	59	0	37	63	0
			Second cohort (1986 graduates)			
All						
Men	41	56	3	37	57	6
Women	41	57	2	37	58	5
College						
Men	46	52	2	47	47	6
Women	38	61	1	40	56	5
Bachelor's						
Men	34	63	3	28	66	6
Women	42	56	2	34	61	5
Master's						
Men	63	36	1	57	37	5
Women	61	38	0	55	41	3
PhD						
Men	34	66	0	34	66	0
Women	36	64	0	35	65	0
			Third cohort (1990 graduates)			
All						
Men	36	61	3	40	56	3
Women	33	65	3	34	63	3
College						
Men	41	56	3	47	48	4
Women	34	64	2	34	62	4
Bachelor's						
Men	29	67	4	25	72	4
Women	29	68	3	27	70	4
Master's						
Men	60	40	1	57	42	1
Women	49	50	1	47	52	1
PhD						
Men	29	71	0	29	71	0
Women	30	70	0	30	70	0

Notes:
Figures may not add up to 100% because of rounding.
Samples exclude those who did not respond to the second interview, those who obtained a new diploma by the relevant interview, and those who worked part time because of school.
Source: *National Graduates Surveys.*

and bachelor's level, to decrease among master's graduates, and to remain fairly steady for the PhD groups.

The qualification dynamics at the individual level are shown in Tables 6a and 6b, but these are again difficult to interpret. Generally high proportions of graduates on the diagonals (in boldface type)—upwards of 68% for the principal overqualified and even-qualified categories—indicate the same qualifications category in the two interview years; however, a substantial proportion of individuals changed status as well. It would probably be necessary to relate these dynamics to job changes, promotions and other movements within the employment situation before these results began to tell a meaningful story.

With respect to the results for each survey year, the later cohorts of graduates tend to have moderately lower rates of overqualification. It is again difficult to interpret these findings. They do not suggest that the quality of the jobs graduates are finding has been deteriorating even though employment rates have held up over time. If there has been a change, it appears to have been in the opposite direction, towards better jobs, not worse. On the other hand,

the increasing educational levels apparently required for the jobs graduates have been finding could also represent 'qualification creep': in a weak labour market, requirements may have been arbitrarily raised for some positions. Further analysis is required to uncover what has really been happening in this regard.

Conclusion

The school-to-work transition is clearly an extended process, with many outcomes changing significantly from two to five years following graduation. Any assessment of how graduates are doing must, therefore, be interpreted in this dynamic context. However, other outcomes did not change as much. For example, the job skills–education match measure and the correspondence of graduates' jobs to their level of education (overqualification and underqualification) show mixed patterns, and overall job satisfaction did not increase commensurately with improvements in more objective outcomes such as earnings or the movement from temporary to permanent jobs. [EQR]

Table 6a
Job qualification dynamics, by sex

	Second interview								
	First cohort (1982 graduates)			Second cohort (1986 graduates)			Third cohort (1990 graduates)		
First interview	Over	Even	Under	Over	Even	Under	Over	Even	Under
					%				
Men									
Over	**76**	22	2	**75**	23	2	**83**	16	1
Even	14	**83**	3	14	**83**	3	11	**88**	2
Under	14	24	**62**	11	25	**64**	7	28	**66**
Women									
Over	**76**	23	2	**74**	24	2	**79**	20	1
Even	13	**83**	3	13	**84**	3	8	**90**	2
Under	20	16	**64**	7	24	**69**	8	29	**63**

Notes:
Figures may not add up to 100% because of rounding.
Samples exclude those who did not respond to the second interview, those who had obtained a new diploma by either interview, and those who worked part time because of school.
***Source:** National Graduates Surveys.*

Table 6b
Job qualification dynamics, by sex and level of education

First interview	Second interview								
	First cohort (1982 graduates)			Second cohort (1986 graduates)			Third cohort (1990 graduates)		
	Over	Even	Under	Over	Even	Under	Over	Even	Under
	%								
	College graduates								
Men									
Over	**78**	19	3	**78**	18	4	**85**	13	2
Even	22	**75**	3	21	**75**	3	17	**81**	2
Under	21	24	**55**	-	-	-	-	-	71
Women									
Over	**81**	17	2	**76**	21	3	**79**	18	3
Even	19	**78**	3	17	**80**	3	10	**87**	2
Under	23	17	**60**	-	-	-	-	-	**68**
	Bachelor's graduates								
Men									
Over	**70**	29	1	**68**	30	2	**85**	13	2
Even	9	**88**	4	9	**88**	3	17	**81**	2
Under	-	-	-	7	24	**69**	16	13	**71**
Women									
Over	**69**	30	1	**70**	27	3	**79**	18	3
Even	8	**88**	4	10	**88**	2	10	**87**	2
Under	-	-	-	4	28	**69**	13	19	**68**
	Master's graduates								
Men									
Over	**82**	18	0	**85**	15	0	**87**	13	0
Even	19	**80**	1	19	**79**	2	16	**84**	0
Under	-	-	-	-	-	-	-	-	-
Women									
Over	**82**	17	1	**83**	17	0	**85**	15	0
Even	11	**89**	0	15	**84**	1	12	**88**	0
Under	-	-	-	-	-	-	-	-	-
	PhD graduates								
Men									
Over	**83**	17	0	**78**	22	0	**87**	13	0
Even	9	**91**	0	10	**90**	0	7	**93**	0
Under	-	-	-	-	-	-	-	-	-
Women									
Over	**80**	-	-	**80**	20	0	**84**	16	0
Even	9	**91**	0	7	**93**	0	8	**92**	0
Under	-	-	-	-	-	-	-	-	-

Notes:
Figures may not add up to 100% because of rounding.
Samples exclude those who did not respond to the second interview, those who had obtained a new diploma by either interview, and those who worked part time because of school.
Source: National Graduates Surveys.

Notes

1. The report presents the results of an empirical analysis of the school-to-work transitions of Canadian post-secondary graduates based on three waves of the National Graduates Surveys (NGS). This analysis comprises large representative databases (over 30,000 individuals in each wave) of those who successfully completed their programs at Canadian colleges or universities in 1982, 1986 and 1990, with information gathered during interviews conducted two and five years after graduation for each group of graduates (1984 and 1987, 1988 and 1991, and 1992 and 1995, respectively). The Applied Research Branch of Human Resources Development Canada provided financial support for this research.

2. All earnings data in this paper are based on 1995 constant dollars.

3. The percentage changes in mean earnings of male graduates from the first to third cohorts as of two and five years after graduation were as follows: 0.3, -4.1 (college); -4.6, -6.0 (bachelor's); -4.1, -1.6 (master's); -0.6, -2.0 (PhD).

4. The percentage changes in female graduates' earnings were as follows: 7.9, 4.1 (college); 2.5, -0.2 (bachelor's); 3.5, 3.5 (master's); and 7.3, 7.8 (PhD).

5. Thus, the median growth rates are generally smaller than the changes in the mean earnings levels for the male groups, whereas this is not true for women—another indicator that earnings growth was relatively more concentrated among men.

6. Readers should refer to the complete report for further details on the index.

Bachelor's graduates who pursue further postsecondary education

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Introduction

In the 1990s, lifelong learning became a common strategy for dealing with changing types of knowledge and skills demanded in the workplace. The Conference Board of Canada identified lifelong learning as an important 'employability' skill (McLaughlin 1992). Postsecondary education, in conjunction with workplace training, is a critical component of lifelong learning strategies.

This study contributes to the research literature on lifelong learning by examining the population of Canadian university students who pursue further postsecondary education after graduating from bachelor's level programs[1] in 1990, using data from the 1992 National Graduates Survey of 1990 Graduates (NGS) and the 1995 Follow-up of 1990 Graduates Survey (FOG). This study examines how social-demographic and enrolment-related factors affect the odds of pursuing different types of further postsecondary education.[2]

The primary focus of research on the NGS and FOG has been labour market outcomes and experiences of university graduates. The issue of further education has not received much attention by researchers who have analysed the various NGS and FOG surveys. Most of the published NGS information on further education has been limited to profile reports of the proportion of graduates from various postsecondary programs who participated in further postsecondary education and the types of further education taken, with breakdowns by sex (Clark, Laing and Rechnitzer 1986: Clark 1986; Little and Lapierre 1996; Paju 1997). Research from provincial surveys of university graduates in Alberta (Krahn and Lowe 1998) and the Atlantic provinces (Baseline Market Research Ltd. 1998) is also limited to a brief presentation of profile results. Clark (1997) produced a more in-depth profile analysis of the NGS graduating class of 1986 five years after graduation. The study looked at differences in further postsecondary education by sex, age, field of study, marital status and the presence of dependent children for all types of postsecondary graduates. However, this analysis failed to control for the level of education that 1986 graduates had prior to entering their programs. This is an important issue because the program from which students

graduated in 1986 may be a second or third postsecondary degree—that is, part of a further education pathway. By examining only 'graduates' of the same program in 1986, one mixes up students who have no previous postsecondary education with those with previous postsecondary degrees, diplomas or certificates. Previous level of educational attainment may have an impact on the likelihood of pursuing further education after graduating from the program in 1986. In addition, Clark's analysis did not have multivariate controls for a number of factors related to pursuing postsecondary education.

Nearly two-thirds of bachelor's graduates had participated in further postsecondary education five years after graduating

Over three-quarters of graduates who took further postsecondary education did so by 1992, within two years of graduation (see appendices A and D). Two years after graduation 47% of bachelor's graduates had participated in further postsecondary education, and this increased to 59% in 1995, five years after graduation. An examination of the population of graduates who took further postsecondary education shows that the proportion in the five levels of postsecondary education was very similar at two years and five years after graduation (Graph 1 – all graphs and tables appear after the Conclusion). In 1995, 31% of graduates who participated in further postsecondary education took programs at the master's or doctoral level, followed by 24% at the bachelor's level, 20% at the college/trade–vocational level, 18% at the university certificate/diploma level, and 8% at the first professional level.

Master's graduates had higher annual earnings five years after graduating than bachelor's graduates

Since bachelor's graduates were more likely to pursue master's and doctoral programs than any other further postsecondary education option, it is important to look at the employment earnings consequences of earning a master's or doctoral degree. This issue can be examined by comparing 1990 bachelor's graduates with 1990 master's and doctoral graduates who were working at a full-time job five years after graduation. Restrictions[3] were imposed in order to make the bachelor's, master's and doctoral populations more comparable. The graduates who were selected from all levels were less than 35 years old at the time of graduation, had less than five years of full-time work experience, and had not completed any additional postsecondary education after graduating in 1990.[4] For

example, it would be inappropriate to include bachelor's graduates who went on to complete a master's degree with bachelor's graduates who had not completed any further postsecondary education. Selecting graduates with less than five years of full-time work experience makes it easier to assess the earnings effects of obtaining a bachelor's versus a graduate degree, because work experience is highly correlated with earnings.

In 1995, bachelor's graduates who were working full-time had median annual earnings of $37,000,[5] while master's graduates earned $46,000 and doctoral graduates earned $50,000. This provides evidence of a substantial ($9,000) earnings benefit to obtaining a master's degree versus a bachelor's degree. Without restrictions on age at graduation and number of years of full-time work experience, there was a $13,000 earnings differential between the bachelor's and master's level. There is a much smaller earnings benefit ($4,000) from obtaining a doctoral degree versus a master's degree.

While all master's graduates had an earnings benefit compared with bachelor's graduates (Graph 2), there was considerable variation by field of study. Five years after graduating, master's graduates from commerce, management and business programs had a $17,000 earnings advantage over bachelor's graduates. Master's graduates from social sciences and education, recreation and counselling programs had a $9,000 earnings advantage compared with their counterparts at the bachelor's level, while master's graduates from humanities and fine arts earned $6,000 more than bachelor's graduates. Master's graduates from agricultural and biological science, engineering, and health sciences had a $5,000 earnings advantage over their bachelor's level counterparts. Master's graduates from math and physical sciences had the lowest earnings advantage ($4,000) compared with other fields of study.

In addition to earnings, there is also the issue of the extent to which graduates use the skills they acquired during their programs in their jobs.[6] In 1995, 47% of master's graduates said that in their current job they used the skills acquired in their master's programs to a great extent, while 40% said that they used their skills to some extent. In comparison, only 31% of bachelor's graduates said that they used the skills acquired in their bachelor's programs to a great extent in their current job, while 46% said that they used their skills to some extent.

It is important to note that even though bachelor's graduates were more likely to choose master's and doctoral programs than other further postsecondary education options, only 18% of all bachelor's graduates participated in master's and doctoral programs by 1995.

Bachelor's graduates from commerce, management and business programs had lower odds of participating in further education (controlling for other factors)

Social science was selected as the comparison group for the analysis presented below, because it contains a large number of fields of study (sociology, economics, geography, anthropology, political science) that do not have a specific job associated with them. In contrast, graduates from fields such as engineering, nursing, occupational therapy or teaching are able to work in specific jobs for which they are trained.

Multinomial logistic regression results (see appendices B and C) show that, compared with social science graduates, students who graduated from education, recreation and counselling programs[7] had sharply lower odds of participation in college/trade–vocational (.42), bachelor's (.82), first professional (.32), and master's or doctoral programs (.40) versus no further postsecondary participation (Table 1). These results demonstrate the effect of a job-specific field of study on the odds of participation in further postsecondary education. It is interesting to note that graduates who completed a master's degree in education, recreation and counselling had a $9,000 earnings advantage over bachelor's graduates, as did those in social science. However, education, recreation and counselling graduates were less likely than social science graduates to pursue master's and doctoral studies. Education, recreation and counselling graduates who took further postsecondary programs had higher odds of participation in university diploma/certificate (2.7) and bachelor's programs (2.1) versus master's or doctoral programs when compared with social science graduates (Table 3).

