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- Information and communication technology
- Cost and benefits of a master's degree
- Student loans

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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.

An Internet "search" of topics on information and communication technology (ICT) reveals how wide-ranging the use of computer-related technology has become in not only the business environment where the first inroads were made, but increasingly in homes and schools. But how this technology is being used, in particular within schools throughout the world, is equally revealing. In 2000, as cited in the Corbett-Willms paper, while nearly 90% of 15-year-old Canadian students had access to a computer at home – ranking Canada 11th among the 32 countries included in the analysis – only 70% had access to the Internet at home . And even its lower percentage of connectivity to the Internet places Canada in a favourable position vis-à-vis other countries – a ranking exceeded by only Iceland and Sweden. Perhaps not surprising in a cyber-world bombarded by a seemingly infinite number of games, an almost equal proportion of Canadian students' computer-connect time is devoted to games as to word-processing.

The second and third papers in this issue are devoted to postsecondary schooling. One examines student loans – dollar amounts by source and level of degree, payback rates by gender and earnings, the impact of parental education on rates of borrowing and provincial differences. The second paper looks at the cost and benefits of pursuing a master's degree – cost by field of study and gender, benefits in terms of the return on earnings and the relative rates of unemployment. The cost of higher education does not appear to be a general deterrent to its pursuit, whether that pursuit be from secondary schooling to a first undergraduate degree, or into a post-graduate degree. As the authors argue, "… although borrowing … by postsecondary students has risen over time, it has not been as extensive as many might have thought and does not appear to have represented unmanageable burdens for most graduates"; and " … while there is an opportunity cost for the master's degree, earnings are typically

higher for graduates in subsequent years and the unemployment rate is lower … (and) over time the returns to obtaining a master's degree appear to outweigh the costs."

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

Highlights

Information and communication technology

- The results of this study indicate that Canada is close to achieving universal access to ICT at home—nearly 9 out of every 10 young Canadians have a computer at home, and 7 out of 10 have home access to the Internet.

- While secondary school students regularly use computers to obtain information from the Internet and to communicate with others, their main school-related activity is word processing. Almost as many students used computers for playing games as for word processing, and less than one-third used computers to help them learn school material.

Cost and benefits of a master's degree

- Educational attainment is positively associated with both participation in the labour market and higher earnings. Those who did not pursue postsecondary education had higher rates of unemployment over their lifetime than those who did pursue it. Earnings for those with a university education are generally from 10% to 40% higher than for those with lower levels of education, and the lower the level of education, the lower the earnings.

- At $37,091, opportunity cost is highest for engineering students. Not only do these students earn more following graduation with a bachelor's degree, but tuition fees for their program are also the highest of all disciplines. Opportunity cost was lowest for students pursuing an arts degree (humanities, fine and applied arts, and social sciences).

- Students who had graduated with a bachelor's degree in 1990 were earning, on average, $38,000 five years later. Master's graduates earned, on average, about one-third more ($50,000), although earnings varied considerably by level of education, field of study and sex.

- In terms of prospects for employment, the unemployment rate for bachelor's graduates has, on average, been higher than the rate for master's and PhD graduates. This is also an indication that a master's degree is beneficial in terms of improving one's likelihood of having a job.

Student loans

- Student borrowing generally rose for graduates in 1982, 1986, 1990 and 1995. For the graduating class of 1995, the proportion with student loans varied by sex and level of education, ranging from one-quarter (for male PhD graduates) to just under one-half (for male bachelor's graduates). Among those who borrowed, loans averaged approximately $9,500 for college graduates, $13,600 for bachelor's and master's graduates, and $12,800 for graduates at the PhD level (all figures in constant 1997 dollars).

- Average payback rates two years after graduation suggest that although borrowing from government loan programs by postsecondary graduates has risen over time, it does not appear to represent an unmanageable burden for most graduates.

- Differences in borrowing by province have been substantial. These presumably stem from a number of factors, including differences in loan eligibility and need assessment criteria, the precise packaging of provincial and federal loan and non-loan (grant, bursary and scholarship) support, parents' income levels and their expected contributions to their children's schooling expenses, the programs in which students are enrolled, and the institutions they attend. EQR

Articles

Information and communication technology: Access and use

Introduction

Students' use of technology in education is expected to improve educational outcomes, increase technological skills, and decrease inequities between groups (Pelgrum and Anderson 1999; Industry Canada 1997). Students' use of technology is considered an important indicator of their preparedness to succeed and excel. This study uses data from the Programme for International Student Assessment (PISA) 2000 to examine Canadian students' access to and use of information and communication technologies (ICT). The PISA survey was conducted in 32 countries to assess, in the literacy domains of reading, mathematics and science, the skills of 15-year-old students at or near the end of their compulsory education. The survey gathered data regarding students' possession of ICT at home and access at school. The results for Canadian students in general are compared with the results of students from each province and from other countries in the Organisation for Economic Co-operation and Development (OECD).

The new economy has intensified competition among nations, and rapid technological advances require a skilled work force to cope with constant changes in the workplace as well as in day-to-day living. Adults require higher skill levels as society becomes more complex, low-skill jobs decrease and literacy requirements increase dramatically. To meet these and other challenges, elementary and secondary schools have a central role in laying a solid foundation on which subsequent knowledge and skills can be built (HRDC, CMEC and Statistics Canada 2001).

The system of education in Canada strives to develop high levels of academic achievement and to attain equity in educational outcomes between the sexes and across socio-economic groups. Measuring achievement has become an important goal of many OECD countries and is seen as a way to assess students' readiness to meet future challenges. Through PISA, participating countries are able to gauge their own level of accomplishments and compare their results with other participating countries (Hirsh 2002). These assessments also provide a means of examining inequities in educational achievement and access to learning resources (e.g., OECD 2001, Chapter 8).

This article was adapted from a paper presented at the Pan-Canadian Education Research Agenda conference on May 2, 2002. Developed by the Canadian Education Statistics Council (CESC), the Pan-Canadian Education Research Agenda surveys current priority issues in education and formulates research questions to address them. CESC commissions papers to give guidance to educational research. Research papers on education can be accessed from the Council of Ministers of Education, Canada (CMEC) website at www.cmec.ca/stats/pcera/compaper/index.stm

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Policy makers in Canada expect that the introduction of ICT in schools will improve academic performance, equity among students and, ultimately, students' ability to use and apply technology and software in their jobs. Co-ordinated federal policies and programs provide access to ICT in every school and every community in Canada. For example, the SchoolNet program was responsible for connecting every school in Canada to the Internet and is now aiming to ensure that every classroom is connected; Computers for Schools channels recycled computers, donated from government and corporations, into schools in low-income areas; and Community Access Programs provide public access to the Internet on evenings and weekends.

The diffusion of many new technologies in society has not been equitable. Rogers (1983) theorized that people who are innovative and quick to adopt new technology tend to be younger and better educated and to earn higher incomes than later- and non-adopters of technology. However, recent studies suggest that there are no longer differences in the rates of Internet access between the sexes and that the divide between ethnic groups is decreasing. There are also some indications that the gap between socio-economic groups is also narrowing, but the current unequal rates of access for students of lower socio-economic status remain a serious concern (NTIA 2002).

In Canada, access to the Internet from home varies substantially with income. Nearly 65% of adults with incomes of less than $20,000 per year report that their access to the Internet is through work, educational institutions, or public access sites (Reddick, Boucher and Grosseilliers 2000). With about 1.4 million Canadian students living in poverty (CESC 2000), it could be expected that a substantial number of students from kindergarten to Grade 12 do not have access to the Internet from home. The relationships linking family socio-economic status, access to resources and equity in outcomes are an important issue in many of Canada's policy sectors, including education.

Students in low socio-economic households may have less access to ICT from home because of many different factors, ranging from economic issues to a lack of parental interest in technology. The primary policy response to this in Canada has been to provide access to Internet-connected computers in schools and other public access sites. While this is a positive step toward improving students' access to ICT, it is clear that the amount of access time children have at school is insufficient and inconsistent among schools (CESC 2000).

In schools across Canada, tremendous differences exist in the ratio of students to Internet-connected computers: averages range from 15:1 for elementary schools in Nova Scotia to 5:1 for secondary schools in Manitoba (CESC 2000). Two-thirds of the computers in Canadian schools are located in computer labs and libraries, and only about 5% of teachers have adopted computers for inquiry-based learning (Laferrière, 1999; SchoolNet 2000). Moreover, Tsikalas, Gross and Stock (2002) found that over 75% of students use computers most at home, strengthening the case that using ICT to improve on students' skills and knowledge will require increased access at home.

International assessments of educational achievement conducted by the International Association for the Evaluation of Education Achievement (IEA) and the OECD over the past 20 years have consistently shown a strong relationship between the number of books in the home and students' academic achievement. As educational systems fully incorporate ICT into curriculum and pedagogy over the next two decades, access to the Internet at school and at home may become as important a variable for high-income countries as the number of books in the home.

Data and methods

This study used 2000 baseline data from the Programme of International Student Assessment (PISA), a school-based survey that assesses the knowledge and skills of 15-year-olds (OECD 2001). Thirty-two countries participated in the 2000 survey; eight more have since participated. The primary aim of PISA is to assess the extent to which students who are near the end of their compulsory schooling have acquired the knowledge and skills essential for full participation in society. The survey extensively tests students' performance in reading, mathematics and science; it also administers a questionnaire that examines home and school factors affecting learning.

In most countries, a sample of about 5,000 students from 150 to 250 schools was surveyed. In Canada, a larger sample was drawn (29,687 students from 1,117 schools) to enable interprovincial comparisons and within-province analyses. The sample weight includes a correction for non-response.

In this study, we drew on information from PISA's main student questionnaire, particularly from the demographic items, the questions pertaining to educational possessions in the home, and the Computer Familiarity Questionnaire. We compared the percentage of Canadian students who had home access to a computer and to the Internet with the same statistics for other countries and for individual provinces. For a select group of countries—Canada, Australia, Finland, Japan and the United States[1]—we made comparisons based on the percentage of students who had other possessions at home that were considered to be educational: these included software, a calculator, their own desk and a quiet place to study. As a measure of students' family socio-economic status (SES), the analysis used a statistical composite[2] of parental education, parental occupation, cultural possessions in the home, educational possessions in the home, and wealth. Using the same procedures as in the first international report for PISA (OECD 2001), we standardized SES to have a mean of 0 and a standard deviation of 1 for all OECD countries.

We used logistic regression to assess the relationship of ICT access to a number of factors describing students' background. We computed separate regressions for 'computer at home' and 'link to the Internet' for the different factors describing students' background. We then fitted a simpler model to provide a summary of the important relationships.

Finally, we examined how students used computers—and how often they used them—at home and at school.

Findings

Student access to ICT

In 2000, 88% of 15-year-old Canadian students had access to a computer at home, compared with 91% in Australia, 83% in the United States, 82% in Finland and 67% in Japan (Table 1). However, Internet use is less prevalent: only 69% of Canadian students had access to the Internet at home. Still, this is comparable with Australia (67%) and the United States (69%) and considerably higher than Finland (54%) and Japan (38%). While possession of software varied similarly across the five countries, other educational possessions showed considerably less variation. Nearly all 15-year-old students in these five countries had their own desk and a quiet place to study, and about 70% had a musical instrument—Japan was the exception, with 80% of its students owning an instrument. We expected that Canada would fare well in these comparisons, as only 8% of all Canadian students in this sample came from families with a low SES—a rate similar to Australia's but considerably lower than those of the other three countries.

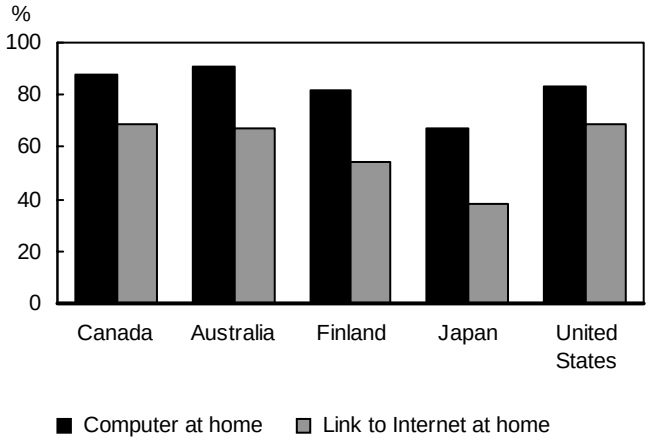
Table 1
Education-related possessions of 15-year-olds, by country

Possessions	Canada	Australia	Finland	Japan	United States
	% of 15-year-olds				
Computer at home	88	91	82	67	83
Link to Internet at home	69	67	54	38	69
Software	77	80	51	16	76
Calculator	99	99	99	99	98
Quiet place to study	94	90	93	82	91
Own desk	85	90	95	96	78
Musical instrument	72	70	70	80	67
Low family SES	8	8	12	13	14

Source: *OECD, Programme of International Student Assessment, 2000.*

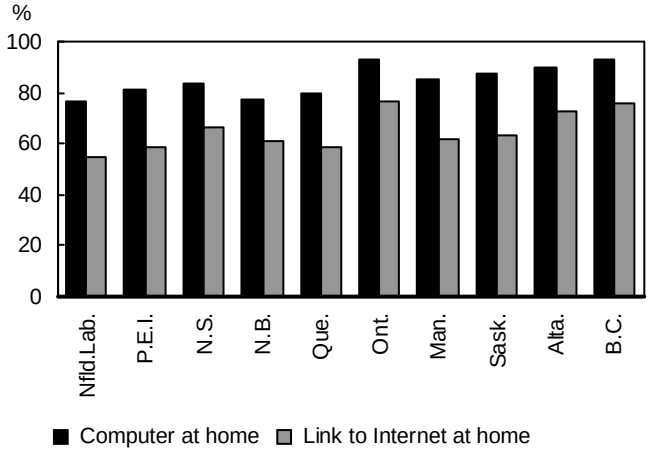
Graph 1 depicts the proportion of students with home computers and home Internet access for the 32 countries participating in PISA. For access to computers in the home, Canada ranked 11th. However, with regard to Internet access, only Iceland and Sweden exceeded Canadian students' connectivity at home, with Norway and the United States reporting similar levels of Internet access.