Graduates of fine arts or humanities programs had slightly higher odds (1.4) of taking a university certificate/diploma versus no further postsecondary participation than social science graduates. However, there were no other differences in the odds of further postsecondary participation versus no further postsecondary participation, compared with social science graduates. Fine arts or humanities graduates who took additional postsecondary education had lower odds (.78) than social science graduates of taking college/trade–vocational education versus master's or doctoral programs, but this was the only difference. The majority of students in the fine arts and humanities fields are humanities students and nearly three-quarters of these students studied history or English/French language and literature. Most disciplines in the humanities/fine arts and social science fields lack job-specific characteristics, and hence it is not surprising that there is barely any difference in the odds of pursing further postsecondary education when comparing these two groups.

Commerce, management and business graduates had lower odds of participating in college/trade–vocational (.67), university diploma/certificate (.78), bachelor's (.29), first professional (.33), and master's or doctoral programs (.20) versus no participation in further education, compared with social science graduates. While the commerce, management and business category includes specialized administrative studies and secretarial science, 98% of students in this field came from the commerce, management and business disciplines, which have very clear job-specific characteristics, such as accounting, finance management and so forth, compared with social science disciplines. In addition, it may be easier for commerce, management and business graduates to find a job than it is for social science graduates, given the practical job-oriented nature of their programs. This is partly reflected in the finding that social science graduates were more likely (12%) than commerce, management and business graduates (9%) to be unemployed two years after graduation. However, despite a $17,000 earnings differential between commerce, management and business master's and bachelor's graduates, these bachelor's graduates had strongly lower odds of participation in master's or doctoral programs, compared with social science graduates.

Commerce, management and business graduates who took further postsecondary education had higher odds than social science graduates of college/trade–vocational (3.3), university diploma/certificate (3.8), bachelor's (1.4), and first professional (1.6) participation versus master's or doctoral programs. The finding that commerce, management and business graduates have higher odds of participating in all types of postsecondary education versus master's or doctoral participation again shows a tendency for more job-specific types of further education, particularly in the case of college/trade–vocational, university diploma/certificate, and first professional programs.

Agricultural and biological science graduates had higher odds of participation in university diploma/certificate (1.4), first professional (2.5), and master's or doctoral programs (1.6) versus no participation in further education programs, compared with social science graduates. The differences in these odds of further education may be due in part to a difficult labour market for graduates from agricultural and biological sciences. These graduates had a 16% unemployment rate two years after graduation, compared with 12% for social science graduates. Agricultural and biological science graduates who took further postsecondary education had lower odds than social science graduates of participation in college/trade–vocational (.65) and bachelor's (.69) versus master's or doctoral programs. However, these graduates had higher odds (1.5) than social science graduates of taking first professional programs versus master's or doctoral programs.

Engineering and applied science graduates had lower odds of participating in college/trade–vocational (.61), university diploma/certificate (.54), bachelor's (.31), first professional (.15), and master's or doctoral programs (.67) versus no further postsecondary participation, compared with social science graduates. Again, we see the effect of fields of study with job-specific characteristics on the odds of pursuing further education. Engineering and applied science graduates who took further postsecondary had lower odds than social science graduates of participating in bachelor's (.46) and first professional (.23) versus master's or doctoral programs.

Graduates from health professional programs had lower odds of participating in college/trade–vocational (.52), university diploma/certificate (.57), bachelor's (.20), and master's or doctoral programs (.21) versus no participation in further education, compared with social science graduates. These findings are very similar to those for engineering and applied science graduates, and likely for the same job-specific reasons. Graduates from health professional programs who took further postsecondary education had higher odds than social science graduates of participating in college/trade–vocational (2.5), university diploma/certificate (2.7), and first professional (3.2) versus master's or doctoral programs. These findings show that further studies at the master's and doctoral level are less likely than other options; this is the opposite of the case for engineering and applied science graduates.

Math and physical science graduates had lower odds (around .60) of participating in college/trade–vocational, university diploma/certificate, bachelor's and first professional programs versus no participation in further postsecondary education, compared with social science graduates. However, there were no differences for math and physical science graduates who took further postsecondary education versus master's or doctoral participation, compared to social science graduates.

The results above show that graduates from fields of study that are job-specific have lower odds than social science graduates of pursuing further postsecondary education. In addition, when graduates from job-specific fields of study pursue further postsecondary education, they have higher odds of taking programs other than master's and doctoral programs (with the exception of engineering and applied science graduates), compared with social science graduates.

Bachelor's graduates from Atlantic universities had lower odds of pursuing college/trade–vocational education (controlling for other factors)

Graduates from Atlantic region universities[8] had lower odds than graduates from Ontario universities of partici-

pation in community college/trade–vocational (.63) versus no participation in further education programs. However, this was the only difference in the odds of pursuing further postsecondary education for these graduates. Graduates from Atlantic region universities who took further education had lower odds (.71) of participating in college/trade–vocational education versus master's or doctoral programs, compared with graduates from Ontario universities. These differences may be due, in part, to the greater availability of community colleges in Ontario.

Graduates from Quebec universities had lower odds than graduates from Ontario universities of participating in college/trade–vocational (.57), bachelor's (.61) and first professional programs (.67) versus no participation in further postsecondary education. The lower odds of participation at the college level are not unexpected, since the CEGEP system in Quebec is a university transfer program, as well as a terminal stream, which is mainly directed at high school graduates. However, Quebec graduates had higher odds of participating in university diploma/certificate (2.5) and master's or doctoral programs (1.7) versus no participation in further postsecondary education, compared with graduates from Ontario universities. Graduates from Quebec universities who took further education had sharply lower odds than graduates from Ontario universities (around .35) of participating in college/trade–vocational, bachelor's and first professional programs versus master's or doctoral programs. However, Quebec graduates who took further postsecondary education had higher odds (1.5) of taking university certificate/diploma programs versus master's or doctoral degrees, compared with graduates from Ontario universities.

Graduates from western[9] universities had lower odds than graduates from Ontario universities of participating in college/trade–vocational (.74), university diploma/certificate (.56) and bachelor's programs (.68) versus no participation in further postsecondary education. Graduates from western universities who took further postsecondary education had lower odds (.58) of taking a university certificate/diploma versus master's or doctoral degree, compared with graduates from Ontario universities.

Graduates from British Columbia universities had odds nearly twice as high as those from Ontario universities for participation in university diploma/certificate programs versus no participation in further postsecondary education, but there were no other differences in the odds of participation in further education for these graduates. Graduates from British Columbia universities who took further postsecondary education had higher odds (2.2) of taking university certificate/diploma programs versus master's or doctoral degrees, compared with graduates from Ontario universities.

Bachelor's graduates who studied part-time had lower odds of participating in master's or doctoral programs (controlling for other factors)

Bachelor's graduates who studied part time[10] had odds 1.6 times higher of taking a university certificate or diploma versus no further postsecondary participation, compared with graduates who studied on a full-time basis. However, graduates who studied part time had lower odds than those who studied full time of participating in first professional programs (.47) and master's or doctoral programs (.62) versus no further postsecondary participation. The most common reasons for not studying full time cited by graduates who studied part time were having a full-time or part-time job; lack of finances; family responsibilities; the program being offered part-time; wanting a break for school; and needing only a few courses to graduate. It seems likely that factors such as full-time employment and lack of financial resources would influence the odds of pursuing further postsecondary education.

Bachelor's graduates who studied part time and took further education had higher odds of taking college/trade–vocational (1.8), university certificate/diploma (2.6) and bachelor's programs (1.7) versus master's or doctoral programs, compared with graduates who studied full time.

Participation in the co-op education option had no impact on the odds of pursuing further education (controlling for other factors)

Participation in the co-op education option did not affect the odds of participating in further postsecondary education. These findings are somewhat unexpected because one would think that co-op students may have a stronger orientation than non-co-op students toward direct entry into the labour market following graduation. However, the bivariate odds ratios show that, without controls, graduates who took the co-op education option had lower odds of participation in college/trade–vocational (.73), university diploma/certificate (.61) and bachelor's programs (.48) versus no participation in further postsecondary education, compared with graduates who did not take the co-op education option (Table 2). For co-op graduates who took further education, there were no differences from non-co-op graduates in the odds of taking different types of further education versus taking master's or doctoral programs. However, at the bivariate level, co-op students who did take further education had lower odds of taking a university certificate/diploma (.65) and a bachelor's degree (.51)

versus master's or doctoral programs, compared with graduates who did not take the co-op education option.

Graduates with $15,000 or more in student loans had higher odds of participating in master's and doctoral programs (controlling for other factors)

Graduates with less than $15,000 in student loans[11] were just as likely as students with no student loans to pursue further postsecondary education versus no further postsecondary education. However, graduates with $15,000 or more in student loans had higher odds than students with no student loans of participating in bachelor's (1.4), first professional (2.2) and master's and doctoral programs (1.8) versus no further postsecondary education. The amount of student loan at the time of graduation was included as a predictor in the model because it was thought that a large student loan may be an impediment to further postsecondary education. This is largely because of the pressure to repay the loan and the danger of increasing the size of the loan by pursuing further education. However, it is also possible that pursuing further postsecondary education would temporarily postpone the repayment of the loan. In addition, the size of student loan may also identify students who are strongly committed to a long-term educational goal, such as a graduate or a first professional degree, and who are willing to accumulate a significant debt to achieve this goal. This may be part of the explanation for higher odds of participation in first professional and master's and doctoral programs versus no further postsecondary participation.

Graduates with more than $15,000 in student loans who took further postsecondary education had lower odds (.56) of taking college/trade–vocational or university certificate/diploma programs versus master's or doctoral programs, compared with graduates who had no student loans.

Men had higher odds of participating in master's and doctoral programs (controlling for other factors)

Men had higher odds than women of participation in first professional (1.3) and master's and doctoral programs (1.5) versus no further postsecondary participation. The latter finding is not surprising since women made up 55% of the class of 1990 master's graduates who were less than 35 years old at graduation. Nearly 90% of graduates who took further education in the combined master's and doctoral category were master's students, so the sex effect

is not due primarily to differential participation rates at the doctoral level. Any sex differences in the odds of participating in master's or doctoral programs are important to note, given the $9,000 earnings benefit for obtaining a master's degree versus a bachelor's degree. As noted previously, master's graduates are also more likely than bachelor's graduates to work in jobs in which they use, to a great extent, the skills acquired during their education. The finding about first professional programs is surprising since 55% of the class of 1990 first professional graduates were women. Since a bachelor's degree is not a prerequisite for entry into first professional programs such as medicine, dentistry and law, the population of students who enter first professional programs after first graduating from a bachelor's program may differ from those who enter without a bachelor's degree. It is important to note that at the bivariate level there is no difference in the odds of pursuing first professional programs for women versus men, but the difference appears when the other predictors are held constant. An examination of other bivariate odds ratios shows that men have lower odds of participating in university certificate/diploma (.81) and bachelor's programs (.70) versus no further postsecondary participation, compared with women. These effects disappear when controls are introduced. Men who took further postsecondary education had lower odds than women of participating in college/trade–vocational (.62), university certificate/diploma (.67) and bachelor's programs (.62) versus master's or doctoral programs.

Younger graduates more likely to pursue further postsecondary education (controlling for other factors)

Age was controlled, to some extent, by limiting the analysis to students who were 26 years of age or younger at graduation in 1990. Just over 60% of these students were between 22 and 23 years old when they graduated in 1990. Despite this restriction, age at graduation was still an important predictor of further postsecondary education. Age at entry to the bachelor's program (influenced by variations in high school diploma or university transfer time requirements, and by taking time off between high school and university), the length of the bachelor's program (three years versus four years), as well as time to bachelor's program completion (full-time or part-time status; changing fields of study) are key factors behind age at graduation. Students from Quebec, Ontario and British Columbia were more likely to have graduated in the 22 to 23 age range than students from other provinces, who more often graduated in the 21 to 22 age range. This is likely the result of Grade 13 in Ontario and the university transfer systems in Quebec and British Columbia.

Students who were 21 years old at graduation had higher odds of participating in bachelor's (1.5), first professional (1.7), and master's and doctoral programs (1.3) versus no further postsecondary participation, compared with graduates who were 22 years old when graduating. However, students 21 years old at graduation who took further education had lower odds (.71) than graduates who were 22 years old of taking college/trade–vocational education versus master's or doctoral programs.

Students 23 years old at graduation had lower odds of participating in college/trade–vocational (.83), bachelor's (.77), first professional (.63), and master's or doctoral programs (.79) versus no further postsecondary participation, compared with graduates who were 22 years old when graduating. There were no differences between the odds of participation in different types of further education versus master's or doctoral programs.

Students 24 years old at graduation had lower odds of participating in college/trade–vocational (.78), university certificate/diploma (.56), bachelor's (.75), first professional (.20), and master's or doctoral programs (.56) versus no further postsecondary participation, compared with graduates who were 22 years old when graduating. However, students 24 years old at graduation who took further education had higher odds (1.4) than graduates who were 22 years old of taking college/trade–vocational education and bachelor's programs (1.3) versus master's or doctoral programs. These same graduates had lower odds (.36) of taking first professional versus master's or doctoral programs than graduates who were 22 years old.

Students 25 to 26 years old at graduation had lower odds than graduates who were 22 years old of participating in college/trade–vocational (.64), bachelor's (.69), first professional (.42), and master's or doctoral programs (.46) versus no further postsecondary participation. However, students 25 to 26 years old at graduation who took further education had higher odds of participating in university certificate/diplomas (1.7) and bachelor's programs (1.5) versus master's or doctoral programs, compared with graduates who were 22 years old.

Graduates whose parents had a university degree had higher odds of participating in master's and doctoral programs

Bachelor's graduates whose parents had less than a high school diploma had lower odds (about .76) of participating in college/trade–vocational education and master's or doctoral programs versus no further postsecondary partici-pation, compared with graduates whose parents had college/trade–vocational education.[12] For graduates who took further postsecondary education, those whose parents had less than high school education had higher odds (1.4)

than graduates whose parents had college/trade–vocational education of taking university certificate/diploma programs versus master's or doctoral programs.

Similarly, graduates with high school-educated parents had lower odds of college/trade–vocational (.77) and master's or doctoral (.78) participation versus no further postsecondary participation, compared with graduates whose parents had college/trade–vocational education. For graduates who took further postsecondary education, those whose parents had high school education were no more likely than graduates whose parents had college/trade–vocational education to take the various types of postsecondary programs versus master's or doctoral programs.

There were no differences in the odds of participation in further education versus no further postsecondary participation between graduates whose parents had a university certificate or diploma[13] and those whose parents had college/trade–vocational education. Similarly, for graduates who took further postsecondary education, those whose parents had a university certificate or diploma were no more likely than those whose parents had college/trade–vocational education to take the various types of postsecondary programs versus master's or doctoral programs.

Graduates whose parents had a bachelor's or first professional degree had higher odds of participating in bachelor's (1.3), first professional (1.6), and master's and doctoral programs (1.5) versus no further postsecondary participation, compared with graduates whose parents had college/trade–vocational education. Additional comparisons show that graduates whose parents had a bachelor's or first professional degree had odds twice as high as graduates whose parents had a high school education for participation in master's and doctoral studies versus no further postsecondary participation (Graph 5). Just over 40% of graduates had parents with high school education or less.

For graduates who took further postsecondary education, those whose parents had a bachelor's or first professional degree had lower odds of participating in college/trade–vocational (.64) or university certificate/diploma programs (.65) versus master's or doctoral programs, compared with graduates whose parents had college/trade–vocational education.

Graduates whose parents had a master's or doctoral degree had higher odds than graduates whose parents had college/trade–vocational education of participating in bachelor's (1.9), first professional (3.0), and master's or doctoral programs (2.1) versus no further postsecondary participation. Other comparisons show that graduates whose parents had a master's or doctoral degree had odds nearly three times higher for participation in master's and doctoral studies versus no further postsecondary participation, compared with graduates whose parents had high school education**.**

For graduates who took further postsecondary education, those whose parents had a master's or doctoral degree had lower odds of participating in college/trade–vocational (.49) or university certificate/diploma programs (.62) versus master's or doctoral programs, compared with graduates whose parents had college/trade–vocational education.

The above results show that graduates whose parents' education was high school or less had lower odds than graduates whose parents had college/trade–vocational education of pursuing master's or doctoral programs versus no further postsecondary participation. Graduates who had at least one parent with a university degree had higher odds of participation in further university education at the first professional and master's and doctoral levels versus no further postsecondary education when compared with graduates with either high school or college/trade–vocational-educated parents. These findings remain, despite controlling for field of study, which was shown to be a crucial predictor of participation in further postsecondary education.

These findings parallel other research (Butlin 1999), which shows that high school graduates with at least one university-educated parent had much higher odds of university participation versus no postsecondary participation, compared with students with high school-educated parents. These latter findings corroborate a long-standing trend in Canadian research literature showing a strong link between the socio-economic status of one's parents and participation in university education. The influence of parents' education on the odds of participation in graduate school raises an important issue, given the $9,000 annual earnings differential between master's and bachelor's graduates and the issue of skill use on the job.

Visible minority status had little impact on the odds of pursuing further postsecondary education (controlling for other factors)

Guppy and Davies (1998), using 1991 Census data, found that visible minorities were more likely than non-visible minorities to have continued their education beyond 12 years of study. However, visible minority status had very little impact on the odds of pursuing further postsecondary education.

Results from the NGS and FOG show that graduates who were members of a visible minority had higher odds (1.5) of participating in community college/trade–vocational education versus no further postsecondary participation, compared with graduates who were not members of a visible minority. Without controls for other variables, graduates who were members of a visible minority had

lower odds (.72) than graduates who were not members of a visible minority of taking a university certificate/diploma versus no further postsecondary participation; this effect disappears when controls are introduced. Visible minority graduates who took further postsecondary education had higher odds (1.5) of participating in college/trade–vocational education versus master's or doctoral programs, compared with graduates who were not members of a visible minority.

Bachelor's graduates with more than two years of work experience had lower odds of participating in master's and doctoral programs (controlling for other factors)

Graduates with up to 12 months of full-time work experience[14] had odds about 1.4 times higher for participation in college/trade–vocational and first professional programs versus no further postsecondary participation, compared with graduates with no full-time work experience. Graduates with up to 12 months of full-time work experience who took further postsecondary education had higher odds than graduates with no full-time work experience of participating in college/trade–vocational (1.6), university diploma/certificate (1.3), bachelor's (1.2) and first professional programs (1.5) versus master's or doctoral programs.

Graduates with 13 to 24 months of full-time work experience had lower odds of participation in college/trade–vocational (.81) and bachelor's programs (.61) versus no further postsecondary participation, compared with graduates with no full-time work experience. Graduates with 13 to 24 months of full-time work experience who took further postsecondary education had lower odds than graduates with no full-time work experience of participating in bachelor's programs (.64), but higher odds of taking first professional programs (1.4) versus master's or doctoral programs.

Graduates with 25 months or more of full-time work experience had lower odds of participation in university certificate/diploma (.67), bachelor's (.48), and master's or doctoral programs (.63) versus no further postsecondary participation, compared with graduates with no full-time work experience. Graduates with 25 months or more of full-time work experience who took further postsecondary education had higher odds than graduates with no full-time work experience of participating in college/trade–vocational (1.7) and first professional programs (2.1) versus master's or doctoral programs.

Conclusion

Nearly 60% of 1990 bachelor's graduates had taken or completed some further postsecondary education by 1995, five years after graduating. Over three-quarters of graduates who took further postsecondary education did so by 1992, within two years of graduation. Nearly a third of graduates who took further postsecondary education took master's or doctoral programs, while close to a quarter of students took programs at either the college/trade–vocational or bachelor's degree level.
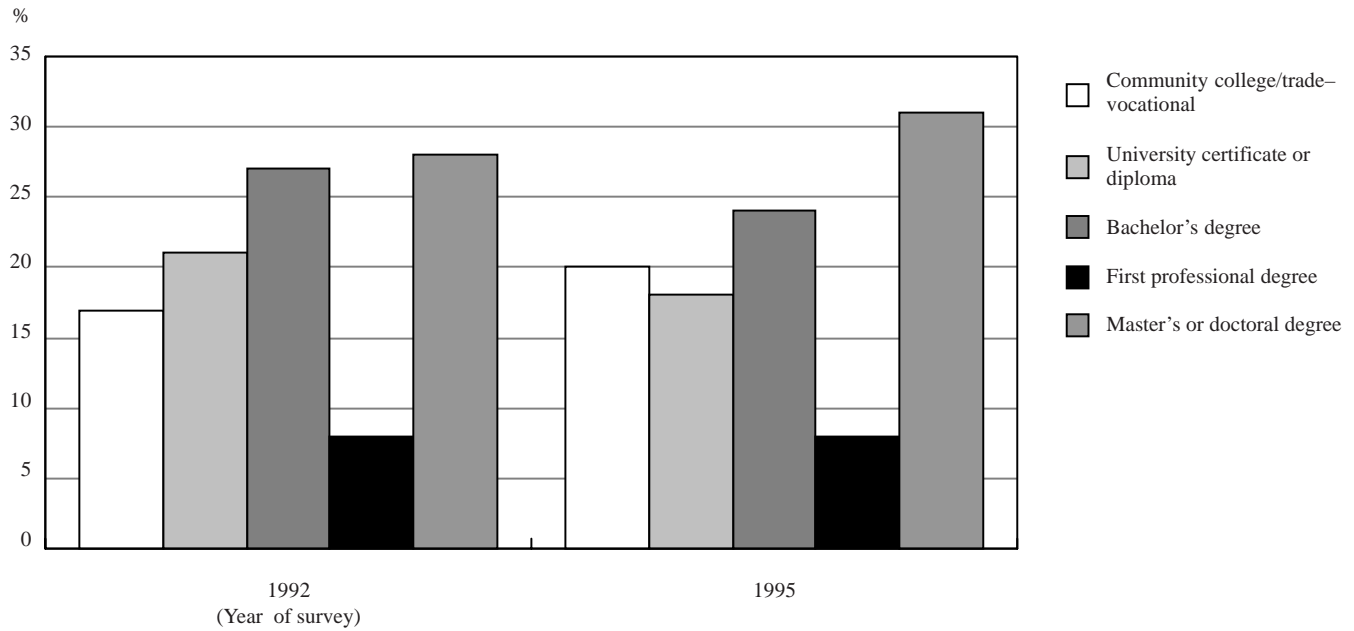
Field of study was found to be a key predictor of participation in further postsecondary education, controlling for other predictors. Graduates from fields of study that had a specific job associated with them—such as education; commerce, management and business; engineering; and health professions—had lower odds of participation in further postsecondary education than graduates from social science programs. Men had higher odds of participation in master's and doctoral programs than women, controlling for other predictors. Graduates whose parents had a university degree had higher odds of participating in first professional and master's and doctoral programs, compared with graduates whose parents had high school education, controlling for other factors. However, visible minority status had little impact on the odds of participation in further postsecondary education, controlling for other predictors. Finally, bachelor's graduates with more than two years of full-time work experience had lower odds of pursuing further postsecondary education than did graduates with no full-time work experience at the time of graduation, controlling for other factors.

Five years after graduation, 1990 bachelors graduates who were working full time[15] had median earnings of $37,000, while 1990 master's graduates earned $46,000 and 1990 doctoral graduates earned $50,000. Clearly there is a substantial earnings benefit associated with obtaining a graduate degree. The findings that show differences in the odds of participation in graduate school by sex and by the educational attainment of bachelor's graduates' parents raise the important issue of equity of access to graduate school and consequently to higher-paying jobs. There is a large body of Canadian research showing that high school students with university-educated parents are much more likely to participate in university education than students whose parents do not have a university degree (Butlin 1999). This study has shown that the educational attainment of one's parents continues to be an important factor among students who entered and graduated from the university system with regard to participation in master's and doctoral programs.

EQR

Pursuing further postsecondary education

Graph 1
Type of further postsecondary education taken by 1990 bachelor's graduates

%

Legend:
- □ Community college/trade–vocational
- University certificate or diploma
- Bachelor's degree
- ■ First professional degree
- Master's or doctoral degree

1992   1995
(Year of survey)

Note: *The 1990 bachelor's population was restricted to graduates with the following characteristics: their previous level of education was high school or community college/CEGEP; their age at graduation was 26 or younger; and they had started their bachelor's programs between 1984 and 1987.*
Sources: *1992 National Graduates Survey and 1995 Follow-Up Survey.*

Graph 2
Median annual earnings in 1995, five years after graduation

$

$37,000 $46,000 $50,000

Bachelor's   Master's   Doctorate
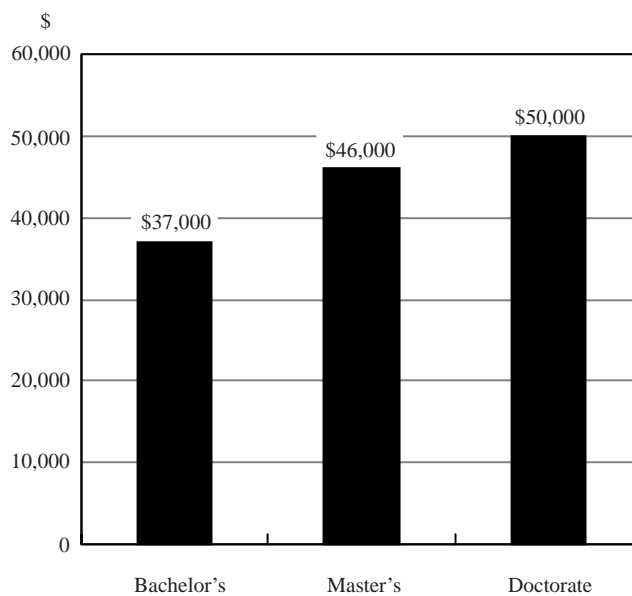
Note: *Graduates with the following characteristics were selected from all levels: they were working full time in 1995; were less than 35 years old at the time of graduation; had less than five years of full-time work experience; and had not completed any additional postsecondary education after graduating in 1990.*
Sources: *1992 National Graduates Survey and 1995 Follow-Up Survey.*

Graph 3
Odds of taking further postsecondary education for male bachelor's graduates