Graph 1
Percentage of 15-year-olds with a computer and a link to the Internet at home, by country



Source: *OECD, Programme of International Student Assessment, 2000.*

Graph 2
Percentage of Canadian 15-year-olds with a computer and a link to the Internet at home, by province



Source: *OECD, Programme of International Student Assessment, 2000.*

In Canada, regional disparities exist in the rates of access to ICT (Graph 2). Nearly 95% of students in Ontario and British Columbia had access to computers at home; the average was lower (85% to 90%) among the Prairie provinces, and lower still (about 80%) in Quebec and the Atlantic provinces. Similar regional disparities were evident for Internet access: Ontario again had the highest percentage, with over 75% of its students reporting a link to the Internet in their home. In contrast, only about 60% of students in Quebec and the Atlantic provinces had home access to the Internet.

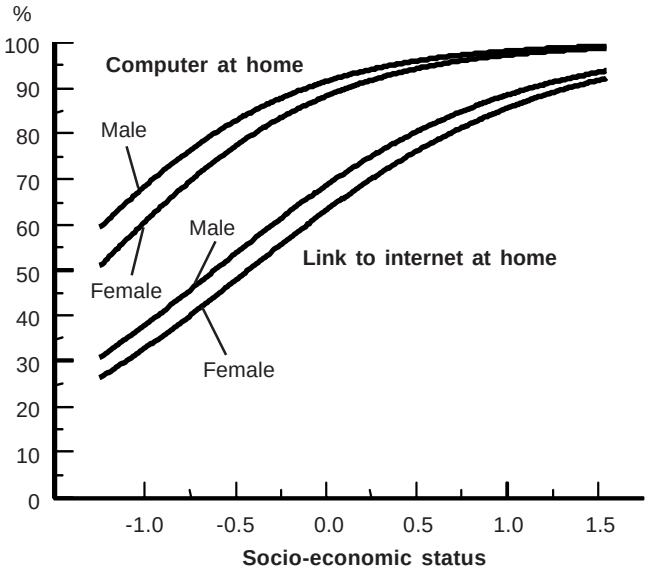
Table 2 and Graph 3 present the findings pertaining to inequality of home access to computers and the Internet by sex and along socio-economic lines. All odds ratios reported were statistically significant at the 0.05 level. The findings reveal that girls are less likely to have a computer at home: the odds ratio of 0.85 indicates that the odds of a girl having a computer are 15% less than the odds of a boy having one. The difference between the sexes for Internet access is of a similar proportion.

Table 2
Likelihood of Canadian 15-year-olds of having a computer and a link to the Internet at home

Predictor	Computer	Link to the Internet
	odds ratio	
Sex (male = 1)	0.85	0.87
Parents' occupation	1.04	1.03
Parents' education (years)	1.18	1.15
Single parent	0.4	0.54
Other parent	0.33	0.44
Number of siblings	0.95	0.93
Recent immigrant	1.5	1.77

Note: *All odds ratios are statistically significant at $p < 0.05$.*
Source: *OECD, Programme of International Student Assessment, 2000.*

Graph 3
Canadian 15-year-olds with a computer and a link to the Internet at home, by sex and socio-economic status



Source: *OECD, Programme of International Student Assessment, 2000.*

Students whose parents had more prestigious occupations and higher levels of education were more likely to have access to both a computer and the Internet at home. For each additional year of parents' education, the likelihood of having a computer at home increased by 18% and of having a link to the Internet by 15%.

Children living in lone-parent families or families headed by non-parent guardians were much less likely to have a computer at home or Internet access. These differences were considerable: the odds of a child in a lone-parent family owning a computer were only 40% those of a child in a two-parent family, while the odds for a child in a non-parent guardian family were 33%. The odds of both these groups of children having a link to the Internet at home were only about one-half those of children in two-parent families.

The number of children in a family also influenced ICT access: for each additional sibling, the likelihood of possessing a computer decreased by 5%, and the likelihood of Internet access decreased by about 7%.

The odds of possessing a computer were 50% higher for students who had recently immigrated to Canada, and the odds of having a home link to the Internet were 77% higher.

Graph 3 shows a positive relationship between SES and the percentage of students who possessed a computer and a link to the Internet. Having a home computer and a link to the Internet were nearly universal among students with high SES.

Among students with low SES, the percentages of girls and boys with a home computer and a link to the Internet differed by approximately 10%. In contrast, there was practically no difference between the sexes among students with high SES.

Students' use of ICT

The PISA survey asked students how often they used a computer at home and at school. Table 3 indicates that those with home computers used them regularly: over 50% of students used them almost every day and more than 20% used them a few times each week, while only 13% never used them. (This is consistent with the findings pertaining to access in Table 1.) With respect to school computers, roughly one-fifth of students used them nearly every day, with about 40% using them at least a few times each week.

Table 3
Frequency of Canadian 15-year-olds' use of computers at home and at school

Frequency of use	% of 15-year-olds
At home:	
Almost every day	51.6
A few times each week	21.3
Between once a week and once a month	9.6
Less than once a month	4.2
Never	13.3
At school:	
Almost every day	18.1
A few times each week	21.2
Between once a week and once a month	22.9
Less than once a month	22.2
Never	15.6

Source: *OECD, Programme of International Student Assessment, 2000.*

The availability of computers at school enables many students to use them even though they may not have a computer at home (Table 4). For example, students in lone-parent families were 40% less likely than students in two-parent families to use computers at home, whereas both groups were equally likely to use them at school. Similarly, students with siblings were less likely than students without any siblings to use a computer at home (odds ratio of 0.92), whereas the opposite was true with respect to computer use at school (odds ratio of 1.06). Immigrants were more likely than non-immigrants to use computers at home, but the differences were not as pronounced for their use at school.

Parents' occupation and parents' education were positively related to computer use at home, with odds ratios similar to those pertaining to access in Table 2. However, these parental factors were not strongly related to school computer use, also indicating that the availability of computers at school increases use for many students. With respect to family structure, the same trend is apparent for those living in a lone-parent family, living in a family headed by a non-parent guardian, or having a large number of brothers and sisters. However, the availability of computers at school does not seem to have much effect on the differences in use between the sexes: girls were less likely than boys to use computers both at home and at school.

Table 4
Likelihood of Canadian 15-year-olds using a computer at home and at school

Predictor	Use at home	Use at school
	odds ratio	
Sex (male = 1)	0.68	0.64
Parents' occupation	1.02	0.998
Parents' education (years)	1.12	1.01
Single parent	0.6	0.98
Other parent	0.56	1.52
Number of siblings	0.92	1.06
Recent immigrant	1.70	1.37

Note: *All odds ratios are statistically significant at $p < 0.05$, with the exception of the odds ratio for 'Use at school' with 'Parents' Education' and 'Single parent.'*
Source: *OECD, Programme of International Student Assessment, 2000.*

In assessing the frequency with which students used computers for various activities, we estimated the percentage of students who used the computer almost every day and at least a few times each week (Table 5). We did not consider less frequent use because it was unlikely to have a meaningful impact on students' academic skills. Students most frequently used computers for accessing information on the Internet, communicating electronically, doing word processing, and playing computer games. Only about one-third of all students reported using computers to help them learn school material, and less than one-fifth regularly used educational software. About one-quarter of all students reported using a computer for doing programming, drawing, painting or graphics, or for analysing data with spreadsheets.

Table 5
Frequency of computer-related activities for Canadian 15-year-olds who use computers

Activity	Almost every day	At least a few times each week
	%	
Internet	46	71
Electronic communication (e.g., e-mail or chat rooms)	38	60
Word processing (e.g., MS Word or WordPerfect)	17	52
Games	21	48
Learning school material	10	32
Programming	11	27
Drawing, painting or graphics	9	27
Spreadsheets (e.g., Lotus 1-2-3, Excel)	6	21
Educational software	5	18

Source: *OECD, Programme of International Student Assessment, 2000.*

Summary and discussion

Rapid growth and improvement in information and communication technologies (ICT) has led to the diffusion of technology in education. Studies in controlled environments suggest that the use of technology under the right circumstances improves educational outcomes, and many educators believe that a new pedagogy that incorporates technology is necessary to prepare students for work in the information age. This study examines the extent to which students have access to computers and the Internet, whether that access is related to sex or socio-economic status, and how those who have access to computers use them. The analysis is based on the responses of nearly 30,000 15-year-old Canadian students who participated in the Programme for International Student Assessment (PISA). The findings indicate that nearly 9 out of every 10 Canadian students have a computer at home, and those with home computers used them regularly: over 50% of students used them almost every day and more than 20% used them a few times each week, while only 13% never used them. However, students from families with low socio-economic status were less likely to have access to computers and the Internet at home. On average, girls were also less likely than boys to have access to computers and the Internet at home, but the disparities

between the sexes were negligible for students in families with high socio-economic status. Students reported that they used computers mainly for accessing information on the Internet, communicating, doing word processing, and playing games. Less than one-third of students who used computers reported using them for learning purposes. The conclusions drawn from this study suggest that universal home access to computers and the Internet is within reach and is essential if computers are to become a learning tool aimed at improving students' skills.

The results of this study indicate that Canada is close to achieving universal access to ICT at home—nearly 9 out of every 10 young Canadians have a computer at home, and 7 out of 10 have home access to the Internet.

The findings indicate that while secondary school students regularly use computers to obtain information from the Internet and to communicate with others, their main school-related activity is word processing. Almost as many students used computers for playing games as for word processing, and less than one-third used computers to help them learn school material. Further research is required to investigate the contribution of ICT to educational outcomes and the importance of ICT skills in the new economy. EQR

Notes

1. The countries were selected for the following reasons: Australia, because it is quite similar to Canada in its socio-economic status; Finland, because it ranked first in reading performance; Japan, because it ranked first in mathematics; and the United States, because of its geographic proximity to Canada.

2. The SES composite includes educational possessions in the home as one of its components and, therefore, to some extent positively biases the estimates. However, this bias is very small, as having a computer and Internet access at home are only two of several items that the educational possessions factor comprises, and having educational possessions is only one of five factors that contribute to the composite.

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Pursuing a master's degree: Opportunity cost and benefits

Introduction

A student in the final year of a bachelor's degree has many options, including, among others, the choice to enter the work force immediately or pursue further schooling—perhaps in the form of a master's degree. Several factors influence this decision, such as the desire to continue one's education and job prospects at the time the decision is being made. One of the most important factors is likely to be the cost of further education. There are obvious direct expenses, such as tuition, room and board, and incidental fees and books; however, indirect expenses, such as the investment of time and effort and the earnings lost during the period of additional schooling, are often overlooked.

Monetary and professional returns associated with additional education would serve as motivations to pursue graduate studies. But will the average master's graduate earn more upon completion of the degree and, if so, how much more? Will master's graduates be more likely than their bachelor's counterparts to obtain employment? This study examines these issues.

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Data and methodology

All the students examined in this study

- graduated with a bachelor's degree in 1995;
- started a master's program immediately following their bachelor's degree;
- enrolled full time in the master's program for three consecutive semesters; and
- worked part time during the master's program.

(See Appendix 1 for details of these criteria.)
In order to calculate the income lost following graduation with their bachelor's degree while they pursued full-time studies instead of full-time work, it was assumed that they would have worked in the same province where they studied. (See Appendix 2 for further details.) Other limiting factors are listed in Appendix 3.

The study examines the immediate cost for Canadian students who pursue a one-year, full-time master's degree at a Canadian university. Data are from the 1995 National Graduates Survey, with information concerning the tuition and additional costs provided by Statistics Canada's Centre for Education Statistics. Calculations are presented by province, field of study and sex, and all figures are in 1995 dollars. Included in the analysis is the opportunity cost of both pursuing an education and foregoing potential income. For the purposes of this study, 'opportunity cost' is defined as the difference between the cost of schooling and the income one would expect to earn if one were working full time rather than attending school.[1]

Opportunity cost

Estimating the opportunity cost of a master's degree is complicated by the fact that students pursue education in a variety of ways. Some complete their education, then enter the work force; others work for a period of time and then return to school. Some choose to pursue a degree part time; others work while enrolled full time. In addition, some degree programs require two years with a summer break or a co-operative work option, while others require three semesters without a break.

The objective of this study has been to estimate what students' time is worth, rather than provide a definitive opportunity cost.[2] Opportunity cost is estimated as follows:

Opportunity cost = tuition + additional fees + books + lost income – part-time income during the school year

Part-time income during school was subtracted in the calculations. While this exclusion reduces the overall opportunity cost, the time that a student spends on part-time work could also be considered a cost. While working, the student may not only be unable to pursue schooling but may also take less leisure time. Both of these factors may differ for each student.

This study examines only short-term opportunity costs, but there are also long-term opportunity costs. A student working full time may accumulate benefits, such as stock options and a pension plan. The contributions that could have been made to a pension plan or to registered retirement savings plans can be considered lost retirement income. In the one to two years required to earn a master's degree, these potential contributions would be significant. On the other hand, based on the supposed earnings potential of master's graduates, this cost might be made up in the future. Another long-term cost is the experience that one gains in the work force but not necessarily in school. Finally, those who pursue a master's degree may, as the result of greater motivation and ability, have the potential to earn more than those not pursuing the degree. Given the difficulty in measuring these factors, only the immediate opportunity costs were calculated.

Returns

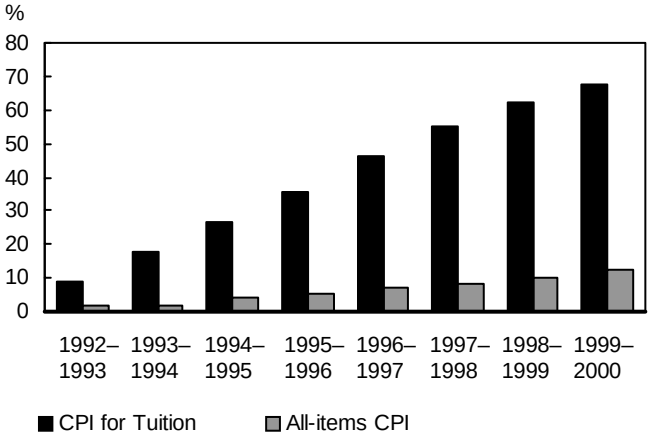
Returns are calculated differently from opportunity costs. Returns are observed for previous graduates in terms of their earnings and whether or not those earnings converged over an extended period of time. Data on these earnings are from the 1995 National Graduates Survey. The employability of graduates is observed by examining the unemployment rate for these graduates using Statistics Canada's main socio-economic database.[3] By observing the unemployment rate, it can be seen whether master's graduates have more success than bachelor's graduates in being employed, and if so, how much.

Rising tuition fees

The calculation of opportunity cost is based on both the cost of education and graduates' earnings. Tuition fees, which represent the major cost of education, have been rising steadily over the past decade relative to the Consumer Price Index (CPI). In the academic year 1995–1996 (Graph 1), tuition for a Bachelor of Arts degree rose 7.3%, compared with a 1.6% increase in the CPI (Omiecinski 1997).