Odds ratio

Note: The 1990 bachelor's population was restricted to graduates with the following characteristics: their previous level of education was high school or community college/CEGEP; their age at graduation was 26 or younger; and they had started their bachelor's programs between 1984 and 1987.
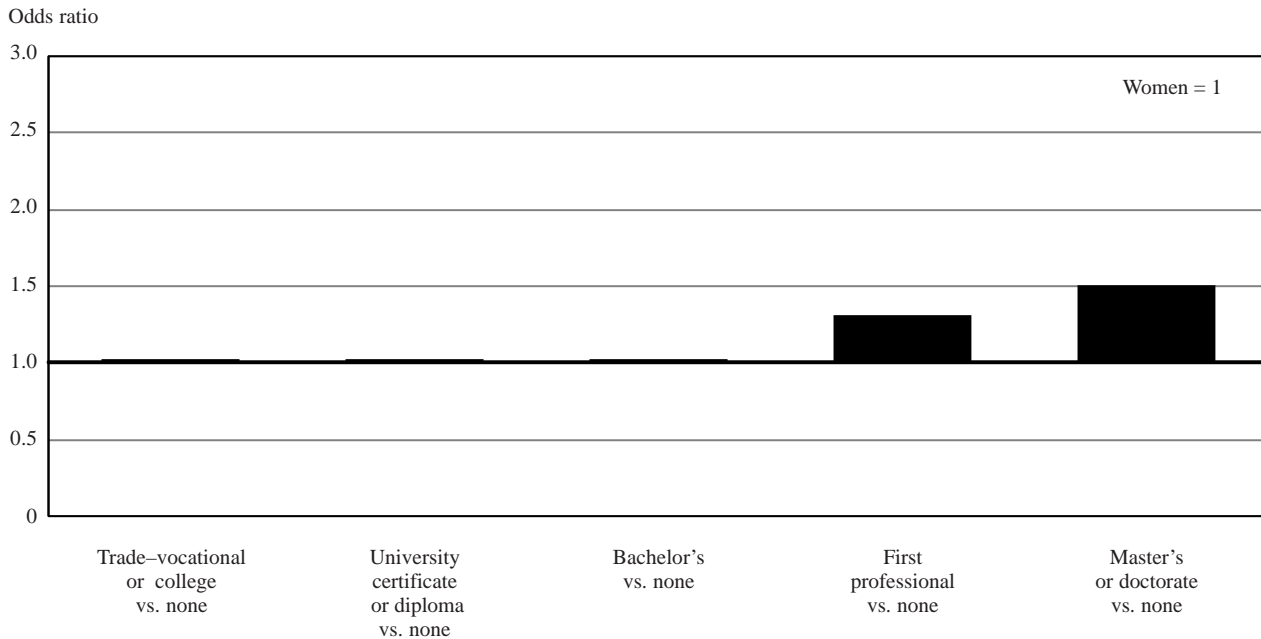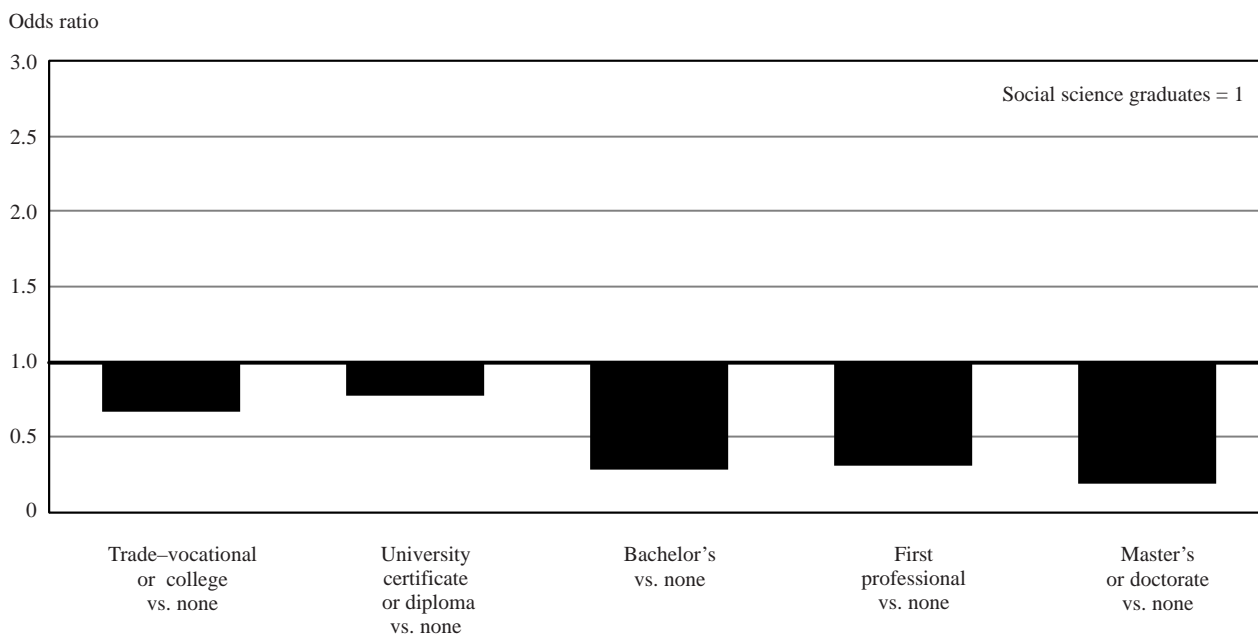*Sources: 1992 National Graduates Survey and 1995 Follow-Up Survey.*

Graph 4
Odds of taking further postsecondary education for bachelor's graduates of commerce, management and business

Odds ratio

Note: The 1990 bachelor's population was restricted to graduates with the following characteristics: their previous level of education was high school or community college/CEGEP; their age at graduation was 26 or younger; and they had started their bachelor's programs between 1984 and 1987.
Sources: 1992 National Graduates Survey and 1995 Follow-Up Survey.

Graph 5

Odds of taking further postsecondary education for bachelor's graduates whose parent(s) have a bachelor's degree

Odds ratio

Note: *The 1990 bachelor's population was restricted to graduates with the following characteristics: their previous level of education was high school or community college/CEGEP; their age at graduation was 26 or younger; and they had started their bachelor's programs between 1984 and 1987.*
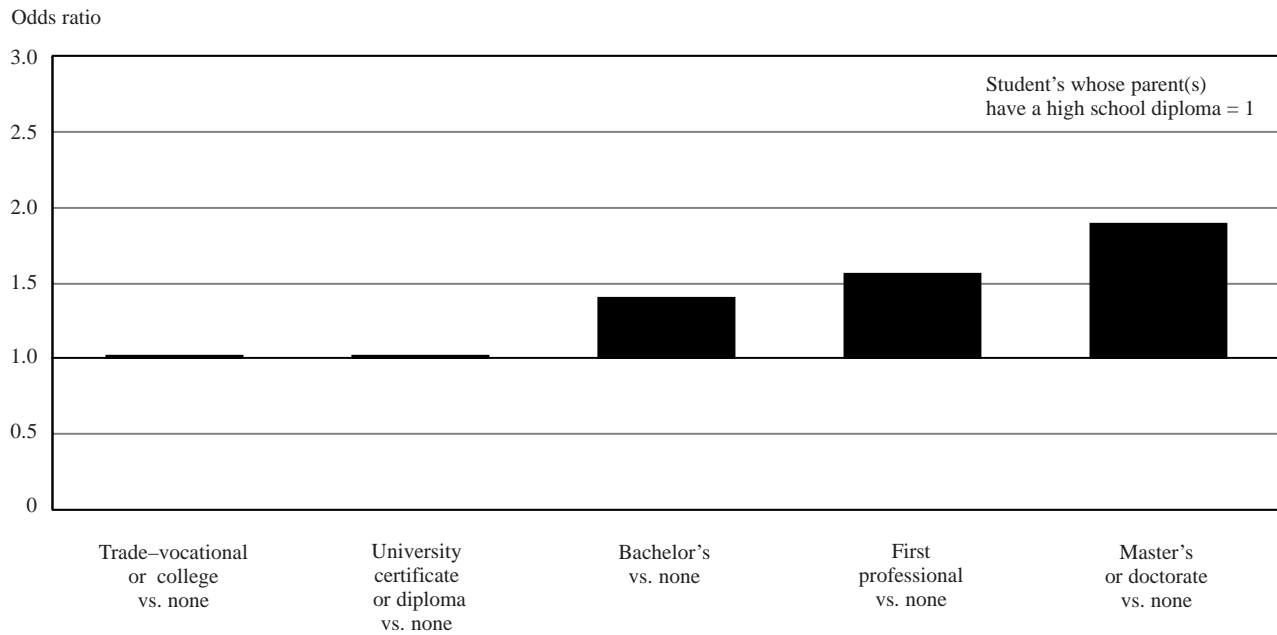*Sources:* *1992 National Graduates Survey and 1995 Follow-Up Survey.*

Table 1

Multivariate odds ratios from a multinomial logistic regression model of pursuing further education with education-related and social–demographic variables[1]

Predictors[2]	College/trade–vocational vs. none	University certificate/diploma vs. none	Bachelor's degree vs. none	First professional degree vs. none	Master's and doctoral degree vs. none
Education, recreation, counselling	0.416	1.056 ^{ns}	0.816**	0.317	0.397
Fine arts and humanities	0.908 ^{ns}	1.354*	1.086 ^{ns}	0.920 ^{ns}	1.164 ^{ns}
Social science[3]	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**
Commerce and business	0.673	0.780**	0.286	0.325	0.202
Agriculture and biological sciences	1.051 ^{ns}	1.414**	1.115 ^{ns}	2.454	1.629
Engineering and applied science	0.609	0.542	0.305	0.149	0.665
Health professions	0.520	0.572	0.195	0.664 ^{ns}	0.208
Math and physical sciences	0.620	0.647*	0.640	0.614**	0.798 ^{ns}
Region of university of graduation					
Atlantic region	0.626	1.128 ^{ns}	0.992 ^{ns}	1.079 ^{ns}	0.881 ^{ns}
Quebec	0.572	2.539	0.614	0.668*	1.711
Ontario	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**
Western provinces	0.738**	0.554*	0.684*	0.797 ^{ns}	0.958 ^{ns}
British Columbia	1.178 ^{ns}	1.899*	1.085 ^{ns}	1.389 ^{ns}	0.868 ^{ns}
Full-time/part-time status					
Studied part time or full and part time	1.132 ^{ns}	1.608	1.077 ^{ns}	0.467	0.620
Studied full time	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**
Co-op education					
Took co-op education	0.920 ^{ns}	0.859 ^{ns}	0.743 ^{ns}	1.095 ^{ns}	1.047 ^{ns}
Did not take co-op education	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**
Amount of student loan at time of graduation					
No loan	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**
$14,999 or less	0.920 ^{ns}	1.098 ^{ns}	1.004 ^{ns}	0.980 ^{ns}	1.045 ^{ns}
$15,000 or more	1.015 ^{ns}	1.015 ^{ns}	1.393**	2.157	1.799
Sex					
Men	0.933 ^{ns}	1.009 ^{ns}	0.929 ^{ns}	1.330*	1.503
Women	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**
Age at time of graduation in 1992					
21 years of age or younger	0.887 ^{ns}	1.273 ^{ns}	1.454	1.645	1.248**
22 years of age	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**
23 years of age	0.830**	0.978 ^{ns}	0.765*	0.627	0.790*
24 years of age	0.782**	0.553	0.745*	0.200	0.559
25 to 26 years of age	0.639	0.804 ^{ns}	0.692*	0.419	0.463
Parents' highest level of education					
Some secondary or less	0.761**	1.063 ^{ns}	0.868 ^{ns}	0.732 ^{ns}	0.772*
High school diploma	0.767**	0.864 ^{ns}	0.906 ^{ns}	0.915 ^{ns}	0.779**
College or trade–vocational	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**
University certificate or diploma or teacher's college	0.969 ^{ns}	1.053 ^{ns}	1.027 ^{ns}	0.691 ^{ns}	0.778 ^{ns}
Bachelor's or first professional degree	0.941 ^{ns}	0.966 ^{ns}	1.285*	1.577*	1.476
Master's or doctoral degree	1.045 ^{ns}	1.334 ^{ns}	1.867	3.020	2.138
Visible minority status					
Visible minority	1.497	0.819 ^{ns}	0.804 ^{ns}	0.814 ^{ns}	1.036 ^{ns}
Not a visible minority	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**
Number of months of full-time work experience					
No full-time work experience	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**
12 months or less	1.357	1.104 ^{ns}	1.070 ^{ns}	1.331**	0.864 ^{ns}
13 to 24 months	0.810**	0.909 ^{ns}	0.605	1.331 ^{ns}	0.959 ^{ns}
25 or more months	1.031 ^{ns}	0.671*	0.484	1.327 ^{ns}	0.625

Notes:

For the model presented above, the odds ratios reported are significant at p<=.01, unless otherwise noted.

* Difference with reference group at .01<p<=.05.

** Difference with reference group at .05<p<=.10.

ns Difference with reference group is not statistically significant.

1. The global logistic regression model is significant at p=.0001.

2. The data for the logistic regression model come from the 1992 National Graduates Survey and the 1995 Follow-up Survey of 1990 Graduates. The sample weight from this survey takes into account unequal probabilities of selection. The adjustment was done by dividing the weight variable by the average of the population included in the model. This adjustment does not correct for possible bias resulting from stratification or clustering in the sample design.

3. The contrast group is indicated by bolding and a value of 1.000. Odds ratios greater than 1 indicate an increase in the odds of postsecondary participation; odds ratios less than 1 indicate a decrease in the odds of participation; and odds ratios equal to 1 indicate no effect on the odds of participation.

Sources: *1992 National Graduates Survey and 1995 Follow-Up Survey.*

Table 2
Bivariate odds ratios from a multinomial logistic regression model of pursuing further education with education-related and social–demographic variables

Predictors[1]	College/trade–vocational vs. none	University certificate/diploma vs. none	Bachelor's degree vs. none	First professional degree vs. none	Master's and doctoral degree vs. none
Education, recreation, counselling	0.358	1.176 ns	0.732*	0.275	0.411
Fine arts and humanities	0.951 ns	1.347*	1.151 ns	0.994 ns	1.185 ns
Social science[2]	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**
Commerce and business	0.619	0.912 ns	0.259	0.333	0.243
Agriculture and biological sciences	1.080 ns	1.448**	1.121 ns	2.767	1.814
Engineering and applied science	0.531	0.536	0.228	0.151	0.857 ns
Health professions	0.528	0.604*	0.201	0.720 ns	0.238
Math and physical sciences	0.601	0.652*	0.551	0.647 ns	0.935 ns
Region of university of graduation					
Atlantic region	0.604	1.120 ns	1.072 ns	1.407**	0.880 ns
Quebec	0.513	2.316	0.462	0.482	1.240*
Ontario	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**
Western provinces	0.700*	0.536*	0.627	0.980 ns	0.977 ns
British Columbia	1.371 ns	1.977*	1.203 ns	1.423 ns	0.972 ns
Full-time/part-time status					
Studied part time or full and part time	1.153 ns	1.468	0.996 ns	0.352	0.540
Studied full time	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**
Co-op education					
Took co-op education	0.731**	0.609	0.479	0.648 ns	0.933 ns
Did not take co-op education	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**
Amount of student loan at time of graduation					
No loan	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**
$14,999 or less	0.826*	1.078 ns	0.887 ns	0.769**	0.920 ns
$15,000 or more	0.816 ns	0.885 ns	1.071 ns	1.427 ns	1.222 ns
Sex					
Men	0.865 ns	0.812*	0.699	0.964 ns	1.314
Women	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**
Age at time of graduation in 1992					
21 years of age or younger	0.967 ns	1.147 ns	1.753	1.977	1.331
22 years of age	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**
23 years of age	0.817**	0.982**	0.714	0.546	0.786
24 years of age	0.731*	0.637	0.686	0.173	0.597
25 to 26 years of age	0.591	0.920 ns	0.539	0.364	0.489
Parents' highest level of education					
Some secondary or less	0.745*	1.153 ns	0.836 ns	0.676 ns	0.757*
High school diploma	0.800**	0.862 ns	0.924 ns	0.893 ns	0.764*
College or trade–vocational	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**
University certificate or diploma or teacher's college	0.939 ns	1.231 ns	1.005 ns	0.725 ns	0.818 ns
Bachelor's or first professional degree	0.969 ns	0.995 ns	1.230 ns	1.600*	1.474
Master's or doctoral degree	1.221 ns	1.304 ns	1.922	3.315	2.268
Visible minority status					
Visible minority	1.601	0.715**	0.804 ns	0.860 ns	1.089 ns
Not a visible minority	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**
Number of months of full-time work experience					
No full-time work experience	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**
12 months or less	1.243*	1.156 ns	1.044 ns	1.447*	0.909 ns
13 to 24 months	0.743	0.825 ns	0.538	1.249 ns	0.905 ns
25 or more months	0.871 ns	0.712*	0.438	0.898 ns	0.550

Notes:
For the model presented above, the odds ratios reported are significant at p<=.01, unless otherwise noted.
* Difference with reference group at .01<p<=.05.
** Difference with reference group at .05<p<=.10.
ns Difference with reference group is not statistically significant.
1. The data for the logistic regression model come from the 1992 National Graduates Survey and the 1995 Follow-up Survey of 1990 Graduates. The sample weight from this survey takes into account unequal probabilities of selection. The adjustment was done by dividing the weight variable by the average of the population included in the model. This adjustment does not correct for possible bias resulting from stratification or clustering in the sample design.
2. The contrast group is indicated by bolding and a value of 1.000. Odds ratios greater than 1 indicate an increase in the odds of postsecondary participation; odds ratios less than 1 indicate a decrease in the odds of participation; and odds ratios equal to 1 indicate no effect on the odds of participation.
Sources: 1992 National Graduates Survey and 1995 Follow-Up Survey.

Table 3

Multivariate odds ratios from a multinomial logistic regression model of pursuing further education with education-related and social–demographic variables[1]

Predictors[2]	College/trade– vocational vs. master's or doctoral degree	University certificate/diploma vs. master's or doctoral degree	Bachelor's degree vs. master's or doctoral degree	First professional degree vs. master's or doctoral degree
Education, recreation, counselling	1.047[ns]	2.650	2.055	0.798[ns]
Fine arts and humanities	0.778**	1.163[ns]	0.937[ns]	0.790[ns]
Social science[3]	**1.000**	**1.000**	**1.000**	**1.000**
Commerce and business	3.329	3.833	1.436**	1.605**
Agriculture and biological sciences	0.646*	0.870[ns]	0.686*	1.508*
Engineering and applied science	0.916[ns]	0.815[ns]	0.461	0.225
Health professions	2.513	2.737	0.935[ns]	3.179
Math and physical sciences	0.775[ns]	0.808[ns]	0.799[ns]	0.768[ns]
Region of university of graduation				
Atlantic region	0.710**	1.280[ns]	1.131[ns]	1.224[ns]
Quebec	0.334	1.484	0.359	0.390
Ontario	**1.000**	**1.000**	**1.000**	**1.000**
Western provinces	0.771[ns]	0.579**	0.714[ns]	0.832[ns]
British Columbia	1.359[ns]	2.190*	1.251[ns]	1.602[ns]
Full-time/part-time status				
Studied part time or full and part time	1.828	2.595	1.737	0.753[ns]
Studied full time	**1.000**	**1.000**	**1.000**	**1.000**
Co-op education				
Took co-op education	0.878[ns]	0.820[ns]	0.704[ns]	1.046[ns]
Did not take co-op education	**1.000**	**1.000**	**1.000**	**1.000**
Amount of student loan at time of graduation				
No loan	**1.000**	**1.000**	**1.000**	**1.000**
$14,999 or less	0.880[ns]	1.051[ns]	0.960[ns]	0.937[ns]
$15,000 or more	0.564	0.564	0.774[ns]	1.199[ns]
Sex				
Men	0.621	0.671	0.618	0.885[ns]
Women	**1.000**	**1.000**	**1.000**	**1.000**
Age at time of graduation in 1992				
21 years of age or younger	0.711*	1.020[ns]	1.165[ns]	1.318[ns]
22 years of age	**1.000**	**1.000**	**1.000**	**1.000**
23 years of age	1.050[ns]	1.238[ns]	0.968[ns]	0.794[ns]
24 years of age	1.398**	0.989[ns]	1.333**	0.358
25 to 26 years of age	1.379[ns]	1.736	1.494*	0.904[ns]
Parents' highest level of education				
Some secondary or less	0.985[ns]	1.377**	1.122[ns]	0.948[ns]
High school diploma	0.981[ns]	1.115[ns]	1.161[ns]	1.178[ns]
College or trade–vocational	**1.000**	**1.000**	**1.000**	**1.000**
University certificate or diploma or teacher's college	1.245[ns]	1.347[ns]	1.320[ns]	0.888[ns]
Bachelor's or first professional degree	0.638	0.654	0.870[ns]	1.068[ns]
Master's or doctoral degree	0.489	0.624*	0.870[ns]	1.413[ns]
Visible minority status				
Visible minority	1.446*	0.795[ns]	0.779[ns]	0.786[ns]
Not a visible minority	**1.000**	**1.000**	**1.000**	**1.000**
Number of months of full-time work experience				
No full-time work experience	**1.000**	**1.000**	**1.000**	**1.000**
12 months or less	1.570	1.278**	1.237**	1.540
13 to 24 months	0.844[ns]	0.948[ns]	0.631	1.387**
25 or more months	1.648	1.073[ns]	0.774[ns]	2.122

Notes:

For the model presented above, the odds ratios reported are significant at p<=.01, unless otherwise noted.

*   *Difference with reference group at .01<p<=.05.*

** *Difference with reference group at .05<p<=.10.*

ns Difference with reference group is not statistically significant.

1. The global logistic regression model is significant at p=.0001.

2. The data for the logistic regression model come from the 1992 National Graduates Survey and the 1995 Follow-up Survey of 1990 Graduates. The sample weight from this survey takes into account unequal probabilities of selection. The adjustment was done by dividing the weight variable by the average of the population included in the model. This adjustment does not correct for possible bias resulting from stratification or clustering in the sample design.

3. The contrast group is indicated by bolding and a value of 1.000. Odds ratios greater than 1 indicate an increase in the odds of postsecondary participation; odds ratios less than 1 indicate a decrease in the odds of participation; and odds ratios equal to 1 indicate no effect on the odds of participation.

Sources: *1992 National Graduates Survey and 1995 Follow-Up Survey.*

Table 4

Bivariate odds ratios from a multinomial logistic regression model of pursuing further education with education-related and social–demographic variables

Predictors[1]	College/trade–vocational vs. master's or doctoral degree	University certificate/diploma vs. master's or doctoral degree	Bachelor's degree vs. master's or doctoral degree	First professional degree vs. master's or doctoral degree
Education, recreation, counselling	0.872 ns	2.862	1.781	0.670 ns
Fine arts and humanities	0.803 ns	1.137 ns	0.972 ns	0.839 ns
Social science[2]	**1.000**	**1.000**	**1.000**	**1.000**
Commerce and business	2.547	3.753	1.064 ns	1.370 ns
Agriculture and biological sciences	0.595	0.799 ns	0.618	1.525 *
Engineering and applied science	0.619	0.626 *	0.266	0.176
Health professions	2.218	2.533	0.843 ns	3.021
Math and physical sciences	0.642 *	0.697 ns	0.590	0.692 ns
Region of university of graduation				
Atlantic region	0.685 *	1.363 ns	1.217 ns	1.599 *
Quebec	0.412	1.862	0.395	0.388
Ontario	**1.000**	**1.000**	**1.000**	**1.000**
Western provinces	0.717**	0.549 *	0.642 *	1.004 ns
British Columbia	1.412 ns	2.034 *	1.238 ns	1.464 ns
Full-time/part-time status				
Studied part time or full and part time	2.134	2.718	1.844	0.652 ns
Studied full time	**1.000**	**1.000**	**1.000**	**1.000**
Co-op education				
Took co-op education	0.784 ns	0.652 *	0.514	0.695 ns
Did not take co-op education	**1.000**	**1.000**	**1.000**	**1.000**
Amount of student loan at time of graduation				
No loan	**1.000**	**1.000**	**1.000**	**1.000**
$14,999 or less	0.897 ns	1.166 ns	0.964 ns	0.836 ns
$15,000 or more	0.668 *	0.725 ns	0.876 ns	1.167 ns
Sex				
Men	0.658	0.618	0.532	0.734 *
Women	**1.000**	**1.000**	**1.000**	**1.000**
Age at time of graduation in 1992				
21 years of age or younger	0.727 *	0.862 ns	1.317 *	1.486 *
22 years of age	**1.000**	**1.000**	**1.000**	**1.000**
23 years of age	1.039 ns	1.248**	0.908 ns	0.695 *
24 years of age	1.225 ns	1.067 ns	1.150 ns	0.290
25 to 26 years of age	1.208 ns	1.881	1.101 ns	0.745 ns
Parents' highest level of education				
Some secondary or less	0.984 ns	1.523 *	1.104 ns	0.893 ns
High school diploma	1.047 ns	1.128 ns	1.209 ns	1.168 ns
College or trade–vocational	**1.000**	**1.000**	**1.000**	**1.000**
University certificate or diploma or teacher's college	1.148 ns	1.505**	1.228 ns	0.886 ns
Bachelor's or first professional degree	0.661	0.679 *	0.840 ns	1.090 ns
Master's or doctoral degree	0.497	0.575	0.847 ns	1.462 ns
Visible minority status				
Visible minority	1.470	0.656 *	0.738**	0.790 ns
Not a visible minority	**1.000**	**1.000**	**1.000**	**1.000**
Number of months of full-time work experience				
No full-time work experience	**1.000**	**1.000**	**1.000**	**1.000**
12 months or less	1.367	1.272**	1.149 ns	1.593
13 to 24 months	0.821 ns	0.912 ns	0.595	1.381**
25 or more months	1.585	1.295 ns	0.797 ns	1.633**

Notes:

For the model presented above, the odds ratios reported are significant at $p<=.01$, unless otherwise noted.

* Difference with reference group at $.01<p<=.05$.

** Difference with reference group at $.05<p<=.10$.

ns Difference with reference group is not statistically significant.

1. The data for the logistic regression model come from the 1992 National Graduates Survey and the 1995 Follow-up Survey of 1990 Graduates. The sample weight from this survey takes into account unequal probabilities of selection. The adjustment was done by dividing the weight variable by the average of the population included in the model. This adjustment does not correct for possible bias resulting from stratification or clustering in the sample design.

2. The contrast group is indicated by bolding and a value of 1.000. Odds ratios greater than 1 indicate an increase in the odds of postsecondary participation; odds ratios less than 1 indicate a decrease in the odds of participation; and odds ratios equal to 1 indicate no effect on the odds of participation.

Sources: *1992 National Graduates Survey and 1995 Follow-Up Survey.*

Notes

1. Research currently underway examines further postsecondary education for 1990 master's graduates and 1990 community college graduates.

2. Technical notes appear in the appendices at the end of this article.

3. The bachelor's population was further restricted to those who had less than a bachelor's degree before entering the bachelor's program from which they graduated in 1990. The master's population was restricted to those who had a bachelor's degree or less when entering the master's program from which they graduated in 1990.