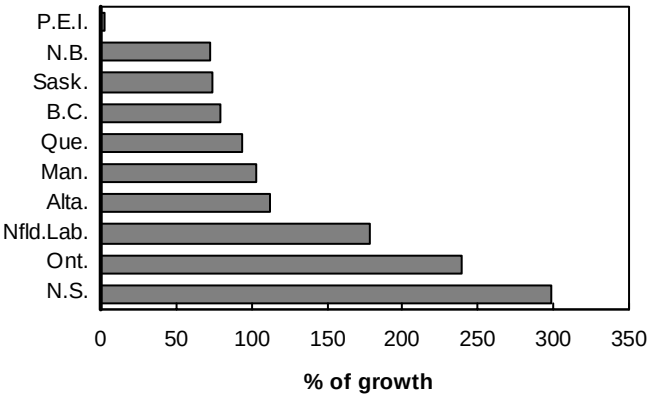
The largest increase in tuition fees over the past decade was in Nova Scotia, whereas students in Prince Edward Island had the smallest increase (Graph 2).

Graph 1
Cumulative growth of CPI: Tuition versus all-items



Source: *Statistics Canada, Centre for Education Statistics.*

Graph 2
Growth in master's tuition, 1990–1991 to 2000–2001



Source: *Statistics Canada, Centre for Education Statistics.*

Differences in actual tuition costs vary by province (Table 1). Students attending universities in Quebec pay the lowest tuition fees in Canada; students in Nova Scotia pay the highest.

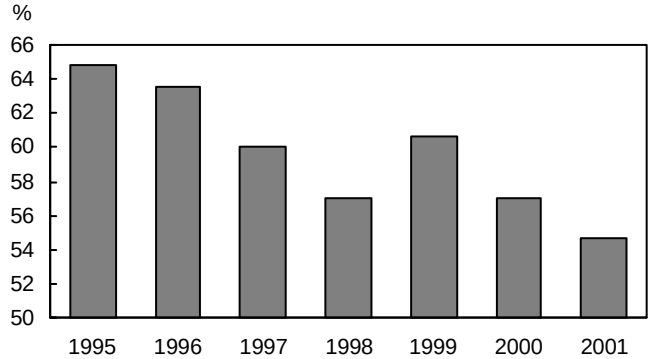
Table 1
Master's tuition, by province, 1990–1991 and 2001–2002

	1990–1991	2001–2002
	2001–2002 constant $	
Nfld.Lab.	977	2,451
P.E.I.	2,238	2,424
N.S.	2,051	8,309
N.B.	2,052	3,850
Que.	1,016	2,012
Ont.	1,821	6,968
Man.	1,819	3,695
Sask.	1,609	3,171
Alta.	1,709	4,247
B.C.	1,778	3,514

Source: *Statistics Canada, CANSIM II Table 326-0002.*

Why have tuition fees increased? One answer lies in the way universities are funded. From 1990 to 1995, the total operating cost of universities increased 15%, but government grants rose only 4% (Little 1997). Over the same period, enrolment increased 8%, whereas average tuition fees rose 62%. Little concluded that fiscal policies of the federal and provincial governments resulted in rising federal and provincial debt in the early 1990s. This may have accounted for the small increase in government grants, as government transfers between 1995 and 2001 decreased overall as a percentage of university and college revenue (Graph 3), possibly explaining the increase in tuition fees.

Graph 3
Government transfers (federal and provincial) as a percentage of revenue, 1995 to 2001



Note: *Transfers include universities and colleges.*
Source: *Statistics Canada, CANSIM II, table 385-0007.*

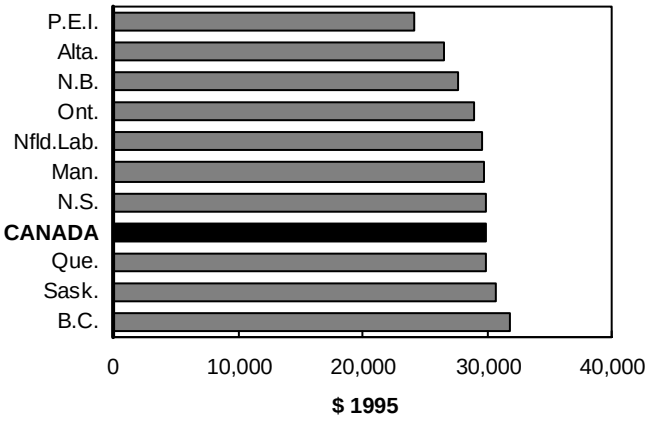
Graduation—then what?

A main concern of those who graduate is their employability and their earnings. It has been found that educational attainment is positively associated with both participation in the labour market and higher earnings (OECD 1998). Findings from a survey of Organisation for Economic Co-operation and Development (OECD) countries indicated that those who did not pursue postsecondary education had higher rates of unemployment over their lifetime than those who did pursue it. Earnings for those with a university education are generally from 10% to 40% higher than for those with lower levels of education, and the lower the level of education, the lower the earnings.

Costs highest in British Columbia and Ontario

Given the relatively high earnings in British Columbia, the highest opportunity cost ($31,906) was also in that province, whereas the lowest cost ($24,146) was in Prince Edward Island (see Graph 4 and Appendix 4). No regional trends emerged, however, with provinces on both coasts equally scattered among the rankings. Despite higher lost income, Ontario and Alberta ranked among the provinces with the lowest opportunity cost because of the potentially higher part-time wages for students in those provinces. Tuition fees in Nova Scotia are the highest in Canada, while those in British Columbia ranked seventh. This indicates that earnings differences (both lost income and part-time work) were the factors determining which province had the highest opportunity cost.

Graph 4
Estimated Opportunity Costs by Province, 1995–1996

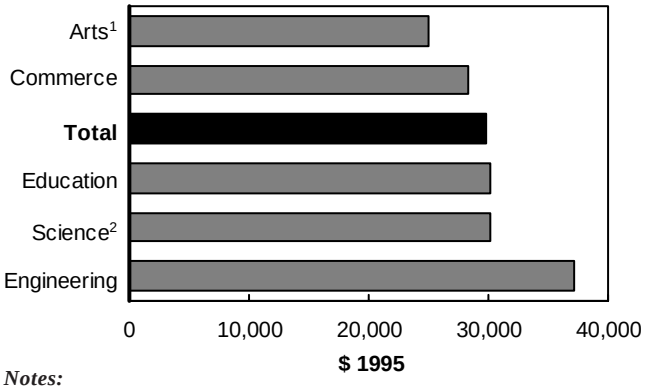


Source: *Statistics Canada, Centre for Education Statistics.*

Highest cost in engineering

A clearer indication of the real costs of a master's degree emerges from an examination of data by field of study (see Graph 5 and Appendix 4). At $37,091, opportunity cost is highest for engineering students. Not only do these students earn more following graduation with a bachelor's degree, but tuition fees for their program are also the highest of all disciplines. Opportunity cost was lowest (just over $25,000) for students pursuing an arts degree (humanities, fine and applied arts, and social sciences). These differences do not change when field of study is examined by sex (see Graph 6 and Appendix 4). Men, who generally earn more than women, typically have higher opportunity costs with one exception: women in engineering have a slightly higher opportunity cost than men (just over $38,000 versus about $37,000), earning slightly more than their male counterparts in a field typically dominated by men.

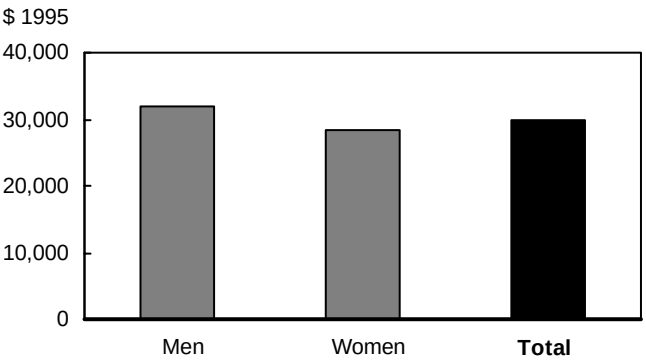
Graph 5
Estimated Opportunity Cost by Field of Study, 1995–1996



Notes:
1. *Arts consists of Humanities, Fine and Applied Arts and Social Sciences.*
2. *Science consists of Agriculture, Biological Sciences, Mathematics and Physical Sciences.*

Source: *Statistics Canada, Centre for Education Statistics.*

Graph 6
Opportunity Cost by Gender, 1995–1996



Source: *Statistics Canada, Centre for Education Statistics.*

Overall, the average opportunity cost across all fields of study for a Canadian student pursuing a master's degree is approximately $30,000. These costs would increase dramatically for students who do not work part time while enrolled in the degree program. Also, students relocating from their place of residence to pursue the degree may experience accommodation costs significantly higher or lower than their costs prior to moving. Finally, while difficult to measure, the investment in higher learning can be expected to increase salaries upon graduation, allowing a relatively short repayment period.

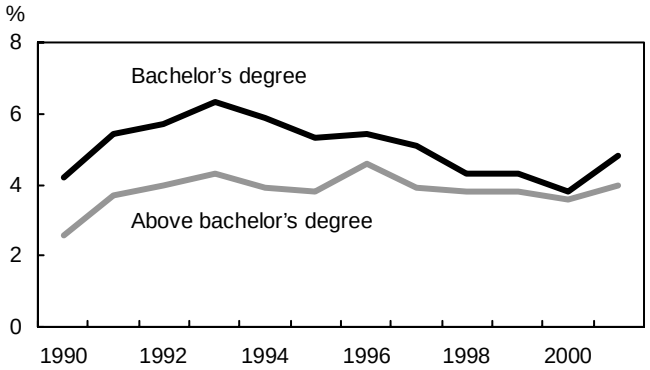
What can a master's graduate expect to earn?

Having earned their bachelor's degree, students have a variety of options, including searching for full-time employment. By 1997, some 67%[4] of 1995 bachelor's graduates were working full time and 14% were working part time. For 1995 master's graduates, the full-time employment rate two years after graduation was 72%. However, not all graduates choose to enter the work force immediately following graduation. Of the bachelor's students who had graduated in 1995, 45% had gone on to further studies within two years. (The survey did not indicate what level of studies they pursued.) Furthermore, students working full time two years after graduation may have pursued further education in the two-year period between graduation and the administration of the survey.

The earnings of a bachelor's graduate are important considerations in determining opportunity cost. Students who had graduated with a bachelor's degree in 1990 were earning, on average, $38,000 five years later.[5] Master's graduates earned, on average, about one-third more ($50,000), although earnings varied considerably by level of education, field of study and sex. A master's degree in commerce commanded about $60,000, while graduates in the humanities earned $40,000. Men with a master's degree in commerce earned, on average, $65,000; their female counterparts earned about $57,000.

In terms of prospects for employment, the unemployment rate for bachelor's graduates (Graph 7) has, on average, been higher than the rate for master's and PhD graduates. This is also an indication that a master's degree is beneficial in terms of improving one's likelihood of having a job. At the same time, it is important to note that while the trend during the late 1990s indicated that the unemployment rates between bachelor's graduates and master's and PhD graduates nearly converged, the time period is not long enough to indicate that this convergence is a long-lasting pattern.

Graph 7
Unemployment Rates for Graduates, 1999 to 2001



Source: *Statistics Canada, CANSIM II, table 282-0003.*

Conclusion

The decision to pursue a master's degree includes identifying the actual cost of pursuing the degree, the loss of potential earnings while in school, and the expected postgraduate income. This study found that in 1995–1996, the highest estimated real cost occurred in the engineering program and in provinces west of Quebec. Men tended to earn more than women, except in engineering, where women's earnings were slightly higher. Engineering was also the only field in which the opportunity cost was higher for women than for men. The reason for this difference requires further investigation. In addition to the cost of attending university, monetary returns to education are also an important element affecting the decision to pursue further education. While total returns could not be calculated for the purposes of this study, the data indicate that while there is an opportunity cost for the master's degree, earnings are typically higher for graduates in subsequent years and the unemployment rate is lower. Over time, the returns to obtaining a master's degree appear to outweigh the costs.

Other issues for future research to examine are whether the earnings for college diplomas and bachelor's, master's and PhD degrees merge as graduates age. A Canada-wide study, similar to one based on graduates from British Columbia (Heisz 2001),[6] would add to our understanding of trends in earnings. Other issues for further research include an analysis of the opportunity cost for a college diploma, a bachelor's degree and a PhD degree, and a look at the repayment period required to recover opportunity costs.

Appendix 1

Calculation of the part-time hours and wages used in the estimation

There were two phases in the calculations of part-time earnings. The first phase observes the earnings for graduate students working as either teaching or research assistants. The second phase involves observing the earnings for those students who worked part time during the school year, but who were not working as teaching assistants or research assistants.

The first phase relied on the websites of the following universities in order to obtain an estimate of the earnings of students employed as teaching or research assistants:

Memorial University of Newfoundland (www.mun.ca)
University of Prince Edward Island (www.upei.ca)
St. Francis Xavier University (www.stfx.ca)
University of New Brunswick (www.unb.ca)
McGill University (www.mcgill.ca)
University of Toronto (www.utoronto.ca)
Brandon University (www.brandonu.ca)
University of Saskatchewan (www.usask.ca)
University of Alberta (www.ualberta.ca)
University of British Columbia (www.ubc.ca)

The second phase involved an examination of the average wages and hours for part-time workers aged 15 to 24 by province for the years 1995 and 1996 (since the students that are observed in this paper go straight from their bachelor's degrees to their master's degrees). Table 2 lists the average wages.