4. Finnie (1999) uses similar restrictions for examining earnings by field of study for university graduates.

5. All discussion of earnings refers to median annual earnings.

6. The same population restrictions used for the earnings section are used for this issue of skills used in one's current job. In 1995 graduates were asked this question: "In this job, to what extent did you use any of the skills acquired from the educational program you completed in 1990? 1) to a great extent; 2) to some extent; 3) very little; 4) not at all."

7. Counseling in this context refers to education-related counseling services. Psychology is part of the social science field of study. Education graduates dominate the education, recreation and counseling field of study.

8. The incidence of interprovincial student migration in the population of bachelor's graduates was very low, and with the collapsing to regional categories this issue was no longer important.

9. Refers to Manitoba, Saskatchewan and Alberta.

10. This category includes students who studied part time only and those who combined full-time and part-time studies.

11. Student loans refer to loans from all sources at the time of graduation in 1990.

12. Includes parents with some trade–vocational or community college/CEGEP.

13. This category also includes teacher's certificates and some university.

14. Full-time work is defined as 30 hours or more per week at a job.

15. See the earnings section in the text for information about restrictions imposed on the graduate population.

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Appendix A

Methodological overview of the 1992 National Graduates Survey and the 1995 Follow-Up of Graduates Survey

The National Graduates Surveys and Follow-up Graduates Surveys,[1] conducted by Statistics Canada in partnership with Human Resources Development Canada, are specifically designed to obtain information on the following: the relationship between education/training and labour market activities; graduates' long-term labour market experiences (employment, earnings and occupations); and graduates' additional educational experiences and qualifications.

The National Graduates Survey carried out in June 1992 through telephone interviews had a survey methodology similar to that used in the surveys of 1982 and 1986 graduates.

For the 1992 National Graduates Survey, the base population encompassed graduates of Canadian postsecondary education institutions who had completed the requirement for degrees, diplomas, or certificates during the calendar year 1990. This population includes
- graduates of university programs leading to bachelor's, master's or doctoral degrees, or specialized certificates or diplomas;
- graduates of postsecondary programs (programs of one year or longer that normally require secondary school completion or its equivalent for admission) in CAATs, CEGEPS, community colleges, technical schools, and similar institutions; and
- graduates of skilled trades (pre-employment) programs that were normally three months or more in duration. This population excludes
- graduates from private postsecondary education institutions (such as commercial secretarial schools);
- those who completed continuing education courses at universities and colleges (unless these led to a degree or diploma);
- those who took part-time trade courses while employed full time;
- those who completed vocational programs that lasted less than three months or were not in the skilled trades (such as basic training and skills development); and
- those in apprenticeship programs.

In June 1995, Statistics Canada, in partnership with Human Resources Development Canada, conducted the 1995 Follow-up of 1990 Graduates. During the initial National Graduates Survey of 1992, 36,000 trade–vocational, community college and university students were interviewed. Three years later, 31,000 of the same students (over 85%) were re-interviewed.

Bachelor's graduates: a restricted population

The population for this study was 1990 bachelor's graduates. From this population only students with the following characteristics were selected for analysis:
- their previous level of education was high school or community college/CEGEP;
- their age at graduation was 26 or younger; and
- they started their bachelor's programs between 1984 and 1987.

The original intention to restrict the population to students whose previous level of education was 'no postsecondary education' would have eliminated all the graduates from Quebec, since CEGEP graduation is a prerequisite for university admission there. However, 93% of bachelor's graduates who had college/CEGEP as the highest level of previous education graduated from Quebec universities. In effect, this preserves the original intent by selecting students with high school—or the CEGEP equivalent in Quebec—as the highest level of previous education.

With the age restriction removed, graduates who were 26 years old or younger accounted for nearly 90% of the graduate population whose previous level of education was high school or community college/CEGEP and who started their bachelor's programs between 1984 and 1987.

There were 5,450 students in this restricted bachelor's population. This group of bachelor's graduates represented 60,771 graduates after the application of sample weights.

Note

1. Information presented in this appendix was taken from Little and Lapierre (1996) and Paju (1997).

Appendix B

Social-demographic and enrolment-related factors affect the odds of participating in further postsecondary education

A multinomial logistic regression model[1] was used to assess how social-demographic and enrolment-related variables affect the odds of participating in further postsecondary education. This model assesses how each of the predictors affects the odds of participation in further postsecondary education, while holding constant the effect of all the other predictors in the model. The enrolment-related predictors include field of study, region of university attended, full-time or part-time enrolment status, co-op education status, and amount of student loan at time of graduation. The social-demographic predictors[2] are sex, age at graduation, parents' highest level of education,[3] visible minority status, and number of months of full-time work experience.[4] Previous level of educational attainment was also restricted in order to include students who had no previous postsecondary education before enrolling in the bachelor's program from which they graduated (see Appendix A for more details). All predictors were captured in the 1992 National Graduates Survey. Information on the further postsecondary education variable was gathered in 1992 and again in 1995 (see Appendix D).

The logistic regression model is called multinomial because multiple comparisons are made between different types of further postsecondary participation (college/trade–vocational versus no further postsecondary participation; university certificate/diploma versus no further postsecondary participation; bachelor's versus no further postsecondary participation; first professional versus no further postsecondary participation; and master's or doctorate versus no further postsecondary participation) rather than simply looking at further postsecondary participation versus no further postsecondary participation (tables 1 and 3). Combining different types of further postsecondary education into a single variable could lead to misleading results, because the effect of many of the predictors on further postsecondary depends on the type of comparison being made. The initial contrasts for the logistic regression model are between different types of further education and no further postsecondary education. This is followed by an examination of the graduates who took additional postsecondary education. Comparisons are made between different types of further education using master's and doctoral education as the contrast group,[5] rather than no additional education (college/trade–vocational versus master's or doctoral participation; university certificate/ diploma versus master's or doctoral participation; bachelor's versus master's or doctoral participation; and first professional versus master's or doctoral participation).

For each predictor variable, one category was chosen as the reference group against which all other categories were compared. For example, social science was chosen as the reference category for field of study: all other fields of study were compared with social science. The estimated odds of pursuing master's or doctoral studies versus not pursuing further postsecondary education were .202 times (80%) lower for commerce, management and business graduates than for social science graduates,[6] when holding constant the effects of all other predictors in the model. In comparison with the reference group, odds ratios greater than 1 indicate an increase in the odds, while odds ratios less than 1 indicate a decrease in the odds. An odds ratio of 1 indicates no effect on the odds of pursuing additional education.

In addition to the multivariate odds ratios mentioned above, bivariate odds ratios are also presented in tables 2 and 4. Bivariate odds ratios do not control for the effects of the other predictors as is the case for multivariate odds ratios. For example, men had lower odds (.70) of pursuing further bachelor's studies versus no further education, but this effect disappeared when controlling for the effect of other predictors variables. Unless otherwise mentioned, odds ratios presented below always refer to multivariate odds ratios.

Notes

1. This model was estimated using the SAS CATMOD procedure. More information on logistic regression can be found in Hosmer and Lemeshow (1989).

2. Marital status was not included in the social-demographic predictors because 1990 graduates were asked about their marital status in 1992. The date of marriage was not captured, so that graduates could have been married after graduation in 1990, especially since the graduates were aged 26 or younger at time of graduation. The marriage may have occurred during or after the period in which further education was taken. Unless we can establish a specific date of marriage, the question of chronological sequence with further education is always in doubt. Only a small proportion of graduates reported having dependent children. This is not surprising given the age of graduates at time of graduation; and when children who were born after graduation were removed from the sample size, it was too small to use this as a predictor variable.

3. Parents' level of educational attainment refers to the highest level of either parent.

4. The issue of how postgraduation labour market experiences affect the odds of pursuing further education could not be examined for graduates who took further education by 1992 because the chronological sequence of these two events could not be established. It was possible to look at the group of graduates who were in the labour market by 1992 but did not take further education until 1995. Unfortunately, 80% of graduates who took further education did so by 1992, leaving only a small group to examine for the labour market and further postsecondary education links.

5. These odds ratios were extracted from the original odds ratios using no further education as the comparison group. The contrast between no further education versus master's or doctoral programs is not reported in these odds ratios, since it is part of the original master's or doctoral programs versus no further education odds ratios.

6. Odds ratios can be expressed as percentages using the formula 100(odds ratio-1). For example 100(.206-1) = 80%.

Appendix C

Specification of the multinomial logistic regression model

Logistic regression: This model expresses the conditional log odds of pursuing further postsecondary education as a linear function of a set of explanatory or predictor variables.

Since the multinomial model used in this study builds on the binary model, both models are presented below.

The binary logistic regression model:
Log (Pi/1-Pi) = Log PPi = alpha + b1 (sex) + b2 (field study)...+bk (K)

The multinomial logistic regression model:
Log PP$^{cc/tv-no}$ = alpha + b1^1 (sex) + b2^1 (field study)...+bk^1 (K),
Log PP$^{unct-no}$ = alpha + b1^2 (sex) + b2^2 (field study)...+bk^2 (K),
Log PP$^{bach-no}$ = alpha + b1^3 (sex) + b2^3 (field study)...+bk^3 (K),
Log PP$^{fprof-no}$ = alpha + b1^4 (sex) + b2^4 (field study)...+bk^4 (K),
Log PP$^{ma/phd-no}$ = alpha + b1^5 (sex) + b2^5 (field study)...+bk^5 (K),

Definition of terms for logistic regression models above:
Log— natural logarithm
Odds— the relative probability of falling into one of two categories of interest
Pi— the conditional probability of pursuing further postsecondary education
1-Pi— the conditional probability of not pursuing further postsecondary education, given the predictors in the model
Alpha— a constant term
b1...bk— logistic regression coefficients
b1^1— superscript indicates the equation number for the multinomial logistic regression parameter
Log PPi— the conditional odds of pursuing further postsecondary education versus no participation, given the predictor variables in the model
Sex— a predictor variable
Field study— field of study of bachelor's graduation in 1990, a predictor variable
K— all other predictor variables in the model
Log PP$^{cc/tv-no}$— the conditional odds of taking community college/trade–vocational education versus no further postsecondary participation, given the predictor variables in the model
Log PP$^{unct-no}$— the conditional odds of taking a university certificate or diploma versus no further postsecondary participation, given the predictor variables in the model
Log PP$^{bach-no}$— the conditional odds of taking bachelor's level education versus no further postsecondary participation, given the predictor variables in the model
Log PP$^{fprof-no}$— the conditional odds of taking a first professional degree versus no further postsecondary participation, given the predictor variables in the model
Log PP$^{ma/phd-no}$— the conditional odds of taking a master's or doctoral degree versus no further postsecondary participation, given the predictor variables in the model

Additional issues: For the multinomial logistic regression model, there are five equations for the log of each separate odds (community college/trade–vocational versus no

further postsecondary participation; university certificate or diploma versus no further postsecondary participation; bachelor's level versus no further postsecondary participation; first professional versus no further postsecondary participation; and master's or doctoral level versus no further postsecondary participation), which are simultaneously estimated by maximum likelihood using the CATMOD procedure in SAS. The number of equations generated is equivalent to the number of categories in the postsecondary education variable minus 1. We could also have specified equations for the comparison between the log odds of master's or doctoral level versus community college/trade–vocational level, or bachelor's level versus master's or doctoral level, and so forth. The parameters for these comparisons can be obtained as the differences between the parameters in the original three equations. Odds ratios are produced by exponentiation of the logistic regression parameters. See Hosmer and Lemeshow (1989) for more information on the logistic regression model.

Appendix D

Measurement of further education

Definition of further education: The measure selected for this study was the highest level of further education taken or completed by 1995 from among the following:
- community college/trade–vocational
- university certificate or diploma[1]
- bachelor's degree
- first professional degree
- master's or doctoral degree
- no further education

Taking or completing multiple instances of further education was not an issue for this population of bachelor's graduates five years after graduation. Bachelor's graduates were broken down into three groups: (1) those who had taken further education in 1992 but had not completed it; (2) those who had completed further education by 1992; and (3) those who had not completed or taken any further education by 1992. The pathways of these three groups to taking and completing further education in 1995 were constructed and it was found that multiple instances of additional education were statistically rare. As well, the bachelor's graduates who had not taken any further education since graduating in 1990 comprised almost half of all graduates, so the sample size was very limited for a study of multiple instances of additional education. The question for taking further education changed from 1992 to 1995 (see below). The restrictions that a course taken be job-related and last 20 hours per week or more were not captured in 1992. This adds more complications when looking at instances of multiple types of further education taken.

1992 graduates were asked the following questions:
- Since you completed the program in 1990, have you **completed** any other university, college or trade–vocational degree, diploma or certificate programs? (Information was then recorded on the types of degrees, diplomas or certificates, the field of study, and the month and date when the program requirements were completed.)
- Since you completed the program in 1990, have you **taken** any other credit courses, including correspondence courses? (Information was recorded on the types of degrees, diplomas or certificates that these courses were good for. Field of study information was also recorded, but the dates when the courses were taken were not recorded.)

1995 graduates were asked these questions:
- Have you **completed** any other university, college or trade–vocational degree, diploma or certificate programs since June 1992? (Information was then recorded on the types of degrees, diplomas or certificates, the field of study, and the month and date when the program requirements were completed. The question was repeated to capture multiple instances of completed degrees, diplomas or certificates.)
- Since June 1992 have you **taken** any other courses, workshops, seminars, tutorials correspondence courses or any other training or education?
  - Were any of these courses job-related?
  - Did any of these job-related courses last 20 hours or more?
  - For the most recent job-related course lasting 20 hours or more, could it lead to a degree, certificate or diploma?