Table 2
Part-time earnings for master's students, by province, 1995 and 1996

	Part-time work		
	Teaching/ research assistant	Non-teaching/ research assistant	Average
	$ 1995		
Nfld.Lab.	2,711	4,550	3,630
P.E.I.	2,248	4,744	3,496
N.S.	2,248	4,782	3,515
N.B.	3,212	4,924	4,068
Que.	3,522	5,981	4,752
Ont.	8,833	5,929	7,381
Man.	3,533	5,082	4,308
Sask.	4,433	5,082	4,757
Alta.	13,474	5,224	9,349
B.C.	5,297	6,671	5,984
Canada	**4,951**	**5,824**	**5,388**

Sources: *University websites; Statistics Canada, CANSIM II, tables 282-0069, 282-0028.*

Appendix 2

Common characteristics of students chosen for the study

- ***1995 bachelor's graduates***: This is the most recent year for which complete earnings data were available. Earnings are the most important factor in the calculation of the total cost of education. In fact, lost earnings are the opportunity cost of education.
- ***Master's degree program immediately following bachelor's degree:*** For graduates with a bachelor's degree in 1995, almost half had pursued further studies by 1997. Graduates who decided to take their master's several years after graduation were excluded from the study because it would be difficult to estimate what their earnings would be after having been in the work force for an extended period of time with the potential for promotions and raises. When the 2000 results become available for 1995 graduates, it will be possible to look at the cost of obtaining a master's degree five years after earning a bachelor's degree.
- ***Full-time participation in master's program:*** This assumption simplified the analysis. Part-time status would raise a number of issues, including whether the employer was paying for all or part of the tuition.
- ***Completion of master's program in three consecutive semesters:*** Master's programs differ in terms of length and how a year is structured. They can be two years in length with a break for the summer, or they can be one year with no break. There are also co-op programs to help alleviate the cost of schooling. In this study it was assumed students would be attending school for one straight year with no break in the summer. The cost of a master's degree for any period longer or shorter than this could be adjusted accordingly.
- ***Part-time work, on or off campus, during master's program:*** The students in the study worked as teaching assistants or research assistants on campus or in other capacities off campus. These types of jobs help alleviate the expenses of school and may also offer valuable experience.

The following assumptions were made in order to calculate opportunity costs:

- ***Students would have worked full time after graduation from the bachelor's program:*** On average, of the 1995 bachelor's graduates in 1997,[7] 67% were working full time, 14% were working part time, 8% were unemployed, and 9% were not in the work force (i.e., not looking for work).[8]
- ***Students would have worked and studied in the same province:*** Thus lost earnings were calculated as being from the province of study.

Appendix 3

Factors that were not included in the calculations

- ***Student loans from previous studies and student loans while taking a master's degree:*** This cost was excluded from the calculations because a student loan is not an immediate cost, but rather a cost that would be incurred after graduation in the form of a loan repayment.
- ***Living expenses:*** Regardless of whether students decide to work or go to school after graduation, they must pay for living expenses. It could be argued that people who work would have a higher standard of living, given that they have more money to spend. However, this difference would be difficult to determine and is likely to be small.
- ***Scholarships and bursaries:*** Fewer than 50% of the master's students in 1995–1996 received this type of financial aid. However, an additional opportunity cost was calculated using these data to determine how this type of financial aid decreases the overall opportunity cost of taking a master's degree. The opportunity cost calculations in Appendix 5 include the average amount of scholarships and bursaries received (i.e., the amount of the award multiplied by the percentage of students who received it).

Table 3
Scholarships, bursaries and grants given to master's students, 1995–1996

	Average amount of grant, bursary, scholarship, etc., given to students who received the awards	Proportion of all graduates who received grant, bursary, scholarship, etc.	Average amount of grant, bursary, scholarship, etc. across the master's student population
	$	%	$
Nfld.Lab.	10,912.43	44.59	4,866
P.E.I.	0	0	0
N.S.	11,284.60	38.79	4,377
N.B.	10,337.28	46.54	4,811
Que.	15,167.37	42.54	6,452
Ont.	13,754.51	53.12	7,306
Man.	12,833.26	37.11	4,762
Sask.	12,370.24	53.35	6,600
Alta.	11,763.54	50.12	5,896
B.C.	14,419.77	44.87	6,470
Canada	**13,319.24**	**46.73**	**6,224**

Source: *Statistics Canada, National Graduates Survey, 1995 graduates.*

Appendix 4 – Opportunity cost calculations

Table 4
Opportunity cost of master's degree, by province, for 1995–1996

	Tuition	+ Incidental fees[1]	+ Books	+ Lost income	– Part-time work during school year	= Opportunity cost
				$ 1995		
Nfld.Lab.	2,515	297	690	29,761	3,630	29,633
P.E.I.	2,619	515	690	23,819	3,496	24,146
N.S.	5,457	321	690	26,932	3,515	29,885
N.B.	3,808	296	690	26,997	4,068	27,723
Que.	2,461	403	690	31,154	4,752	29,956
Ont.	4,415	569	690	30,681	7,381	28,974
Man.	4,402	289	690	28,730	4,308	29,804
Sask.	4,623	211	690	29,888	4,757	30,654
Alta.	4,239	437	690	30,564	9,349	26,581
B.C.	3,420	233	690	33,547	5,984	31,906
Canada	**3,635**	**357**	**690**	**30,661**	**5,388**	**29,956**

Note:
1. Average of the fees from all universities in the province.
Source: *Statistics Canada, Centre for Education Statistics.*

Table 5
Opportunity cost of master's degree, by field of study, for 1995–1996

	Tuition	+ Incidental fees	+ Books	+ Lost income	– Part-time work during school year	= Opportunity cost
				$ 1995		
Arts[1]	3,657	357	690	25,752	5,388	25,069
Commerce	3,424	357	690	29,304	5,388	28,388
Education	3,292	357	690	31,261	5,388	30,212
Engineering	3,812	357	690	37,619	5,388	37,091
Science[2]	3,702	357	690	30,883	5,388	30,244
Average[3]	**3,556**	**357**	**690**	**30,660**	**5,388**	**29,896**

Notes:
1. Includes humanities, fine and applied arts, and social sciences.
2. Includes agriculture and biological sciences, and mathematics and physical sciences.
3. These figures for tuition and opportunity cost are different from those in Table 4, which include all faculties of study.
Source: *Statistics Canada, National Graduates Surveys, Centre for Education Statistics, CANSIM II, tables 282-0069 and 282-0028.*

Table 6
Opportunity cost of master's degree for men, by field of study, for 1995–1996

	Tuition	+ Incidental fees	+ Books	+ Lost income	– Part-time work during school year	= Opportunity cost
				$ 1995		
Arts[1]	3,657	357	690	26,192	5,388	25,508
Commerce	3,424	357	690	30,948	5,388	30,032
Education	3,292	357	690	33,219	5,388	32,170
Engineering	3,812	357	690	37,427	5,388	36,899
Science[2]	3,702	357	690	31,864	5,388	31,225
Average	**3,556**	**357**	**690**	**32,874**	**5,388**	**32,089**

Notes:
1. Includes humanities, fine and applied arts, and social sciences.
2. Includes agriculture and biological sciences, and mathematics and physical sciences.
Source: *Statistics Canada, National Graduates Surveys, Centre for Education Statistics, CANSIM II, tables 282-0069 and 282-0028.*

Table 7
Opportunity cost of master's degree for women, by field of study, for 1995–1996

	Tuition	+ Incidental fees	+ Books	+ Lost income	– Part-time work during school year	= Opportunity cost
				$ 1995		
Arts[1]	3,657	357	690	25,036	5,388	24,353
Commerce	3,424	357	690	28,464	5,388	27,548
Education	3,292	357	690	30,210	5,388	29,161
Engineering	3,812	357	690	38,613	5,388	38,084
Science[2]	3,702	357	690	28,865	5,388	28,226
Average	**3,556**	**357**	**690**	**29,292**	**5,388**	**28,507**

Notes:
1. Includes humanities, fine and applied arts, and social sciences.
2. Includes agriculture and biological sciences, and mathematics and physical sciences.
Source: *Statistics Canada, National Graduates Surveys, Centre for Education Statistics, CANSIM II, tables 282-0069 and 282-0028.*

Appendix 5 – Opportunity cost including scholarships and bursaries

Table 8
Opportunity cost of master's degree, by province, for 1995–1996

	Tuition	+ Incidental fees	+ Books	+ Lost income	– Part-time work during school year	– Scholarships and bursaries	= Opportunity cost
				$ 1995			
Nfld.Lab.	2,515	297	690	29,761	3,630	4,866	24,766
P.E.I.	2,619	515	690	23,819	3,496	0	24,146
N.S.	5,457	321	690	26,932	3,515	4,377	25,507
N.B.	3,808	296	690	26,997	4,068	4,811	22,912
Que.	2,461	403	690	31,154	4,752	6,452	23,504
Ont.	4,415	569	690	30,681	7,381	7,306	21,668
Man.	4,402	289	690	28,730	4,308	4,762	25,042
Sask.	4,623	211	690	29,888	4,757	6,600	24,055
Alta.	4,239	437	690	30,564	9,349	5,896	20,685
B.C.	3,420	233	690	33,547	5,984	6,470	25,436
Canada	**3,635**	**357**	**690**	**30,661**	**5,388**	**6,224**	**23,731**

Source: *Statistics Canada, National Graduates Surveys, Centre for Education Statistics, CANSIM II, tables 282-0069 and 282-0028.*

Table 9
Opportunity cost of master's degree, by field of study, for 1995–1996

	Tuition	+ Incidental fees	+ Books	+ Lost income	– Part-time work during school year	– Scholarships and bursaries	= Opportunity cost
				$ 1995			
Arts	3,657	357	690	25,752	5,388	6,224	18,845
Commerce	3,424	357	690	29,304	5,388	6,224	22,164
Education	3,292	357	690	31,261	5,388	6,224	23,988
Engineering	3,812	357	690	37,619	5,388	6,224	30,866
Science	3,702	357	690	30,883	5,388	6,224	24,020
Average	**3,556**	**357**	**690**	**30,660**	**5,388**	**6,224**	**23,651**

Source: *Statistics Canada, National Graduates Surveys, Centre for Education Statistics, CANSIM II, tables 282-0069 and 282-0028.*

Table 10
Opportunity cost of master's degree for men, by field of study, for 1995–1996

	Tuition	+ Incidental fees	+ Books	+ Lost income	– Part-time work during school year	– Scholarships and bursaries	= Opportunity cost
				$ 1995			
Arts	3,657	357	690	26,192	5,388	6,224	19,284
Commerce	3,424	357	690	30,948	5,388	6,224	23,808
Education	3,292	357	690	33,219	5,388	6,224	25,946
Engineering	3,812	357	690	37,427	5,388	6,224	30,675
Science	3,702	357	690	31,864	5,388	6,224	25,001
Total	**3,556**	**357**	**690**	**32,874**	**5,388**	**6,224**	**25,865**

Source: *Statistics Canada, National Graduates Surveys, Centre for Education Statistics, CANSIM II, tables 282-0069 and 282-0028.*

Table 11
Opportunity cost of master's degree for women, by field of study, 1995–1996

	Tuition	+ Incidental fees	+ Books	+ Lost income	– Part-time work during school year	– Scholarships and bursaries	= Opportunity cost
				$ 1995			
Arts	3,657	357	690	25,036	5,388	6,224	18,128
Commerce	3,424	357	690	28,464	5,388	6,224	21,324
Education	3,292	357	690	30,210	5,388	6,224	22,936
Engineering	3,812	357	690	38,613	5,388	6,224	31,860
Science	3,702	357	690	28,865	5,388	6,224	22,002
Total	**3,556**	**357**	**690**	**29,292**	**5,388**	**6,224**	**22,283**

Source: *Statistics Canada, National Graduates Surveys, Centre for Education Statistics, CANSIM II, tables 282-0069 and 282-0028.*

Appendix 6 – Ranking provinces by part-time earnings and annual income of bachelor's graduates

Table 12
Ranking of provinces, by average part-time earnings during school year of master's students, for 1995–1996

	$
Alberta	9,349
Ontario	7,381
British Columbia	5,984
Canada	**5,388**
Saskatchewan	4,757
Quebec	4,752
Manitoba	4,308
New Brunswick	4,068
Newfoundland and Labrador	3,630
Nova Scotia	3,515
Prince Edward Island	3,496

Sources: *University websites; Statistics Canada, CANSIM II, tables 282-0069, 282-0028.*

Table 13
Ranking of provinces, by average annual income lost by master's students, for 1995–1996

	$
British Columbia	33,547
Quebec	31,154
Ontario	30,681
Alberta	30,564
Canada	**30,661**
Saskatchewan	29,888
Newfoundland and Labrador	29,761
Manitoba	28,730
New Brunswick	26,997
Nova Scotia	26,932
Prince Edward Island	23,819

Source: *Statistics Canada, National Graduates Surveys.*

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Notes

1. Greenwald (1982) refers to opportunity cost as that which is foregone in order to produce a unit of output of a good or service (p. 719). He gives the example of a farmer who can plant either oats or soybeans, and chooses oats. He expects to earn $60,000 from selling oats, but he could earn $70,000 by selling soybeans. His opportunity cost is therefore $10,000, the difference in profits.
2. An alternate estimate of the opportunity cost is presented in the appendices. These calculations include scholarships, grants and bursaries, thus lessening the overall opportunity cost for a student. This was not included in the general calculations, as just over 45% of the master's students in 1996 received these monetary incentives.
3. Canadian Socio-Economic Information Management System (CANSIM) II, table 282-0003.
4. This figure, along with the figures in the following paragraph, comes from the National Graduates Survey, 1995 graduates.
5. Data from the National Graduates Survey, 1990 graduates.
6. This study looked at the returns to education over a 23-year period for bachelor's graduates from British Columbia. Heisz found that median incomes were lower for more recent graduates that for past graduates. He also found that the growth rate in earnings was higher for recent cohorts of graduates than for past graduates, to the point where the incomes of both cohorts converged. Although initially the median incomes of the graduates from different fields of study were different, they converged as graduates aged. This study did not control for events after graduation, including pursuing additional studies or moving to another province. This could have an effect on future earnings.
7. National Graduates Survey, 1995 graduates.
8. These figures from the National Graduates Survey are different from those from CANSIM in Graph 7. Different surveys and consequently different samples were used in order to capture the data.

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Student loans: Borrowing and burden[1]

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Introduction

The Canadian Student Loan Program (CSLP) has been the primary vehicle for delivering direct financial assistance to postsecondary students in Canada since its inception in 1964. Recently, postsecondary students appear to have been borrowing more, paying off their debts more slowly, and defaulting in larger numbers than before. This has resulted in concerns about the hardship faced by students in the postschooling payback period. Since individuals may have been foregoing, delaying or slowing down their studies because of rising debt burdens, there are also concerns about students' access to the postsecondary educational system. Debt burdens may also affect other schooling-related decisions such as field of study, institution, part-time versus full-time enrolment, outside work during school, and the pursuit of graduate studies.

Of particular concern is that these effects are greater for those from lower-income families. Is access to the Canadian postsecondary education system becoming increasingly dependent on family background rather than on individuals' ability and desire to pursue their schooling? This is an especially important issue at a time when college and university graduates have been 'holding their own' in the labour market and the fortunes of those with less schooling have been in steady decline (Finnie 1999a): postsecondary education has become increasingly important to career success. These concerns about access are also pertinent to the generally perceived need to increase the number of postsecondary graduates to drive the new knowledge economy.[2]

Furthermore, these concerns are arising at a time of important changes in the CSLP and related provincial programs, and in the cost of postsecondary education. Need assessment procedures have been revised; the interest relief program has been extended; debt reduction has been introduced; the primary responsibility for loan defaults has passed from the government to the banks, and then back to the government as it adopted a system of direct lending; and provincial grant systems have been largely replaced with loans, only to be followed by the introduction of debt remission programs in many jurisdictions.

All this has been accompanied by a steady rise in tuition fees.

In order to help provide an empirical basis for such discussions, this paper uses data on cohorts that graduated in 1982, 1986, 1990 and 1995 to address the following questions related to student loan program borrowing:

- What proportion of students has been assuming student loans?
- What amounts have students borrowed, by sex and level of education?
- How does the picture change when non-government sources are taken into account?
- How do borrowing levels vary with level of parents' education (a proxy for family income) and by province?
- How do loan amounts compare with postgraduation earnings levels?
- How quickly do graduates repay their loans?

Survey and data

This research employs data from four cohorts of the National Graduates Surveys (NGS). These data represent those who successfully completed their programs at Canadian universities and colleges in 1982, 1986, 1990 and 1995. The survey gathered information for each cohort through interviews carried out two and five years after graduation. The analysis presented here is based on the first interview for each cohort. This provides a consistent series of student loan information over time.

These surveys, developed by Statistics Canada in partnership with Human Resources Development Canada, are suited to the analysis for a number of reasons. First, the NGS is quite large in terms of its target populations. Each survey includes approximately 30,000 university and college graduates, thus facilitating detailed analysis of postgraduation experiences. At the same time, the surveys' representative nature allows the results to be generalized to the population of graduates at large. The NGS databases are based on a stratified sampling scheme (by province, level of education, and field of study); all results reported below reflect the appropriate sample weights (see Finnie 2000 for further details).

Second, the availability of data for four different cohorts permits enduring patterns to emerge and updates the record as much as possible.

Third, the timing of the survey interviews provides a useful and consistent perspective of borrowing and repayment patterns across cohorts (e.g., the amount of debt at graduation and the amount paid down two years after that).

Finally, and most crucial to this project, the surveys collect a variety of variables related to student borrowing, including amounts borrowed, debt remaining two years after graduation, and self-identified problems with making loan repayments. This loan information can, in turn, be linked to individuals' educational, socio-demographic and labour market characteristics, which are available on the files.[3]

The working samples

In order to establish the record in a consistent fashion for students as they finished their studies, we imposed restrictions to eliminate graduates who continued their schooling. Our focus is, therefore, on total accumulated borrowing by the end of an individual's schooling and on payback rates in the postschooling period, as captured at the precise point in time represented by the interviews—two years following graduation.[4]

Graduates with the following characteristics were, therefore, dropped from the analysis: those who had obtained an additional degree or diploma by the first interview; part-time workers who cited school as the reason why they were only partially attached to the labour market; those who were not looking for work because they were in school at the time of the interview; and those who were enrolled in a program at that time.

We then verified the key loan variables for consistency and either dropped or corrected a small number of records. Finally, we excluded observations from specific tables when the required information was missing or unreliable.

Findings[5]

Levels of borrowing

Table 1 and Graph 1 show (by sex, cohort and level of education) the levels of borrowing from student loan programs as of graduation. Two sets of numbers appear: the proportion of graduates with loans, and the mean amount owed for those who borrowed (in constant 1997 dollars). These amounts reflect total borrowing from both federal and provincial governments.

The incidence of borrowing generally increased across the four cohorts for both college and bachelor's graduates. At the college level, borrowing rose from 1982 to 1986, then remained fairly stable to finish at rates of 41% for men and 44% for women of the class of 1995. The mean levels of borrowing among those with loans, however, rose more sharply, from just under $4,000 for the 1982 cohort to around $9,500 for both men and women in the class of 1995. Among bachelor's graduates, the incidence of borrowing rose more moderately, especially for men, to finish at rates of 47% for men and 44% for women (compared with 45% and 39%, respectively, for the earliest cohort). However, mean amounts borrowed increased more rapidly, growing from around $6,000 for men and women for the 1982 cohort to more than $13,000 in the most recent graduates.

At the master's level, the incidence of graduating with a student loan increased moderately, from rates of 32% for men and 31% for women in 1982 to 37% and 35% in 1995. The mean amounts borrowed increased more sharply, from around $6,500 for both sexes to $13,300 for men and $14,000 for women. Male PhD graduates were an exception: their incidence of borrowing dropped significantly from 1982 through 1995, finishing at a rate of just 23%. For women at the PhD level, the borrowing rate rose from a low level of 22% to 29% over this period. This represents, by far, the lowest rate of all combinations of sex and level of education. Average amounts borrowed rose from just over $5,000 for both sexes in 1982 to $12,500 for men and more than $13,000 for women in 1995.

Similar borrowing occurred across the three university degree levels. There are several reasons for this. First, those who pursue higher degrees have presumably received more financial support in the form of bursaries and scholarships at the lower degree levels, thus reducing their demand (and eligibility) for loans. Second, individuals from higher socio-economic backgrounds have less need for loans, are less eligible to borrow, and are more likely to go on to graduate studies. Finally, causality could run the other way, and having a greater level of borrowing might deter some individuals from continuing with their studies.

Non-government borrowing

How much of total student debt do government loan programs and other lending sources—family, friends and financial institutions—account for? Tables 2 and 3 show outstanding government borrowing and total borrowing as of two years following graduation (corresponding to the information available on the NGS databases).

Total borrowing from both government and non-government sources is (of course) greater than borrowing from government student loan programs alone. The difference is moderate at the college and bachelor's levels and more substantial among master's and PhD graduates. In 1997, considering overall borrowing (calculated as the incidence of borrowing multiplied by the mean amount owed by borrowers), total borrowing was just 11% and 5% higher than government-only borrowing for college men and women, respectively; 19% and 10% higher for bachelor's graduates; a more substantial 25% and 29% higher at the master's level; and a significantly greater 44% and 69% for those with a PhD.

Non-government loans differ in nature from government loan programs. Loans from family may be forgiven or have more flexible payback schedules and lower rates of interest. Loans from financial institutions may, conversely, be less advantageous. In any event, since other sources of borrowing are not, overall, extensive at the college and bachelor's levels, this suggests they are less important for these groups.

Greater non-government borrowing among graduate students, especially at the doctoral level, suggests that these other sources of debt should be taken into account when evaluating student loans and associated policy implications. At the same time, debt burdens were generally lowest and payback rates highest among master's and PhD graduates. By two years after graduation these graduates had paid back more than half of their government borrowing, so even with the extra non-government borrowing taken into account, debt loads would generally not be likely to be overly burdensome.

Parents' level of education

How progressive has the loans system been in terms of getting more money to students from lower socio-economic backgrounds? This question derives from the basic mandate of the CSLP and its provincial counterparts, which is to give all worthy candidates access to the postsecondary system, regardless of family background. This would seem to imply that students from lower-income families should do more borrowing. The NGS data are rather limited in this regard, lacking family background variables, as well as information on students' financial needs, but they

do allow us to look at borrowing by level of parents' education, which is a proxy for family socio-economic status.[6]

Table 4 shows that borrowing patterns have been somewhat mixed along these lines. In the most recent cohort (1995), female college and bachelor's graduates had less overall borrowing (again, calculated as incidence multiplied by mean amount owed) at successively higher levels of parents' education, thus indicating that students from lower-income families did indeed borrow more. But among male graduates at these levels, borrowing was actually greatest for those with the most educated parents. Perhaps surprisingly, the system seems to be somewhat more progressive at the graduate level. In particular, graduates with the most educated parents did the least borrowing. To the degree that parents' education is a good indicator of family income, the loan system seems to have been only moderately efficient in getting more money to those students with the greatest need.

One explanation for this finding might be that those from better-off families tend to attend the institutions or enrol in the programs that are associated with higher costs, such as out-of-town colleges and universities and professional degree programs (especially medicine and law). Another reason might be that students from wealthier families may be more comfortable with the idea of borrowing to help them get through school or to give them a better standard of living while doing so, and so seize more borrowing opportunities. Another contributing factor is that students from lower-income families are eligible for more need-based grants, bursaries and scholarships, thus reducing the need for loans in at least some cases. (This last argument is weakened, however, by the fact that the provinces' grants systems were greatly diminished in the late 1980s and early 1990s, while the education-borrowing patterns have continued.)

Although these findings are hardly conclusive in terms of indicating that government loan programs do not serve the students who need them most, they may raise some concerns, particularly in light of the fundamental goal of these programs to deliver financial aid to students most in need.

Provincial differences

Differences in borrowing by province (Tables 5 through 8) are relatively large. For example, in the 1995 cohort of bachelor's graduates, the incidence of borrowing varies from lows of 39% for men and 33% for women in Manitoba to 60% for both sexes in Newfoundland and Labrador. Average amounts borrowed also vary, if somewhat less so, at the bachelor's level, from just over $13,000 for both men and women in Ontario to $15,400 for men and $19,200 for women in Saskatchewan. The 1995 patterns reveal more overall borrowing by students in Atlantic Canada, Saskatchewan, Alberta and British Columbia, and less in Ontario, Quebec and (especially) Manitoba.

What accounts for these differences? First, the provinces are responsible for the assessment of students' needs, and these procedures have often varied significantly, meaning that loan eligibility has varied from province to province. Second, the 'packaging' of the combination of student loan money (provincial and federal) and other forms of financial aid (grants, scholarships and bursaries) has also varied across jurisdictions, resulting in further differences in student loan program borrowing. Third, general differences in income levels across provinces (i.e., individuals' earnings tend to be higher in some and lower in others) affect the contributions expected from parents, as well as various education choices, thus further affecting loan eligibility and borrowing amounts. Fourth, there are important provincial differences in the sorts of institutions students attend, the specific programs that are covered and other related factors that affect loan eligibility.[7]

The burden of student loans

One simple measure of the burden that borrowing represents is the debt-to-earnings ratio, measured here as the amount owed to student loan programs at graduation divided by the annual rate of pay in the job held at the first interview. The higher the ratio is, the greater the debt burden it represents.[8]

Median debt-to-earnings ratios (means are not used because they are too sensitive to outliers) are shown by sex, cohort and level of education in Table 9 and Graph 2. Among the different types of university graduates, debt burdens decline substantially with degree level, especially for women. College graduates' burdens are roughly similar to those at the master's level; the college graduates have less borrowing but substantially lower earnings as well. Debt burdens have been generally higher for women than for men (except at the PhD level), because similar borrowing levels by sex translate into higher burdens for women because of their generally lower earnings.

Payback rates

Average payback rates two years after graduation are shown in Table 10 and Graph 3. The *Unweighted* columns (representing the mean payback rate across all individuals who had loans) show that for the most recent cohort, college and bachelor's graduates had

paid back an average of two-fifths of the debt level they had at graduation. The master's group had repaid a little over one-half, and PhD graduates slightly greater amounts. In nearly all cases, however, there were clear declines in the amounts that had been paid back for each succeeding cohort. Furthermore, the declines were generally greater for women than for men, and in some cases quite substantial (e.g., from 56% to 38% for college women and from 72% to 57% for PhD women).

Summary

Student borrowing generally rose over the period covered by the data (1982, 1986, 1990 and 1995 graduates). For the most recent cohort, from one-quarter to just under one-half of all postsecondary graduates, depending on sex and level of education, held student loans. Loans averaged approximately $9,500 for college graduates, $13,600 for bachelor's and master's graduates, and $12,800 for graduates at the PhD level (all figures in constant 1997 dollars).

Average payback rates two years after graduation for the 1995 cohort (i.e., the most recent) varied from 40% to 55%, rising with the level of education. These rates are all well ahead of what the standard 10-year repayment schedule would yield, thus suggesting that despite the increases in student borrowing that have occurred for more recent cohorts, student loans still do not represent an excessive burden for the majority of graduates—at least not for the latest group observed here (see further on this below).[9] Relatively small differences between the sexes appear in borrowing and repayment rates, with greater differences in debt-to-earnings ratios.

Borrowing from non-government sources has not been especially great among college and bachelor's graduates; counting these sources boosts measured borrowing levels by 5% to 19%. Such sources have, however, been more important for master's and PhD graduates, adding as much as 70% to overall borrowing levels.

Student loan program borrowing has not always varied with parents' education level (a proxy for family income level) in the manner that would be predicted. In some cases borrowing is greater, rather than lower, among students with more highly educated parents. This could be for a number of reasons, including the following: these students tend to be enrolled in programs or go to institutions where their costs are higher, thus making them more likely to qualify for student loans; these students have a greater willingness to take out loans; or students from lower-income families have greater access to grants, bursaries, and scholarships.

Finally, provincial differences in borrowing have been substantial. These are presumably related to provincial variations in loan eligibility criteria, the packaging of financial aid packages, general income levels (which affect assumed parental contributions), the programs in which students enrol, and the types of institutions they attend.

Perhaps the most important general conclusion in terms of policy discussions that may be drawn from this analysis is this: although borrowing from government loan programs by postsecondary students has risen over time, it has not been as extensive as many might have thought and does not appear to have represented unmanageable burdens for most graduates. At the same time, it is important to recognize that a minority of graduates have borrowed greater amounts, faced debt levels that are large relative to their postgraduation incomes, paid their loans back slowly, and experienced difficulties with their debt loads.[10] This is useful information for those interested in government loan programs, graduates' general well-being, the financing of postsecondary education, and related issues. Data currently being collected for the graduating class of 2000 will provide additional information for research on these and related topics.

Appendix

The NGS data used in this article are limited to postsecondary students who have successfully completed their programs. The data for those who incurred loans but then dropped out of school might look quite different in terms of not only borrowing levels (presumably lower) but also repayment. In particular, these school leavers would generally not enjoy the higher earnings that postsecondary diplomas typically confer on finishers and are thus likely to face greater problems in the payback years.