(The type of degree, certificate or diploma was recorded, but no dates were recorded. The question was repeated to capture multiple instances of courses taken that lasted over 20 hours and could lead to a degree, diploma or certificate.)

Note

1. Undergraduate and graduate certificates and diplomas are combined into a single category. For bachelor's graduates with no other university degree, certificate or diploma, an undergraduate certificate or diploma is awarded to those taking a certificate or diploma in a different field of study from the bachelor's degree. A graduate certificate or diploma includes those bachelor's graduates taking a certificate or diploma in the same field of study as the bachelor's degree.

New hirings and permanent separations

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Introduction

Data from the Labour Force Survey (LFS) have always been invaluable to those following the evolution of the Canadian labour market. This important survey is the source of the unemployment rate, employment rate and monthly change in the level of employment, which are so often quoted in the media and studied by labour market analysts. These and other data from the LFS paint a comprehensive, but static, picture of the labour market each month.

To address the need for monthly, current data on the dynamics of the labour market, the LFS recently began collecting new hirings and permanent separations information. These new data provide a better understanding of the degree to which people flow into and out of jobs or businesses.

Labour market analysts could use these new data to better understand the different regional labour markets in Canada. For example, it will help policy makers understand the role of hirings, quits and layoffs as they relate to employment trends. After all, employment growth could slow because fewer employers are hiring or because more people are quitting their jobs to retire or go to school. A different policy response would be warranted depending on which scenario occurs.

An overview of new hirings and permanent separations

The new Labour Force Survey hirings and separations data[1] show that there are vast numbers of people who move in and out of jobs or businesses over the course of a year.

- In 1998, 5.5 million new hirings took place in Canada while in 1999, there were 5.4 million.
- In both 1998 and 1999, there were 5.1 million permanent separations from work.

A note on the LFS new hires and permanent separations data

The LFS new hires and permanent separations data are intended to be a measure of labour market dynamics. However, the data are not the gross flows that make up the net change in employment from one month to the next. Although one might expect new hires minus permanent separations in month B to equal the change in employment between month A and month B, there are a number of reasons why this is not so.

First of all, the permanent separations data exclude the people on temporary layoff. Similarly, those recalled to a job from which they were laid-off are not counted as new hires. Since people on temporary layoff are not considered employed, they can affect the change in employment but not the hiring or separation data. In 1998, there were an average of 97,000 people per month on temporary layoff, a number which fell to 86,000 the next year.

The fact that people on temporary layoff cannot be considered as a new hire when they go back to work explains why the term "new" hire is used. People on temporary layoff would be considered as rehired.

Second, like people on temporary layoff, casual workers are classified as not employed if they did not work during the survey reference week. Although the date that casual workers start their jobs should be updated each time they return to work, this is known to not be the case (presumably because they may feel a strong sense of job attachment). As a result, they tend to give "old" start dates and are not counted among the newly hired, even though they affect the change in employment.

These and other conceptual differences help one understand why it is possible for the net increase in employment to be bigger in 1999 than 1998 at the same time that hirings are slowing relative to separations.

How the annual hiring and separation rates are calculated

In order to have a relative measure, annual hiring and separation rates are calculated. To obtain the denominator for these ratios, it is necessary to add all new hirings that took place during the current period to the employment level at the end of the previous period. The numerator consists of the total number of either hirings or separations in the current period, depending on the ratio calculated.

For an annual ratio, all persons who were hired during the year are added to the number of persons who held a job at the end of the preceding year. This gives us a good picture of the number of "person-jobs" per year. Thus, for example, the annual separation rate will be represented by the number of persons who left a job during the year, divided by the number of person-jobs during that same year. The monthly rate will have as its denominator the employment level for the previous month plus the number of hirings for the current month.

Note that the type of ratio used in this publication does not include the change in temporary layoffs and in casual workers.

The hiring rate (see box), like the separation rate, was similar in both 1998 and 1999. The hiring rate stood at 29% in 1998 and 28% in 1999 while the separation rate was 26% in both years.

The hiring and separation rates of men and women were very similar to each other in both 1998 and 1999.

- In both 1998 and 1999 the hiring rate for men was 28%. For women the hiring rate was 29% in 1998, slightly more than the previous year, 27%. The separation rate for men and women was 26% in both years.

Youths set the tone for a dynamic labour market

Looking at hirings and separations by age, it is clear that there are major differences between youths (aged 15 to 24), the core-age group (aged 25 to 54) and older people (55 and over). Not surprisingly, the degree to which youths move into or out of jobs is much greater than the churning which takes place in the labour market for adults.

- About 2.6 million hirings of youths took place in both 1998 and 1999, resulting in hiring rates of 57% in 1998 and 55% in 1999.

New hirings and permanent separations by level of education

A worker's education can have an impact on the degree to which they flow into and out of jobs. A lack of education, for example, could pre-dispose someone to temporary or seasonal work and lead to more frequent job changes.

To get a grasp of the effect of education on hirings and separations, it is necessary to focus the analysis on those who have finished their schooling. Research has shown that in general, the initial transition from school to work is over before age 25 (Statistics Canada 1999), so the following looks at hirings and separations of people 25 years of age or older.

The more education, the less movement into and out of jobs

In general, the higher the level of education, the lower are the rates of hiring and separation. For those 25 and older, the hiring and separation rates were, on average for 1998 and 1999, 20%.

- Among people 25 years of age and older without any education beyond a high school diploma, the hiring and separation rates were, on average for 1998 and 1999, 21%.
- For those holding a university degree, the average annual hiring rate was 17%, almost identical to the rate of separation (16%).

Much higher layoff rate for those with the least formal education

The annual layoff rate for 1998 and 1999 was 12% for people with high school or less while it was 6% for people with a master's degree or a PhD.

It is interesting to compare the proportion of hirings, quits or layoffs to the total number of workers in the same groups.

- Around 14% of workers 25 years of age or older had a master's degree or a PhD but this group accounted for only 3.7% of layoffs.
- At the other end of the scale, 36% of workers 25 years of age or older had a high school diploma or less but they comprise 44% of permanent layoffs.
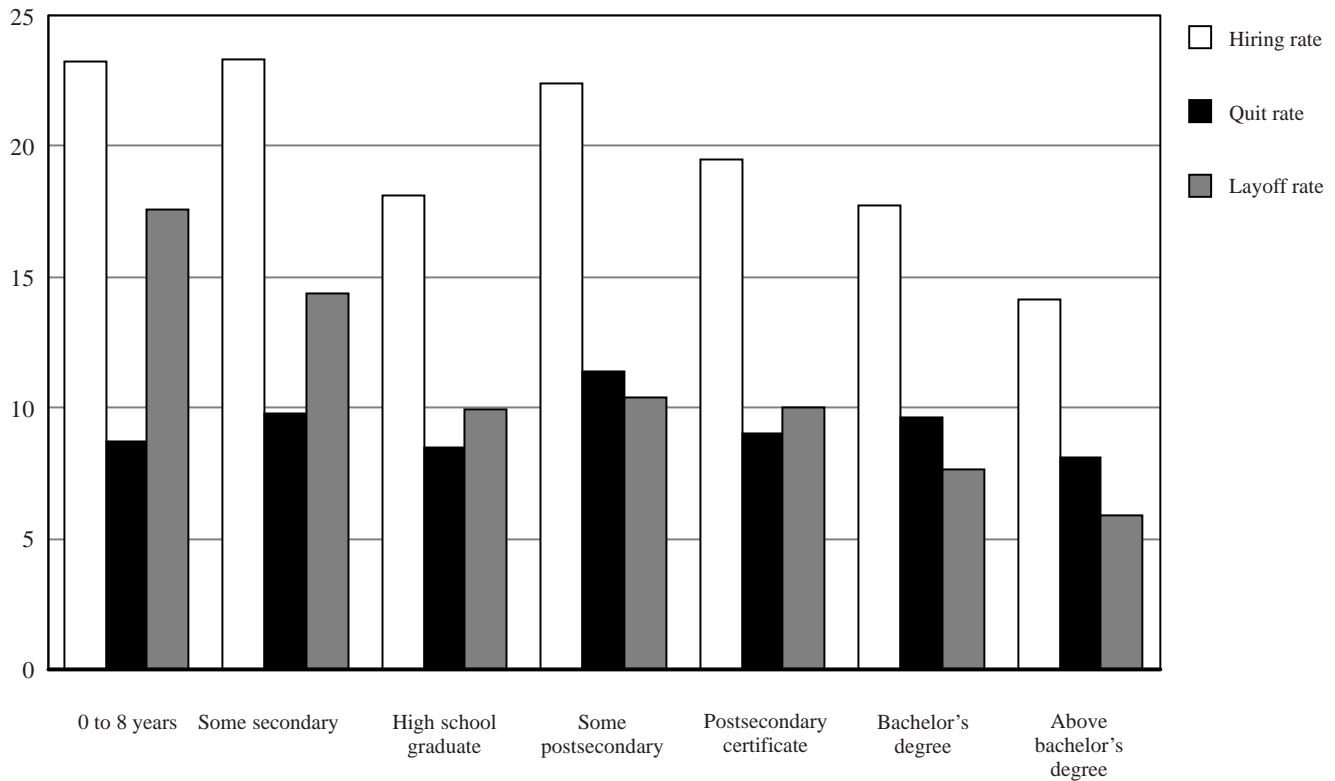
Table 1

Number, distribution and rates of hirings, separations, quits and layoffs for adults (25 years and over), average for 1998 and 1999

	Hirings	Separations	Quits	Layoffs
	'000			
Average number				
0 to 8 years	168.4	190.6	63.2	127.3
Some secondary	412.4	426.8	172.8	254.1
High school graduate	532.9	542.8	250.1	292.7
Some postsecondary	266.4	258.5	134.9	123.6
Postsecondary certificate	1,020.0	997.8	473.7	524.2
Bachelor's degree	369.8	360.3	200.3	160.0
Above bachelor's degree	137.7	136.2	79.1	57.1
Total	**2,907.4**	**2,913.1**	**1,374.1**	**1,539.0**
	%			
Distribution				
0 to 8 years	5.8	6.5	4.6	8.3
Some secondary	14.2	14.7	12.6	16.5
High school graduate	18.3	18.6	18.2	19.0
Some postsecondary	9.2	8.9	9.8	8.0
Postsecondary certificate	35.1	34.3	34.5	34.1
Bachelor's degree	12.7	12.4	14.6	10.4
Above bachelor's degree	4.7	4.7	5.8	3.7
Total	**100.0**	**100.0**	**100.0**	**100.0**
	%			
Rates				
0 to 8 years	23.2	26.3	8.7	17.6
Some secondary	23.3	24.1	9.8	14.4
High school graduate	18.1	18.5	8.5	10.0
Some postsecondary	22.4	21.8	11.4	10.4
Postsecondary certificate	19.5	19.1	9.1	10.0
Bachelor's degree	17.7	17.2	9.6	7.7
Above bachelor's degree	14.1	14.0	8.1	5.9

Source: *Labour Force Survey.*

Graph 1
Hiring, quit and layoff rates, by level of education, 1998 and 1999

Average rates

□ Hiring rate
■ Quit rate
▨ Layoff rate

0 to 8 years   Some secondary   High school graduate   Some postsecondary   Postsecondary certificate   Bachelor's degree   Above bachelor's degree

Source: *Labour Force Survey.*

• Around 35% of workers 25 years of age or older had a non-university postsecondary diploma or certificate. This group accounted for 35% of hirings, quits and layoffs.

Only people who had some postsecondary education, or a university degree had layoff rates that were lower than their quit rates.

For people with a university degree, the lower hiring rate, and the fact that there are more quits than layoffs probably indicates greater job stability. Furthermore, high quit rates signal greater labour market opportunities for those with university degrees, a situation where workers more often change jobs by choice than by force.

Note

1. New hires are people who started a new job or business between the end of the previous LFS reference week and the end of the current reference week. Permanent separations are people who left a job or a business between the start of the previous reference week and the start of the current reference week. Please note that the term "new hire" is used to describe both employees hired by a company and people that started their own businesses.

Bibliography

Statistics Canada. 1999. *Labour Force Update: Youths and the Labour Market 1998-1999*. Catalogue no. 71-005-XPB, Vol. 3, no. 4, Autumn.

Data availability
announcements

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 Internet web site* <www.statcan.ca>. *Click on "Daily news" and "Previous issues".*

- Full-time enrolment in trade/vocational and preparatory/special training, 1997-1998 (released January 30, 2001)

- Community colleges and related institutions: Postsecondary student enrolments, 1998-1999 (released October 3, 2000)

- Registered apprenticeship training, 1998 (released September 19, 2000)

EQR

Current data

Data series	Most recent data	
	Final[1]	Preliminary or estimate[2]
A. Elementary/secondary		
Enrolment in public schools	1997–1998	1998–1999[e] 1999–2000[e]
Enrolment in private schools	1997–1998	1998–1999[e] 1999–2000[e]
Enrolment in minority and second language education programs	1997–1998	
Secondary school graduation	1997–1998	
Educators in public schools	1997–1998	1998–1999[e] 1999–2000[e]
Educators in private schools	1997–1998	1998–1999[e] 1999–2000[e]
Elementary/secondary school characteristics	1997–1998	1998–1999[e] 1999–2000[e]
Financial statistics of school boards	1997-1998	
Financial statistics of private academic schools	1995–1996	1996–1997[p]
Federal government expenditures on elementary/secondary education	1996–1997	1997–1998[p] 1998-1999[e]
Consolidated expenditures on elementary/secondary education	1996–1997	1997–1998[e] 1998–1999[e]
Education Price Index	1998	
B. Postsecondary		
University enrolments	1998–1999	discontinued
University degrees granted	1998	discontinued
University continuing education enrolment	1996–1997	discontinued
Educators in universities	1998–1999	1999–2000[e]
Salaries and salary scales of full-time teaching staff at Canadian universities	1999–2000	
Tuition and living accommodation costs at Canadian universities	2000–2001	
University finance	1997–1998	1998–1999[p] 1999–2000[e]
College finance	1997–1998	1998–1999[p] 1999–2000[e]
Federal government expenditures on postsecondary education	1996–1997	1997–1998[e] 1998–1999[e]
Consolidated expenditures on postsecondary education	1997–1998	1998–1999[e] 1999–2000[e]

See notes at end of this table.