Also, the situation may have changed since the last cohort included in this analysis graduated in 1995. For example, the 1994 increase in the maximum borrowing limit permitted by the Canada Student Loans Program from $105 per week of studies to $165 has likely driven borrowing levels up. If, for example, we assume there has been a proportional increase in mean borrowing levels, this would point to average cumulative totals of about $19,300 at the bachelor's level (rather than the approximately $13,500 reported above) among those who have faced these higher limits over their entire four years—a number that is consistent with others in circulation.[11] On the other hand, given that the eligibility criteria have not changed, there is little reason to assume that the proportion of graduates with loans has shifted. Applying the new estimated averages to the previously observed incidences (again at the bachelor's level) results in average

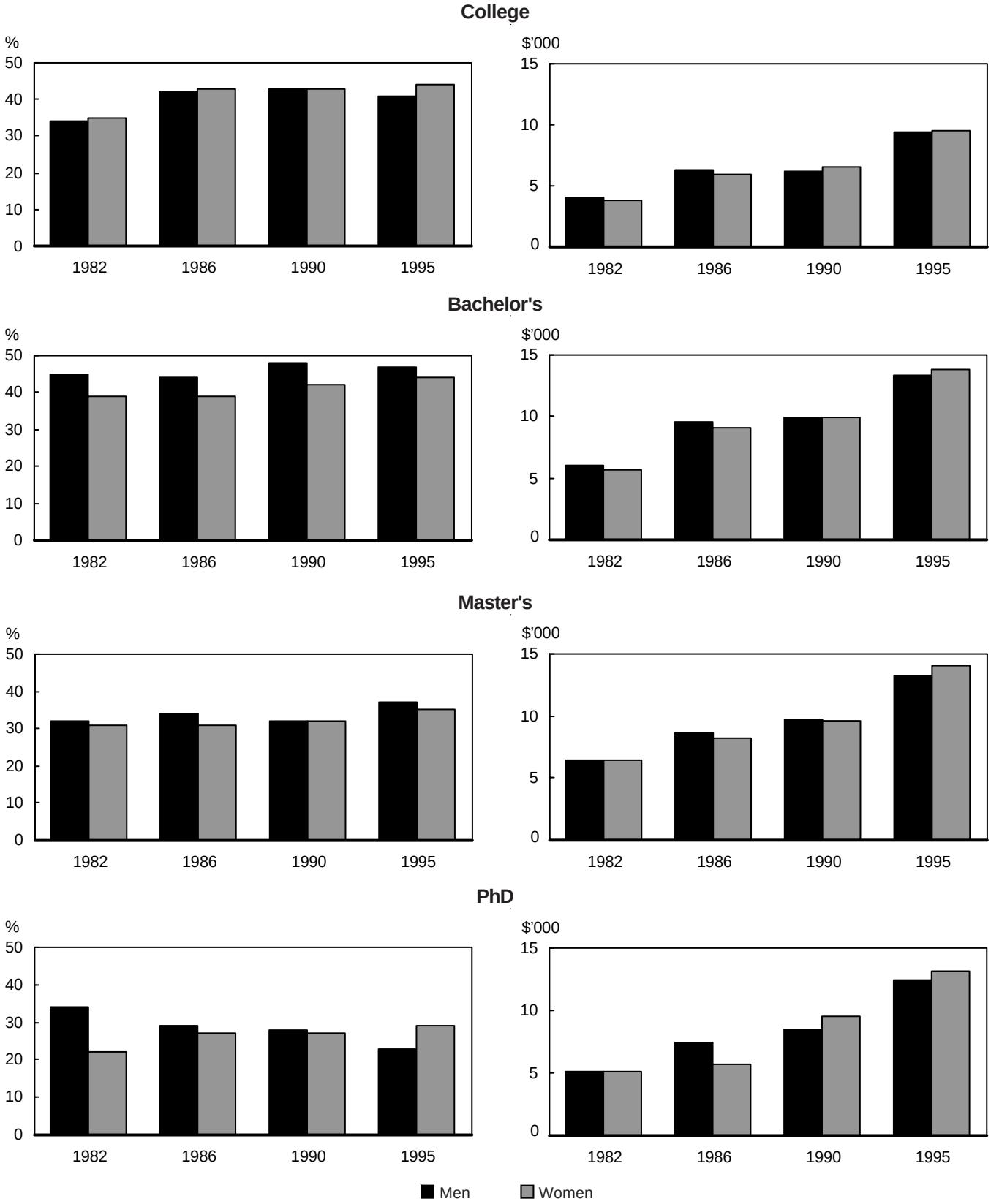
borrowing of just under $9,000 when averaged across all graduates—still not a huge amount, but higher than before. Also, provincial grant programs were largely replaced with loans over this period, and this would presumably have driven borrowing levels up even further. On the other hand, debt remission programs have been introduced and enhanced in many provinces, and the Canadian Millennium Scholarships Foundation now provides up to $3,000 of support for individuals in their first or second years, thus easing the pressures on borrowing.[12]

Other factors of change are more closely related to the payback of loans. Under the 1995 agreement between the government and participating banks, the latter assumed the primary risk of default in return for a 5% premium paid up front to cover liability. This may have made banks more diligent in their management of student loans and more flexible in their payment arrangements. Since 2000, the federal government has become the direct lender to students borrowing from the CSLP and will be responsible for collection as well (through agencies established for this purpose), and this is likely to change borrowing and repayment patterns further. (Most provinces, but not all, have followed suit.) There are, however, no public data on the effects of these changes on borrowing and repayment.

The CSLP has also been expanding its aid to those experiencing problems with the repayment of their loans. Interest relief was made available for those out of work or facing low earnings, as well as for the sick and disabled groups that were previously eligible. Debt forgiveness has been introduced as well, although the take-up rate has been low to date. In addition, younger workers have faced shifts in the labour markets; these have made things easier for some, especially those whose education and training fit the job market, but perhaps more difficult for others.

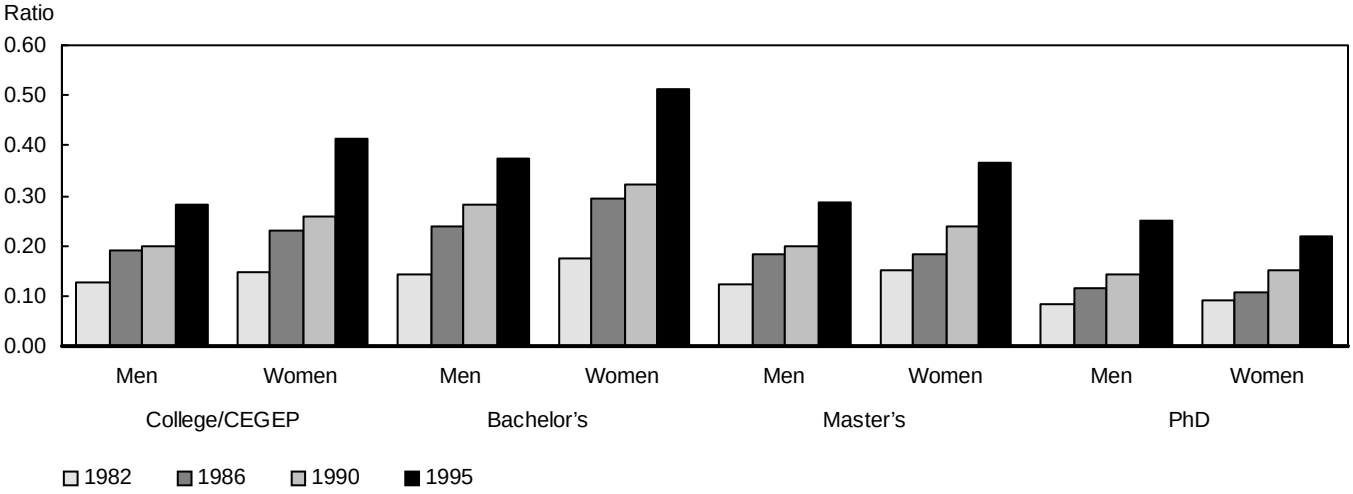
Overall, then, borrowing levels may have increased, perhaps fairly substantially, since the 1995 graduates studied here. But the burden of a given level of debt may have decreased if repayment schedules have become more flexible, interest relief and debt reduction initiatives have been extended, and labour market conditions have generally improved. However, these remain only conjectures, and it will be useful to see what new data reveal as they become available. EQR

Graph 1
Incidence of borrowing and mean amounts owed at graduation, by cohort, sex and level of education



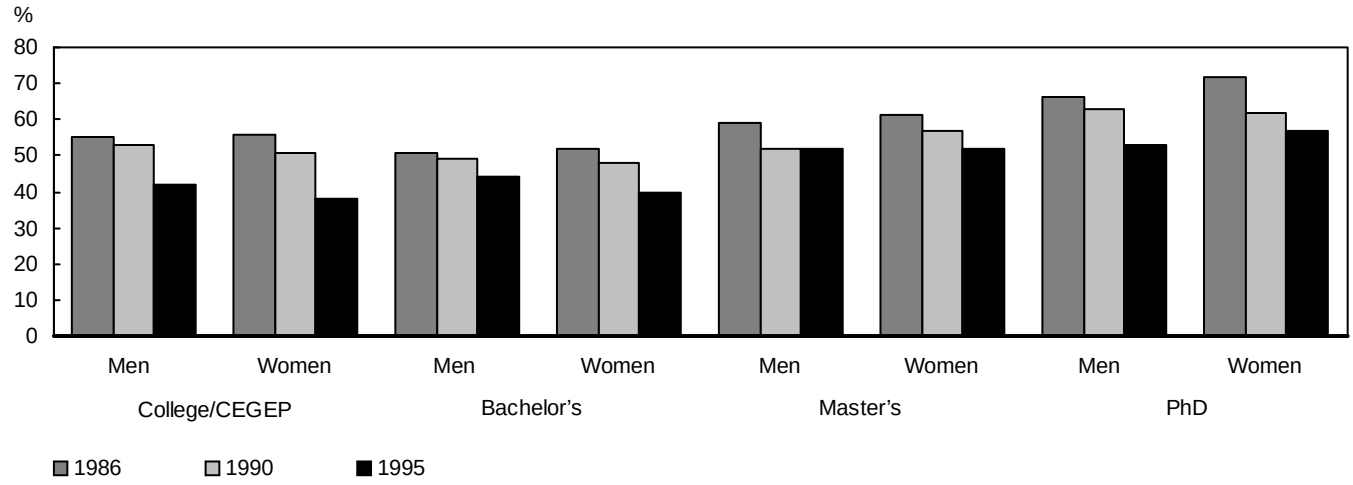
Source: *Statistics Canada, National Graduates Surveys.*

Graph 2
Median debt-to-earnings ratios, by cohort, sex and level of education



Source: *Statistics Canada, National Graduates Surveys.*

Graph 3
Proportion of debt repaid, by cohort, sex and level of education



Source: *Statistics Canada, National Graduates Surveys.*

Table 1
Incidence of borrowing and mean amounts owed[1] at graduation, by cohort, sex and level of education

Level of education	Sex	1982		1986		1990		1995	
		Incidence	Mean	Incidence	Mean	Incidence	Mean	Incidence	Mean
		%	$	%	$	%	$	%	$
College/CEGEP	Men	34	3,990	42	6,350	43	6,140	41	9,420
	Women	35	3,850	43	5,910	43	6,580	44	9,580
Bachelor's	Men	45	6,070	44	9,550	48	9,870	47	13,390
	Women	39	5,650	39	9,100	42	9,910	44	13,840
Master's	Men	32	6,450	34	8,690	32	9,670	37	13,250
	Women	31	6,440	31	8,260	32	9,620	35	14,040
PhD	Men	34	5,110	29	7,440	28	8,520	23	12,450
	Women	22	5,100	27	5,750	27	9,550	29	13,130

Note:
1. Constant 1997 dollars.
Source: *Statistics Canada, National Graduates Surveys.*

Table 2
Incidence of borrowing from government sources and mean amounts owed[1] two years after graduation, by cohort, sex and level of education

Level of education	Sex	1986		1990		1995	
		Incidence	Mean	Incidence	Mean	Incidence	Mean
		%	$	%	$	%	$
College/CEGEP	Men	30	4,590	30	4,620	32	7,710
	Women	31	4,490	30	4,810	33	8,550
Bachelor's	Men	33	7,150	35	7,730	35	11,700
	Women	29	7,130	31	7,510	34	11,980
Master's	Men	22	6,810	22	7,780	24	11,050
	Women	20	6,920	20	7,260	23	11,880
PhD	Men	17	4,810	16	6,200	15	10,050
	Women	13	4,580	15	7,400	17	11,410

Note:
1. Constant 1997 dollars.
Source: *Statistics Canada, National Graduates Surveys.*

Table 3
Incidence of total borrowing and mean amounts owed[1] two years after graduation, by cohort, sex and level of education

Level of education	Sex	1986		1990		1995	
		Incidence	Mean	Incidence	Mean	Incidence	Mean
		%	$	%	$	%	$
College/CEGEP	Men	32	5,000	32	5,150	35	7,820
	Women	33	4,760	32	5,070	35	8,420
Bachelor's	Men	36	7,580	40	8,310	38	12,770
	Women	31	7,750	35	8,130	37	12,120
Master's	Men	25	7,900	26	9,070	27	12,280
	Women	22	7,720	23	8,590	26	13,540
PhD	Men	21	7,740	21	8,280	19	11,450
	Women	18	9,580	19	9,660	22	14,200

Note:
1. Constant 1997 dollars.
Source: *Statistics Canada, National Graduates Surveys.*

Table 4
Incidence of borrowing and mean amounts owed[1] at graduation, by cohort, sex, level of education and parental education

Level of education	Sex	Parental education	1986		1990		1995	
			Incidence	Mean	Incidence	Mean	Incidence	Mean
			%	$	%	$	%	$
College/CEGEP	Men	Both <BA[2]	43	6,360	43	5,440	42	9,250
		Some BA[3]	32	5,940	42	5,950	38	9,420
		Some pro[4]	47	7,540	39	5,740	49	13,310
	Women	Both <BA	44	5,920	45	5,930	45	9,690
		Some BA	40	6,020	34	6,190	40	9,450
		Some pro	37	5,930	30	7,020	33	10,640
Bachelor's	Men	Both <BA	45	8,910	51	8,950	50	13,620
		Some BA	39	11,110	41	8,410	44	12,670
		Some pro	46	8,820	43	10,050	52	14,070
	Women	Both <BA	40	9,340	44	8,930	46	14,120
		Some BA	37	8,440	40	8,350	44	12,790
		Some pro	29	9,570	34	9,300	30	15,930
Master's	Men	Both <BA	32	8,980	32	9,170	35	13,610
		Some BA	38	8,240	33	7,850	41	12,540
		Some pro	44	8,720	31	5,940	31	13,170
	Women	Both <BA	31	8,510	31	8,970	33	14,720
		Some BA	34	7,720	35	8,190	40	13,280
		Some pro	25	8,570	23	8,450	28	14,360
PhD	Men	Both <BA	31	7,080	31	7,590	23	12,740
		Some BA	27	8,860	22	7,480	25	11,960
		Some pro	F	F	30	7,110	16	12,100
	Women	Both <BA	30	5,640	27	8,420	34	14,550
		Some BA	25	6,020	27	8,980	25	11,380
		Some pro	F	F	23	6,370	23	10,360