Current data (concluded)

Data series	Most recent data	
	Final[1]	Preliminary or estimate[2]
Community colleges and related institutions: enrolment and graduates	1998–1999	1999–2000[p]
Trade/vocational enrolment	1997–1998	1998–1999[e]
College/trade teaching staff	1997–1998	1998–1999[e]
International student participation in Canadian universities	1998–1999	

C. Publications[3]

Education in Canada (1999)

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

Leaving school (1993)

After High School, the First Years (1996)

Adult education and training survey (1995)

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)

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)

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

1. *Indicates the most recent calendar year (e.g., 1993) or academic/fiscal year (e.g., 1993–1994) for which* <u>final</u> *data are available for* <u>all</u> *provinces and territories.*
2. *Indicates the most recent calendar year (e.g., 1995) or academic/fiscal year (e.g., 1996–1997) for which* <u>any</u> *data are available. The data may be preliminary (e.g., 1995[p]), estimated (e.g., 1995[e]) 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 the Analysis and Dissemination Section of the Centre for Education Statistics at Statistics Canada. Telephone: (613) 951-1503, Fax: (613) 951-9040 or E-mail: sharon-anne.borde@statcan.ca.*

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, 1981 to 1999

Indicator[1]	1981	1986	1991	1992	1993	1994	1995	1996	1997	1998	1999
						thousands					
Social context											
Population aged 0–3	1,448.7	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
Population aged 4–17	5,480.3	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
Population aged 18–24	3,493.1	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
Total population	24,900.0	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
Youth immigration[r]	42.8	25.9	61.2	61.2	73.1	68.3	65.9	66.3	70.4	61.2	..
						%					
Lone-parent families	16.6	18.8	15.3	14.4	14.8	14.9	15.1	14.8	14.9	..	..
Economic context											
GDP: Real annual percentage change	4.0	3.1	-1.8	-0.6	2.2	4.1	2.3	1.5	..	..	..
CPI: Annual percentage change	12.4	4.2	5.6	1.5	1.8	0.2	2.2	1.7	1.7	1.0	1.9
Employment rate	60.0	59.6	59.7	58.4	58.0	58.4	58.8	58.5	59.0	59.7	60.6
Unemployment rate	7.6	9.7	10.3	11.2	11.4	10.4	9.4	9.7	9.1	8.3	7.6
Student employment rate	..	34.4	38.0	35.1	34.0	34.2	33.3	34.8	32.5[2]	..	..
Families below low income cut-offs: Two-parent families	10.2	10.9	10.8	10.6	12.2	11.5	12.8	11.8	12.0	..	..
Lone-parent families	48.4	52.5	55.4	52.3	55.0	53.0	53.0	56.8	51.1	..	..
Enrolments						thousands					
Elementary/secondary schools	5,024.2	4,938.0	5,218.2	5,284.1	5,327.8	5,362.8	5,441.4	5,414.6	5,386.3	5,483.9[e]	5,524.9[e]
						%					
Percentage in private schools	4.3	4.6	4.7	4.9	5.0	5.1	5.1	5.2	5.3	5.3[e]	..
						thousands					
College/trade/vocational, full-time[3]	..	238.1	275.9	266.7	306.5	298.5	269.1	266.4[e]	264.5[e]	..	..
College/postsecondary, full-time	273.4	321.5	349.1	364.6	369.2[r]	380.0[r]	391.3[r]	397.3[r]	398.6	403.5[r]	409.4[e]
College/postsecondary, part-time[4]	..	96.4[e]	125.7[e]	106.6[e]	98.4	90.8	87.7	87.1	91.6	91.4	..

See notes at end of this table.

Table 1
Education indicators, Canada, 1981 to 1999 (concluded)

Indicator[1]	1981	1986	1991	1992	1993	1994	1995	1996	1997	1998	1999
						thousands					
Full-time university	401.9	475.4	554.0	569.5	574.3	575.7	573.2	573.6	573.1 [r]	580.4	..
Part-time university	251.9	287.5	313.3	316.2	300.3	283.3	273.2	256.1	249.7	246.0	..
Adult education and training	..	..	5,504	..	5,842	..	..	..	6,069	..	..
						%					
Participation rate	..	..	27	..	28	..	..	..	26	..	..
Graduates						thousands					
Secondary schools[5]	..	..	260.7	272.9	281.4	280.4	295.3	300.2 [r]	296.4 [r]	300.8 [e]	..
College/trade/vocational[6]	..	145.0	159.7	158.8	163.9	151.1	144.2	141.5 [e]	138.7 [e]	..	..
College/postsecondary	71.8	82.4	85.9	92.5	95.2	97.2	100.9	105.0	105.9 [e]	..	..
University/Bachelor's	84.9	101.7	114.8	120.7	123.2	126.5	127.3	128.0	125.8	124.9	..
University/Master's	12.9	15.9	18.0	19.4	20.8	21.3	21.4	21.6	21.3	22.0	..
University/Doctorate	1.8	2.2	2.9	3.1	3.4 [e]	3.6	3.7	3.9	4.0	4.0	..
Full-time educators											
Elementary/secondary schools	274.6	269.9	302.6	301.8	295.4	295.7 [e]	298.7 [e]	294.4 [e]	296.8 [e]	295.9 [e]	295.9 [e]
College/postsecondary/trade/ vocational	26.8 [7]	30.6 [7]	31.7 [7]	31.8 [7]	32.2 [7]	31.0 [7]	30.9 [r]	31.5 [r]	31.0 [r]	32.1 [e]	..
University	33.6	35.4	36.8	37.3	36.9	36.4	36.0	34.6	33.7	33.7 [e]	..
						ratio					
Elementary/secondary pupil–educator ratio	17.0	16.5	15.5	15.7 [e]	16.1 [e]	16.1 [e]	16.1 [e]	16.3 [e]	16.3 [e]	16.5 [e]	16.6 [e]
Education expenditures						$ millions					
Elementary/secondary	16,703.2	22,968.0	33,444.9	34,774.5	35,582.3	35,936.0	36,424.7	36,744.7	36,973.1 [p]	37,453.8 [e]	37,498.9 [e]
Vocational	1,601.2	3,275.1	4,573.8	5,380.9	5,631.2	6,559.0	6,185.2	5,301.8	5,896.9 [p]	5,903.4 [e]	6,229.6 [e]
College	2,088.1	2,999.0	3,870.7	4,075.3	4,105.9	4,207.1	4,531.8	4,477.9	4,642.0 [p]	4,808.9 [e]	5,261.7 [e]
University	4,980.7	7,368.7	11,254.8	11,569.8	11,736.8	11,857.9	11,802.0	11,600.7	12,255.4 [p]	12,660.5	12,874.9 [e]
Total education expenditures	25,373.2	36,610.8	53,144.2	55,800.5	57,056.2	58,560.0	58,943.7	58,125.1	59,767.4 [p]	60,826.6	61,865.1
						%					
As a percentage of GDP	7.1	7.3	7.9	8.1	8.0	7.8	7.6	7.1	6.9	6.8	..

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[1]	Canada	Newfound-land	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario
				%			
Social and economic context							
Educational attainment,[2] 1999:							
Less than secondary diploma	26.8	38.4	35.7	30.8	32.9	33.0	24.1
Graduated from high school	19.3	14.1	15.1	14.0	19.9	15.8	21.0
Some postsecondary	6.9	4.8	5.5	5.6	4.5	5.4	7.2
Postsecondary certificate, diploma							
or university degree	47.0	42.6	43.8	49.5	42.8	45.7	47.6
Labour force participation rates							
by educational attainment, 1999:							
Total	66.0	58.5	65.7	60.8	60.8	63.4	66.9
Less than secondary diploma	40.0	34.5	47.0	36.2	36.2	37.5	40.2
Graduated from high school	69.6	64.4	73.7	66.8	69.1	70.1	68.8
Some postsecondary	71.8	63.0	71.4	70.0	67.9	70.3	72.1
Postsecondary certificate, diploma							
or university degree	78.5	77.8	77.0	73.4	75.1	79.0	78.9
Unemployment rate, 1999	6.3	15.1	13.4	7.8	8.9	8.1	5.0
Costs							
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, 1997–1998	16.4[r]	14.6	17.2	17.5	17.6	14.6[r]	16.7[r]
Educational outcomes							
Secondary school graduation							
rates, 1996–1997	73.4	80.2	85.6	80.7	86.0	75.9[3,4]	72.0
University graduation rate, 1997–1998	35.2[r]	31.4[r]	21.0[r]	53.5[r]	32.9[r]	41.8[r]	36.7
Unemployment rate by level of							
educational attainment, 1999							
Less than secondary diploma	10.4	25.4	23.6	13.0	15.7	12.7	7.7
Graduated from high school	6.3	16.7	15.3	6.6	8.9	8.4	5.1
Some postsecondary	7.1	9.2	5.7	5.8	5.9	9.8	6.6
Postsecondary certificate, diploma							
or university degree	5.0	10.7	8.1	6.6	6.5	6.2	4.1

See notes at end of this table.

Table 2
Education indicators, provinces and territories (concluded)

Indicator[1]	Manitoba	Saskatchewan	Alberta	British Columbia	Yukon	Northwest Territories
				%		
Social and economic context						
Educational attainment,[2] 1999:						
Less than secondary diploma	30.9	31.4	21.6	20.5	..	..
Graduated from high school	18.3	18.8	19.9	22.6	..	..
Some postsecondary	6.8	7.9	8.2	8.8	..	..
Postsecondary certificate, diploma						
or university degree	44.0	41.9	50.3	48.1	..	..
Labour force participation rates						
by educational attainment, 1999:						
Total	66.8	67.5	73.1	65.8	..	..
Less than secondary diploma	44.5	44.6	50.4	39.8	..	..
Graduated from high school	72.1	77.5	75.4	66.5	..	..
Some postsecondary	75.9	73.5	77.5	69.0	..	..
Postsecondary certificate, diploma						
or university degree	78.9	79.1	81.2	76.0	..	..
Unemployment rate, 1999	4.6	4.8	4.4	7.2	..	..
Costs						
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, 1997–1998	16.3	17.3	17.8 [r]	17.5	13.2	13.1
Educational outcomes						
Secondary school graduation						
rates, 1996–1997	78.1	78.8	64.7	70.5	37.3	24.6
University graduation rate, 1997–1998	31.3 [r]	34.1 [r]	26.8 [r]	24.5 [r]	..	..
Unemployment rate by level of						
educational attainment, 1999						
Less than secondary diploma	6.8	7.9	5.6	12.8	..	..
Graduated from high school	4.2	3.9	3.9	8.1	..	..
Some postsecondary	4.7	5.6	5.2	7.3	..	..
Postsecondary certificate, diploma						
or university degree	3.8	3.7	3.9	5.6	..	..

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 that graduated from regular day programs.*
4. *Excludes "Formation professionnelle."*

..

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, 1999, Centre for Education Statistics, *Education in Canada,* 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. $\boxed{EQR}$

In upcoming
issues

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

100 years of education

This article reviews Canadian education in the last century, examining compulsory education, the "baby boom", increases in educational attainment and the advances in postsecondary education.

A profile of underemployed university graduates

Using results from the 1995 National Graduates Survey this article examines "overqualification" for employment from the perspectives of university graduates.

Why so few female engineers?

This paper examines reasons for women's reluctance to enter the engineering discipline. Issues examined include earnings, employment status and satisfaction measures.

Making the transition: The impact of moving from elementary to secondary school on adolescents' academic achievement and psychological adjustment

This paper compares the academic, behavioural and emotional outcomes of children who continued their education in an elementary school versus those who transferred during early adolescence to middle and high schools.

EQR

Cumulative index

This index lists all analytical articles published in *Education Quarterly Review*. Included are descriptions of education and education-related surveys conducted by Statistics Canada, provincial governments and institutions. The categories under which the articles appear are based on policy issues identified in the report *Strategic Plan (1997),* released by the Centre for Education Statistics in November 1997 and available on the Internet at address <http:/www.statcan.ca/cgi-bin/downpub/freepub.cgi>.

Education funding

Student flows, student mobility and transitions

Relationships between education and the labour market

Technology and learning

Science and technology careers in Canada: Analysis of recent university graduates
  Vol. 4, No. 3 (February 1998)

Intergenerational education mobility: An international comparison
  Vol. 5, No. 2 (December 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)

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)

Student debt from 1990–91 to 1995–96: An analysis of Canada Student Loans data
  Vol. 5, No. 4 (July 1999)

Alternative forms of education delivery

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)

Teacher issues

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)

College and Related Institutions Educational Staff Survey
  Vol. 2, No. 1 (March 1995)

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)

Student participation and performance

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)

Predicting school leavers and graduates
  Vol. 1, No. 2 (July 1994)

Foreign students and marketing of education internationally

Satisfaction

Education data sources