Notes:
F Too unreliable to be published.
1. Constant 1997 dollars.
2. Less than a bachelor's degree.
3. Some bachelor's-level education on the part of either parent.
4. Some graduate or professional school education for either parent.
Source: *Statistics Canada, National Graduates Surveys.*

Table 5
Incidence of borrowing and mean amounts owed[1] at graduation by college graduates, by cohort, sex and province of graduation

Province of graduation	Sex	1982		1986		1990		1995	
		Incidence	Mean	Incidence	Mean	Incidence	Mean	Incidence	Mean
		%	$	%	$	%	$	%	$
Nfld.Lab.	Men	36	4,280	40	5,540	66	6,090	40	9,240
	Women	33	4,530	54	6,480	68	5,990	51	12,540
P.E.I.	Men	26	2,790	52	5,210	64	4,900	40	7,770
	Women	33	3,160	50	4,770	59	5,690	39	7,150
N.S.	Men	31	4,310	70	11,120	64	7,910	31	8,320
	Women	47	4,150	71	7,590	57	7,640	42	11,050
N.B.	Men	45	4,710	49	7,430	46	6,520	36	8,670
	Women	62	5,110	69	7,410	65	7,840	50	10,530
Que.	Men	40	3,530	51	5,110	48	5,630	53	8,340
	Women	39	3,660	51	4,920	53	5,280	57	7,930
Ont.	Men	29	3,830	35	6,660	34	4,100	39	10,110
	Women	34	3,560	36	5,780	32	4,710	44	10,290
Man.	Men	30	4,090	45	7,470	47	6,000	22	7,450
	Women	34	3,850	44	7,310	48	7,140	24	8,560
Sask.	Men	33	3,580	38	6,160	51	6,730	52	10,270
	Women	36	4,390	43	6,040	62	8,210	46	11,190
Alta.	Men	38	5,360	58	6,400	65	6,300	46	8,930
	Women	29	5,300	53	6,210	53	7,290	45	9,090
B.C.	Men	36	4,320	30	8,140	32	8,150	36	10,690
	Women	29	4,150	27	8,750	30	7,970	25	10,470

Note:
1. Constant 1997 dollars.
Source: *Statistics Canada, National Graduates Surveys.*

Table 6
Incidence of borrowing and mean amounts owed[1] at graduation by bachelor's graduates, by cohort, sex and province of graduation

Province of graduation	Sex	1982		1986		1990		1995	
		Incidence	Mean	Incidence	Mean	Incidence	Mean	Incidence	Mean
		%	$	%	$	%	$	%	$
Nfld.Lab.	Men	64	6,410	61	10,670	77	11,610	60	14,280
	Women	56	6,610	52	12,140	65	12,230	60	16,260
P.E.I.	Men	52	4,540	46	7,250	65	9,550	62	11,150
	Women	49	6,340	50	9,140	57	10,500	53	14,820
N.S.	Men	67	6,840	66	11,810	64	10,090	52	14,460
	Women	61	6,410	60	11,660	61	10,220	53	14,580
N.B.	Men	67	6,190	67	9,330	64	10,040	55	14,720
	Women	54	6,740	59	10,430	61	8,980	54	14,370
Que.	Men	42	6,440	43	8,290	54	7,790	47	11,670
	Women	39	5,890	32	7,210	52	8,670	43	12,260
Ont.	Men	43	5,730	38	10,520	37	8,060	44	13,170
	Women	33	5,170	39	9,540	32	7,490	43	13,700
Man.	Men	34	4,570	33	8,380	43	8,950	39	12,420
	Women	31	5,690	36	8,520	41	8,600	33	12,080
Sask.	Men	45	6,410	34	6,550	47	11,250	51	15,370
	Women	31	4,740	32	8,190	42	11,830	42	19,170
Alta.	Men	47	6,380	61	9,890	68	9,580	62	14,950
	Women	43	6,020	52	9,440	55	9,750	56	14,950
B.C.	Men	47	5,680	42	9,910	44	10,010	46	16,290
	Women	48	5,200	35	9,510	34	9,540	38	17,560

Note:
1. Constant 1997 dollars.
Source: *Statistics Canada, National Graduates Surveys.*

Table 7
Incidence of borrowing and mean amounts owed[1] at graduation by master's graduates, by cohort, sex and province of graduation

Province of graduation	Sex	1982		1986		1990		1995	
		Incidence	Mean	Incidence	Mean	Incidence	Mean	Incidence	Mean
		%	$	%	$	%	$	%	$
Nfld.Lab.	Men	43	5,760	30	6,670	24	7,910	20	10,900
	Women	22	4,930	23	6,250	22	6,280	16	9,700
P.E.I.	Men	F	F	F	F	F	F	F	F
	Women	F	F	F	F	F	F	F	F
N.S.	Men	45	6,100	35	9,820	45	10,840	31	15,300
	Women	47	5,890	55	9,430	31	9,470	27	16,340
N.B.	Men	51	9,540	24	7,960	34	7,790	22	15,120
	Women	34	6,960	31	7,530	30	7,440	22	14,280
Que.	Men	32	7,020	43	8,010	39	8,310	55	13,660
	Women	30	6,260	40	7,150	46	8,720	53	13,150
Ont.	Men	30	6,210	30	9,440	29	8,230	30	12,090
	Women	30	6,960	27	9,170	26	8,080	30	13,410
Man.	Men	34	6,500	33	7,130	41	8,490	25	13,250
	Women	17	4,500	19	7,560	21	9,130	20	13,020
Sask.	Men	25	5,550	17	6,040	21	6,840	24	13,080
	Women	26	5,420	17	8,480	13	8,600	19	15,990
Alta.	Men	29	5,790	36	10,190	26	10,620	27	13,210
	Women	23	4,810	20	8,760	29	8,230	25	17,360
B.C.	Men	38	5,420	24	7,070	25	10,500	33	14,540
	Women	43	6,590	30	7,730	27	10,230	29	17,910

Note:
F Too unreliable to be published.
1. Constant 1997 dollars.
Source: *Statistics Canada, National Graduates Surveys.*

Table 8
Incidence of borrowing and mean amounts owed[1] at graduation by PhD graduates, by cohort, sex and province of graduation

Province of graduation	Sex	1982		1986		1990		1995	
		Incidence	Mean	Incidence	Mean	Incidence	Mean	Incidence	Mean
		%	$	%	$	%	$	%	$
Nfld.Lab.	Men	F	F	F	F	F	F	F	F
	Women	F	F	F	F	F	F	F	F
P.E.I.	Men	F	F	F	F	F	F	F	F
	Women	F	F	F	F	F	F	F	F
N.S.	Men	F	F	F	F	26	6,430	16	12,160
	Women	F	F	F	F	F	F	F	F
N.B.	Men	F	F	F	F	F	F	F	F
	Women	F	F	F	F	F	F	F	F
Que.	Men	34	5,360	47	6,310	42	7,390	43	13,130
	Women	22	4,160	51	7,200	39	7,560	48	13,780
Ont.	Men	36	4,790	24	7,850	25	8,660	19	11,740
	Women	21	5,390	19	4,400	26	9,620	24	11,270
Man.	Men	16	4,990	22	6,000	18	8,640	5	13,070
	Women	F	F	F	F	F	F	8	7,650
Sask.	Men	F	F	F	F	21	2,860	8	5,340
	Women	F	F	F	F	F	F	F	F
Alta.	Men	31	5,300	21	7,790	21	6,810	15	12,660
	Women	20	3,950	22	6,790	7	6,180	17	16,280
B.C.	Men	35	7,470	31	8,960	15	4,780	15	12,970
	Women	19	6,570	28	4,220	19	7,890	25	14,370

Note:
F Too unreliable to be published.
1. Constant 1997 dollars.
Source: *Statistics Canada, National Graduates Surveys.*

Table 9
Median debt-to-earnings ratios, by cohort, sex and level of education

Level of education	Sex	1982	1986	1990	1995
		ratio			
College/CEGEP	Men	0.13	0.19	0.20	0.28
	Women	0.15	0.23	0.26	0.41
Bachelor's	Men	0.14	0.24	0.28	0.38
	Women	0.17	0.29	0.32	0.51
Master's	Men	0.12	0.18	0.20	0.29
	Women	0.15	0.18	0.24	0.37
PhD	Men	0.08	0.12	0.14	0.25
	Women	0.09	0.11	0.15	0.22

Source: *Statistics Canada, National Graduates Surveys.*

Table 10
Proportion of debt repaid, by cohort, sex and level of education

Level of education	Sex	1986		1990		1995	
		Unweighted	Weighted	Unweighted	Weighted	Unweighted	Weighted
		%					
College/CEGEP	Men	55	49	53	43	42	44
	Women	56	46	51	41	38	41
Bachelor's	Men	51	44	49	40	44	42
	Women	52	43	48	40	40	41
Master's	Men	59	51	52	44	52	47
	Women	61	52	57	49	52	47
PhD	Men	66	61	63	56	53	50
	Women	72	61	62	57	57	49

Source: *Statistics Canada, National Graduates Surveys.*

Notes

1. This paper is drawn from work that has been reported in Finnie (2001; 2002a,b,c). The views expressed in this article are solely those of the author and should not be attributed to Statistics Canada. This research was made possible by the financial support received from the Canada Students Loan Program Branch of Human Resources Development Canada. The author also gratefully acknowledges assistance from the Social Sciences and Humanities Research Council of Canada in the earlier phases of this research.
2. See Industry Canada (2002).
3. Statistics Canada is sometimes criticized for not collecting the right data—often only after data have been collected does it become apparent that certain other data would be useful to have. In this case, Statistics Canada should be credited for its prescience, having started gathering loan data far before student loans became such a topical issue.
4. Students like those excluded in this fashion would in fact be represented in the samples used. They would be captured at precisely the point they finished their studies instead of being double-counted along the way (first, as they left one program and then continued with their studies; then again, at the completion of their later programs).
5. A number of important caveats apply to these findings (see Appendix).
6. For simplicity, mother's and father's education were collapsed into three categories: less than a bachelor's degree; some bachelor's-level education on the part of either parent; and some graduate or professional school education for either parent.
7. For example, in some provinces a higher percentage of students must go out of town to attend university; and enrolment in certain types of private vocational schools qualifies individuals for student loans in some provinces, but not others.
8. These ratios can be calculated only for those with jobs as of the first interview.
9. Finnie (2001) also shows that the rate of self-reported difficulties has been relatively low, although it has risen for the more recent cohorts.
10. See Finnie (2001).
11. This number was calculated by multiplying $13,500 (approximate average amount borrowed by 1995 graduates) by 1.57 (the proportional increase in the maximum lending limit) and taking three-quarters of the resulting increase to allow for the fact that the 1995 graduates would have faced these greater limits for one of their four years. Actual increases might have been greater than this, especially given that tuition increases have been driving needs up significantly—or smaller, if students' borrowing needs are not generally as great at the margin (i.e., they might have taken up the extra amounts offered at lower rates than before).
12. See the Canadian Millennium Scholarship Foundation's forthcoming factbook on student financial assistance for other loan level estimates and related policy developments.

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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 website www.statcan.ca. Click on "The Daily" and "Previous issues".*

- School board revenues and expenditures, 1999 (released July 23, 2002)
- Registered apprenticeship training, 2000 (released August 14, 2002)
- University tuition fees, 2002-2003 (released August 21, 2002)
- Full-time university faculty, 2001-2002 (released August 23, 2002)
- University finances, 2000-2001 (released September 16, 2002)
- Community colleges and related institutions: Postsecondary enrolments and graduates, 1998-1999 and 1999-2000 (released September 24, 2002) EQR

Current data

Data series	Most recent data: Final[1]	Most recent data: Preliminary or estimate[2]
A. Elementary/secondary		
Enrolment in public schools	1999–2000	2000–2001[e]
		2001–2002[e]
Enrolment in private schools	1999–2000	
Enrolment in minority and second language education programs	1999–2000	
Secondary school graduation	1999–2000	
Educators in public schools	1999–2000	2000–2001[e]
		2001–2002[e]
Educators in private schools	1999–2000	
Elementary/secondary school characteristics	1999–2000	
Financial statistics of school boards	1999	
Financial statistics of private academic schools	1998–1999	1999–2000[e]
		2000–2001[e]
		2001–2002[e]
Federal government expenditures on elementary/secondary education	1999–2000	2000–2001[e]
		2001–2002[e]
Consolidated expenditures on elementary/secondary education	1998–1999	1999–2000[p]
		2000–2001[e]
		2001–2002[e]
Education Price Index	2000	
B. Postsecondary		
University enrolments	1999–2000	discontinued
University degrees granted	1998	discontinued
University continuing education enrolment	1996–1997	discontinued
Educators in universities	1999–2000	
Salaries and salary scales of full-time teaching staff at Canadian universities	1999–2000	
Tuition and living accommodation costs at Canadian universities	2002–2003	
University finance	2000–2001	
College finance	1999–2000	2000–2001[e]
Federal government expenditures on postsecondary education	1999–2000	2000–2001[e]
Consolidated expenditures on postsecondary education	1999–2000	2000–2001[e]
Community colleges and related institutions: enrolment and graduates	1998–1999	1999–2001[e]
Trade/vocational enrolment	1998–1999	1999–2000[e]
College/trade teaching staff	1997–1998	1998–1999[p]
		1999–2000[p]
International student participation in Canadian universities	1998–1999	

See notes at end of this table.

Current data (concluded)

Data series

C. Publications[3]

Education in Canada (2000)

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

After High School, the First Years (1996)

Participation in postsecondary education and family income (1998)

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

International student participation in Canadian education (1993–1995)

Education Price Index – methodological report

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

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

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

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

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

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

The Class of '90 Revisited (1997)

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

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

Education at a Glance: OECD Indicators (2000)

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

Literacy, Economy and Society (1995)

Literacy Skills for the Knowledge Society (1997)

Literacy in the Information Age (2000)

International Adult Literacy Survey Monograph Series

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

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

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

Children and youth at risk: Symposium report

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

Current trends in teacher education and training: A symposium report (2001)

Notes:

1. *Indicates the most recent calendar year (e.g., 1993) or academic/fiscal year (e.g., 1993–1994) for which final data are available for all provinces and territories.*
2. *Indicates the most recent calendar year (e.g., 1995) or academic/fiscal year (e.g., 1996–1997) for which any data are available. The data may be preliminary (e.g., 1995^{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 Client Services, Culture, Tourism and the Centre for Education Statistics. Telephone: (613) 951-7608, toll free 1 800 307-3382; Fax: (613) 951-9040) or E-mail: educationstats@statcan.ca.*

Education at a glance

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

Table 1
Education indicators, Canada, 1986 to 2001

Indicator[1]	1986	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	thousands											
Social context												
Population aged 0–3	1,475.0	1,573.4	1,601.7	1,610.6	1,596.1	1,595.1	1,578.6	1,560.7	1,550.7	1,453.9	1,390.6	1,366.8
Population aged 4–17	5,204.7	5,395.4	5,437.7	5,484.7	5,536.4	5,620.7	5,691.4	5,754.0	5,795.7	5,725.6	5,723.7	5,723.2
Population aged 18–24	3,286.3	2,886.1	2,869.2	2,869.6	2,852.0	2,823.4	2,816.8	2,833.0	2,865.4	2,895.9	2,921.2	2,948.7
Total population	26,203.8	28,120.1	28,542.2	28,940.6	29,248.1	29,562.5	29,963.7	30,358.5	30,747.0	30,553.8	30,769.6	31,081.9
Youth immigration[r]	25.9	61.2	61.2	73.1	68.3	65.9	66.3	70.4	61.2	..	..	..
	%											
Lone-parent families	18.8	15.3	14.4	14.8	14.9	15.1	14.8	14.9	15.4	15.7	..	..
Economic context												
GDP: Real annual percentage change	3.1	-1.8	-0.6	2.2	4.1	2.3	1.5	..	..	..	..	..
CPI: Annual percentage change	4.2	5.6	1.5	1.8	0.2	2.2	1.7	1.7	1.0	1.9	..	..
Employment rate	59.6	59.7	58.4	58.0	58.4	58.8	58.5	59.0	59.7	60.6	..	..
Unemployment rate	9.7	10.3	11.2	11.4	10.4	9.4	9.7	9.1	8.3	7.6	6.8	7.2
Student employment rate	34.4	38.0	35.1	34.0	34.2	33.3	34.8	32.5[2]	..	..	..	..
Families below low income cut-offs:												
Two-parent families	10.9	10.8	10.6	12.2	11.5	12.8	11.8	12.0	..	..	..	..
Lone-parent families	52.5	55.4	52.3	55.0	53.0	53.0	56.8	51.1	..	..	..	..
Enrolments	thousands											
Elementary/secondary schools	4,938.0	5,218.2	5,284.1	5,327.8	5,362.8	5,430.8	5,414.6	5,386.3	5,369.7	5,397.1	5,389.3[e]	5,385.2[e]
	%											
Percentage in private schools	4.6	4.7	4.9	5.0	5.1	5.1	5.2	5.3	5.5	5.6	..	..
	thousands											
College/trade/vocational, full-time[3]	238.1	275.9	266.7	306.5	298.8	269.1	261.4	250.0	240.1	..	..	..
College/postsecondary, full-time	321.5	349.1	364.6	369.2	380.0	391.3	397.3	398.6	403.5	407.0[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	91.4[e]	..	..

See notes at end of this table.

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

Indicator[1]	1986	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	thousands											
Full-time university	475.4	554.0	569.5	574.3	575.7	573.2	573.6	573.1	580.4	590.7[e]	..	..
Part-time university	287.5	313.3	316.2	300.3	283.3	273.2	256.1	249.7	246.0	257.5[e]	..	..
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	301.7	304.5	307.8	310.6	317.0[r]	..	..
College/trade/vocational[6]	145.0	159.7	158.8	163.9	151.1	144.2	141.5[e]	138.7[e]	..	..	..	..
College/postsecondary	82.4	83.8	85.9	92.5	95.3	97.2	101.0	105.0	113.1	..	..	..
University/Bachelor's	101.7	114.8	120.7	123.2	126.5	127.3	128.0	125.8	124.9	127.1[e]	..	..
University/Master's	15.9	18.0	19.4	20.8	21.3	21.4	21.6	21.3	22.0	23.2[e]	..	..
University/Doctorate	2.2	2.9	3.1	3.4[e]	3.6	3.7	3.9	4.0	4.0	4.0[e]	..	..
Full-time educators												
Elementary/secondary schools	269.9	302.6	301.8	295.4	295.7	298.7	294.4	296.9	300.3	303.0	304.2	305.7
College/postsecondary/trade/ vocational	30.6[7]	31.7[7]	31.8[7]	32.2[7]	31.0[7]	30.9[7]	31.5	31.0	31.2	27.8	..	..
University	35.4	36.8	37.3	36.9	36.4	36.0	34.6	33.7	33.7	33.8	..	..
	ratio											
Elementary/secondary pupil–educator ratio	16.5	15.5	15.7[e]	16.1[e]	16.1[e]	16.1[e]	16.1[e]	16.3[e]	16.4[e]	15.9[e]	15.9	..
Education expenditures	$ millions											
Elementary/secondary	22,968.0	33,444.9	34,774.5	35,582.3	35,936.0	36,425.3	36,804.8	37,163.6	38,709.4	39,321.7[p]	39,738.9[e]	..
Vocational	3,275.1	4,573.8	5,380.9	5,631.2	6,559.0	6,185.2	5,301.8	7,953.4	8,946.2	8,391.9[p]	8,669.9[e]	..
College	2,999.0	3,870.7	4,075.3	4,105.9	4,207.1	4,531.8	4,477.9	4,689.5	4,781.7	5,498.5[p]	4,923.2[e]	..
University	7,368.7	11,254.8	11,569.8	11,736.8	11,857.9	11,802.0	11,600.7	12,220.3	12,863.2	14,549.0[p]	13,168.3[e]	..
Total education expenditures	36,610.8	53,144.2	55,800.5	57,056.2	58,560.0	58,944.3	58,185.2	62,026.7	65,300.4	67,761.1[p]	66,500.2[e]	..
	%											
As a percentage of GDP	7.3	7.9	8.0[r]	7.9[r]	7.7[r]	7.3[r]	7.0[r]	7.1[r]	7.1[r]	..	..	..

Notes:
.. *Figures not available.*
[r] *Revised figures.*
[e] *Estimated figures.*
1. *See 'Definitions' following Table 2.*
2. *The figure is for April 1997.*
3. *The enrolments have all been reported as full-time based on a'full-day' program, even though the duration of the programs varies from 1 to 48 weeks.*
4. *Excludes enrolments in continuing education courses, which had previously been included.*
5. *Source: Canadian Education Statistics Council. (Excludes adults for Quebec, Ontario and Alberta equivalencies.)*
6. *The majority of trade and vocational programs, unlike graduate diploma programs which are generally two or three years' duration, are short programs or single courses that may require only several weeks. A person successfully completing these short-duration programs or courses is considered a completer, not a graduate. These completers do not include persons in part-time programs.*
7. *Figures have been revised to include a complete count of staff in trade programs.*

Table 2
Education indicators, provinces and territories

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

See notes at end of this table.

Table 2
Education indicators, provinces and territories (concluded)

Indicator[1]	Manitoba	Saskatchewan	Alberta	British Columbia	Yukon	Northwest Territories
			%			
Social and economic context						
Educational attainment,[2] 2001						
Less than secondary diploma	27.8	28.6	19.3	18.5	..	..
Graduated from high school	21.0	20.6	19.2	22.5	..	..
Some postsecondary	6.6	7.0	9.1	9.8	..	..
Postsecondary certificate, diploma or university degree	44.6	43.9	52.3	49.2	..	..
Labour force participation rates by educational attainment, 2001						
Total	67.2	66.0	72.7	64.8	..	..
Less than secondary diploma	42.1	40.3	47.1	38.2	..	..
Graduated from high school	74.0	74.5	75.5	63.8	..	..
Some postsecondary	75.7	73.0	75.0	66.9	..	..
Postsecondary certificate, diploma or university degree	78.5	77.7	80.8	74.7	..	..
Unemployment rate, 2001	3.9	4.5	3.6	6.6	..	..
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, 1998–1999	15.6	16.2	16.8	16.9	12.7	13.5[e]
Educational outcomes						
Secondary school graduation rates, 1999	74.3	75.0	63.3	73.4	60.4	40.1[6]
University graduation rate, 1998–1999	31.5	33.1	25.2	24.6	..	..
Unemployment rate by level of educational attainment, 2001						
Less than secondary diploma	6.3	7.7	5.2	11.5	..	..
Graduated from high school	3.2	3.9	3.4	6.5	..	..
Some postsecondary	4.2	6.4	4.1	7.3	..	..
Postsecondary certificate, diploma or university degree	3.4	3.5	3.2	5.5	..	..

Notes:
.. *Figures not available.*
[r] *Revised figures.*
[e] *Estimated figures.*
1. See 'Definitions' following Table 2.
2. Parts may not add up to 100% due to rounding.
3. Starting in 1995, Quebec graduate data for regular day programs include individuals over the age of 20 who graduated from regular day programs.
4. Excludes "Formation professionnelle."
5. Excludes night school and correspondence courses for Ontario adults.
6. Includes graduates from Nunavut.

Definitions

Education indicators, Canada

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

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

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

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

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

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

6. **Unemployment rate**
   The number of unemployed persons expressed as a percentage of the labour force.

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

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

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

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

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

Education indicators, provinces and territories

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

12. Educational attainment and labour force participation rates
Refers to the population aged 25 and over. Source: Statistics Canada, Labour Statistics Division.

13. Secondary school graduation rate
Source: Statistics Canada, 2001, Centre for Education Statistics, *Education in Canada 2000,* Catalogue no. 81-229-XPB.

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

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

In upcoming issues

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

Unions and training

This analysis looks at the role that unions play in the provision of training in the Canadian economy. The findings of the study indicate that the effects of unions on employee training are typically small and negative, and that unionization generates, to some extent, greater employer involvement in payment for training. For women, unionization has, if any, a negative impact on the proportion of training in which firms assist with funding.

Raising and levelling the learning bar

Using data from the Programme for International Assessment (PISA), this study examines the questions "How can we further improve the learning and skills of our youth?", and "What would it take to achieve higher rankings in reading, mathematics and science?". The report concludes that while Canadian youth are faring quite well in their academic achievement, more could be done to move those achievement scores to the top ranking of member countries in the Organisation for Economic Co-operation and Development.

Effect of parental education on the high school and postsecondary education transitions of Canadian youth

Using longitudinal data from the School Leavers Survey and the School Leavers Follow-up Survey, this study examines the impact of parental education on high school and postsecondary transitions of Canadian youth. The examination of educational transitions begins with participation in private high school and ends with postsecondary leaving. Specific variables in the analysis include failing an elementary grade, social capital and high school academic performance. EQR

Cumulative index

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

Enrolment

Graduates

Teachers

Finance

Flows and transition

Accessibility

Achievement and literacy

Labour market

Training

Private, distance and home schooling

Indicators

Surveys and data sources

NEW BOOK / NOUVEAU LIVRE :

Towards evidence-based policy for Canadian education
Vers des politiques canadiennes d'éducation fondées sur la recherche

A collaboration of Statistics Canada and the John Deutsch Institute at Queen's University, and edited by
Une collaboration de Statistique Canada et de l'Institut John Deutsch de l'Université Queen's, sous la direction de
Patrice de Broucker and / et Arthur Sweetman

As we move into a more knowledge-oriented era, our society is increasingly interested in improving the educational experience and outcomes of students, and evidence-based decision-making is a feature of this educational innovation process. Individuals involved in the development and use of such evidence come together to create this volume. The discourse is broader than is usual in a single book since it includes contributors from groups that do not normally interact very much. Academics from education faculties, education policy makers from various jurisdictions (federal, provincial and school board), economists and various other education stakeholders are all included. The topics addressed are wide ranging, and divergences in interests are sometimes substantive – this is one of the strengths of the volume.

The 19 essays, each with a commentary, and four "reflections" include broad discussions of the political and school environments in which evidence is used (or not used) in informing policy and practice, and case studies of innovative educational developments in various jurisdictions. There are also overviews and analyses of large scale assessment programs, and economic analyses looking at links between the school system and outcomes, especially labour market outcomes, much later in life.

Alors que notre époque est toujours davantage orientée vers le savoir, notre société s'intéresse de plus en plus à l'amélioration du système d'éducation et des résultats des étudiants, et les prises de décisions fondées sur la recherche font partie du processus d'innovation en matière d'éducation. Diverses personnes impliquées dans le développement et l'utilisation de ces recherches, avec leurs perspectives différentes, se sont réunies pour produire cet ouvrage : des universitaires de facultés d'éducation, des décideurs de politiques d'éducation de diverses juridictions (fédérale, provinciale et conseil scolaire), des économistes et diverses autres personnes ayant un intérêt particulier en éducation. De ce fait, la matière traitée est plus vaste qu'il n'est d'usage en un seul volume. Des divergences d'intérêt parfois très marquées se manifestent – ce qui constitue un des points forts de l'ouvrage.

Les 19 essais, chacun accompagné d'un commentaire, et quatre « réflexions » comprennent d'amples discussions sur l'environnement politique et scolaire, où la recherche est utilisée (ou non) dans l'élaboration des politiques et leur mise en pratique, et des études de cas de développements novateurs en matière d'éducation dans diverses juridictions. Plusieurs chapitres présentent aussi des vues d'ensemble et des analyses de programmes d'évaluation à grande échelle, ainsi que des analyses économiques qui examinent les liens entre système scolaire et performances individuelles, en particulier relative à la situation sur le marché du travail, bien plus tard dans la vie.

Early Reviews / Premiers comptes rendus

"An Excellent Initiative! ... a rare opportunity for researchers, policymakers and practitioners to share perspectives on fundamental concerns. ... Teachers want to provide the best possible education to students. This book offers a contribution in this direction."
Dr. Julius Buski, Secretary General, Canadian Teachers' Federation

"Ce livre permet de constater la richesse et la diversité de la recherche statistique et économique en éducation faite au Canada. Il permet aussi de voir ce qu'il nous reste à comprendre pour mettre en place de meilleures politiques et mieux gérer globalement nos systèmes d'éducation."
Yvan Dussault, Sous-ministre adjoint, Ministère de l'Éducation du Québec

"The authors of this volume provide helpful advice to government, teachers, and the public ...."
Paul Davenport, President, The University of Western Ontario

"This book offers a remarkable overview ... [and] ... has relevance for a large audience, which includes researchers, policy makers and the general public."
Donald Fisher, President CSSE, Professor in Education UBC

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